



DESIGN IDEALS

Volume 2 | Issue 1 | 2020

PREFACE

Dear Respected Readers,

*Assalamu'alaikum warahmatullah hiwabarokatuh-
Peace be upon you!*

Sincere appreciation for reading and reviewing the articles of KAED Design Ideals Journal.

In succeeding from the previous issue, the new edition provides the intellectual stimuli in articles and research reports related to Malaysia with Islamic perspectives. It has become the team's commitment to continually produce a journal primarily devoted to design work as continuously created by KAED community.

This issue covers nine excellent articles initiated by the faculty members and students of the Kulliyah of Architecture and Environmental Design specialising in the fields of architecture, urban planning, landscape architecture, quantity surveying, building technology and engineering, applied arts and design. In keeping to the fundamental aim of the Design Ideals Journal as a platform for the students, lecturers and practitioners of design to extend their practical trust to the public, the Design Ideal Journal bids opening for researchers, research students and practitioners to share their views. Academics and students can indulge in the value of its contents - theoretical or empirical research findings. As usual, we welcome both research reports and theoretical papers, short practice notes, design reviews and abstracts from portfolios and design theses on any aspects of the built environment for design discourse.

This year we aim to publish two more issues to meet our expectation of a six-monthly publication, InsyaAllah. Apart from the regular edition, we hope to also produce a Special Issue to the readership this year.

Do keep giving us encouraging feedback and wishing all
Happy reading.

Editor-In-Chief

EDITORIAL

Assalamu'alaikum Warahmatullahi Wabarakatuh

In this First Issue of the Second Volume of the Design Ideals Journal, nine articles discuss the various subjects, challenges and solutions in the forms of design concepts of the built and natural environments. As in the First Volume, this issue is dedicated to Malaysian case studies comprising of final year studio projects, design thesis and multi-disciplinary projects of the students guided and supervised by the Kulliyah's lecturers. Collectively, five designs dedicated to subject matters on KAED heritage living laboratory which comprised of backdrop, benches, thematic garden, and network and connectivity of the heritage living park. Four other papers embrace the landscape redevelopment of Highland Tower's land, multi-purpose motorcycle for entrepreneurs, and two revised proposals for the Selangor State Structure Plan's development concepts.

The first article by Nurlelawati Abdul Jalil and Ahmad Hareez Adlan Mohd Asri titled *Instagramable Backdrop for KAED Heritage Living Lab*, is about the backdrop design features of Rumah Kutai, a living Malay heritage lab of Kulliyah of Architecture and Environmental Design (KAED) of the IIUM. The second article by Aliyah Nur Zafirah Sanusi and Muhammad Muzzammil Muhammad Taufik focused on a masterplan of IIUM Cultural and Natural Heritage Living Centre, gazebo designs within an appropriate budget. The team was required to design five gazebos that reflected the Bugis culture, one of Malay Nusantara culture found in Gombak.

Zeenat Begam Yusof, Muhammad Aiman Farahi Noor Ariffin and team, were looking at the design of a recreational park for the International Islamic University Malaysia (IIUM) Gombak Cultural and Malay Heritage Living Laboratory, in front of Kulliyah of Architecture and Environmental Design (KAED). The park was designed according to the Acehnese Architecture emulated from the Aceh tradition which was among the first settlers at Gombak area.

The next article by Arita Hanim Awang and Zulma'arif Suhaimi and team, take an interest in the design for outdoor benches as one of the essential elements in landscape design, especially in the heritage sites. The design of these benches adds to the overall identity that complements the concept of Kulliyah of Architecture and Environmental Design (KAED) Malay Heritage Living Lab.

The fifth article entitled *Connectivity to Malay Heritage* by Asiah Abdul Rahim and Nur Sabrina Othman and team, highlighted the connectivity and similarities among traditional Malay houses from five different states through architectural design, materials and features including outdoor spaces such as *wakaf*. The end products are manifested in the forms of gazebo built in each plot, and other furniture like bench, table, streetlight, dustbin and signage showing its connectivity to one another.

Anis Hazirah Zubaidi, Zainul Mukrim Baharuddin and Mazlina Mansor in their article entitled *Redevelopment of Abandoned Highland Towers as Memorial Landscape*, intended to reclaim the abandoned area of Highland Towers and redevelop the area into a memorial park. The objectives of the project were to rejuvenate the historical value of the place, to revitalize the abandoned area, and to propose the green spaces for the residence of Ampang. While Julaila Abdul Rahman, Nur Nabilah Masron and Zumahiran Kamarudin in their article *BITARA – Sidecar Motorcycle for Service-oriented Mobilepreneur*, developed an innovative sidecar motorcycle for a mobile entrepreneur recognized as *mobilepreneur* who innings a service-oriented business.

EDITORIAL

The last two articles, number eight, by Abdul Azeez Kadar Hamsa, Mansor Ibrahim, Azila Sarkawi, Irina Safitri Zen, Aaliyah Bajrai, Ahmad Ariffuddin and Ahmad Zul Ikram, and number nine by Abdul Azeez Kadar Hamsa, Mansor Ibrahim, Azila Sarkawi, Irina Safitri Zen, Nurul Ain Nazihah Mohd Iqbal, Nur Shahida Abdullah, and Farah Husna Mohd Nor revisited the Selangor State Structure Plan 2035 and proposed two different development concepts. One was “Interdependent Polycentric Economic Region”, and the other was “Radial Economic Nucleus Development Concept”. This review covered all items affecting the whole state development strategies, policies and indicative areas which incorporated the alterations on policies at the state level. It is in a way to incorporate the fast-rapid change of development trend in Selangor State.

Overall, it is hoped that professionals, lecturers, researchers, undergraduate and postgraduate students, in built and natural environments, will find this issue of Design Ideals interesting, useful and knowledge-expanding. Enjoy your reading.

Prof. Dr Mansor Ibrahim
Editor-in-Chief
VOLUME 2, ISSUE 1, 2020

TABLE OF CONTENT

1. Instagramable Backdrop for KAED Heritage Living Lab	01
Nurlelawati Abdul Jalil and Ahmad Hareez Adlan Mohd Asri	
2. A Nosedive into Bertapah Buana	08
Aliyah Nur Zafirah Sanusi and Muhammad Muzzammil Muhammad Taufik	
3. Aceh Enclave Garden Design	15
Zeenat Begam Yusof and Muhammad Aiman Farahi Noor Ariffin	
4. Malay Influence Benches Design	22
Arita Hanim Awang and Zulma'arif Suhaimi	
5. Connectivity to Malay Heritage	29
Asiah Abdul Rahim and Nur Sabrina Othman	
6. Redevelopment of Abandoned Highland Towers as Memorial Landscape	36
Anis Hazirah Zubaidi, Zainur Mukrim Baharuddin and Mazlina Mansor	
7. BITARA - Sidecar Motorcycle for Service-Oriented Mobilepreneur	44
Julaila Abdul Rahman, Nur Nabilah Masron and Zumahiran Kamarudin	
8. Selangor State Structure Plan (SSP): A Way Forward to 2035	49
Abdul Azeez Kadar Hamsa, Mansor Ibrahim, Azila Sarkawi, Irina Safitri Zen, Aaliyah Bajrai, Ahmad Ariffuddin and Ahmad Zul Ikram	
9. A Review on the State Structure Plan of Selangor 2035: Radial Economic Nucleus Development Concept	57
Abdul Azeez Kadar Hamsa , Mansor Ibrahim, Azila Sarkawi, Irina Safitri Zen, Nurul Ain Nazihah Mohd Ikbal, Nur Shahida Abdullah, and Farah Husna Mohd Nor	

Notes to Contributors and Guidelines for Manuscript Submission
Template of Manuscript
Ethics Statements, Duty of Authors, Reviewers & Editors

01

INSTAGRAMABLE BACKDROP FOR KAED HERITAGE LIVING LAB

Nurlelawati Ab. Jalil* & Ahmad Hareez Adlan Mohd Asri
Department of Applied Arts,
Kulliyah of Architecture and Environmental Design,
International Islamic University Malaysia

ABSTRACT

This research aims to study the backdrop design features of Rumah Kutai, a living Malay heritage lab of Kulliyah of Architecture and Environmental Design (KAED) for the university project. The objectives of the study are to identify the existing backdrop design elements for the project references and to formulate the appropriate backdrop design that applies to the context. The rapid development of information technology nowadays and the domination of the internet as the medium to the contemporary human activities are the factors in the transformation of this heritage living lab into an 'instagramable architectural' place. Methodologically, three case studies were selected based on different purposes; as a signage and landmark of a place, a monument of a place, and a public gathering space. The attributes of the design elements, materials, techniques of installation and colour selection were studied with respect to the contextual issues and requirements.

Keywords: *Instagramable, Rumah Kutai, IIUM logo*

*Corresponding author: nurlelawati@iium.edu.my

INTRODUCTION

Backdrop design of Rumah Kutai is a unique university project where the site (Figure 1) becomes a living lab of Malay heritage as well as a public attraction to many prestigious events of the university. As the university embraces the establishment, there arises a question of how the backdrop would be able to portray the identity of the faculty, Kulliyah of Architecture and Environmental Design (KAED), reflects the university's mission and vision, responds to the site context itself, and importantly is 'architecturally instagramable'. According to Hammouda, Mansour & Kamel (2019), 'instagramable' architecture refers to the alteration of a building's meaning into tangible and intangible branding elements of prominent symbolic values or markers of the cities. Hence, enhancement of its existing architectural elements such as having a backdrop for this Rumah Kutai is also a work of marking the university and its local identity.

Historically, backdrop was used as an artistic scene for entertainment such as at the theatre and studio. For decades, its function has been revolutionized to various context and purposes, including for outdoors. Nowadays, a backdrop is frequently used to highlight a location or event outstandingly to the viewers based on the theme or objective of the event. In terms of design, as found in many commercial projects such as backdrop at the hotel lobby (Figure 2) and many fine restaurant, the



Figure 1: Plot 1 – Aerial view of the whole site of Rumah Kutai project.

design is more innovative in many ways such as in its presentations, materials and technology used. Moreover, the design can be found in 3D, backlit and lighted with new materials used such as acrylics, LED lighting, moulded plastic, which are similarly found in signage designs. Although there are hundreds of design resources available in the market that could serve as references to the project, the Rumah Kutai backdrop design should be inline to the context and cost-effective. Hence, this study intends to identify a suitable design for the project based on various attributes from selected backdrop designs.



Figure 2: Example of backdrop design at the lobby of Alila Solo Hotel, Indonesia.

ISSUE

Several site issues need to be address at the first phase of design. The site has a hilly background and the placement of the Rumah Kutai itself limits the potential location for the backdrop. Consequently, the location affects the 'instagramable' angles for the visitors. The site in its current state is not at the most developed area and requires an attractive design to beckon more visitors to the site.

POTENTIAL

The Rumah Kutai's backdrop has the potential to become a landmark and attraction to the university's population as well as to the surrounding society with its 'instagramable architecture' element. The project also promotes the Malay heritage as reflected in the identity of the faculty/kulliyyah.

METHOD / PROCEDURE

This project adapted content analysis approach where three (3) case studies of backdrop designs in the market are studied (refer to Figure 3 to Figure 5). Attributes reviewed in this case studies are;

- Functionality
- Material
- Techniques/installation
- Design element
- Colours

PROJECT FINDINGS

The line-up study of existing backdrop designs revealed that most of the backdrops have multipurpose features, such as, as a signage and landmark of other structures, as a monument, and as a gathering area with ergonomic design sitting. The study also found that in all case studies, the text is used to define the building or space as it is a convenient way for a silent communication. Table 1 of the comparative study below is the evaluation of the case studies of backdrop designs in terms of its design style, sustainability and costing.

Table 1: Summary of findings on case studies.

ATTRIBUTES	CASE STUDY 1	CASE STUDY 2	CASE STUDY 3	REMARKS
Design Elements	Geometric patterns	Floral pattern	Letters	Letters give a bolder look than intricate patterns.

ATTRIBUTES	CASE STUDY 1	CASE STUDY 2	CASE STUDY 3	REMARKS
Material	Steel plates	Steel plates	Acrylics & LED lights	Steel plates are more lasting but expensive LED requires future maintenance & cost
Colour	White	White	Colourful	Colour should be in contrast to the background
Installation / Techniques	Laser-cut, welding & spraypaint	Laser-cut, welding & spraypaint	Cutting, bending, glue, screw, LED wiring	Minimal installation & maintenance.
Function	Monument of the event & public gathering	Signage / landmark	Signage / landmark, monument & sitting	Multipurpose design is preferred.

For the proposed site, the green design would best in adapting to the site context. Several principles were first drawn from the university's reflection of the masterplan concept in conceptualising the backdrop design, as explained in the Schematic diagram. Findings from the case studies were used to guide the selection of patterns, materials and functions for the backdrop design.

The repetitive geometric design in the design proposal symbolises the equality of Islam to Mankind regardless of their background and differences. In Islam, faith or Iman in Allah/God is the utmost importance. The repeated pattern creates uniformity and unity in the submission to Allah. The hollow and framed lettering with geometries designs, on the other hand, represents a symbiosis between the symbolism of Islam and the Malay culture. The complexity of the proposed design is balanced by a flat surface placed as footing also served as the structure that symbolises the foundation of faith or Aqidah, knowledge and Iman of a Muslim. The identity of the kulliyyah was also adapted in the backdrop design in KAED's abbreviation as well as KAED's corporate purple colour.

SCHEMATIC

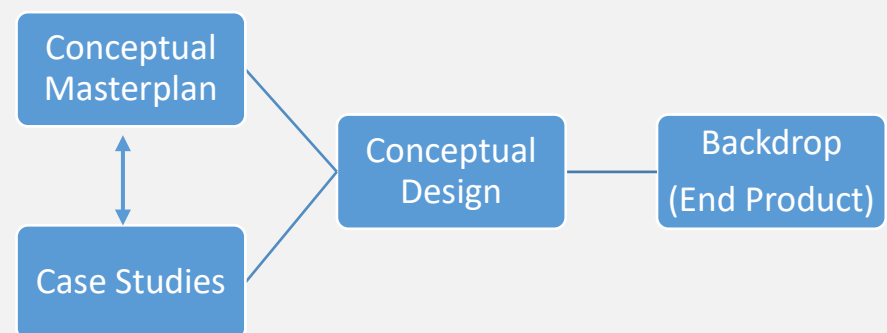


Figure 3: Schematic Design

CASE STUDIES:

CASE STUDY 1

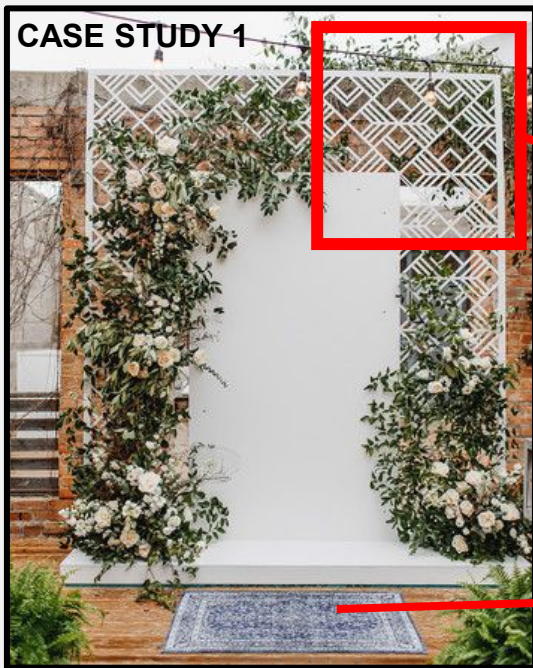


Figure 4: Example of an event's photo booth (Source: Shira Savada, 2020)

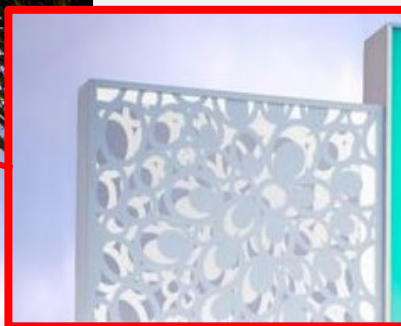
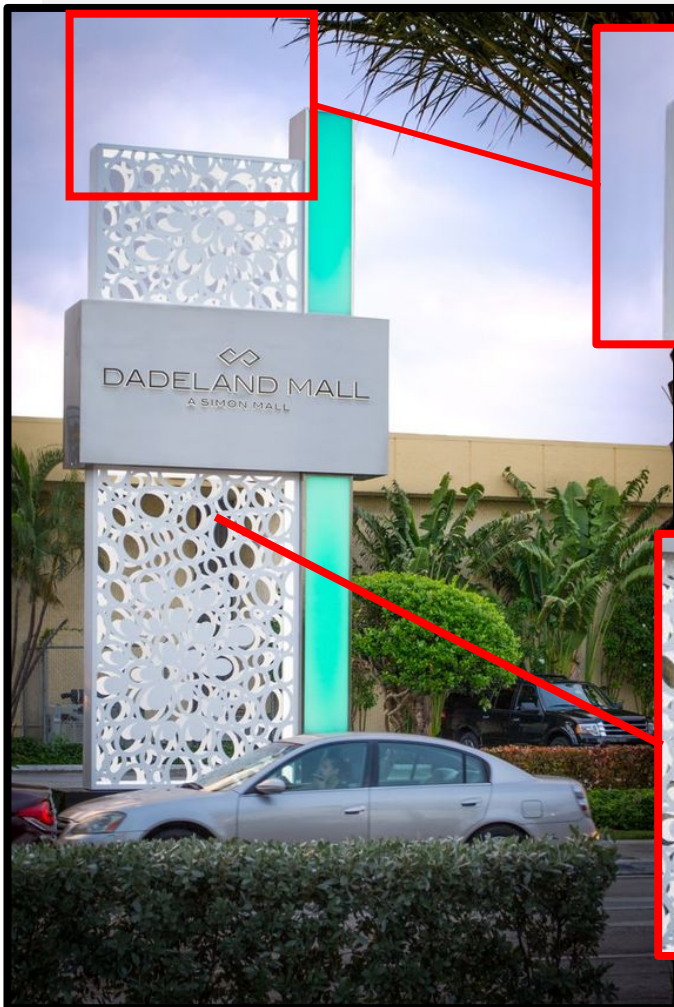


Material: Steel
Technique: Laser cut
Pattern: Line/ geometric

Colour combination:
White and green

Base to support the
backdrop.
May also use as a stage

CASE STUDY 2



Material: Steel
Technique: Laser cut
Pattern: Floral



Figure 5: Example of floral motifs used on the Dadeland Mall's signage (Source: 505design.com, 2020)

Colour combination:
White and light
turquoise

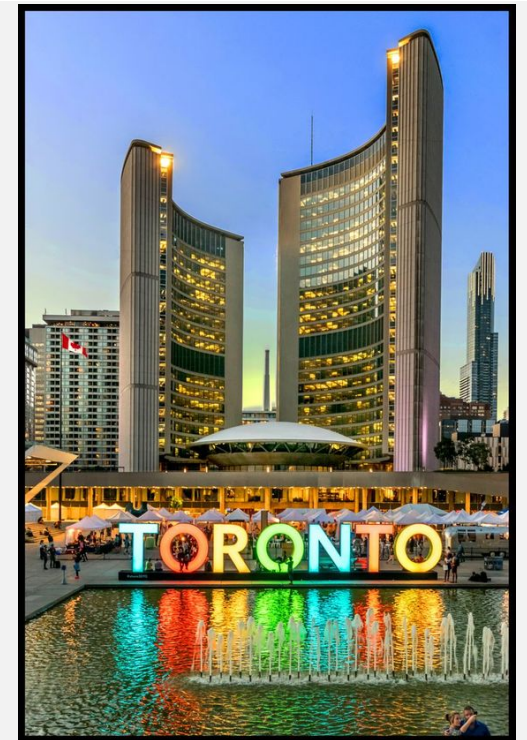


Figure 6: Colorful landmark signage in letterings in Toronto (Source: Peggy, 2018)

CASE STUDY 3



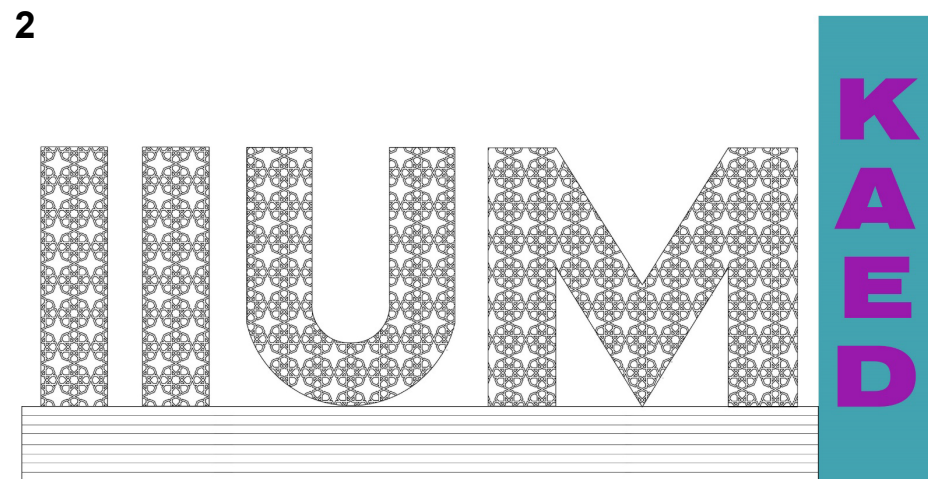
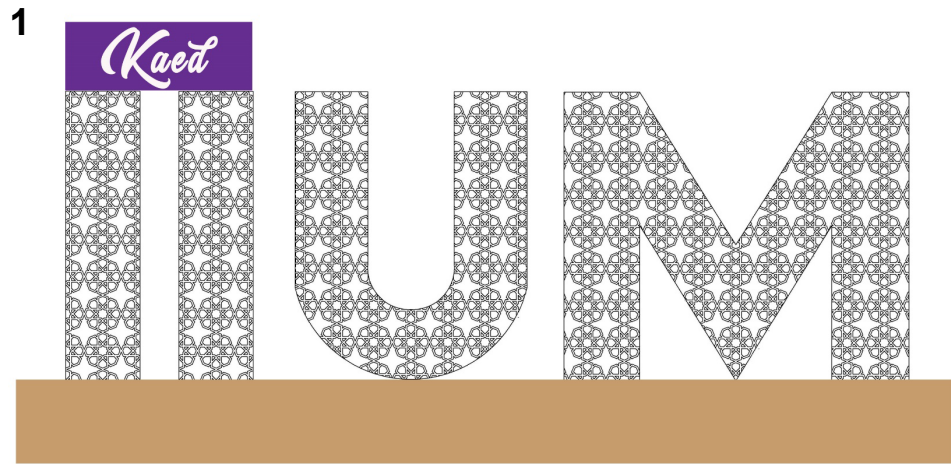
Metal plate
cut and
shaped to the
word of
Toronto
The
horizontal
base to
stand the
form.
The base is
also used as
a seating
place.



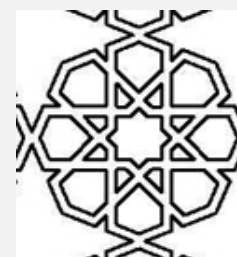
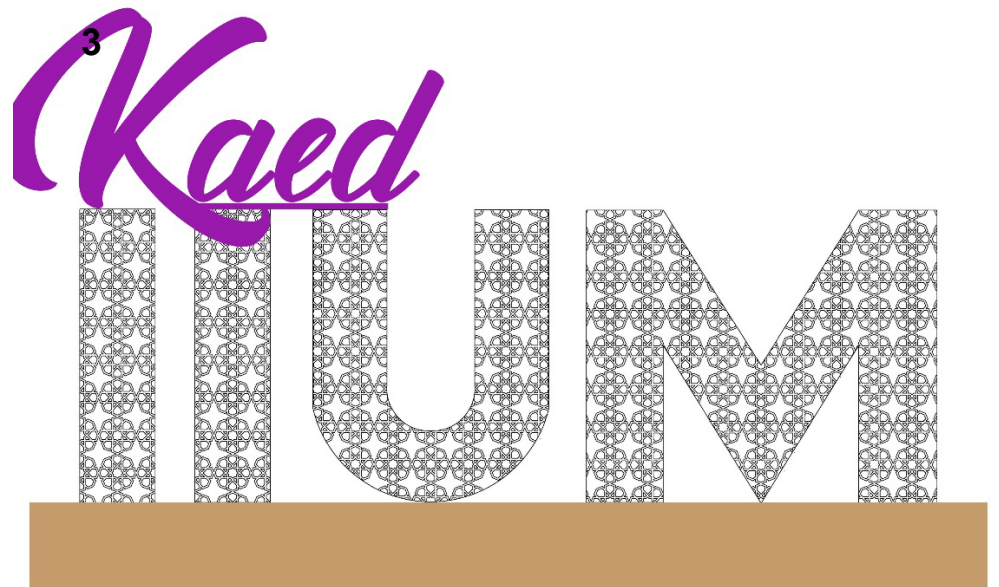
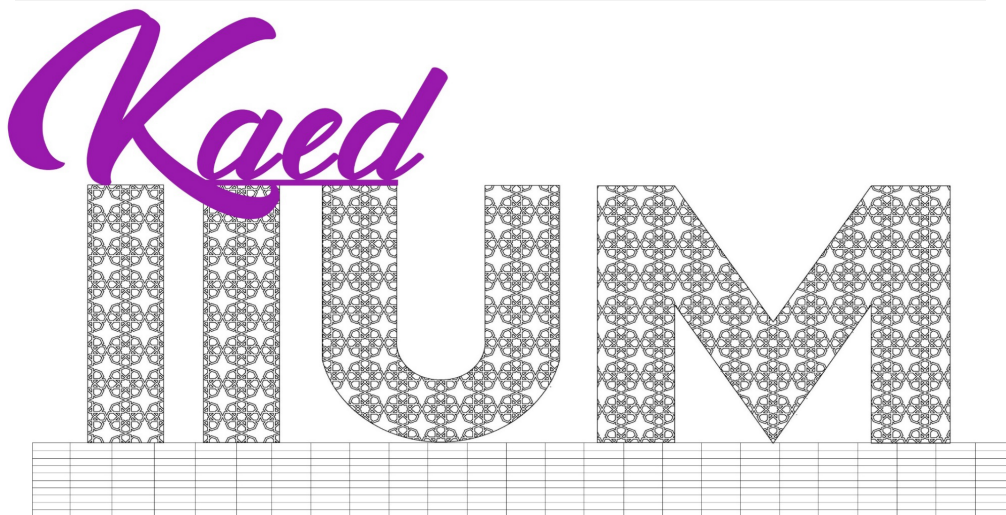
Lights to enable the signage being
seen at night.
To increase the aesthetics value
of the design.

The colourful lights during the
night attract more visitors to the
site for photo shoots.

DESIGN PROPOSALS



FINALISED



Pattern: 8-pointed octagonal star or 'Islamic' geometric pattern- forms the 8 folded rosette pattern

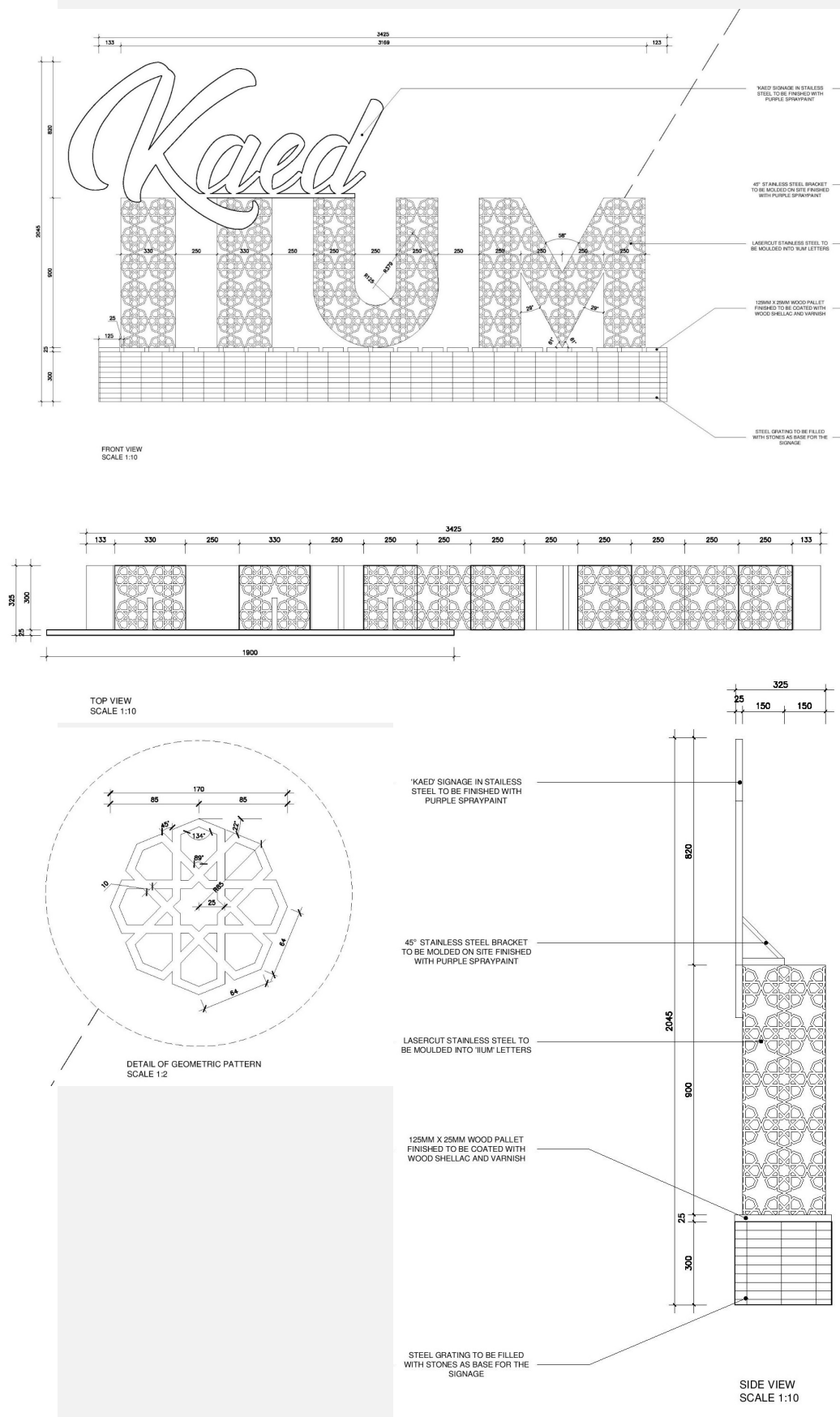
To represent the pattern of IIUM logo

The base is designed as a seating area (for the photoshoot session)
Material: Gabion and concrete



Material: Stainless steel
Technique: Laser cut

DETAILS – WORKING DRAWING



ERGONOMICS, PROPOSED FUNCTION AND LOCATION



Figure 7: Landmark at the site

The dimensions of the structure is proposed to be in 2 meters high and 3.4 meters wide. The size makes the backdrop moderately bold and noticeable from its surrounding context as the focal point of the area. The location of the backdrop is in between the Rumah Kutai and the proposed Rumah Pak Ali, as this location provides good angle for the photoshoot of each houses at one time. The size of the backdrop was determined after simulation of various heights and adjustments were made in the SketchUp software. In the test, a camera was placed at the average human visual height. The views were captured and the best angle determined the specific dimension for the backdrop.



Figure 8: View simulation for view to the hill side.

MATERIALS SELECTION

Selection of materials defines the overall probability as well as the practicality of achieving the criteria mentioned previously in the design principles of the concept chosen. To attain such quality, a frame that is made of wire mesh is filled with medium size rocks and stones to cover the gaps. The use of wire mesh is to allow the rocks and stones to be seen visually by the user or visitors who passes by the area. As this will become the base for the backdrop, such materials are selected as they bind between nature and man-made elements, and grass or vines could grow around it. Stones are chosen as they can be stacked, while still allowing water to flow through it, and this maintains its correlation to nature.

Proceeding further, for the structure of the 'Islamic' geometric pattern that forms the word IIUM, steel is chosen due to its malleability and strength characteristics to carry out the function of appearance as well as reflects itself as the framing structure. In detail, stainless steel is recommended as it could accommodate the environment of the proposed site, with a long-term capability in terms of being exposed to the rain and sun daily. To maintain the structure, it is also recommended that the wire mesh be coated with white paint—symbolising Islam as the purity embracing nature - the green. The structure will be freestanding thus some inner framing system is required to add support.

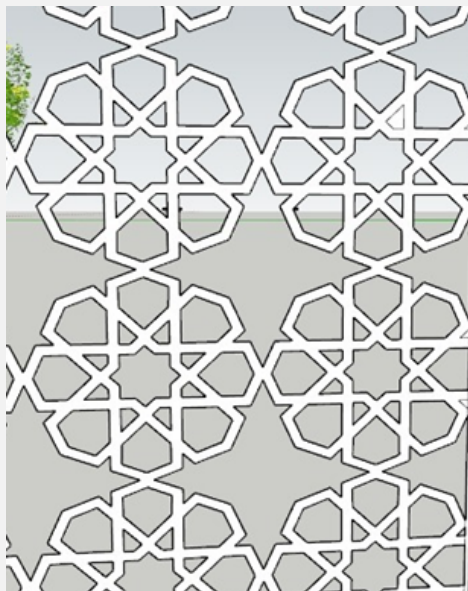


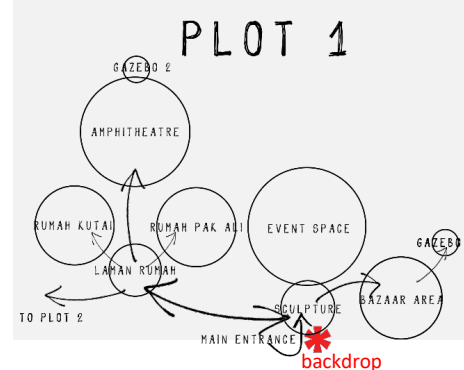
Figure 9: 'Islamic' Geometric Pattern

The last part of the backdrop Nyatoh timber is used. Nyatoh timber is a natural material which is not just aesthetically pleasing, but more importantly could sustain in the Malaysian weather. For this purpose, the timber will be painted glossy purple according to the proposed design. This pain will also extend the lifespan of the timber and thus able to avoid it to being replaced in a short term.

PROTOTYPE – REPRESENTATIVE MODEL



MASTERPLAN



CONCLUSION

Backdrop design is seen as a multifunctional structure that plays an essential role in making Rumah Kutai as a Malay heritage living lab within the IIUM campus to the Gombak society and nationwide. The rapid development of information technology and the domination of the internet as the medium of networking in the contemporary human activities are the factors of the transformation of this heritage living lab into an 'instagramable architectural' place. It is the right move at the right time for the institution to makes the site as an attraction and at the same time, promote Islamic values intrinsic within the Malay heritage values into the next level accordingly. The project exposed students to tangible and intangible design attributes on-site and trends of new design requirements for backdrops worldwide.

ACKNOWLEDGEMENT

Special thanks to all lecturers involved; Asst. Prof. Dr Mohamad Saiful Nizam Mohd Suhaimi, Asst. Prof. Dr Khairusy Syakirin Has-Yun Hashim, Prof. Dato' Sri Ar. Dr Asiah Abdul Rahim, Asst. Prof. Dr Zeenat Begam Yusof, Asst. Prof. Dr Aliyah Nur Zafirah Sanusi, Asst. Prof. Dr Ts. Arita Hanim Awang and Asst. Prof. Dr Nurlelawati Abd. Jalil for their guidance, understanding, patience and most importantly, they had provided positive encouragement and a warm spirit to complete the project. It has been a great pleasure and honour to have them as our coordinators.

Our special thanks to Sr. Anis Syazana Azizan, the designer of this photobooth backdrop and the technical team, Br. Ahmad Hareez Adlan Moha Asri, Sr. Nur Aini Nabihah Mohd Azman, Sr. Siti Noorliyana Juhari that contributed to the success of the design process. We offer special thanks to our surveyor team, Sr. Nurul Syazwanie Saifulnizam and Br. Khaizizi Amri Mizan that provide budget estimating and cost planning to control the cost of this project. We would sincerely like to thank our editor, Br. Muhammad Zulhilmi Mohd Zuki for his contribution in recording all the data and proceedings of this project. Lastly, we would also like to extend our thanks to all members of Lakar Studio team that were with us from inception to the successful completion of this project.

REFERENCES

- Backdrop: Definition of backdrop in English by Lexico Dictionaries. (n.d.). Retrieved from <https://www.lexico.com/en/definition/backdrop>
- Borkowski, E. (n.d). Garden Architect's Modern Garden. [photograph]. <https://www.gapphotos.com/FeatureContactSheet.asp?featureref=347>
- Dade land Mall by 505Design – Kendall. Environmental Graphic Design: Exterior signage, Monument signage, Pylon signage. (n.d.). Retrieved from <https://www.pinterest.com/pin/732679433102455175/>
- Giant 3D Cardboard Words and Letters for Weddings, Conventions, and Festivals - Our Paper Life: Cardboard Conference Booth Design: 3D letter: Giant letters, Lettering design, 3d words. (n.d.). Retrieved from <https://www.pinterest.com/pin/70931762864985501/?lp=true>
- Hammouda, K. N., Mansour, Y. M., & Kamel, S. M. (2019). Instagramable Architecture: The role of architecture as cities brand element in the age of information technologies & social networks.
- Peggy (2018). *City Hall Toronto* [photograph]. Pinvib. <https://www.pintower.com/media/308285536977229425>
- Shira Savada (2020). Creative Wedding Backdrop Ideas to Consider for Your Own Ceremony. <https://www.marthastewartweddings.com/396013/wedding-backdrop-design-ideas-you-can-diy>

02

A NOSEDIVE INTO BERTAPAK BUANA

Aliyah Nur Zafirah Sanusi*, Khairunnisa Abdul Halim, Muhammad Muzzammil Muhammad Taufik, & Yusfariq Iqmal
Department Architecture, Kulliyah of Architecture and Environmental Design
International Islamic University Malaysia

ABSTRACT

The Kulliyah of Architecture and Environmental Design (KAED), IIUM was given a stretch of land within the campus to develop the Malay Enclave Project. The Malay Enclave Project was initiated in 2017 through the preservation and relocation of the 111 years old Rumah Kutai from the state of Perak as a move towards preserving the Malay heritage and architecture as part of the UNESCO Sustainable Development Goal (SDG) initiative. "Reminiscing the Tradition" is the overall project concept to recall the continuity of Malay culture-their customs and institutions as well as their social attitudes.

INTRODUCTION

In this era, the adoption of Western's culture and styles are highly evident in the living environment throughout Malaysia. The impact of welcoming such culture results in the deterioration of the Malay traditional culture and heritage. Hence, the beauty of the Malay culture and heritage needs to be preserved and highlighted again amongst the community.

Kulliyah of Architecture and Environmental Design (KAED), IIUM was established in June 1996 to nurture and produce professionals of the built environment industry. KAED was deemed unique as it aims to be the pioneer in integrating Islamic worldview and values into the teachings and training of students by applying the Tawhidic educational approach. Tawhidic approach in built environment includes creating a learning environment that considers Man, Environment and the Creator in a balance. A Tawhidic design approach considers the suitability of the architecture to the climate, site context and the social-cultural needs of the people of the locality. For this site, it is imperative to understand and adopt the Malaysia Malay traditional culture and heritage context for the project.

KAED initiated The Malay Enclave Project in 2017 through the relocation and preservation of a 111 years old Rumah Kutai, which originated from the state of Perak. The activity was part of preserving the architecture and heritage of the Malays in response to the UNESCO Sustainable Development Goal (SDG). KAED was given a task to expand the Malay Enclave Project by proposing a design of an IIUM Cultural and Natural Heritage Living Centre. The proposal includes the design of five gazebos within a budget.

The project aims to produce a concept and the design of a masterplan with five gazebos within appropriate costing for the IIUM Cultural and Natural Heritage Living Centre. The concept is the philosophy that ties the masterplan and design elements of the whole project. The gazebo designs should reflect, the Bugis as one of the many cultural settlements in Gombak.

Under the Malay Enclave Project, a multidisciplinary KAED student group from the three disciplines-Architecture, Interior Design and Quantity Surveyor; were given the task to design IIUM Cultural and Natural Heritage Living Centre. The site was divided into four different plots. Each team were required to produce a strong concept and work together to create a masterplan of IIUM Cultural and Natural Heritage Living Centre. The team is also required to design five gazebos in the masterplan that reflect the Bugis culture. Bugis is one of the Malay Nusantara culture found in Gombak. The Gazebo is to be designed to budget.

Keywords: *Malay Bugis Architecture, Heritage, Cultural, Gazebo*
* Corresponding author: aliyah@iium.edu.my

METHODOLOGY

The Methodology Chart shown in Figure 1 was used to achieve the aim of the IIUM Cultural and Natural Heritage Living Centre design project. It started with a concept, followed by precedent and case studies of successful similar projects. The flow continued with the development process of the Centre's proposed masterplan and the designs its five distinct gazebos.

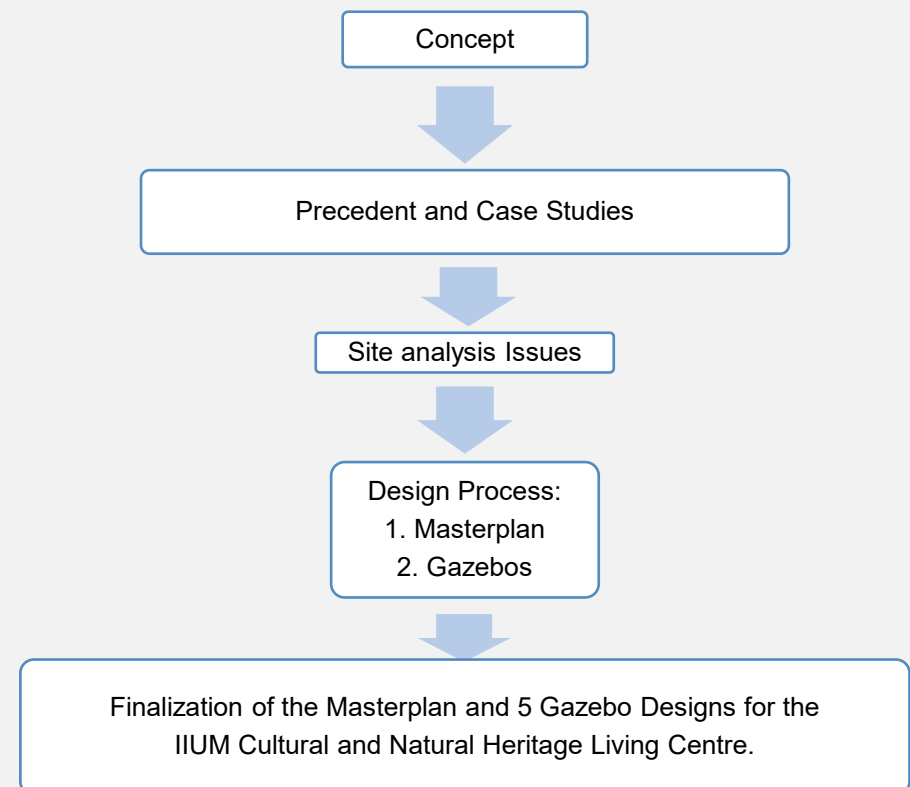


Figure 1: Methodology Chart

THE CONCEPT

"Bertapak Buana", the project concept, comes from an old Malay word. 'Bertapak' means 'placement' or 'location', while 'Buana' means 'realm' or 'world'. The concept chosen relates to KAED's initiative to strengthen the efforts in protecting, safeguarding and sustaining the local cultural and natural heritage within a regenerative development of the surrounding.

The subject matter for "Bertapak Buana" is the inverted root. The idea behind that concept is to portray a strong element that had held up the tree from falling. It also provides a sense of connectivity between the elements such as water and soil. Thus, the root is to show the bondage between our Malaysian heritage and the IUM community. The whole layout was designed to be an initiative where the community can come together and experience the culture and nature at the same time.

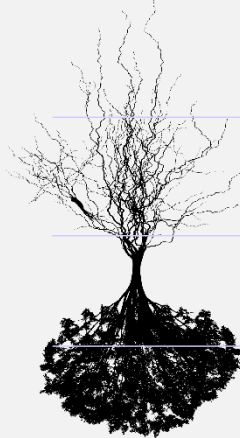


Figure 2: The inverted tree

Plot 4: LOCAL
HERITAGE FRUITS
Sub-concept:
REGENERATION

Plot 3: URBAN
FARMING
Sub-concept:
SUSTAINABILITY

Plot 2: EDIBLE
GARDEN
Sub-concept:
GUARDIAN

Plot 1: MASS
GATHERING SPACE
Sub-concept:
CONNECTIVITY

The whole layout was designed based on precedent and case studies research. It was through this research that the movement of molecules was found in parts of the root. The elements had inspired the circular layout of the entire plots in the masterplan design. The reasoning goes hand in hand with the group's original concept and aims to make the site as a place of gathering and to promote movement of the crowd throughout the whole plots. The circular layout supports a 360° view of the entire proposed masterplan. The design established a strong relationship between Man and Nature, whereby in appreciating the beauty of the site, the visitors are exposed to local cultural heritage and nature.

The inverted idea of the root indicates a game-changer in reviving concern for local heritage and nature. An image that screamed towards them, "look at me", is a symbol to indicate awareness to the public that our heritage and culture is deteriorating. This concerns should be cultivated in our memories and recalled as lessons learned throughout our lives.

Essentially, Plot 1, resemble the starting part of a root where the mass gathering area of the whole design is located. The layout at Plot 1 would be vast and opened and easy to navigate around. As one move to Plot 2, new elements were introduced to fit the edible garden theme; and the circulation gets more specified. As one move on to Plot 3, more features were added to celebrate the urban farming theme. The last plot was designed to be the most complicated layout out. Like a tree, the last plot is to resemble the end part of the roots—the circulation and facilities designed to cater to the crowd.

PRECEDENT AND CASE STUDIES

The masterplan design took precedence from a local garden located within the urban context of Kuala Lumpur - the Perdana Lake Garden. It is Kuala Lumpur's first large-scale recreational park, established in 1888 and measuring 91.6 hectares. The park serves as a refuge from the hustle and bustle of the city from colonial times until now. It contains large sculpted and manicured gardens and a host of attractions with a series of pavilions that act as the nodes along the stretch of the whole masterplan (Figure 3 & 4).

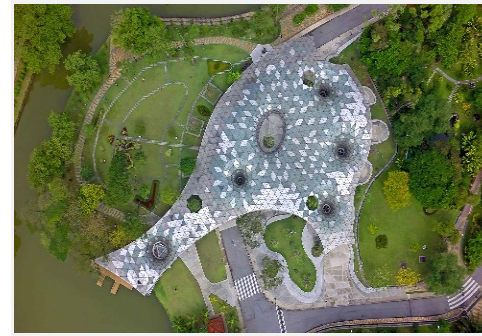


Figure 3: Perdana Botanical Garden Canopy
(Source: gdparchitects.com, 2015)



Figure 4: Perdana Botanical Garden Canopy
for mass gathering. (Source:
stories.travel360.com, 2016)

On the global platform, more case studies on pavilion were referred. The first is a public pavilion known as 'Growing Up' from Hong Kong (Figure 5). Despite its simple volume, each angle of the pavilion reveals a different sense of porosity, materiality and scale.



Figure 5: Growing Up public
pavilion in Hong Kong (Source:
freight.cargo.site)

The M Pavillion in Melbourne, Australia takes its inspiration from origami, with wings opening out to welcome the city into its embrace (Figure 6). In the United Kingdom, the Serpentine Pavilion 2017 creates a sense of openness-achieved by its wall system and arrangements (Figure 7).

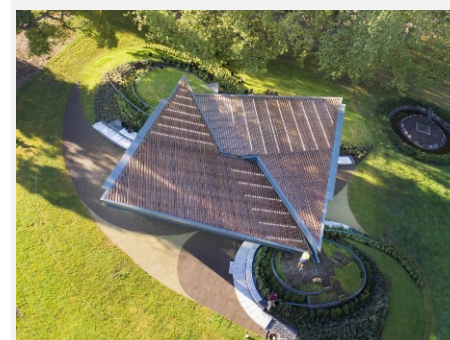


Figure 6: M Pavilion in Australia (Source:
www.metalocus.es, 2018)



Figure 7: Serpentine Pavilion, United Kingdom
(Source: www.archdaily.com, 2017)

The precedent and case studies of the gardens, pavilions and gazebos have guided the design process from the initial stage of design through its spatial organisation of the masterplan design right through to the design of the gazebos.

PLOT 1: MASS GATHERING SPACE

SITE ISSUES

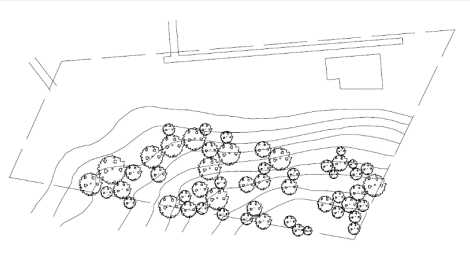


Figure 8: The original state of plot 1 on site

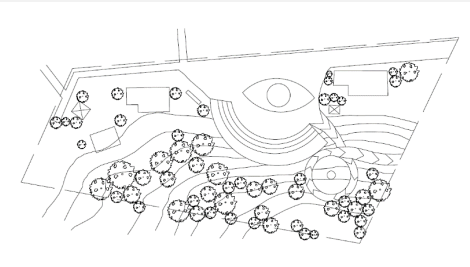


Figure 9: The first design of plot 1



Figure 10: The second design of plot 1

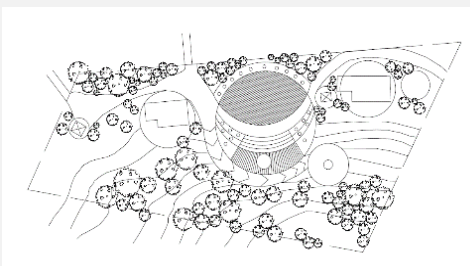


Figure 11: The final design of plot 1

The issues:

- Circulations
 - Footpath/ pathway
 - On foot and wheelchair
 - Lack of greeneries
 - Positioning of Pak Ali's land
- Proposed ramp impractical, very steep, unfriendly to wheelchair users
 - Inadequate facilities: toilet, musolla
 - The whole layout was disarray; circulation and positioning of facilities were not appropriately planned
- The water feature design is not practical
 - The ramp was unfriendly to both wheelchair users and people on foot
 - Circulation and layout were not orderly
- The circular layout was chosen to strengthen the whole concept
 - The mass gathering area acted as the root of the design layout, and it grew further into the entire layout plan
 - The circulation matched the layout plan of the whole site

PLOT DESIGN DEVELOPMENT

PROPOSED DESIGN FOR PLOT 1



Figure 14: Overview of plot 1



Figure 15: Viewing tower



Figure 16: Musolla



Figure 17: Bird's eye view of the viewing tower

GAZEBO 1: WAKAF EMMA' TAKKE



Figure 18: Gazebo 1 in plot 1

Wakaf Emma' Takke signifies the starting point, the roots and the beginning of the world. The 'Emma' means mother in Buginese and associated with fertility, growth and agricultural bounty. Hence, this gazebo marks the starting point of growth for KAED Heritage and Cultural Lab. The aesthetic value of the gazebo is value-added with the presence of gold-painted Semarang motif. The 3-panel Lebah Bergantung motif shows the hierarchy principle of Buginese people; water, earth and sky. The measurement size of the gazebo is 4m x 3m x 4.7m.

GAZEBO 2: WAKAF WAE SORE



Figure 19: Gazebo 2 in plot 1

Wakaf Wae Sore relates to the elemental principle of Buginese, morning dew and roots. This gazebo marks the early stage of growth and is significant to the growth of KAED Heritage and Cultural Lab. The gold-painted zig-zag motif indicates the reflection of light in the morning. Plus, the zig-zag motif is also a representation of connecting roots. The measurement size of the gazebo is 3.8m x 3.8m x 4.7m.

SPATIAL ORGANISATION

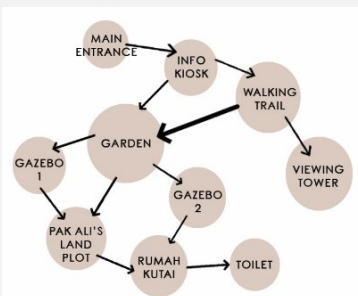


Figure 12: Relationship diagram of plot 1

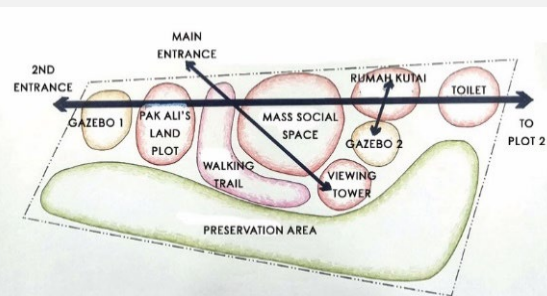


Figure 13: Schematic diagram of plot 1

PLOT 2: EDIBLE GARDEN

SITE ISSUES

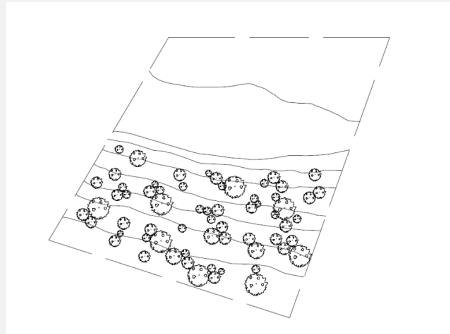


Figure 20: The original state of plot 2

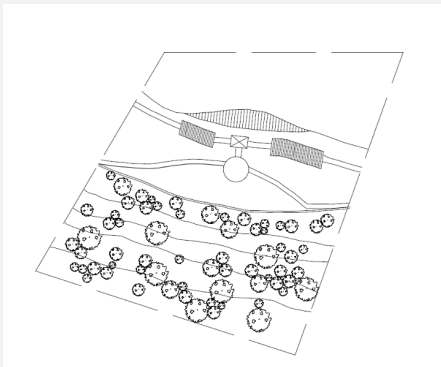


Figure 21: The first design of plot 2

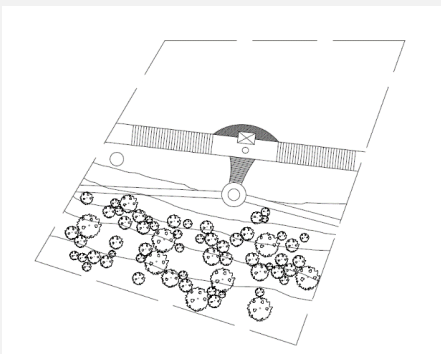


Figure 20 The second design of plot 2

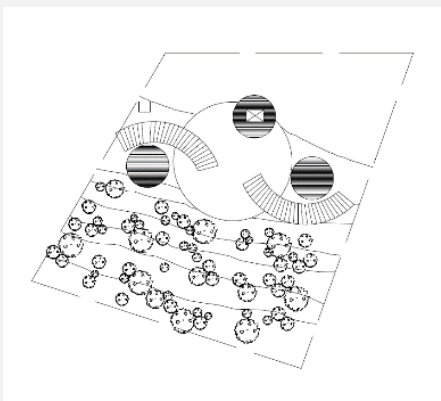


Figure 21 The final design of plot 2

The issues:

- Hilly / sloppy site
- Uneven ground
- Ground settlement near riverbank

- Two tunnels form a combination of pergola and living wall was connected by a walkway
- Gazebo 3 was located in between the tunnels
- Staircases from the platform were placed directly towards gazebo 3

- Gazebo 3 was placed in the middle of timber decking and ground walkway
- Pergola and living wall are connected by the edible vegetation to create a tunnel that acts as a shading device
- The sculpture was placed in the middle of the pergola and gazebo 3
- A staircase connects directly from the circular platform to where the sculpture stands

- Every space was design equally with the other plots, which the circulation works in a circular pattern
- Gazebo 3 was placed on the edge of the riverbank.
- Two edible garden tunnels, both on each side of the Centre, act as a shading device for planter boxes
- The 6m platform was removed entirely

PLOT DESIGN DEVELOPMENT

SPATIAL ORGANISATION

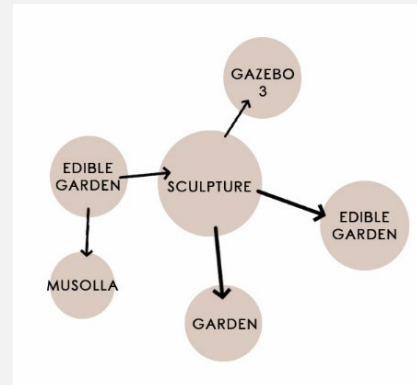


Figure 22: Relationship diagram of plot 2

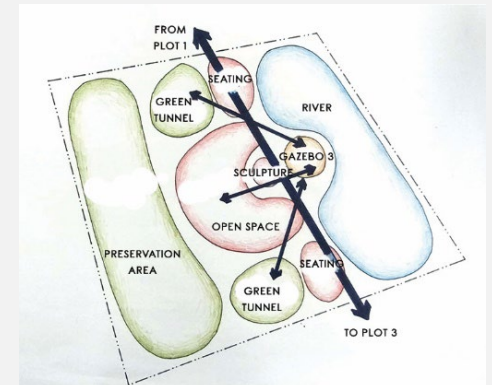


Figure 23: Schematic diagram of plot 2

SITE FEATURES



Figure 24: Green tunnel



Figure 25: Restroom

SOFTSCAPES



Figure 26: Aloe vera (Source: www.jardins-du-monde.be, 2016)



Figure 27: Bird's eye chillies (Source: liamd.pw, 2019)



Figure 28: Coriander (Source: www.pinterest.co.kr, 2019)

GAZEBO 3: WAKAF TANATUO



Figure 29: Gazebo 3 in plot 2

Wakaf Tanatuo is the third gazebo installed for KAED Heritage and Cultural Lab. Tanatuo comes from the word 'growing earth'. The connecting zig-zag motif symbolises the movement of roots which also indicates the strength of the earth. Similar to the rest of the roof, the V-shape roof is symbolic to the design of Buginese people where it represents their social strata. The measurement size of the gazebo is 3.8m x 4m x 5.3m.

PLOT 3: URBAN FARMING

SITE ISSUES

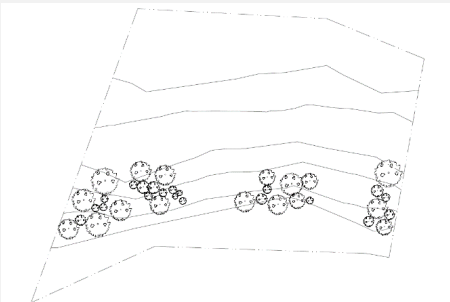


Figure 30: The original state of plot 3

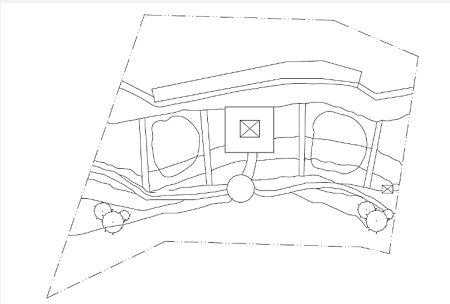


Figure 31: The first design of plot 3

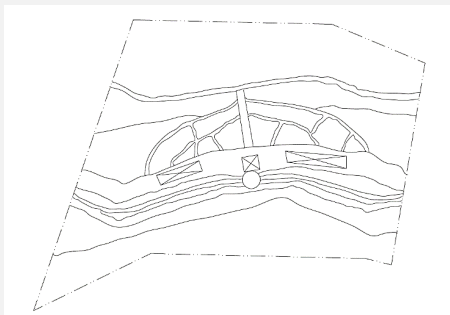


Figure 32: The second design of plot 3

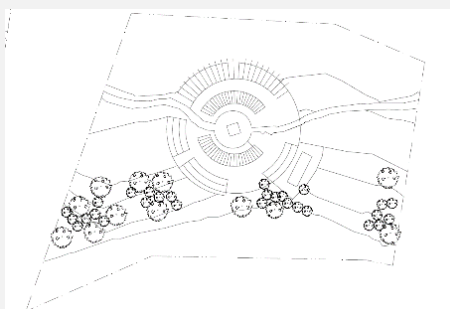


Figure 33: The final design of plot 3

The issues:

- No proper walkway on site
- Hilly site with high slope
- Ground settlement near riverbank
- Non-utilized site on the upper side of the site
- No connection between canopy walk and walkway through the farming area
- Gazebo 4 was placed in the middle of the site on the timber decking that were elevated from the ground
- Circular decking connecting the canopy walk is also connected to the gazebo
- Farming area was inspired from terrace paddy field of Indonesia

- Maze farming to give adventure challenges to visitors
- Concrete staircase form the main access to the gazebo
- Gazebo was placed at a higher position to give maximum view for the visitors
- Vegetable plantations were divided into two - horizontal farming and vertical farming

- Circular layout fit aptly to the concept "Bertapak Buana"
- Horizontal farming - cabbage, carrot, lettuce
- Vertical farming - scallion, tomato, parsley
- System used - Hydroponic, Sprinklers

PLOT DESIGN DEVELOPMENT

SPATIAL ORGANISATION

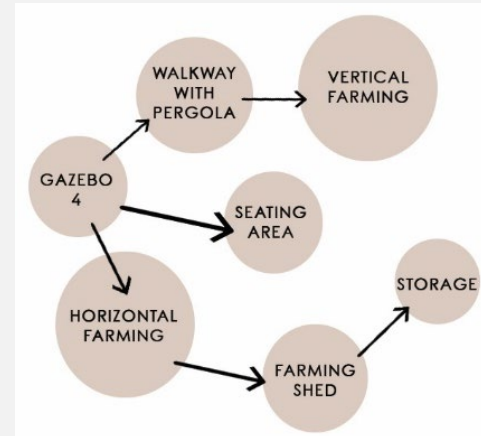


Figure 34: Relationship diagram of plot 3

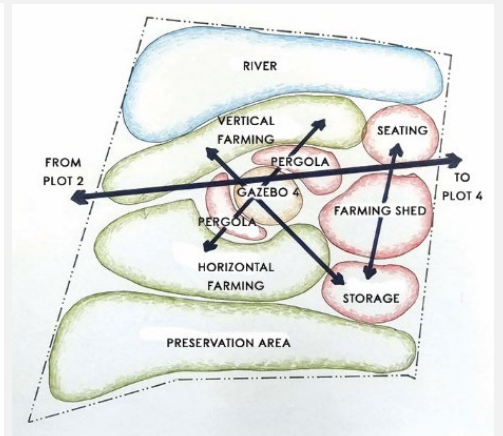


Figure 35: Schematic diagram of plot 3

SITE FEATURES



Figure 36: Overview of plot 3



Figure 37: Farming shed

SOFTSCAPES



Figure 38: Cabbage
(Source: tr.pinterest.com, 2019)



Figure 39: Garlic
(Source: brightkids.biz, 2019)



Figure 40: Cucumber
(Source: www.thespruce.com, 2019)

GAZEBO 4: WAKAF URE' TAKKE

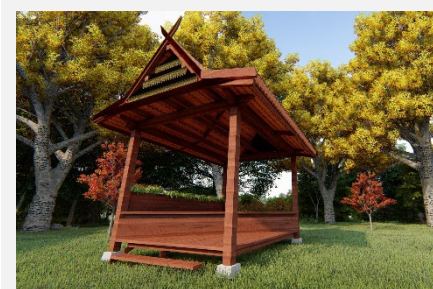


Figure 41: Gazebo 4 in plot 3

Wakaf Ure' Takke is inspired from Buginese word 'intertwining veins/roots'. The gazebo is built on two different levels to indicate the difference in Buginese social class. The intertwining roots signify the symbiotic relationship between the two different social class and also to associate the relationship between man and nature. The gazebo has 'Lebah Bergantung' as part of the motif. The measurement size of the gazebo is 2.8m x 3.8m x 4.5m

PLOT 4: LOCAL HERITAGE FRUITS

SITE ISSUES



Figure 42: The first design of plot 4

- Entrance not appropriate
- Too sparse
- Very random decking trail
- Lack of identity
- No typical local fruit planted
- No toilet
- Placement of gazebo
- Cannot relate to the concept



Figure 43: The second design of plot 4

- Develop into a massive oval-shaped fruit farm
- Entrance not appropriate
- Lack of identity
- Placement of gazebo
- Unsuitable garden trail

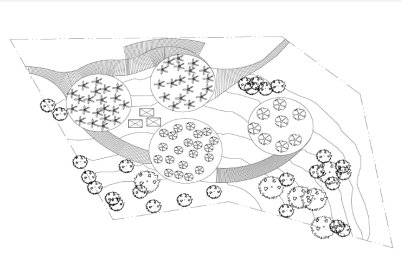


Figure 44: The third design of plot 4

- Change the garden into circular layout
- Lack of identity
- Circulation
- Placement of gazebo
- Unsuitable walkway



Figure 45: The final design of plot 4

- Finalised design of "Alam Buana Fruit Garden"
- Design relates to the concept
- Standardised circulation
- Appropriate entrance
- Presence of Sculpture to show identity of the orchard

SPATIAL ORGANISATION

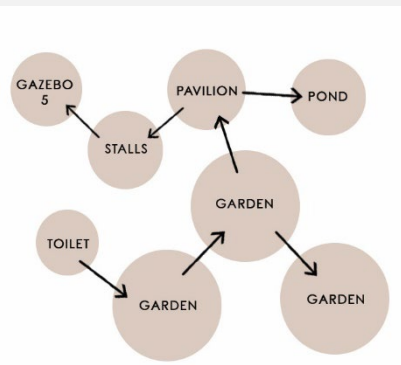


Figure 46: Relationship diagram of plot 4

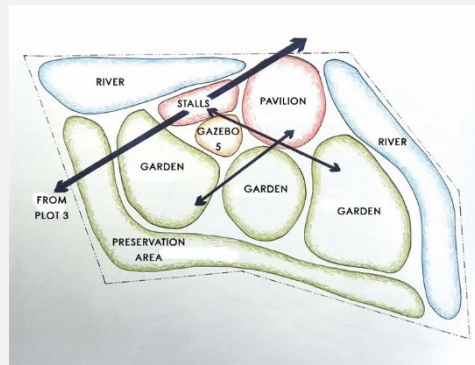


Figure 47: Schematic diagram of plot 4

PLOT DESIGN DEVELOPMENT

SITE FEATURES



Figure 48: Overview of plot 4



Figure 49: Walking trail

SOFTSCAPES



Figure 50: Rambutan tree
(Source: yaya.lk, 2019)



Figure 51: Mangoesteen
(Source: lh3.googleusercontent.com, 2019)



Figure 52: Jackfruit tree
(Source: creativemarket.com, 2019)



Figure 53: Mangoes tree
(Source: www.bioqualitum.com, 2019)

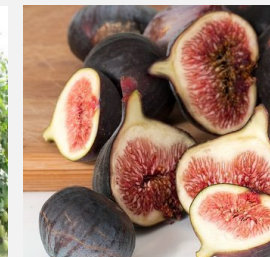


Figure 54: Figs
(Source: lh3.googleusercontent.com, 2019)



Figure 55: Banana tree
(Source: lh3.googleusercontent.com, 2019)

GAZEBO 5: WAKAF LANGIE



Figure 56: Gazebo 5 in plot 4

Wakaf Langie is the last gazebo installed for KAED Heritage and Cultural Lab. Wakaf Langie means 'sky' in Buginese. The symbolism of the sky relates to the highest hierarchy in Buginese principle. The elongated-styled roof shows the majestic value of Buginese culture. 'Lebah Bergantung' motif adds aesthetic value to the gazebo. The measurement size of the gazebo is 6.8m x 1.8m x 4.4m.

CONCLUSION

The characteristic of traditional architecture generates a friendly place through an understanding of the design to its cultural environment and the local people. The historical precedents validate how the characteristic of traditional architecture gathers and embodied the importance of traditional values in contemporary architecture. It is therefore imperative that the Malay cultural heritage is preserved to sustain the continuity of its cultural identity.

The Malay Enclave Teaching Lab project initiated by Kulliyyah of Architecture and Environmental Design has highlighted the contribution of the Malay heritage to world sustainability issues and had raised interest for today's youth to learn, follow and adopt the relevant principles as required.

The project brought together the experience of working in a multi-disciplinary team of designers and surveyors. The added value includes working together towards design decisions within the cost limitation. This experience brings maturity to both designers and surveyors in the team.



Figure 57: Masterplan

ACKNOWLEDGEMENT

All gratitude be to Allah SWT, the God almighty for giving the strength and perseverance to complete the tasks with flying colours.

To the lecturers involved in the project, the team is ever thankful for the opportunity to participate in this exciting project. The project allows the team to learn the value of trust and had guided the team throughout the course to discovering in-depth, the cultures and traditions of our heritage and understood the importance of preserving them throughout our lives.

To all Pusaka Bina Associates team members i.e. Aliyah Nur Zafirah Sanusi, Muhammad Muzzammil, Nur Arifah & Yusufariq Iqmal, Ezryn Ezyani Najwa, Nizamuddin Hafzi, Ahmad Rafie Nasrullah, Ammar Asyraf, Luqman Hakim, Izzatun Munirah, Muhammad Izzat Amir, Muhammad Afiq, Muhammad Hafiz Rahimi, Nur Hazierah, Nur Izzati Syahirah, Umi Aissar, Athirah Nazri, Sumayro Saif, Dayang Damia Batrisyia, Amierul Syaddad, Qurratu Aini, Khairunnisa, Nur Hazirah, Muhamad Irphan, Nurul Izzanie, Safia Nadzirah, Mohd Faiz, Nourelhoda Zbair, Siti Noratira, Alea Syaffa, Muhammad Miqdad, and Puteri Nurhidayah, everyone played their part diligently in making our project a success.

Thank you.

- http://gdparchitects.com/2015/wp-content/uploads/2015/10/gdp_web_perdanacanopy_header.jpg
- <https://stories.travel360.com/how-go-sightseeing-kuala-lumpur-without-spending-transportation/>
- <https://www.metalocus.es/en/news/crossed-pieces-mpavilion-2018-melbourne-carne-pinos>
- https://www.archdaily.com/874920/critics-laud-francis-keres-2017-serpentine-pavilion-for-its-simplicity-and-authenticity?ad_medium=widget&ad_name=recommendation
- Tongkonan. (2019, July 07). Retrieved from <https://en.wikipedia.org/wiki/Tongkonan>
- Wan Ismail, W. (2013). *Adoption of Culture in Bugis houses in Johor, Malaysia*. 3rd ed. [ebook] Skudai, Johor: Centre for Environment-Behaviour Studies (CEBs), Faculty of Architecture, Planning & Surveying, Universiti Teknologi MARA, Malaysia. Available at: <https://fspu.uitm.edu.my/cebs/images/stories/cebs/jabs392013c1.pdf> [Accessed 26 Jul. 2019].
- <https://www.jardins-du-monde.be/nl/exotic-palmboom/319-aloe-vera.html>
- <https://liamd.pw/>
- <https://www.pinterest.co.kr/pin/428264245816430277/>
- <https://tr.pinterest.com/pin/386042999293827974/>
- <http://brightkids.biz/garlic-planting-spacing/>
- <https://www.thespruce.com/growing-cucumbers-in-container-gardens-848163>
- <https://yaya.lk/2019/01/27/%E0%B6%BB%E0%B6%B9%E0%B7%94%E0%B6%A7%E0%B6%B1%E0%B7%8A-rambutan/>
- https://lh3.googleusercontent.com/HeVjnDuODIz0wM8Ohv78o0UsT6a2LyE_zNDYRM5mj8oqUWiJyx6eHVghzLTdVjkGSrU9hg=s101
- <https://creativemarket.com/saiko3p/4749712-Jackfruit-tree>
- [https://www.bioqualitum.com/es/multimedia/Galer%c3%ada?_escaped_fragment_="](https://www.bioqualitum.com/es/multimedia/Galer%c3%ada?_escaped_fragment_=)
- <https://lh3.googleusercontent.com/W-ngwi87S6RIA3UBu6oRh8NwSjnyZg4xCw2rnKQqkRF5AVv4DQLwdZFdELYlmtM0XWitFw=s89>
- https://lh3.googleusercontent.com/yQZwkMtJ6lZO4zlBeTmKOomrAVOL_u99jxUDqFCascxAWbaRUPO23r_sGeB5bE4chKTVa_A=s110

REFERENCES

- Bugis and Makassar Architecture and Urban Neighbourhoods in Singapore. (2017, October 01). Retrieved from <http://singapurastories.com/2017/10/bugis-and-makassar-architecture-and-urban-neighbourhoods-in-singapore/>
- Camp Adventure Park. (n.d.). Retrieved from <https://www.oeffekt.dk/camp>
- Frearson, A., & Frearson, A. (2019, May 15). EFFEKT completes spiralling Camp Adventure tower in midst of a Danish forest. Retrieved from <https://www.dezeen.com/2019/05/12/camp-adventure-tower-effekt-denmark-forest/#/>
- Harizah, A. & Mohsen, M. (2018). *Traditional Procedures Of Environmental Vision Bugis Architecture Bulding Materials In South Sulawesi, Indonesia (Based On Lontara And Opinions By Panrita Bola As The Architects Of Bugis Traditional Architecture)*. 9th ed. [ebook] Makassar, Indonesia: IAEME Publication. Available at: http://www.iaeme.com/MasterAdmin/UploadFolder/IJCIET_09_11_043/IJCIET_09_11_043.pdf [Accessed 26 Jul. 2019].
- https://freight.cargo.site/w/750/i/e26fad73466886cd0738b7d3abc75605ddc8f56d4da885deec2173ace06b3ef7/New-Office-Works_NOW14_WKCD-Pavilion_06A_LRXu-Liang-Leon.jpg

03

ACEH ENCLAVED GARDEN DESIGN

Zeenat Begam Yusof* and Muhammad Aiman Farahi Noor Ariffin
Department of Architecture,
Kulliyah of Architecture and Environmental Design,
International Islamic University Malaysia

ABSTRACT

This project aims to design a recreational park which is located at the Cultural and Malay Heritage Living Laboratory in International Islamic University Malaysia (IIUM), Gombak, in front of Kulliyah of Architecture and Environmental Design (KAED). The park is to be designed according to Aceh Architecture as Aceh people were one of the first settlers at Gombak area. The park is divided into four plots. Each plot consists of different activities and gazebos. The gazebos were designed based on the spaces in the Aceh traditional house concept. Each gazebo is designed to respond to nature and the activities at the plot. Materials and carvings resembling Aceh architecture are to be part of the gazebo design.

Keywords: Aceh Architecture, Seuromea Keu, Seuromea Teungoh, Seuromea Likot, Rumoh Dapo

*Corresponding author: zeensoni@iium.edu.my

INTRODUCTION

The design concept for this project is “**Respect the Past, Embrace the Future**”. Aceh traditional architectural elements were implemented in the master plan and gazebo design. Aceh houses apply Islamic concepts such as *Hablumminallah* (the relationship between man and Allah- God), *Hablumminannas* (the relationship between man and man) and *Hablumminal’alam* (the relationship between man and environment)(Majid et al., 2017). *Hablumminallah* concept help to design building spaces that consider Islamic principles. Meanwhile, *Hablumminannas* concept helps to plan social and cultural activities. Whereas, *Hablumminal’alam* concept help to design structures that consider the natural environment.

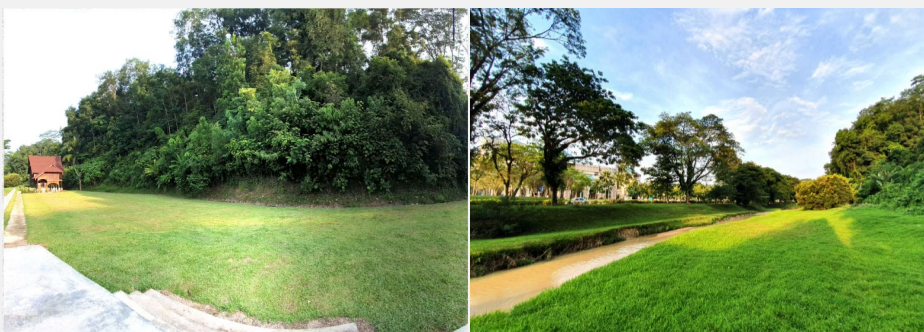


Figure 1 : Site views

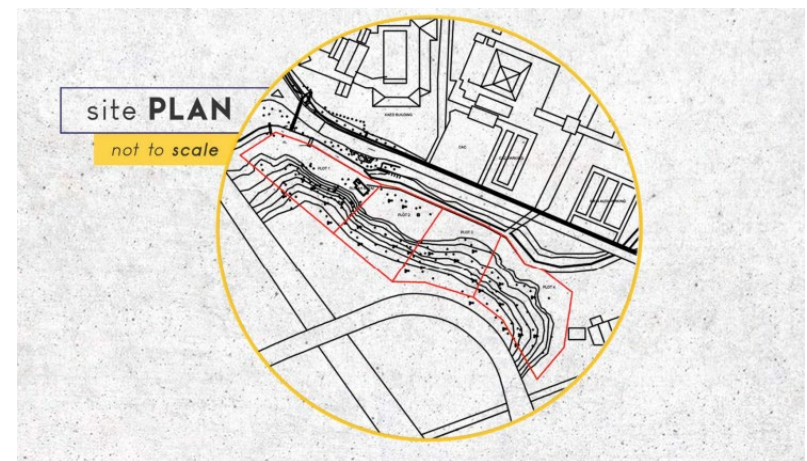


Figure 2 : Site Plan showing Plots

METHODOLOGY

Several case studies of traditional Aceh buildings was conducted to design the masterplan and the gazebos. The building architecture is studied in terms of spaces, history, construction materials, techniques, colours and carvings. The Aceh houses are built very high to avoid the flood. It has a common three spaces and one kitchen in an elongated type of house. Aceh houses are very intricate carvings and use bright colours to highlight the reliefs. Each carving represent nature and the beliefs of the Aceh people (Majid.et. al, 2017)



Figure 3 : Aceh Traditional Houses
(Source: Google Website, 2020)

LITERATURE REVIEW

Traditional Houses of Aceh or better known as rumoh Aceh was developed based on the concept of community life in Islam. The orientation of rumoh Aceh extends in the direction of Qibla. Rumoh Aceh usually has three to five rooms, consisting of Seuramoe keu (front portion), Seuramoe Teungoh (central portion), Seuramoe likot (back portion) and Rumoh Dapo or kitchen as an additional room (Nas & Iwabuchi, 2008).

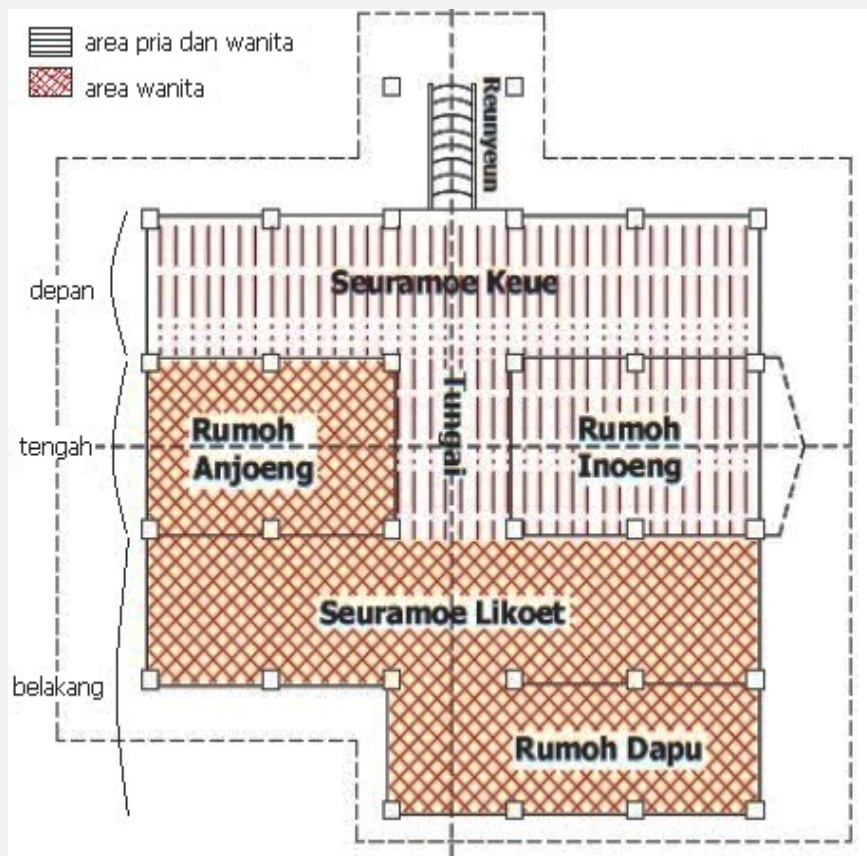


Figure 4 : Aceh Traditional Houses basic spaces
(Source: Zulfikar, 2011)

Traditionally the house for Aceh community was called Inong house as the house is made for women. The room division of Rumoh Aceh are as follows (Meutia, 2017):

1. Seramoe keue is the place for the men to do their activity including accepting guests, discussions, reciting and as a sleeping room.
2. Seramoe Tengoh was made for parents and daughters that had a new family. These rooms are private domain. The unmarried daughter's room is known as Rumoh Anjong, while the married room is called Rumoh Inong.
3. Seramoe Likot was made for women in doing their daily activities such as minding the children and as the family eating area.
4. Rumoh Dapo is the cooking and washing area.

Aceh traditional houses usually built from natural materials; for example, the pegs and wedges are from hardwood and roof from nipah leaves (Kamal, 2015). The houses are built in rectangular form but elongated with six pillars. Front of the house must face north-south direction, and the staircases and rooms must be in odd numbers (Susilawati, 2019). Carvings are placed on the walls, doors, ventilation panels, openings, internal partitions and staircases (Sofyan, 2014). The carvings motifs are mainly symmetrical and repeated pattern in the form of plant shoots, flora and crisscross patterns. The carvings are also a reflection of the owner's social status. The richer the carvings, the higher the status of the owner (Majid et al., 2017).



Figure 5 : The pictures above showing Rumoh Aceh characteristics
(Source: Indonesia Kaya, 2020)

MASTERPLAN DEVELOPMENT

The masterplan (Figure 6 & 7) was design based on the shape of Celosia flower. This flower was chosen because of the vibrant colour that symbolises Aceh traditional houses carvings. This flower bud blooms upward. Many tiny buds surround the main stem. The illustration indicates 'adab' or the act of courtesy as the main stem that connects the four plots, and the gazebo as the datum. The curvilinear line shows the circulation pattern of the site.



Figure 6 : Conceptual diagrams for Masterplan



Figure 7 : Masterplan Design

PROJECT FINDINGS

GAZEBO 1:SEURAMOE KEU

There is one gazebo placed in Plot 1. The first one is located near to the existing bridge, named as Seuramoe Keu (anjung or verandah). This gazebo function as welcoming and gathering space for the proposed site.

The gazebo is design square and elevated 2 metres from the ground to symbolise the Aceh traditional house entrance. The Aceh stairs (Figure 8 & 9) come with odd numbers of steps - seven or nine steps. The roof is made of shingles. The four gable roofs (Figure 10) is decorated with 'Tolak Angin' motif, which is also from the Acehnese architecture.



Figure 8 : Gazebo 1

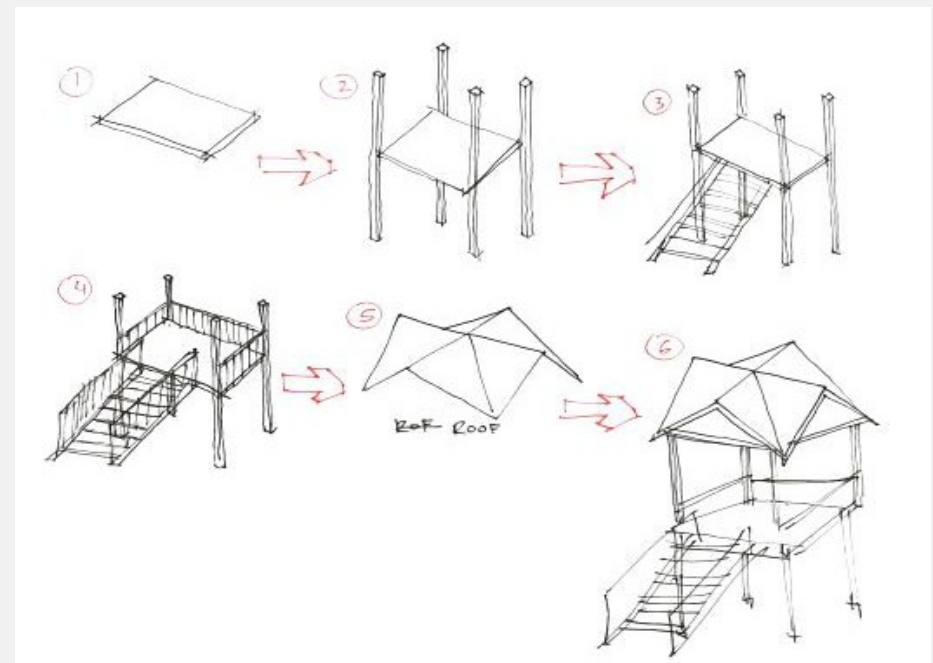


Figure 9 : Design Development of Gazebo 1



Figure 10 : Tolak Angin Carving on Gable end

The railing at the Gazebo railing decorated with another type of Aceh motif known as 'Boengong Koendo'. The motif was repeated to create the whole composition as shown in figure 11 below.



Figure 11 : Boengong Koendo motif on the gazebo railing

GAZEBO 2: SERAMOE TEUNGOH

The second gazebo is located in the middle of the second plot. Various type of colourful local plants is planted near the gazebo as the gazebo is not elevated from the ground. The gazebo is positioned facing the Qibla direction to symbolise the orientation of Acehnese houses. The design of this gazebo is unique and signify the importance of the middle space in Acehnese homes. The roof is covered with shingles tiles. The roof rafters are exposed, and the seating on the concrete bench is made of hardwood timber and decorated with floral carvings.



Figure 12 : Gazebo 2

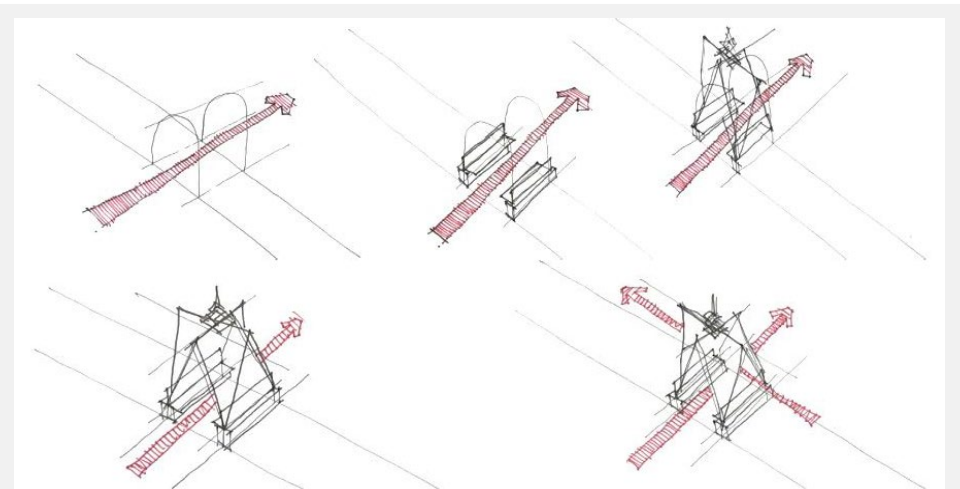


Figure 13 : Design development of Gazebo 2

Similar to its name, Seramoe Teungoh represents the central corridor in Rumoh Aceh. At the entrance and exit of this gazebo, these are ramps that highlight the corridor. The staggered roof was designed to resemble the Acehnese architectural style. The height of the sitting area is 615mm, with 550mm height of the backrest. The roof is connected to the concrete seating giving the gazebo a low headroom to symbolise the private space of Rumoh Teungah. The total height of this gazebo is 4700mm from ground level.

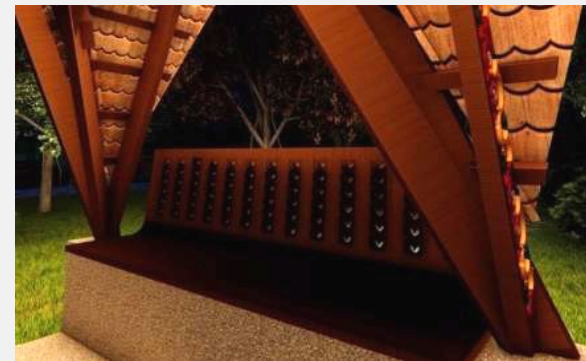


Figure 14 : Sirih motif at backrest

The backrest of the seating is carved with 'Sirih', motif with the shape of two leaves. While below the lower roof, there is a wood carving of motif 'Boengong Awan-awan'. The motif was carved with relief carving technique and painted with bright red and yellow colour.



Figure 15 : Boengong Awan Awan motif

GAZEBO 3: SERAMOE LIKOT

The third gazebo (Figure 16) is located in Plot 3, which is in front of the musolla. It was named Seramoe Likot, which represents the back terrace in Rumoh Aceh. Traditionally, this area is used as a special area for women to do their activity like sewing, weaving and preparing for cooking. It is also known as the dining area. In relation to the masterplan design, this plot is for urban farming that consists of many vegetables such as pumpkins, tomatoes, lime citrus, potatoes, cucumbers, watermelons and pandan. Since the gazebo is surrounded by these plants, it gives users the enjoyment of a direct connection with the plants.



Figure 16 : Gazebo 3

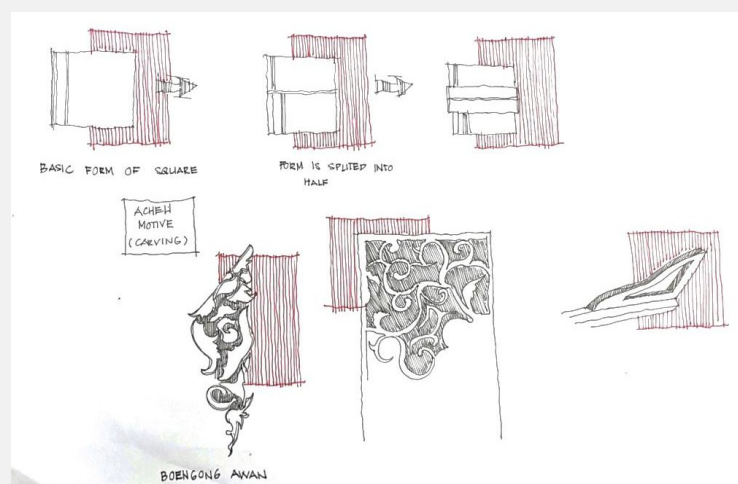


Figure 17 : Design Development of Gazebo 3

While doing these activities, most of the women will lean their back to the wall of their house to rest their back as those activities require a long time to finish. The design for this gazebo, therefore, focused onto the centre part consisting of a leaning wall with the dimension of 700mm X 700mm X 2300mm. The leaning wall helps the user to lean their back and let their feet relax when resting after doing the activities in the urban farming area in Plot 3.



Figure 18 : View of Gazebo 3

At the central main column of this gazebo (Figure 18), all of its four surfaces were carved with the motif of 'Batik Demak'. The technique used for this column is directly pierced with a relief technique. This column has a source of light from the inside. A motif of 'Tolak Angin' is also carved at the four edges (Figure 19) between column and beam of the gazebo. Similar to previous woodwork, this motif is painted in bright colours of yellow, red, white and light blue.

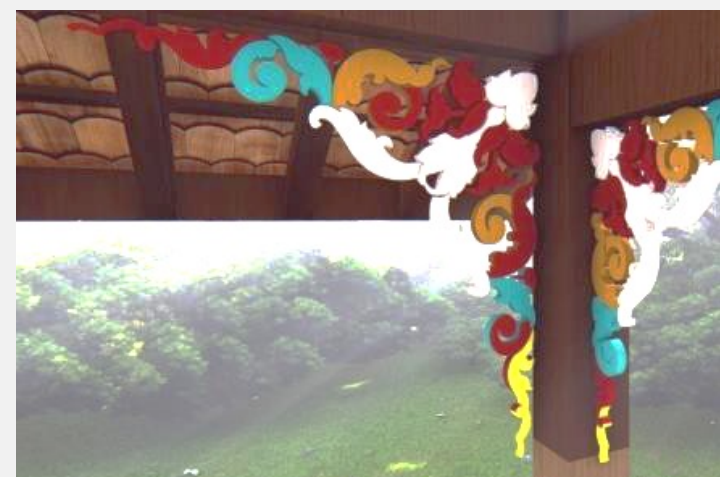


Figure 19 : Motif Tolak Angin

GAZEBO 4: SERAMOE DAPU

The last gazebo (Figure 20) is located in Plot 4, and it is named as Rumoh Dapu. The name is from the additional space in *Rumoh Aceh* which is slightly lower in level than *Seuramoe Likot*. It functions as a wet kitchen. In reference to the masterplan design, the placement of this gazebo is more hidden and surrounded by local fruit trees such as *rambutan*, mango and papaya trees. The gazebo is positioned in such a way to give privacy to the user.



Figure 20 : Gazebo 4

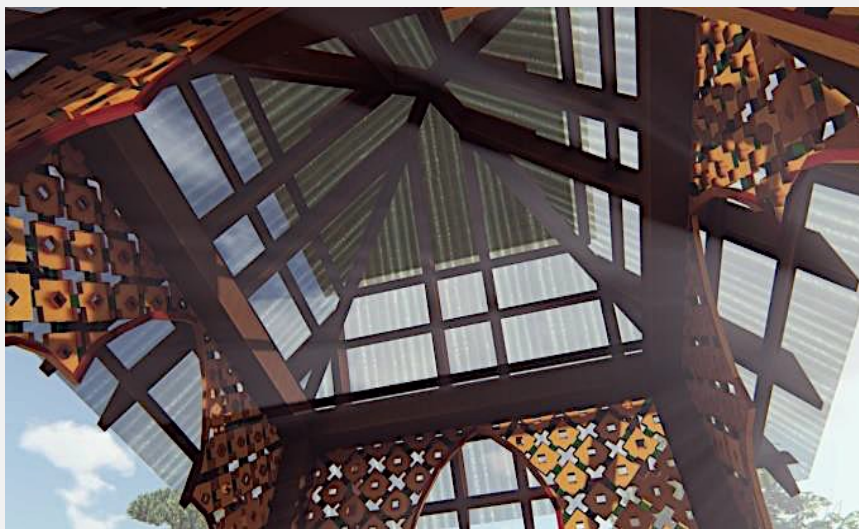


Figure 21 : Roof structure of the gazebo

The design of the gazebo is a simple square shape to portray Rumoh Dapo. The gazebo floor height is 650mm from the ground. The floor area is 2400mm X 2400mm, with the height of 2900m. The overall height of the gazebo is 5500mm from the ground. The roof is designed in two tiers with an opening for roof ventilation. Roof material used is wood shingles. The columns are decorated, and carvings are elaborate near the roof part. The gazebo is designed without any railing to ease users to sit and enjoy eating fruits at the orchard.



Figure 22 : Decorated Timber Column of the Gazebo

This gazebo has several types of motifs with Aceh influences. The arch at the gazebo uses a striking colour combination of bright yellow and red. The motif used is a cross-line motif, and it been carved by using direct pierced with relief carving. Meanwhile, all of its four columns are using the geometric motif in yellow colour, contrast with its green background colour.



Figure 23 : Motif Cross line

CONCLUSION

"Respect the Past, Embrace the Future", is the title of this project for IIUM Gombak Cultural and Malay Heritage Living Laboratory. Acehese traditional elements and beliefs were applied in the design of the masterplan and the design of gazebos. The three main Islamic principles-*Hablumminallah*, *Hablumminannas* and *Hablumminal'alam* - were made as guidelines for this project. Both Horizontal Principle and Vertical Principle that were inspired by the Acehese belief had contributed to the spatial distribution. By following the basic layout of *Rumoh Aceh*, all the gazebos demonstrate the metaphoric expression of Acehese architecture. *Seuramoe Keu* acts as a welcoming and gathering area for the community in Plot 1. *Seuramoe* tengah as middle corridor at plot 2. *Seuramoe Likot* mimics the private space for people to enjoy cultivating the farm. *Rumoh Dapu* highlights user interaction with nature in Plot 4. With the implementation and adaption of the motifs on the selected material such as *Balau* wood, the project portrays a sign of appreciation towards Acehese valuable ornamentations to the built environment.

ACKNOWLEDGEMENT

The acknowledgment goes to everyone in Group 3 Bunga Mas as listed below, to all lecturers in charge of AQS 1301 Multi-disiplinary Project 1, 2018, Kulliyah of Architecture and Environmental Design (KAED), IIUM, all related parties and institutions that had contributed for the success of this project –thank you.

NO.	NAMES	MATRIC NO.	PROGRAM
1.	MOHAMED ZULFAHMY BIN MOHAMED ZULKIFLY	1816789	AQS
2.	ZURIA BINTI MOHD NASIR	1819180	AQS
3.	WAN HAMIZAN BIN WAN HAIRUDDIN	1812525	AQS
4.	NOR ALIYA BINTI OSMAN	1716456	AQS
5.	MUHAMMAD QAYYUM IRFAN BIN NORDIN	1814091	AQS
6.	GHZILAN NUBHA BINTI RAFDHY	1817564	AQS
7.	MUHAMMAD MUIZZUDDIN BIN MAHAZANI	1817665	AQS
8.	FADHILAH BINTI YUSOF	1717904	AAD
9.	ADNIN TASNIM BINTI MOHD SAUFI	1719992	AAD
10.	MUHAMMAD SAIFULLAH BIN ZA'BA	1713225	AAD
11.	ZAREEN MUNAWARAH BINTI HJ YAHYA	1716258	AAD
12.	HAMIDAH BINTI PUASA	1716388	AAD
13.	MUHAMMAD MU'AZ BIN MOHD KAMAL ARIFFI	1612875	AAD
14.	NURLIYANA BINTI AMMAR ANUAR	1710854	AAD
15.	NUR FATIAH BINTI MAZLAN	1717368	AAD
16.	ORTIZ MOLLEPAZA ROCIO SOCORRO	1617109	AAD
17.	ANISSA BINTI ANWAR	1711774	ARCHI
18.	MUHAMMAD AIMAN FARAHI BIN NOOR ARIFFIN	1713555	ARCHI
19.	NUR NABIHAH BINTI MANSOR	1712702	ARCHI
20.	SOFEA SYAZWANIE BINTI SABRI	1719476	ARCHI
21.	AIDIL QUSHAIRI BIN OMAR	1710217	ARCHI
22.	MUHAMMAD AIZUDDIN BIN VAEA	1717311	ARCHI
23.	SHAFIQ IZHAM MUSTAQIM BIN SHAPURANAN	1718681	ARCHI
24.	MAHANI FAHEZAH BINTI MASJUKI	1719448	ARCHI
25.	NAEMATULLAH HUSSAINI PAYAM	1216019	ARCHI
26.	NUR HIDAYAH BINTI TARMUZI	1714868	ARCHI
27.	RAFIQI AQIL BIN SUFIAN	1716175	ARCHI
28.	DINIE ATHIRAH BINTI MD IDROS	1717754	ARCHI
29.	AKMAL ARIF BIN KAMARUL BAHRIN	1429349	ARCHI
30.	MOHD HAAFIZH BIN CHE RAMLI	1716611	AAD
31.	AHMAD KHAIRUL SYAHMI BIN AHMAD LATFI	1710067	ARCHI

REFERENCES

- Indonesia Kaya, 2020. Retrieved from <https://www.indonesiakaya.com/info#hubungi>
- Kamal, A. A. (2015). Keluhuran Seni Arsitektur Rumoh Aceh. *Seminar Nasional Inovasi Seni Kriya Bebas Lokal Tradisi (National Seminar On Arts Innovation With Basis On Local Tradition)*. Jantho, Aceh Besar
- Kamaruzzaman, B.A., Ruzman, M. N., & Mohd Yakub, M. Y. (2012). Konstruksi identitas Melayu dalam sejarah Aceh dan Penang. *6th International Conference Indonesia-Malaysia*, July 10-12, 2012, Surabaya, Indonesia.
- Majid, N. H. A., Denan, Z., Rahim, Z. A., Nawawi, N. M., & Hazman, S. N. (2017). Sustainability Concepts In Malay And Aceh Traditional Houses. *Planning Malaysia*, 15(1).
- Meutia, E., & Izziah, D. E. I. (2017). The Development of Acehese Traditional Architecture in Lubuk Sukun Village Based on Local Knowledge. In *Proceeding International Conference on SENVAR*.
- Nas, P. J., & Iwabuchi, A. (2008). Aceh, Gayo and Alas: Traditional house forms in the special region of Aceh. In *Indonesian Houses* (pp. 17-47). Brill.
- Susilawati, D. (2019, March 30). The Extraordinary Characteristics of Rumoh Aceh. Retrieved July 10, 2019, from https://www.kompasiana.com/debysusilawati/5c96691695760e1a45_139da3/the-characteristics-of-rumoh-aceh#
- Sofyan, S. (2014). Ornaments of flora and fauna on traditional Aceh house. *Journal Natural*, 14(2), 33-35.

04

MALAY INFLUENCED BENCHES DESIGN

Arita Hanim Awang* and Zulma'arif Suhaimi
Kulliyah of Architecture & Environmental Design, IIUM

ABSTRACT

Outdoor benches are one of the important elements in landscape design especially at heritage sites. The design of these benches will add to the overall identity of the whole development. The purpose of this research and design is to propose an outdoor bench design that will compliment the concept of Kulliyah of Architecture and Environmental Design (KAED) Malay Heritage Living Lab at International Islamic University Malaysia (IIUM), Gombak Campus. The objective of this design is to innovate the outdoor bench design so as to incorporate the value of Malay traditional elements. For this purpose, Malay traditional design elements taken from five states in Malaysia served as the main inspiration. These states are Perak, Melaka, Terengganu, Kedah and

Kelantan. As the Malay motifs in the traditional design were derived from nature, they give a strong connection between the park and its immediate site. Other important elements in designing the furniture such as ergonomics, safety and material are taken into considerations. The outcome of this research and design exploration of Malay traditional elements from different states in Malaysia, is the discovery of a new concept of outdoor bench for heritage sites.

Keywords: Malay traditional elements, outdoor benches, ergonomic design

*Corresponding author: aritahanim@iium.edu.my

RESEARCH / PROJECT INTRODUCTION

KAED has identified the preservation of Malay-Muslim heritage and traditional built environment as being its niche areas. One of its initiatives is to develop a Malay Heritage Living Lab in IIUM Campus to become a real-life site or living museum for the teaching and learning activities. For this purpose, a collaborative project under the Integrated Multidisciplinary Project was devised for students to design the Heritage Living Lab overall complex. This includes the hardscape and its facilities, which includes the design of the outdoor bench. The scope of this research is limited to the Outdoor Bench design only.

CONCEPTUAL PROCESS, PROCEDURE AND SCHEMATIC DESIGN

The Malay influenced benches design represents the history of the states in Malaysia, and its traditional and cultural heritage. The design was adapted from the case studies of traditional utilities that have the potential to be developed for human needs such as stools and benches. The chosen benches represent the symbol from each state. It is to make sure that it can give an impact to the visitors as it can also provide visitors with knowledge and history on itself. For instance, the '*kukur kelapa*' bench is derived from the Malay traditional utensil – *Kukur Kelapa*. The early designs were processed and developed accordingly to make it a convenient design.

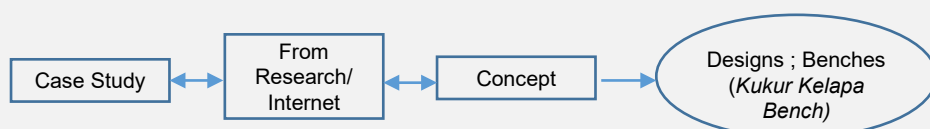


Figure 1: Flow of Design Process

METHODOLOGY

In the commencement of this research, the methodology adapted in collecting data is to ensure comprehensiveness of the whole process. For this research, primary data used are based on observations and case studies, while the secondary data are retrieved from literature reviews. The ideas used for this project were derived from the culture and daily use of the traditional items from the state of Melaka, Perak, Kedah, Kelantan and Terengganu.



Figure 2: Examples of benches design

OBJECTIVES

1. To propose an outdoor bench design that will complement the concept of Kulliyah of Architecture and Environmental Design (KAED) Malay Heritage Living Lab at International Islamic University Malaysia (IIUM,) Gombak Campus.
2. To explore new outdoor bench design from the value learning from the Malay traditional elements.

BENCH 1: PERAK BENCH - KUKUR KELAPA BENCH

PROPOSED DESIGN



Figure 3: Rendered picture



Figure 4 Kukur Kelapa
(Source: Yusoh Bakyah, 2015)

This outdoor bench design was inspired from a famous traditional utensil that is well-known around Malaysia - *Kukur Kelapa*.

Kukur Kelapa is a daily utensil that was used in the past to extract the coconut's content to make ingredients for their traditional dishes.

Kukur Kelapa is the perfect choice for an outdoor bench as it was originally designed to cater for one-person sitting while performing his/ her task. In addition, the object is usually ornamented with Malay motifs.

DETAILS



Figure 5: Motif *Bunga Padi*

For this specific bench, the Malay motif chosen to adorn it is Bunga Padi motif. This motif is widely used in the Malay woodwork, architecture and even fashion especially at the northern states.

The proposed material used for this bench is Kayu Balau and Concrete. These materials are preferred as they are strong, can withstand different temperatures and weather, as well as will not harm the environment.

TECHNICAL DRAWING

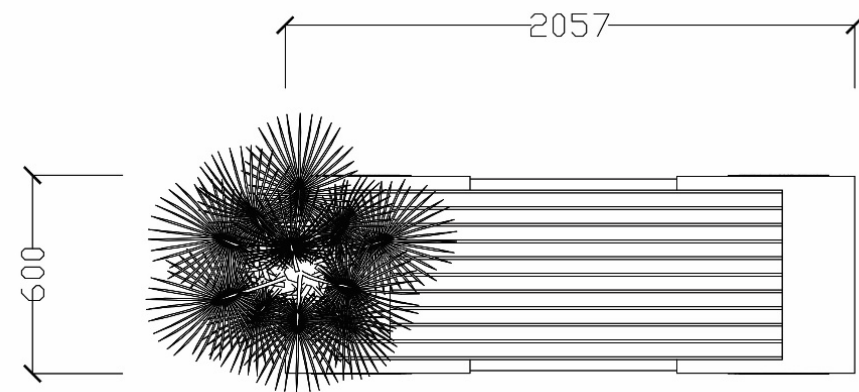


Figure 6: Plan Elevation

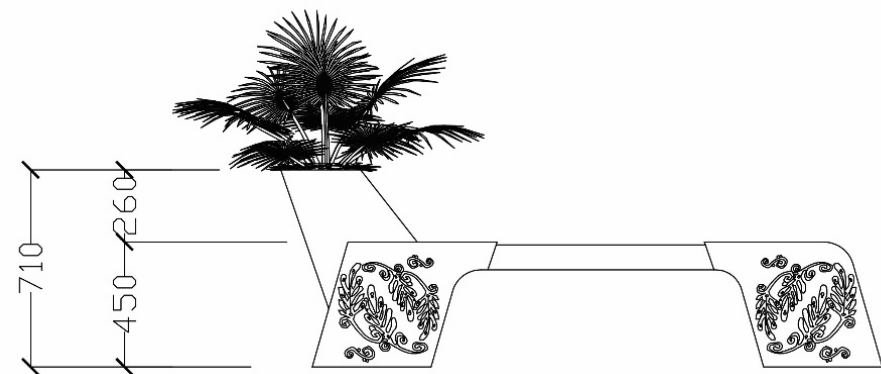


Figure 7: Front Elevation

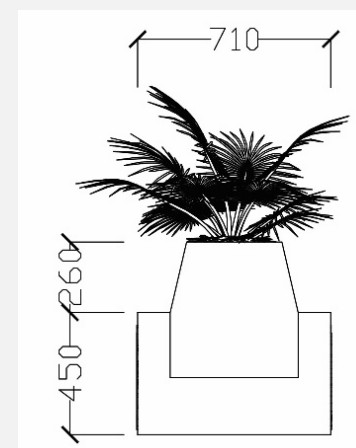


Figure 8: Side Elevation

BENCH 2: MELAKA TRANSPORTATION - *BECA* BENCH

PROPOSED DESIGN



Figure 9: Rendered picture



Figure 10: Beca
(Source : Muzium Negara, 2020)

DETAIL

This outdoor bench design is inspired from the famous traditional transportation that is well-known around Melaka – the *Beca*.

Beca is a daily transportation that is used around Melaka to provide rides, especially to the tourists, who want to see the old Melaka town in comfort.

This vehicle is a perfect choice as a subject matter for an outdoor bench that represents Melaka as it is originally designed to fit 2 to 3 persons sitting per ride at once, plus it is usually ornamented with Malay motifs.

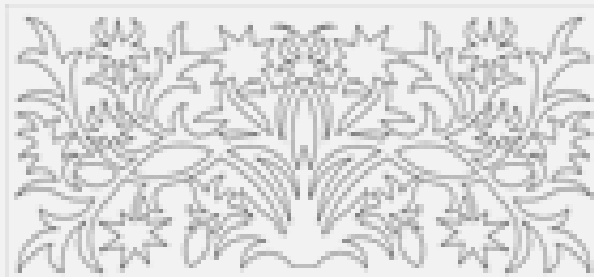


Figure 11: Motif Sulur Daun

Sulur is known by various names such as *Sulur Bayung*, *sulur daun* and others, as a form of engraving that resembles a body-plant sower shape. The lines that exist in the sapling sucker, for example, seem to grow from one source and from that source the sucker appears to grow and move out slowly and gently. Motif *sulur* is the motif *batik* that is inspired from the shape of the leaf blade, while the leaf motif is a motif of *batik* that is basically shaped leaves that are painted in such a way as motifs of leaves. Motif Sulur Daun is chosen because this motif is easily seen around Melaka, usually used as decoration on mosques and in batik design.

TECHNICAL DRAWING

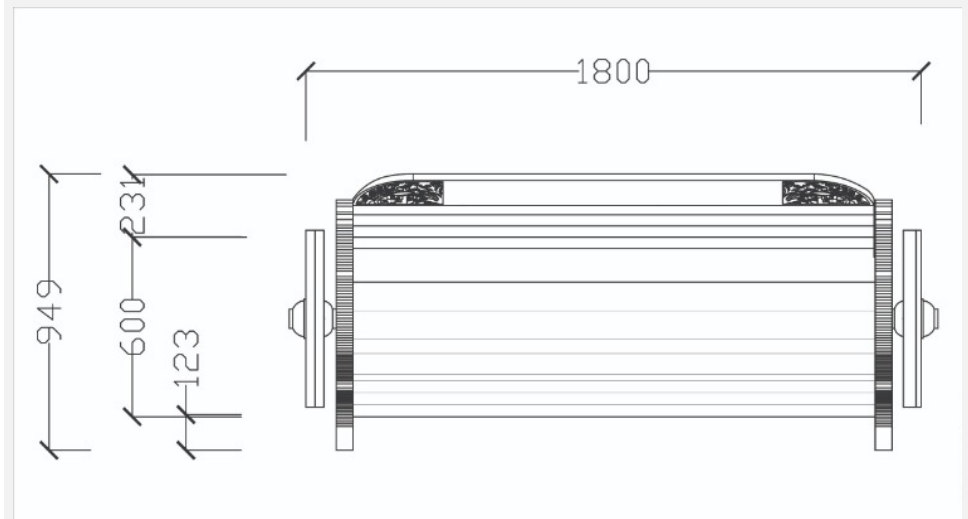


Figure 12: Plan Elevation

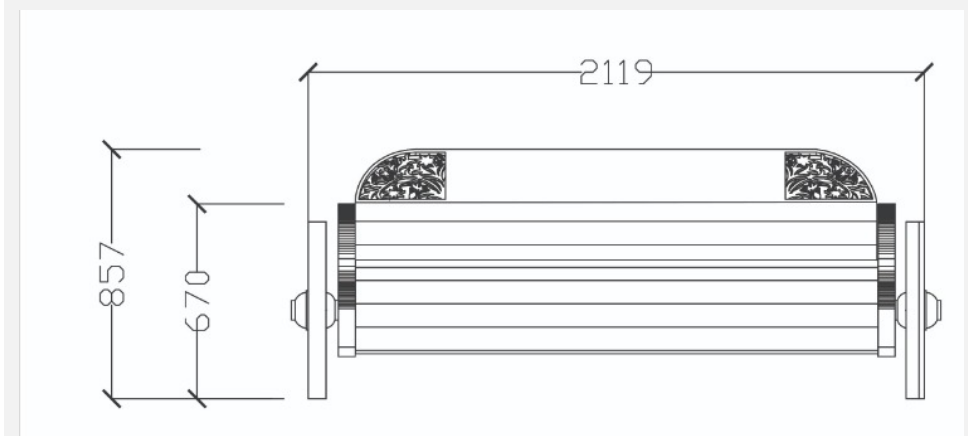


Figure 13: Front Elevation

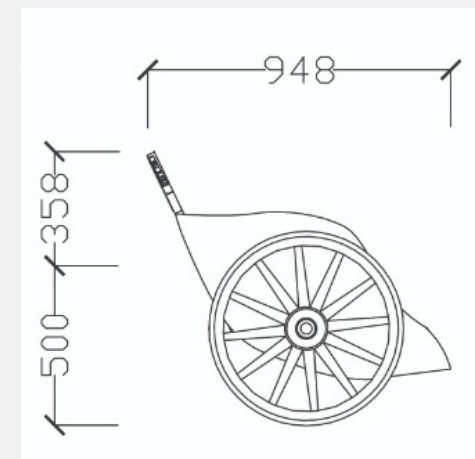


Figure 14: Side Elevation

BENCH 3: KEDAH BENCH – CONGKAK BENCH

PROPOSED DESIGN

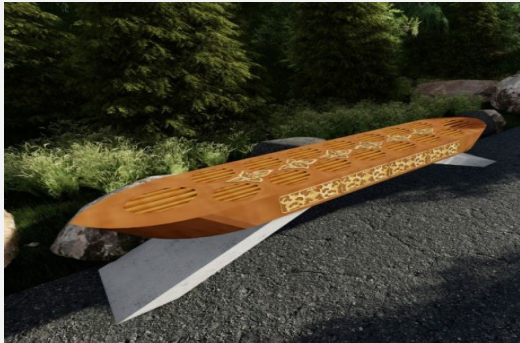


Figure 15: Rendered image

This outdoor bench design was inspired from a famous traditional games that are well-known around Kedah. It is called a *congkak*.



Figure 16: Traditional congkak
(Source : Muzium Negara, 2020)

Congkak, which is often considered a game for girls, has simple rules that allow the boards to have different numbers of holes. *Congkak* boards are often made of teak or mahogany wood that are often elaborately carved into various shapes such as *naga* or birds.

This item is the perfect and suitable choice as a subject matter for an outdoor bench as it is originally designed to symbolize the Malay culture.

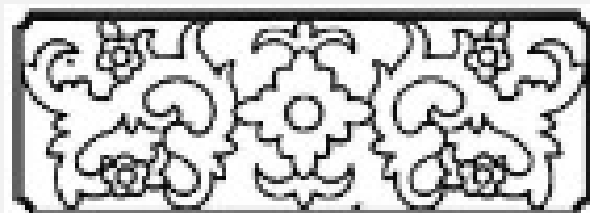


Figure 17: Motif Tampuk Manggis

The motif used for this bench is called motif *Tampuk Manggis* or *mangosteen*. This motif shows the image of a mangosteen with a mangosteen split in the middle which shows the outer skin and white inner flesh of the fruit.

The depiction of this batik motif carries the meaning that moral goodness and the fineness of one's heart cannot be seen from the skin alone. This motif is widely used in Malay woodwork. It is also usually found in the Kedah traditional Malay house.

The materials used for this bench are Balau wood and concrete. Balau wood is suitable for outdoor usage because of its durability while the concrete is used for the bench's stand.

TECHNICAL DRAWING

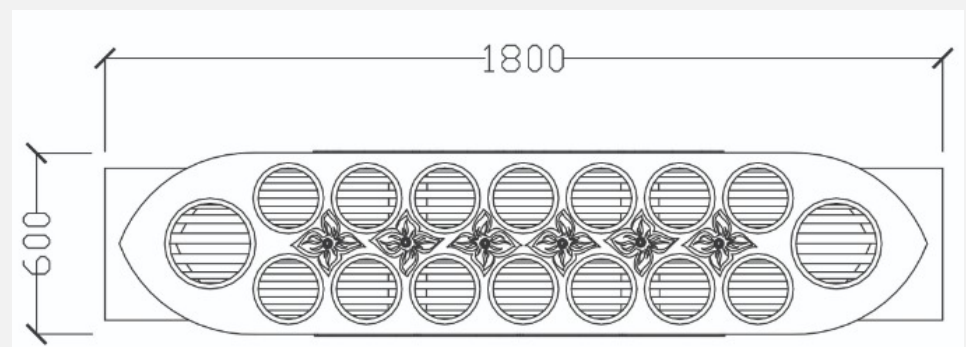


Figure 18: Plan Elevation

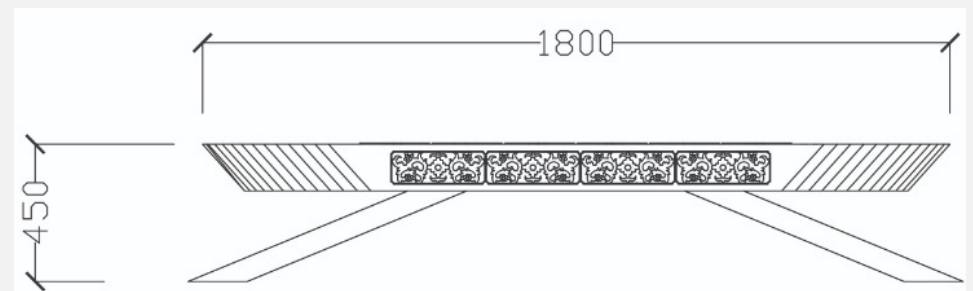


Figure 19: Front Elevation

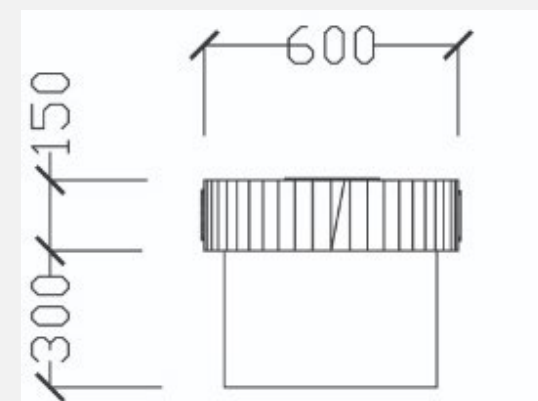


Figure 20: Side Elevation

BENCH 4: TEREANGGANU BENCH – SAMPAN BENCH

PROPOSED DESIGN



Figure 21 Rendered picture



Figure 22: *Sampan*
(Source: Author, 2006)

The *Sampan* bench can cater up to three person at one time. Its design is inspired from the *Sampan*, a traditional transportation that is commonly used around the coast and riverine of Malaysia especially in the east coast region.

According to Oxford dictionary, *Sampan* can be described as a small boat of a kind used in East Asia, typically with an oar or oars at the stern.

This selection of *Sampan* as a subject matter is significant as it highlights and reflects the identity of Terengganu, which is famous for its wooden boat (*sampan*) making. Until now, the world's most famous handmade wooden boatbuilders are located on Pulau Duyung, Terengganu.

DETAIL

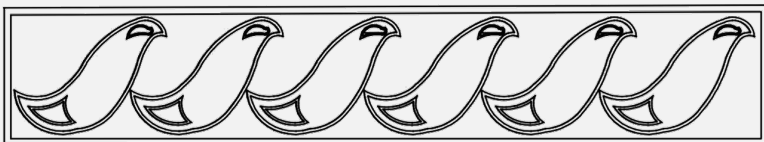


Figure 23 Motif Itik Pulang Petang

Itik Pulang Petang has been chosen as the motif to be adorned on the bench design. This motif were often used at Malay traditional houses. Motif engraved is similar to a row of walking ducks portraying the nature of the animals that usually walk in line behind their leader.

The material used for this bench is *Balau* timber. This timber is selected due to its durability, sustainability and ability to withstand extreme weather conditions. It is also best for wood carving as it is relatively easy to work with.

TECHNICAL DRAWING

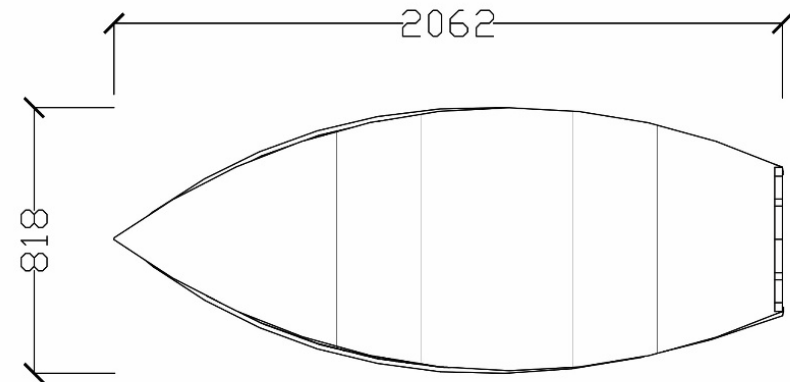


Figure 24: Plan Elevation

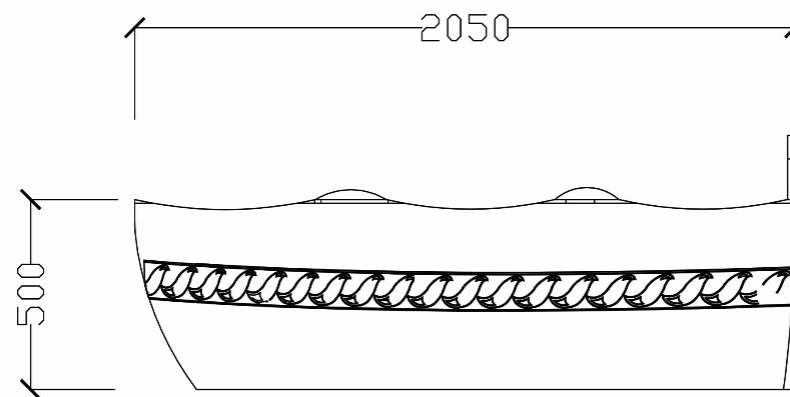


Figure 25: Front Elevation

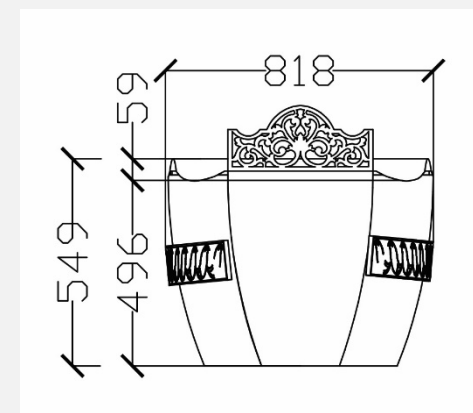


Figure 26: Side Elevation

BENCH 5: KELANTAN'S IDENTITY - REST BENCH

PROPOSED DESIGN



Figure 27: Rendered picture



Figure 28: Pangkin
(Source: Ahmad, A. S., Bakar, J. A., & Ibrahim, F. K., 2006)

This bench design is inspired from decking (*pangkin*) that complements some Malay houses in their courtyards.

Pangkin or *Pelantar* is known as a long low bench or decking which is usually located at the compound of traditional Malay house under the shade of mango or coconut trees. The pangkin is also used as a rest area after working or for chatting amongst neighbours.

Pangkin is a good selection as a subject matter for plot 4 because it really resembles Malay culture and very popular among Kelantan traditional houses.

DETAIL

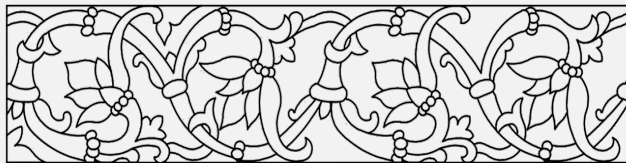


Figure 29: Motif Awan larat

Awan Larat is a well-known motif in wood carving and has been used widely in traditional Malay houses especially in Kelantan and Terengganu. To make *awan larat* motif more realistic, a technique called '*silat*' is recommended to emboss or to dilute the carving form (Yahya, 1995). In some context, the term 'awan' has long served as a name for a variety of patterns found in Malay ornaments. This is particularly evident in the works of old Malay design as can be seen in classical Malay literature.

TECHNICAL DRAWING

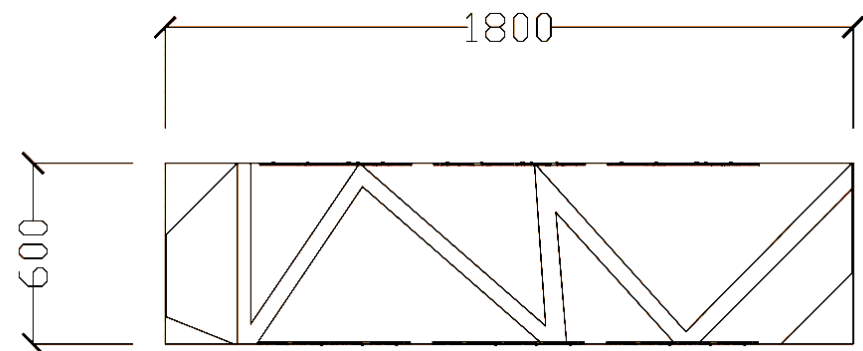


Figure 30: Plan Elevation

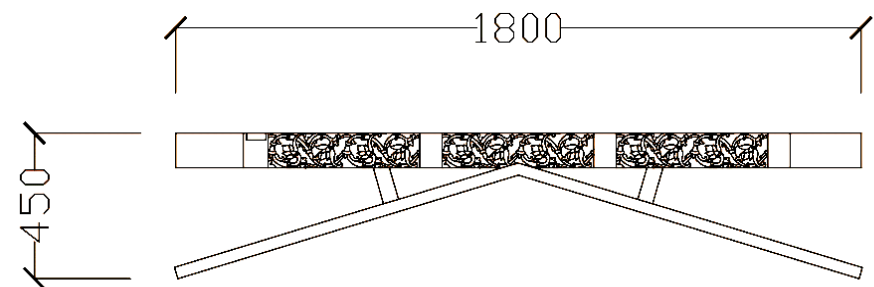


Figure 31: Front Elevation

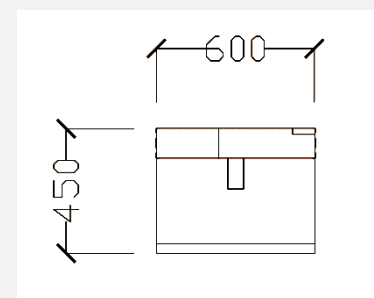


Figure 32: Side Elevation

CONCLUSION

Benches as one of the main elements in the landscape design require special care in their selection and design. Benches vary in design and style. For the purpose of association with the project on Malay cultural heritage park which focuses on heritage living lab, the project team had designed benches based on the Malay traditional elements. This paper explains the values of traditional culture in Malaysia by conducting research on benches design from the state of Perak, Melaka, Terengganu, Kedah and Kelantan. The study illustrates that there is a great relationship between parks and the Malay heritage from the types of floral motives that are applied on the traditional benches. The successful application of the Malay cultural design can be summarised in the preservation and application of the design using sustainable materials and the use of Malay traditional motifs in a contemporary forms.

ACKNOWLEDGEMENT

First and foremost, we would like to thank Allah almighty for giving us the strength, knowledge, ability and opportunity to undertake this research, to persevere and complete it satisfactorily. Without His blessings, this achievement would not have been possible. Our journey in this course, Multi Disciplinary Project 1, has blessed us in meeting many individuals that served as a doctor, a friend, an inspiration, a role model and a pillar of support in our exploration; they are Prof. Dato' Sri Ar. Dr Asiah Abdul Rahim, Asst. Prof. Dr Zeenat Begam Yusof, Asst. Prof. Dr Aliyah Nur Zafirah Sanusi, Asst. Prof. Dr Ts. Arita Hanim Awang, Asst. Prof. Dr Nurlelawati Abd Jalil, Asst Prof. Dr Mohamad Saiful Nizam Mohd Suhaimi, and Asst. Prof. Dr Khairusy Syakirin Has - Yun Hashim. They have been with us throughout providing their heartfelt support and guidance at all times and had given us valuable guidance, inspiration, and suggestions in our quest for knowledge.

We would also like to express our gratitude to others who have been so helpful in sparing their valuable time, cooperation and giving their support at in the completion of this project.

REFERENCES

- 18 Beautiful Handcrafted Outdoor Bench Designs. (2014, May 04). Retrieved from <http://www.architectureartdesigns.com/18-beautiful-handcrafted-outdoor-bench-designs/Aaron>. (2017, November 01).
- Ahmad, A. S., Bakar, J. A., & Ibrahim, F. K. (2006). Investigation on The Elements of Malay Landscape Design (Kajian Elemen Rekabentuk Landskap Melayu)
- Atsa Architects. (n.d.). KAMPUNG HOUSE. Retrieved August 11, 2019, from http://www.atsa.com.my/publication/misc_files/Manipal/files/assets/downloads/page0041.pdf
- Batik Jambi Motif Tampuk Manggis. Retrieved from <https://infobatik.id/batik-jambi-motif-tampuk-manggis/> (2018, May 25).
- Besar, L. (2019). Land of the giants?: Beca besar. [online] Orandableg-foto.blogspot.com. Available at: <http://orandableg-foto.blogspot.com/2015/01/land-of-giants-beca-besar.html> [Accessed 12 Aug. 2019].
- Choosing the Best Outdoor Bench. Retrieved from [https://www.essentialhomeandgarden.com/best-outdoor-bench/Brown, R. \(2012, May 20\).](https://www.essentialhomeandgarden.com/best-outdoor-bench/Brown, R. (2012, May 20).)
- Haron, H., Yusof, N., Taha, M., & Abdul Mutalib, N. (2014). Motifs of Nature in Malay Traditional Craft. *Middle-East Journal of Scientific Research*, Vol. 21(1), 169-180, 1-12.
- Hussin H., Baba Z., Hassan A., Haji Mohamed A., (2012) The philosophy in the creation of traditional Malay carving motifs in Peninsula Malaysia. *Malaysia Journal of Society and Space*. 88-95
- KUKUR KELAPA. (2014, August 01). Retrieved from <http://namakucell.blogspot.com/2018/10/kukur-kelapatombong-kelapanostalgia.html>



Team members of RANGKAIAN:

Zulma'arif Suhaimi, Badrul Amien, Nazran Haikal, Ahmad Shakirin, Nur Ijazati, Nur Anis Syafiqah, Muhd Asyraf, Nik Muhd Ifwat, Muhd Arif Akmal, Maisara, Muhd Syahmi, Ahmad Izzuddin, Mohd 'Asif Syarqawi, Nurferisya Irwana, Amer Ashraff, Megat Mohammad Aqif, Min Khant Oo, Anisah Syakirah, Ain Najihah, Muhd Amirul, Nooraihan, Muhd Aiman, Najihah, Nurul Adnin, Muhd Zakwan, Anis Husna, Siti Fatimah, Muhd Irsyad, Adibah Syaida, Marwa Baydoun, Mohammed Faraaz Kareem

- Kukur Kelapa Tradisional. (2015, May 28). Retrieved from <http://yusohbakyah.blogspot.com/2015/05/ada-satu-kuda-sakti-kepalanya-besi-tak.html>
- Mohamed Rosli, N. (2018, April 06). Ukiran Awan Larat. Retrieved August 11, 2019, from <https://www.openlearning.com/u/norhidayahbintimohamedrosli/blog/UkiranAwanLarat/>.
- Perahu-perahu orang Melayu. (2019, May 28). Retrieved August 11, 2019, from https://ms.wikipedia.org/wiki/Perahu-perahu_orang_Melayu.
- Traditional Malaysian Games. (2016, June 21). Retrieved from <https://blog.tourism.gov.my/traditional-malaysian-games/> (n.d.). Retrieved from http://www.muziumnegara.gov.my/gallery/items/Beca_16
- Utaberta, N., & Abubakar, A. (2014). Evaluating Ornamentation of Twelve Pillared House in Kelantan and Terengganu. *Journal of Environmental Science and Technology*, Vol. 7(4), 236-244. What You Need to Know About Kayu Batu: Red Balau Wood Decking. (2019, May 20). Retrieved August 11, 2019, from <https://www.kayu.com/what-you-need-to-know-about-kayu-batu-red-balau-wood-decking>.
- Wood Solutions. (2018). Balau. Retrieved August 11, 2019, from <https://www.woodsolutions.com.au/wood-species/balau>.

05

CONNECTIVITY to MALAY HERITAGE

Asiah Abdul Rahim* and Nur Sabrina Othman
Department of Architecture, Kulliyah of Architecture and Environmental Design,
International Islamic University Malaysia

ABSTRACT

A multi-disciplinary team of lecturers and students from various departments of the Kulliyah of Architecture and Environmental Design (KAED), International Islamic University Malaysia (IIUM) Gombak was given a project to conduct a study and proposed a masterplan to promote the Malay Enclave Teaching Lab (METL). The masterplan should comprise of 4 plots for the Cultural and Natural Heritage Living Laboratory (GCHL). The project aims to ensure that the laboratory offers plenty of learning opportunities for the future generation in appreciating Gombak Cultural Heritage through its surrounding, facilities and activities within site. The Malays have always been known for its unique traditional Malay houses. Each of the houses' architectural design and features vary according to each state in Malaysia. Despite the differences, these houses share the same basic characteristics and its underlying principles. The objectives of the project are, firstly to review and understand the architectural elements of traditional Malay houses and heritage in Malaysia; and secondly to propose the different types of the gazebo on the site. Methods of data collection for this project uses a qualitative approach through content analysis and case studies method by literature review on traditional Malay houses in Malaysia. The analysis is done on five of the traditional Malay houses of Johor, Kelantan, Terengganu, Pahang and Kedah. The outcome of the project study highlighted connectivity and similarities among traditional Malay houses from the five different states through architectural design, materials and features, including outdoor spaces structures such as wakaf. In conclusion, the end products are manifested in the forms of gazebo built in each plot with other street furniture (bench, table, streetlight, dustbin and signage) showing its connectivity to one another. This project covers works from masterplanning, design of the gazebo and other facilities from the inception to working drawings.

Keywords: *Malay Heritage, Traditional Malay Houses, Architecture, Culture*

*Corresponding author: arasiah@iium.edu.my

INTRODUCTION

According to Franchi (2014), "heritage" is a property, something that is inherited, passed down from previous generations. She further mentioned in the case of "cultural heritage," the heritage doesn't consist of money or property, but of culture, values and traditions. It also creates an identity that represents one's unique character, differentiating it from anything else. Culture and its heritage reflect and shape values, beliefs, and aspirations, thereby defining a people's national identity (AMF, 2014). Thus, it is very important for the preservation and conservation of nations' cultural heritage as it keeps its integrity to be transmitted through it from one generation to the next. In relation to architecture, Gottman (1978) outlined two aspects to be considered, which is tangible and intangible aspects. The tangible aspect refers to 'hardware' elements such as building and landscape, and intangible aspect refers to 'software' elements such as social pattern, activity, culture (Gottman, 1978). Thus, the combination of both concepts (time and heritage) creates an environment that reflects the 'genius loci' or spirit of place that can be felt by users. In the Islamic world view, Muslims are encouraged to design and shape the earth sustainably for future generation with the incorporation of nature. The Quran says, "It is He who has appointed you vicegerent on the earth..." (The Quran 6:165). And indeed, the Muslim's character is one that is to be inclined to moderation and conservation rather than excess and wastefulness (Bagnied, 2016).

Architecture is the manifestation of society and their cultural practice (Mohd Sabrizaa, 2014). As for traditional Malay houses, the design and forms of the houses are pretty much influenced by its cultural context, climatic factor and availability of resources during the prevalent time. The design and layout of a traditional Malay house can be divided into the front and rear portions

which are centred around the *Rumah Ibu* (core house) and the *dapur* (kitchen) respectively with the *anjung* located at the entrances (Mohd Shazmie, 2014). Shazmie further mentioned that wall of the traditional Malay house has many full-length fully openable openings that air can ventilate between spaces and from the outside. The different geometries of the roof shape in the traditional Malay houses are significant in relation to the tropical climate. The high sloped roofs with roof overhang work as a convenience device for users against hot, humid weather and seasonal rainfalls (Hosseini, Shahedi and Mursib, 2012).

In terms of construction, Sufian and Mohd Sabrizaa (2009) mentioned that traditional Malay houses are mostly timber post and beam construction that is lightweight and utilizes one of the earliest prefabrication methods in building construction. Consistent with Waterson (1997), the Malay house is held together using techniques of jointing and mortising entirely without the use of a single nail. The technique gives the advantage in that it is capable of being dismantled and reassembled in a new location as necessary. The technology strongly reflects its cultural kinship system. Most traditional Malay houses also can be seen built on stilts which have to do with its geographical setting. Since many early settlements were built along rivers and the coastline, the raised floor construction was an ideal solution for coping with ground dampness due to heavy rains that frequently resulted in flash floods (Kamarul, Lilawati and Asmalia, 2004).

Sufian et al. (2009) explained that the traditional Malay arts and architecture is also a reflection of beauty. The aesthetical elements or ornamentations adorned the built structure had more profound philosophical and sacred meanings in its usage. Decorations in the traditional Malay house are not

merely objects of beauty, but also as means to create an environment of peace and tranquillity; and this is portrayed in the functions and meanings attached to the traditional Malay culture and practices as seen in their timber carvings and ornamentations. In addition to facilitating ventilation, the carving ornaments of panels regulate the ventilation and penetration of the sun's ray through fenestrations of the external vertical plane rather than its visual interest (Yuan, 1987).

The achievement of visual harmony of traditional Malay house is done by creating interaction between architectural buildings forms and environmental characteristic which directs to the regionalism concept. According to Kamarul et. Al (2004), orienting a particular building towards the direction of the prevailing wind is important where the airflow can be increased by arranging houses in random order as opposed to the regular patterns seen in most housing estates which trap air and prevent adequate ventilation. A group of Malay settlements are called as kampong. For a linear pattern *kampong*, houses face the economic resources and transportation links such as roads, rivers or beaches; in a concentric pattern kampong, the *serambi* usually faces the public space located at the centre of the houses. (Mohd Firrhdhaus, 2012). For religious reasons, most traditional Malay houses are oriented to face Makkah (east-west direction), which indirectly minimizes the area of exposed walls to direct solar radiation during the day (Yuan, 2011).

The Proposed Development of IIUM Gombak Cultural and Natural Heritage Living Laboratory (GCHL) for International Islamic University Malaysia, Gombak Campus, Gombak, Selangor' is the project that was conducted by IIUM students and lecturers from various departments in multidisciplinary team, to promote the Malay Enclave Teaching Lab (METL). The project aims to ensure that the laboratory offers plenty of learning opportunities for the future generation in appreciating the Gombak cultural heritage through its surrounding, facilities and activities within site and restoring the environment of traditional Malay heritage in today's world. The given site consists of four different plots, with each plot representing different assigned typologies. A few types of Malay traditional house from five different states are selected as case studies which are Johor, Pahang, Terengganu, Kelantan and Kedah. The end products are manifested in the forms of gazebo built on each plot, whilst showing its connectivity to one another. This project focused on the construction of gazebo from the initial design to working drawing.

CONCEPTUAL PROCESS, PROCEDURE AND SCHEMATIC

The vision of the project of this paper is to create a continuous journey of Malay heritage that can bring the understanding and the awareness of its uniqueness to the IIUM community. Through the concept of Master plan which is '**Connectivity to Malay Heritage**' (refer Figure 1), the visitors can experience and appreciate more about Malay heritage through traditional Malay house style developed on the design. From this master plan, it can maintain the aesthetic of the traditional Malay house throughout Malaysia. Master plan is divided into 4 plot with different sub concept to bring out the essence of Connectivity to Malay Heritage. Each plot of the site is influenced by the distinct types of Malay traditional house. The concept of each plot influenced by the distinct types of Malay traditional house is shown in Table 1.

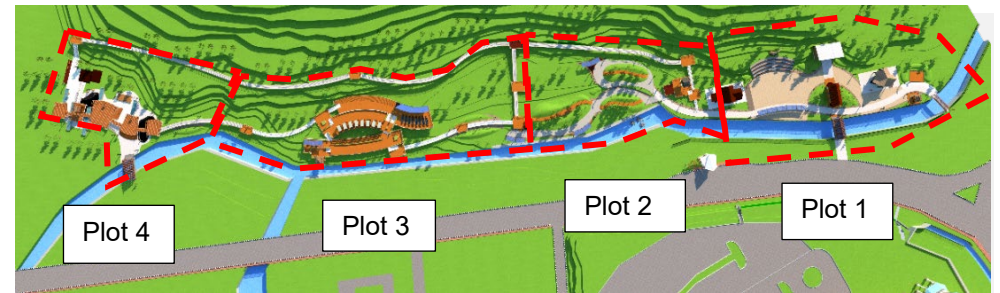


Figure 1: Master plan – Concept "Connectivity to Malay Heritage"

Table 1: Concept of each plot influenced by the distinct types of Malay traditional

Plot	Description
Plot 1: Mass social space Concept: <i>Sayang</i>	The word " <i>Sayang</i> " is an affection that brings people closer and tightens the bonds between the societies. The concept for Plot 1 is integrated based on the traditional dance of <i>tarian zapin</i> Johor and <i>tarian joget</i> Pahang. Interestingly, dancing is an artistic expression intended to convey or express sentiments and emotions
Plot 2: Edible Garden Concept: <i>Layang</i>	The term " <i>Layang</i> " generally comes from the traditional Malaysian kite which is " <i>Wau</i> ". <i>Wau</i> is a well-known game till now as being the Terengganu's major traditional games. The powerful and influential colourful pattern on the <i>Wau</i> was used as inspiration to design Plot 2, the edible garden's landscape and space planning.
Plot 3: Urban Farming Concept: <i>Bayang</i>	The word " <i>Bayang</i> " was strongly influenced by the best-known performance art of Kelantan which is <i>Wayang Kulit</i> . <i>Wayang Kulit</i> is a distinctive type of theatre that employs the excellent talents act with the presence of light and shadow. Based on these artistic performance arts of <i>Wayang Kulit</i> , the team used it as design concept for Plot 3. Just like <i>Wayang Kulit</i> that uses puppet to produce shadow, traditional Kelantan ornamentation on the pergola is used through the walkway where the light of the sunlight will pass through the ornamentation that will eventually produce shadow motifs on the ground.
Plot 4: Local Fruit Heritage Concept: <i>Kayang</i>	The word " <i>kayang</i> " literally means " <i>Tanah milik orang</i> " or the land that belongs to an owner which connects the design of the Plot as it is inspired from " <i>bendang</i> ". The word " <i>bendng</i> " is taken from Kedah significant paddy fields. The objective of the plot is to locate the local heritage fruit, which relates to the interpretation of <i>Kayang</i> . Hence, various water features are being highlighted into the space planning with the gazebo that implement Kedah traditional house and ornamentations.

METHODOLOGY





Methodology adopted for this project paper was a qualitative approach using content analysis and case studies through literature review on traditional Malay houses in Malaysia. Analysis was carried out on the five traditional Malay houses of Johor, Kelantan, Terengganu, Pahang and Kedah.

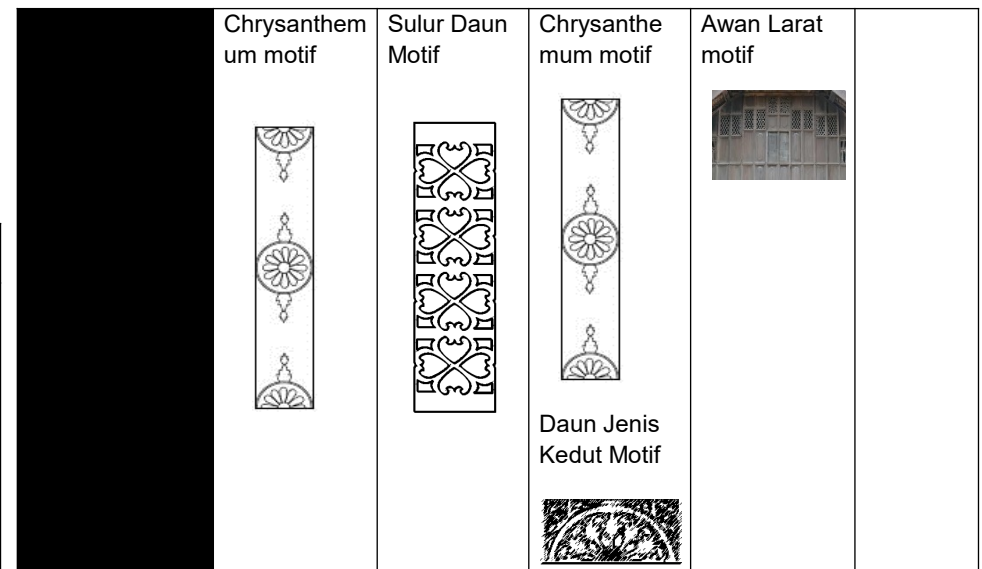
1. Content analysis - Literature review on Traditional Malay Houses from five different states is gathered from secondary data - books, journal articles, theses and internet that cited the original sources. Literature review is important to establish a foundation on Malay Heritage.
2. The design of gazebo that symbolises each state, is demonstrated by model-making using precise construction. The outcome of the project is the design of Gazebo with the different influence of Malay Heritage from the five chosen case studies.

FINDINGS

This project paper's findings on the connectivity of architectural element of traditional Malay houses from the five chosen case studies - Johor, Kelantan, Kedah, Terengganu & Pahang, are shown in Table 2.

Table 2 Connectivity of architectural element of traditional Malay houses from five chosen case studies

Architectural element	Johor	Kelantan	Kedah	Terengganu	Pahang
Building form (structure of building)	Roof "Rumah bumbung limas"	"tiang seri" is used as four big inner columns which functioned as the core structure to support the roof and building structures	Rumah Panjang Kedah	Rumah Tiang Dua Belas	Rumah Bumbung Panjang
Orientation	It was forbidden to have the front of a house facing west, toward the sunset	Faces the direction of <i>qiblah</i> , for the purpose of performing prayers	West orientation facing <i>Qiblah</i> , while reducing exposure from direct sunlight	<i>Tebar layar</i> (Gable end) is applied facing <i>qiblah</i> with flower and sun motif to represent nature and reflect Islamic value	House faces West (<i>Qiblat</i>) and washrooms facing the opposite (East)
Roof	Gabled hip roof (limas) roof form	Roof is constructed in three tiers and supported at the four corners by big wooden pillars, sixteen interior pillars and twenty-four veranda pillars thus making forty four pillars in all.	Long straight horizontal roof with <i>tebar layar</i> that made of triangular inverters or reverse 'V' letters	Roof is built with rectangular frame and king post trussed roof system	Simple pattern which are triangle and semicircle shape of <i>papan cantik</i> .
Ornamentation	<i>Pucuk Rebung Motif</i> 	<i>Bunga Ketumbit Motif</i> 	<i>Lebah Bergantung Motif</i> 	Sun Motif 	



The outcome of the studies highlighted connectivity and similarities among traditional Malay houses from the five different states through architectural design, materials and features including outdoor spaces such as *wakaf-pavilion*. Throughout this project paper, some elements of traditional Malay houses for each case studies were been adopted in the design of the proposed gazebos. These gazebos are placed in the masterplan of traditional Malay houses in IIUM with the concept of Connectivity to Malay Heritage.

Design 1: Gazebo Johor (Plot 1)



Figure 2: Gazebo Johor

Takzim - Inspired by *Rumah Bumbung Limas* from Johor. It is consisting of gabled hip roof with thumb-shaped roof ornaments (*tunjuk langit*), *papan cantik* with *Pucuk Rebung* motif, *tunjuk langit* is shaped like a headstone in showing element of Sufism.

Design 2: Gazebo Pahang (Plot 1)



Figure 3: Gazebo Pahang

Makmur - Inspired from *Rumah Bumbung Panjang* of Pahang. The elements that were applied at Makmur are traditional railing, long roof design, a combination of simple and motif pattern on *tebar layar*, *ande-ande* (*papan cantik*) as well as traditional stairs.

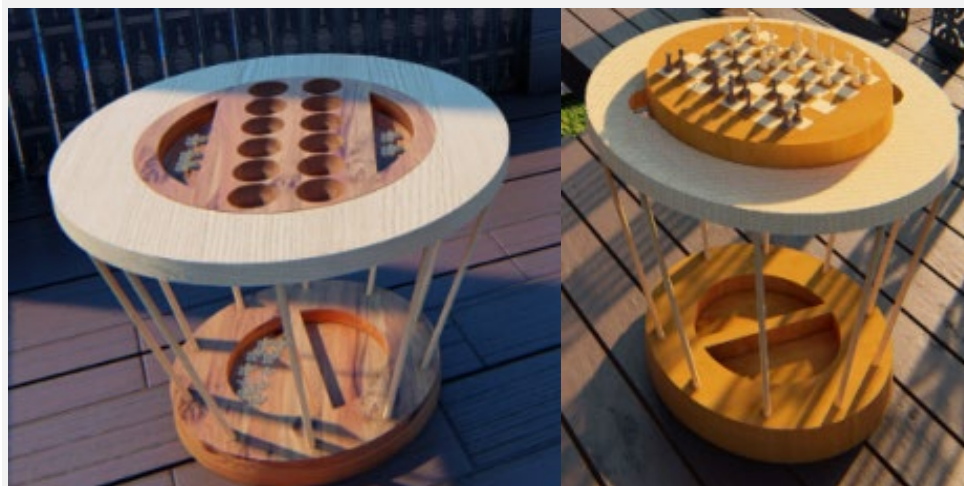


Figure 4 and 5: *Atur* furniture

Acts as an interactive games table for *congkak* and chess/*dam* board. The Malay traditional element is being implemented on the chosen materials which are rattan and chengal wood. These games are placed at Pahang and Johor gazebo.

Design 3: Gazebo Terengganu (Plot 2)



Figure 6: Gazebo Pahang

Iman - The design is inspired by *Rumah Tiang Dua Belas*, a traditional house from Terengganu. The gazebo consists of a rectangular frame roof structure, king post trussed roof system, fascia board (*papan pemeleh ibu*) and *serambi*.



Figure 7: *Wa-u* bench inspired by Wau

Kite flying is one of the popular traditional pastimes in Terengganu. It was once played by farmers on levelled ground after the harvesting season. Today, kite-flying attracts people from all walks of life. Kite or *Wau* (pronounce as 'wow') can appear in all shapes and sizes. Other than the joy of kite flying, the decorative traditional kite adorns the walls, making it the pride for the owner (Tourism Terengganu).

In gazebo Terengganu bench *Wa-u* is located at Plot 2. Inspired from *Wau Dodo Helang*, this bench is suitable with the element that the team brought to this plot in order to magnify the culture from Terengganu. Figure 7 show the design of *Wa-u* bench.

Design 4: Gazebo Kelantan (Plot 3)



Figure 8: Gazebo Kelantan

Naim - The design resembles a Kelantan Malay traditional architecture consisting of four layers of beam, king post as the roof design, traditional fascia board railing motif as well as custom made bench.



Figure 9: *Bangku* bench

Using the sense of simplicity in its design, *Bangku* portrays its own classic style through the using of basic polygon following the shape of the *Kelantan* gazebo. Adding to its distinctive feature, *Bangku* is designed as a bench with a *kerawang* at the bottom of it.

Design 5: Gazebo Kedah (Plot 4)



Figure 10: Gazebo Kedah

Aman – A long straight horizontal roof with triangular inverters or reverse 'V' letters of *tebar layar*.



Figure 11: *Lipat* table

Serves multi-purposes function, *Lipat* is designed as a hidden table implemented on the gazebo's flooring.

Design 6: *Layar* Bench



Figure 12: *Layar* bench

Scattered around the lawned areas, this unique multi-material benches are positioned in such a way to enhance the landscape of the proposed site. Using sampan as the subject matter, this bench is designed to highlight the Malay element, how it was once known to the world that Malays are great sailors.



Figure 13: *Pancha* street light

Light post and streetlight designed from the shape of bubu or fish trap.

Design 8: Dustbin



Figure 14: Dustbin

Chengal woods are used as the selected material to add the Malay touch.

Design 9: Signage

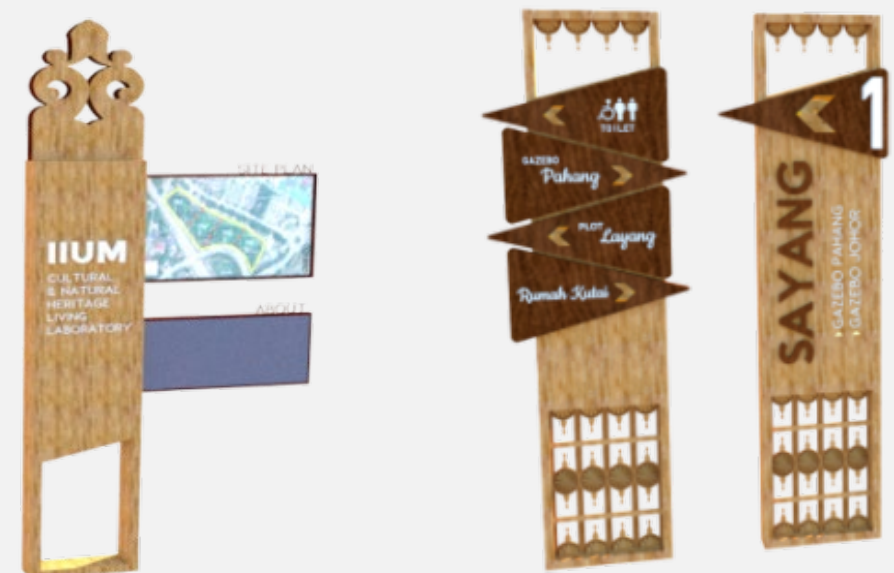


Figure 15: Entrance signage and Figure 16: Plot signage

This signage will be located at the entrance as the main guide for the visitors. The signage includes the name of the site which is 'IIUM Cultural and Natural Heritage Living Laboratory', site plan and explanation of the site. Figure 15 show the design of the signage which is inspired from the *pucuk rebung* of fascia board (*papan cantik*). The design of signage for every plot includes the motif of Chrysanthemum motif from railing (*kekisi*) in Johor and Kedah. The signage includes the indicator for toilets (male, female and people with disabilities), gazebo, plot and Rumah Kutai. Another signage indicate the plot and its concept which are *Sayang*, *Layang*, *Bayang* and *Kayang*.

CONCLUSION

In conclusion, the findings of this study are manifested in the forms of gazebo built in each plots, and other furniture (bench, table, streetlight, dustbin and signage) showing its connectivity to one another. This project paper covers the design and the construction drawings of gazebo from the initial stage until working drawing. The research concludes that a connectivity exists among the traditional Malay houses even if they come from different states. Cultural heritage implicit a shared bond, which belongs to the Malay community. It represents the history and identity; the bond to the past, to today's present, and the future. In the relation of the concept of 'Connectivity' in the proposed master plan of International Islamic University Malaysia (IIUM) Gombak Cultural and Natural Heritage Living Laboratory (GCHL), the real meaning of both heritage and culture are reflected and fused into the design. The master plan of this project has successfully merged all the manifestation of traditional Malay architecture in one development.

ACKNOWLEDGEMENT

Due acknowledgement to all students from group Dirgantara & Co. (Group 7) who undertake AQS 1301 Integrated Multidisciplinary Project 1, Semester 3, Session 2018/2019 and lecturers from Department of Architecture, Applied Arts and Design and Quantity Surveying.

Gratitude to research officers-Nuraiman Imran Bin Norazlan and Wan Mohamad Amin Seman, for their assistance in this project.

REFERENCES

- Australian Multicultural Foundation. (2014). Preserving Culture and Heritage through Generations. 7th Diversity Matters Forum. Istanbul, Turkey. Retrieved from http://amf.net.au/library/uploads/files/Diversity_Matters_Forum_overview_and_theme_summaries_2014.pdf
- Bagnied, O. (2016). Caretakers of the Earth: An Islamic Perspective. Khaleafa. Retrieved from <http://www.khaleafa.com/khaleafacom/caretakers-of-the-earth-an-islamic-perspective>
- Franchi, E. (2014). What is Cultural Heritage?. Khan Academy. Retrieved from <https://www.khanacademy.org/humanities/special-topics-art-history/arches-at-risk-cultural-heritage-education-series/arches-beginners-guide/a/what-is-cultural-heritage>
- Gottman J. (1978). Forces Shaping Cities. In IUBMB Jubilee Lecturers. IUBMB Jubilee Lecturers
- Hosseini, A, Shahedi, B and Mursib, G. (2012). Values in Traditional Architecture: Malay House. 6th International Seminar on Vernacular Settlements, Contemporary Vernaculars: Places, Processes and Manifestations, April 19-21, 2012, Famagusta, North Cyprus.
- Kamarul Syahril Kamal, Lilawati Abdul Wahab and Asmalia Che Ahmad (2004). Climatic design of the traditional Malay house to meet the requirements of modern living. University Technology Mara, Perak, Malaysia. Pp. 175
- L. J. Yuan. (1987). The Malay House Pinang: Institute Masyarakat 1987
- L. J. Yuan. (2011). The Malay House: Principles to Building Simple and Beautiful Homes for Comfort and Community: East Petersbug: Fox Chapel
- M. Gelernter and V. Dubrucq, "Historicism," in Encyclopedia of 20th-Century Architecture. vol. 2, R. S. Sennott, Ed., ed London: Taylor & Francis e-Library, 2005, p. 896.
- Mohd. Shazmie. (2014). Case study of malay traditional house. Theory & History Architecture 2 BAAD 2053. Retrieved from https://issuu.com/shazmie/docs/case_study_malay_traditional_house
- Mohd Firrdhaus Mohd Sahabuddin. (2012). Traditional Values and Their Adaptation in Social Housing Design: Towards A New Typology and Establishment of 'Air House' Standard in Malaysia. School of Arts, Culture and Environment. The University of Edinburgh.
- Sufian Che Amat and Mohd Sabrizaa Abd. Rashid. (2009). An Analysis of the Traditional Malay Architecture as Indicators for Sustainability: An Introduction to Its Genius Loci. pp. 1-6
- The Quran.(6:165). (Translated by M.A.S. A. Haleem). Retrieved from messageinternational.org
- Waterson, R. 1997, The Living House, Thames and Hudson : Singapore.

06

REDEVELOPMENT OF ABANDONED HIGHLAND TOWERS AS MEMORIAL LANDSCAPE

Anis Hazirah Zubaidi, Zainul Mukrim Baharuddin* and Mazlina Mansor
Department of Landscape Architecture, KAED, IIUM

ABSTRACT

The aim of this project is to reclaim the abandoned area of Highland Towers and redevelop the area into a memorial park. The objectives of the project are to rejuvenate the historical value of the place, to revitalize the abandoned area, and to propose green spaces. The process included identifying issues and the solutions for the proposed design of the project. Data collection method consisted of primary and secondary data of the subject. The proposed design considers the slope condition and the historic value of the site. Any proposed development must take considerations the stability of the slope condition.

Keywords: *Memorial Landscape, Limestone Hill, Eco-Tourism Park.*

*Corresponding author: zainulm@iium.edu.my

INTRODUCTION

A major landslide that happened on 11th December 1993 in Taman Hillview, Ulu Kelang, Selangor, Malaysia had caused an apartment building, Highland Towers, at Ulu Kelang to collapse. The collapse structure involved Block 1 of the Highland Towers, resulting in the death of 48 people. The event led to the complete evacuation of the remaining two blocks due to safety issues. The collapse was due to burst pipes, which had allowed the barren ground near the site to wash away (Nalley, 1993)

This project aims to redevelop the abandoned area of Highland Towers through a 'memorial landscape' design concept aimed for low impact tourism and recreational developments. Three main objectives outlined for the project are:

1. To rejuvenate the historical values of the area as to highlight its identity,
2. To revitalize the abandoned area by transforming it into parks and green spaces for the benefit of users and the environment,
3. To provide green infrastructure in creating a conducive space for visitors' attractions.

The three issues with the project are seen from these aspects - economy, environment and social. The question on the economy is concerning how currently the site is seen as having a negative image for the city. It decreases the property's value and investment within the area and consequently burdens the municipal in terms of legal aspects. The issues from the environmental aspects such as the disruption or alteration to wildlife habitats is a potential danger in the form of accessibility to people and depress the amenity values of the area. In addition, the issues concerning social aspects include the site has become a magnet for crimes, contributing to urban horror fiction and induced a depressed community within site and its contextual areas..

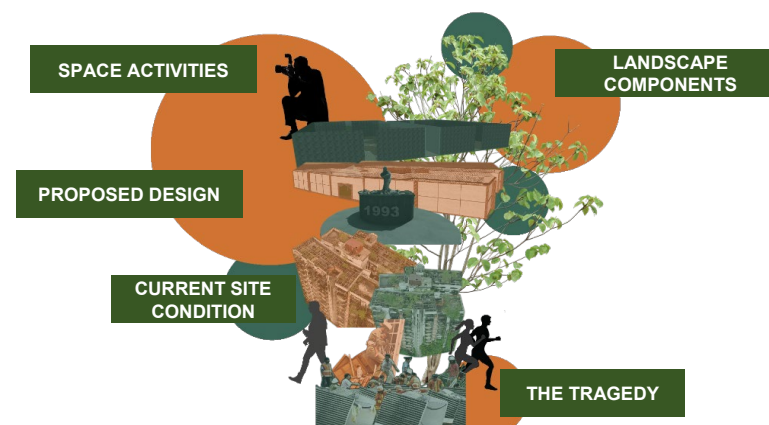


Figure 1: Summary of the project

LITERATURE REVIEW

LIMESTONE HILL

Limestone hill is landscape underlain by limestone which has been eroded by dissolution, producing ridges, towers, fissures, sinkholes and other characteristic landforms. Limestone sedimentary rock is formed from the precipitation of the whitish crystalline mineral, calcium carbonate, from warm seawater. These limestone masses have undergone extensive weathering and erosion to create a typically rugged topography known as tower karsts. (Price, 2018)

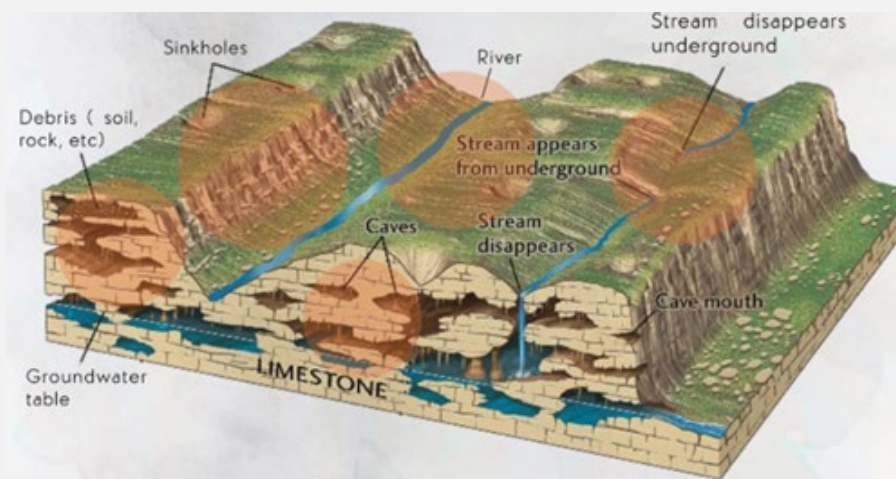


Figure 2: Underground structure of limestone hill

LIMESTONE HILL GEOMORPHOLOGY

Tower karst landscape is identified as isolated clusters of linked, strikingly dramatic hills with rugged characteristics of formidably steep to almost vertical facades; barren and jagged cliffs; rocky overhang; plunging sinkholes and sparsely vegetated valleys. Existence of several small streams, which flow through the connected limestone formations forms a flow pattern of several large branches that empties into the main river. Acidic rain and groundwater penetrate through fissures in the fractured surface of limestone sedimentary rock deposits, it dissolves and erodes the limestone's calcium carbonate content producing tower karst topography (Refer Figure 2) (Goldscheneir et al., 2007).

THREAT TOWARDS LIMESTONE HILL

Limestone hill is exposed to the threats of quarrying, unsustainable agriculture practices, mining for gold and antimony, building of temples, tourism development, and flooding related to hydroelectric dam construction. Granting these limestone hills as state park status would be ideal as most of them are on state land. Unless limestone hill is located in inaccessible and remote areas or lies within protected national parks, there are few laws to protect them (Jaafar, 2003).

ECO-TOURISM POTENTIALS OF LIMESTONE HILL

Minimal development and construction must be carried out when planning an ecotourism place on a limestone hill, due to the sensitive condition of the underground structure. Examples of ecotourism activities that can be carried out at limestone hills are such as limestone hill hiking, sightseeing in the forest reserve and cave exploring. Eco- friendly tourism management is important to preserve the biodiversity of the limestone hill. Implementing tourism carrying capacity is one of the solutions in protecting the environment of limestone hill (Jaafar, 2003).

ABANDONED SPACE LANDSCAPE

Abandoned land is defined as land which was once used but has now been abandoned. (stats. oecd.org, 2001). Types of abandoned land are - a) Land that is derelict due to natural causes, e.g. neglected woodland, farmland, marshes, mudflats, etc., b) Land damaged by development that is subject to enforceable planning conditions, c) Land still in industrial or other recognized use, d) Land damaged by development that has blended into the landscape or put to some form of acceptable use and no longer constitutes a problem, e) Vacant sites awaiting development, and f) Small areas of neglected or unsightly land were less than 0.02ha.

In the case of the project, the land can be in the category (d) that is converted into a designed landscape under the theme memorial park for people and nature (Corbelle-Rico et al., 2008).

MEMORIAL LANDSCAPE

Memorial landscapes consist of places or objects which speak of the memory of an event or person. Such landscapes can be designed, vernacular, ethnographic, or historic, and range in form and scale from a single object to a panoramic viewshed. The most common form is to use a statue or plaque placed at a strategic location. Types of memorial landscape are war memorial, natural disaster memorial or prominent individual memorial. Elements commonly found within memorial landscape are flat flush plaques or markers, central water features, statuary, and gathering spots (tclf.org).

REFERENCE STUDIES

1. DUISBURG NORD PARK, GERMANY



Figure 3: Landscape design of the park in the reclamation of derelict industrial sites in urban areas. (Source: Latz, 2016)

Created to reuse old industrial areas in the Ruhr river basin, the design signifies the reclamation projects based on the Heritage Character. The blasting hall has been converted into a theatre and used as the venue for the Ruhr-Triennale festival. Public funds have been used to transform an important monument of industrial heritage into a 24-hour multifunction park for all ages. The landscape was designed by Latz & Partner's involving an important legacy (Latz, 2016)

2. 9/11 MEMORIAL & MUSEUM, NEW YORK

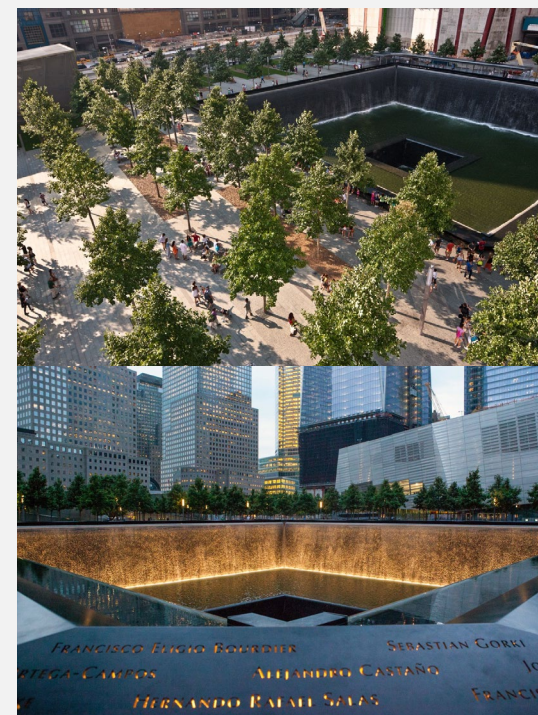


Figure 4: Landscape design of the plaza (Source: 911memorial.org, 2020)

The memorial plaza is designed to be a mediating space. It belongs both to the city and to the memorial. It is located at street level to allow for its integration into the fabric of the city. The plaza encourages the use of this space by New Yorkers on daily basis. The memorial ground is not isolated from the rest of the city, but it is a living part of it. It was designed by Michael Arad and Peter Walker. The names of the 2,983 people who were killed in the 2001 and 1993 terrorist attacks are inscribed on bronze parapets edging the memorial pools.

The names are grouped by the locations and circumstances in which victims found themselves during the attacks. The twin reflecting pools are situated within the footprints of the tower (Frearson, 2011).

METHODOLOGY

Primary and secondary data is used in the data collection for this project under mix-mode. The primary data collection is site inventory and analysis obtained from field study of the proposed site. An online survey is also conducted to obtain the perception and preferences of the public towards Highland Towers redevelopment. Documents and records from Ampang Municipal Council, literature from websites were reviewed as the secondary data for the project.

INVENTORY & ANALYSIS

The site inventory consisted of information regarding the land-use, physical, biological and social attributes of the site. The physical attributes were the topographical features, hydrology and soil information. The biological attributes consisted of natural vegetation, designed landscape and wildlife habitats. The social-cultural attributes included the legal aspect, boundary, people living in and around the project site, infrastructure facilities, landscape features, views and sensory and a few others. Overall, the residential area within the project's site consists of a strong neighbourhood concept with a close-community ambiance and a gated residential for the safety of the residence. The commercial area contributes to 25% work sector, which encourages economic growth of the district and contributes to local's household income. The industrial area is a part of export industry trading and contributes to 75% work sector. The open spaces encourage active lifestyle, provide conducive living environment and create opportunity for recreational activity for all ages.

ONLINE SURVEY

An online survey was also conducted to obtain the views of the public towards Highland Towers redevelopment. 279 respondents answered a simple survey that was blasted through emails and WhatsApp using Google form. The questions enquire whether the public would like the existing tower to be demolished or to remain. 64 respondents wished that the tower should not be demolished due to its historical significance and environmental effects of demolition such as noise. 215 respondents agree to the demolition, stating that it can restore the forest environment and prevent drug addicts using the ruined towers. The public also suggested the place to be rebuilt with some new development that is accessible to the public (63 respondents). It means that there is a possibility of a Memorial Landscape to be proposed on the site based on this survey.

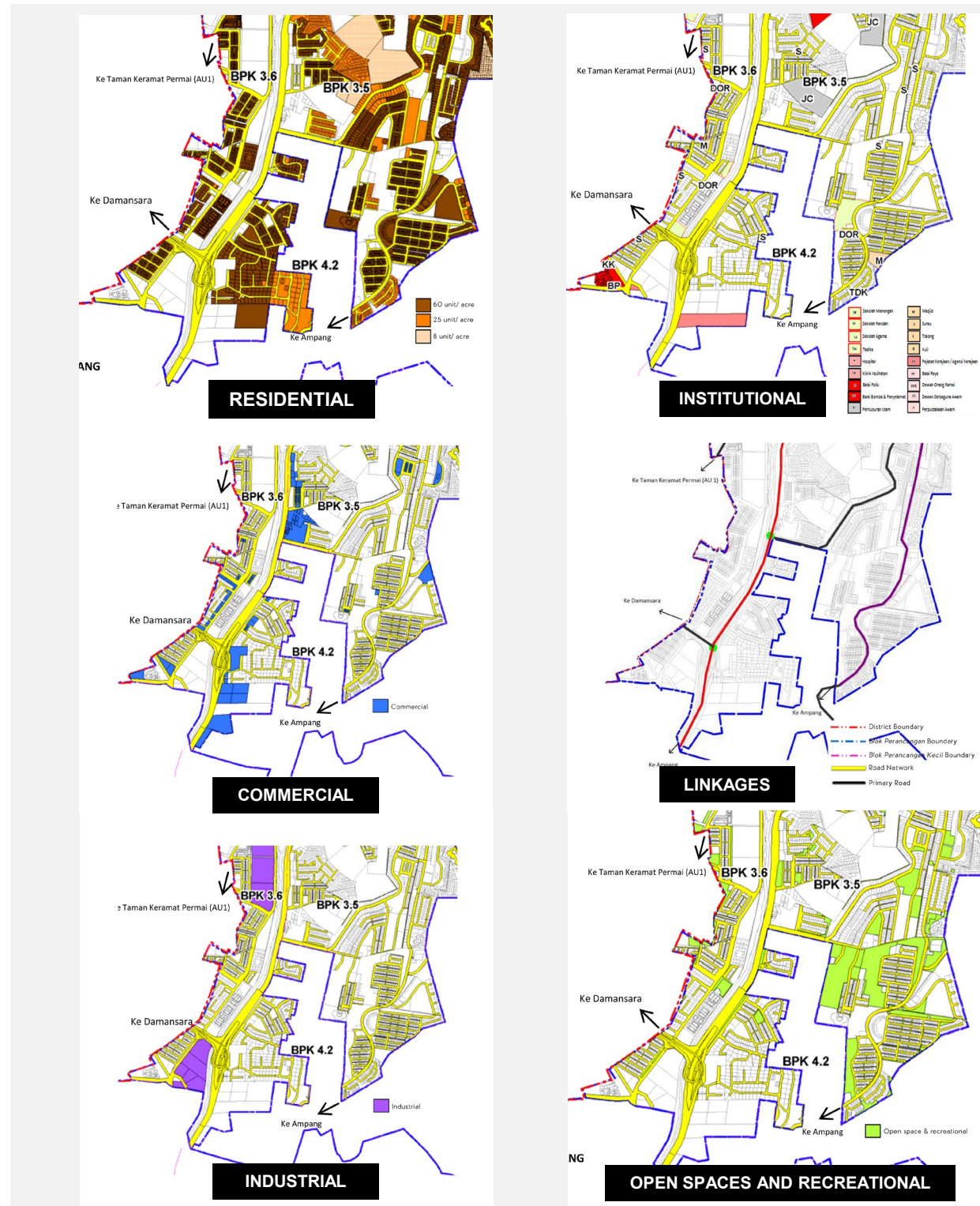


Figure 5: Inventory & analysis of project's site consisting of land uses and infrastructures' information

SITE SYNTHESIS

Based on the data collected, the aim to create a memorial landscape design at an abandoned space need to consider the nature of the site. Seven (7) design considerations are established (Figure 6): (1) Imprinting the collapsed building with structure or marking as a memorial. The structure can serve as a landmark or nodes for the area and induce the sense of remembrance towards the tragedy, (2) Reclaiming the derelict remaining building as a nodes for the area. The focal of the development should be transforming the derelict building into a usable space with consideration of a proper guidelines to maintain the mystical ambiance of the space, (3) Providing a forest trail at the slope area to make use of the scenic vista of the high land, (4) Incorporate a proper stormwater management in consideration to the sensitive slope condition of the site and to avoid further landslide during heavy rain, (5) Designing a memorial park with recreational facilities. Providing facilities that can form different activities that can enliven the area, (6) Creating alternative access to the site. The importance of a different access is to segregate the outsider visitors from the private residential community, and (7) Retention and conservation of environmentally sensitive area. Only minimal development should be carried out at the slope area due to the unstable underground structure of the hill.



Figure 6: Site synthesis and design considerations

DESIGN DEVELOPMENT

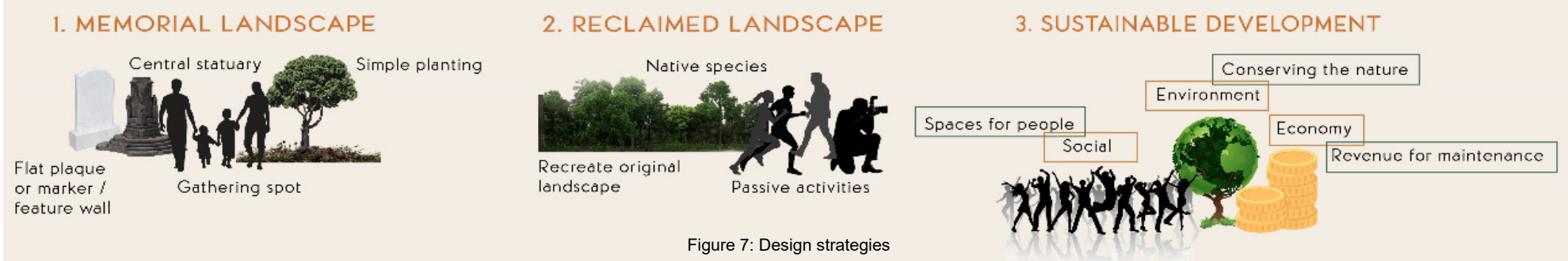
DESIGN STRATEGIES

The design strategies imposed on this project are: **1) Memorial Landscape, 2) Reclaimed Landscape, 3) Low Impact Development and 4) Sustainable Development consisting of economy, environment and social aspects.**

The first strategy -Memorial Landscape is imposed through the hardscape and structures. Examples of hardscapes commonly used at memorial landscape are flat plaque or marker, or a feature wall with names of the victims. Memorial space is mainly used as a gathering space for visitors and families of the victims to commemorate the victims. Hence the landscape designed needs to be a space with calm ambiance, that can be achieved with simple planting.

The second strategy is Reclaimed Landscape which is applied in the softscapes and planting schemes. The purpose of this strategy is to recreate and preserve the original landscape of the site which is located at limestone hill forest. The sensitive steep slope condition is also one of the reasons for the need to impose a reclaimed landscape. Native tree species are proposed such as *Gelam*, *Gaharu* and *Jelutong* for the site. Passive activities such as sight-seeing, walking, trekking, jogging and photography are deemed most suitable to comply with the strategy of a reclaimed landscape.

The third strategy is Sustainable Development, which is applied to fulfil the social, environment and economy needs of the site. From the social aspect, the spaces need to be designed for people to interact and socialize, not only with other people but also with the elements of the space. Environmental aspect is fulfilled with the conservation of the natural state of the site as much as possible-i.e. with minimal alteration of the site topography. Hence, the proposed circulation is following the original contour of the site. The economy aspect of Sustainable Development is fulfilled through creating an exclusive space with payment imposed. This will aid in obtaining revenue for the maintenance of the overall site.

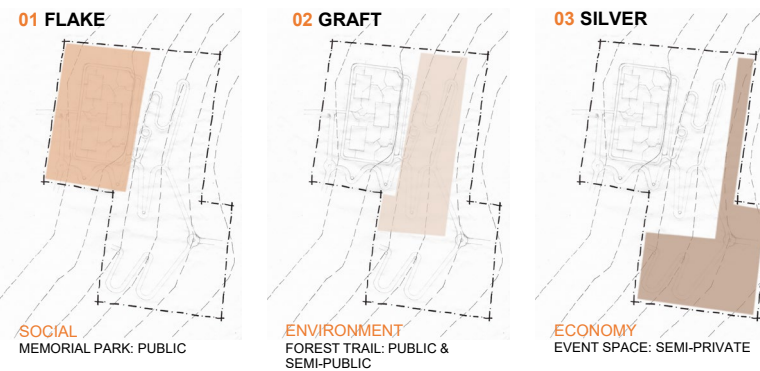
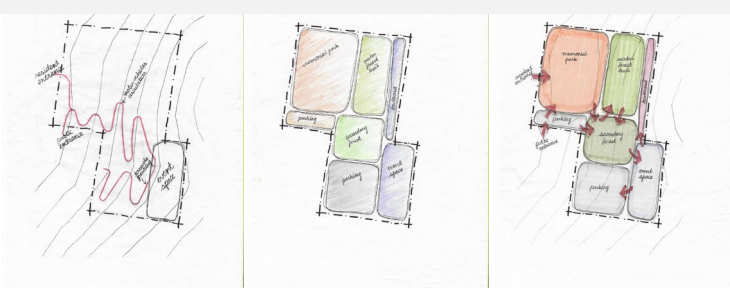


DESIGN CONCEPT

The design concept implemented symbolises a reflection on the past, as lessons for the future to preserve the imageability and character of the space (Figure 8). The elements of the memorial landscape are portrayed with flake pattern to re-imagine the collapse of Block 1. The spaces of the site are arranged in graft arrangement to create the sense of exploration to the visitors. The circulation are designed in continuous style based on Islamic value of accessibility or universal design for all through seamless spaces without obstruction.



Linkages are planned according to the slope condition, followed by space division according to function and connectivity between each spaces are determined.



Planting schemes are determined according to the space function



Figure 9: Space Development Diagrams (left) Space Zoning (middle) Conceptual Plan (right)

SCHEMATIC

The spaces are divided according to the strategy of sustainable development that incorporates the three aspects; economy, environment and social. The economy space is proposed to gain revenue for the proposed development, while the environment and social spaces are proposed as nodes and landmarks for the area.

At the first space, which is located at the lowest level of the site, the memorial structure and other spaces are constructed on the imprint of the previous apartment blocks. At the second space, which is located at the middle level of the site, the nocturnal forest is proposed to create a unique attraction to the site and to transform the hostile image of the site into an inviting area. The third level of the site is where an event space is proposed. This third space is a semi-private area where it can only be accessed by the people who paid for the space, hence contributing to the revenue of the site.



Figure 10: Schematic Plan

PROPOSED MASTER PLAN

Three major spaces at the site are Highland Towers Memorial Ground, Highland Nocturnal Forest and Highland Glass Hall, which is an event space. Parking spaces are provided for the memorial area and the event space. New circulation is proposed for public use to ensure the privacy and safety of the residents of the adjacent area of the site is achieved.

The hardscapes and memorial structures are proposed with consideration to the design strategy of a memorial landscape. The softscapes proposed considers the strategy of a reclaimed landscape. Circulation path following the slope condition is proposed in considering the strategy of reclaimed landscape to ensure the sustainability of the project.



Figure 11: Master Plan

PLANTING CONCEPT

The spaces are also divided according to the strategy of sustainable development that incorporates the three aspects of economy, environment and social i.e. to gain revenue for the proposed development and provide the outdoor environment as well as social spaces as nodes and landmarks of the area for the visitors.

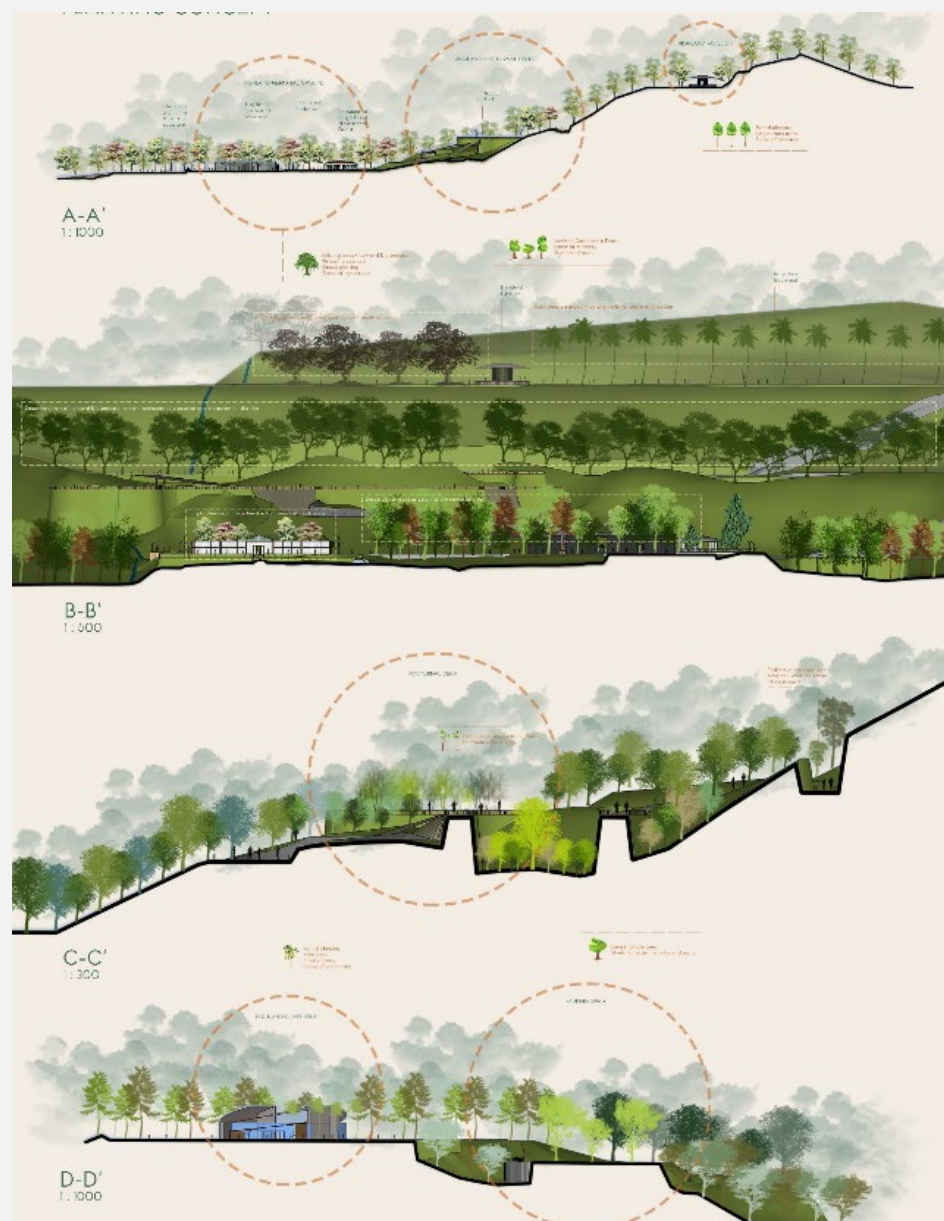


Figure 12: Elevations of the site showing the planting concept

The planting at the Highland Towers Memorial Ground consists of preserving existing trees, which is a Lowland Dipterocarp Forest. Simple planting is incorporated, and the ambience proposed with the planting scheme is the sense of mysteriousness, which can be achieved with the use of *Ficus spp.* At the Highland Nocturnal Forest, the proposed planting is to maintain the site with Lowland Dipterocarp Forest by illuminating the trees to create a sense of curiosity to the site. The Highland Glass Hall area incorporates a formal planting with single trunk trees and palm species proposed to visualize the sense of direction and formality.

DETAIL DEVELOPMENT AREA PLAN

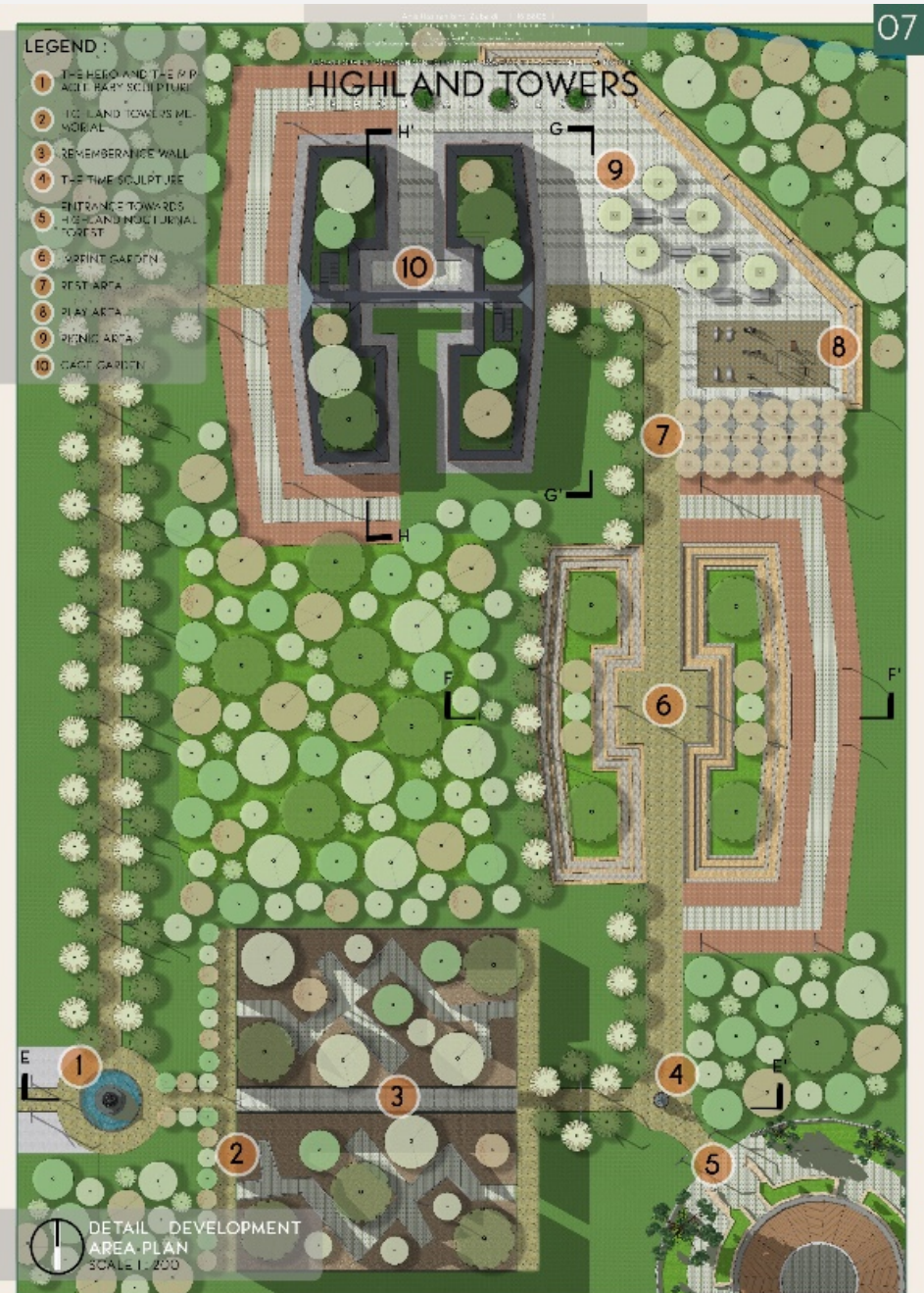


Figure 13: Detail Development Area Plan

SCHEMATIC

The area chosen for detail development is the Highland Towers Memorial Ground. The area consists of three major spaces which are Highland Towers Memorial, Imprint Garden and Cage Garden. These spaces are designed from the imprint of the previous apartment blocks, each with different characteristics. One of the major elements of this area is the Remembrance Wall where the names of the victims are carved to commemorate the tragedy.



Figure 14: Highland Towers Memorial Ground



Figure 15: Birds eye view of the overall site

REFERENCES

- 1millionwomen (2015). Retrieved 19th June 2020 from <https://www.1millionwomen.com.au/blog/10-incredible-images-of-abandoned-places-nature-has-reclaimed/>
- 911memorial.org [online] <https://www.911memorial.org/plaza-details-0>
- Amar Shah, M & Ashwin K. (2019). Retrieved 19th June 2020 from [https://www.thesundaily.my/Corbelle-Rico, E., Maseda, R.C., \(2008\). Land abandonment: Concept and consequences. Revista Galega de Economia. 17. Frearson, A., \(2011\) \[online\] 9/11 memorial by Michael Arad and Peter Walker https://www.dezeen.com/2011/08/22/dezeen-screen-911-memorial-by-michael-arad-and-peter-walker/](https://www.thesundaily.my/Corbelle-Rico, E., Maseda, R.C., (2008). Land abandonment: Concept and consequences. Revista Galega de Economia. 17. Frearson, A., (2011) [online] 9/11 memorial by Michael Arad and Peter Walker https://www.dezeen.com/2011/08/22/dezeen-screen-911-memorial-by-michael-arad-and-peter-walker/)
- Germany.travel [online] <<http://www.germany.travel/en/towns-cities-culture/palaces-parks-gardens/themes/symbiosis-of-history-and-high-tech/duisburg-nord-industrial-landscape-park.html>>



Figure 16: Elevation E-E' shows the Highland Towers Memorial (top), Elevation F-F' shows the Imprint Garden (middle), and Elevations G-G' and H-H' show the Cage Garden (bottom)

CONCLUSION

The hilly area of the site creates opportunity for design, which can influence the highland area. By proposing a semi-private area at the high land level, users will feel the sense of exclusivity, thus increasing the value of the site. The twist and turn circulation patterns of the site are proposed considering the slope condition to prevent steep pathway, overcut and fill of the natural slope. The proposed design takes consideration of the design strategy, which is memorial landscape-hardscapes, reclaimed landscape-softscapes and sustainable development-economy, environment and social. This is to ensure the sustainability of the site, hence fulfilling the aim of the project.

- Jaafar, Z., (2003), Gua-gua batu kapur di malaysia dalam perspektif arkeologi, Jabatan Muzium dan Antikuiti.
- Latz, P., (2016). Metamorphosis of the blast furnace plant Thyssen-Meiderich into a landscape park Retrieved 10 Feb 2020 from <<https://www.latzundpartner.de/en/projekte/postindustrielle-landschaften/landschaftspark-duisburg-nord-de/>>
- Nalley, J., (1993). Highland Towers Collapse. Retrieved 15th Feb 2020 from <<https://buildingfailures.wordpress.com/>>
- Nicole, J. (2019). INHABITAT Retrieved 19th June 2020 from <https://inhabitat.com/steel-framed-treehouse-slated-for-malaysian-national-park/>
- PlannersWeb (2013). News & information for Citizen Planners. Retrieved 19th June 2020 from <http://plannersweb.com/2013/11/>
- Price, L., (2018). Limestone hills Retrieved 15th Feb 2020 from <<https://cavesofmalaysia.wordpress.com/>>
- PROTECT (2017). Develops Deeper Understanding of Contaminant Transport in Karst Aquifers. Retrieved 19th June 2020 from <https://web.northeastern.edu/protect/2017/tclf.org>. Commemorative Landscape Retrieved on 15th Feb 2020 from <https://tclf.org/category/landscape-types/commemorative-landscape>
- Xpdainage (2016). Swale. Retrieved 19th June 2020 from <https://help.innovyze.com/display/XDH2016v1/Swale>

07

BITARA – SIDECAR MOTORCYCLE FOR SERVICE-ORIENTED MOBILEPRENUER

Julaila Abdul Rahman*, Nur Nabilah Masron and Zumahiran Kamarudin

Department of Applied Arts and Design

Kulliyyah of Architecture and Environmental Design

International Islamic University Malaysia

ABSTRACT

This project aims to develop an innovative sidecar motorcycle for a mobile entrepreneur or mobilepreneur who runs a service-oriented business. There are three kinds of data collection methods: line-up study, a questionnaire survey and interviews. The line-up study has been done to identify 10 existing sidecar motorcycles with their various characteristics such as material, design features, and colour. The questionnaire survey was carried out among 100 mobile entrepreneurs in Kuala Lumpur to obtain the mobile render perception towards the design features. The questionnaire has four main sections: demographic, issues, design features and comments. The interview session was done with one representative from the industry to obtain the latest information on the sidecar motorcycle. The line-up study found that aluminum is one of the suitable material, which is used for sidecar motorcycle because of its practicality.

Various design feature ideas can be applied further for sidecar motorcycle in the local market. The survey outcomes showed that the existing sidecar in Malaysia does not have the wide space for business purposes such as storage system and other required design features. From the case study, it is found that refurbishment on the sidecar motorcycle has been made by the mobilepreneur, which is lacking in safety and other design features. As a finding, there is a need to propose a sidecar motorcycle with new design features that will not compromise the safety requirement and can fit various types of business. BITARA is a sidecar motorcycle for mobilepreneur. BITARA has a potential as the start-up kit in mobilepreneur in improving the existing mobilepreneur business in Malaysian's rural, sub-rural and city area.

Keywords: *mobile entrepreneur, sidecar motorcycle, innovation, design features*

* Corresponding author: julailarahman@iium.edu.my

RESEARCH INTRODUCTION

Mobilepreneur Programme has been introduced under the Ministry of Rural Development, under Budget 2016 and 2017 (Bernama, 2016). Under this program, RM 30 million were allocated and about 3000 young entrepreneurs received a motorcycle with box, which cost about RM10k (Nor Fazlina, 2017). Through this programme, entrepreneurs informed that their income increased to about 10%-30%. However, they also reported that the motorcycle box has a small space that contributed to the difficulty in bringing many tools and equipment. Therefore, one of the potential vehicles for the young entrepreneur is the sidecar motorcycle, where the size is adequate for the food and beverages (F&B) industry as well as for the service-oriented industry. Sidecar motorcycle design features need to be more user-friendly to reduce refurbishment costs while improving its design features like compartments. Sidecar motorcycle can be improved based on the needs according to the nature of business. Therefore, BITARA, a sidecar motorcycle for service oriented mobilepreneur is proposed (Figure 1)

METHODOLOGY

To achieve the research aim, three types of data collection were done: line-up study, a questionnaire survey, and interviews. First, a line-up study is done based on 10 potential existing sidecars to obtain product specifications such as the material used, dimensions and design features. Next, is the survey questionnaire, where a total of 100 mobilepreneurs in Jalan Tuanku Abdul Rahman and Jalan Masjid India, Kuala Lumpur were selected as respondents to get their perception mainly on design features.



Figure 1: BITARA – A Sidecar Motorcycle for Service-oriented Mobilepreneur.
(Source: Google Website, 2017)





Finally, an interview was carried out with a company named as Shaifulzairul Aziz Sdn. Bhd. to obtain more detailed data on actual needs and demands of sidecars from the entrepreneurs, as well as the latest information in the mobile entrepreneur business.

RESEARCH FINDINGS

LINE UP OF SIDECAR MOTORCYCLES

Based on Table 1, 10 products in the market were studied based on their characteristics such as colour, material, shape, dimension, storage capacity, tongue weight, empty weight, storage capacity, features, strengths, and weaknesses. Various types of storage systems were built according to the purpose of the sidecar motorcycle. For the practicality and hygiene, aluminum can be one of the suitable materials for the sidecar motorcycle in Malaysia in F&B and other kinds of industries.

Table 1: Line up analysis for existing waste bin
(Source: Google Website, 2017)

Name	Escapade	Motorcycle Side Car	Cellco	Rover	CT-500	CT-700	SRT 500	Escalade	excel	ZZ 2000LT for BMW
										
Material	Fibre glass	Stainless Steel	Fibre glass	Thermoplastic Olefin (TPO)	Aluminium	Aluminium with Diamond Plate trim	Aluminium	Fiberglass	Fibre glass	Fibre glass
Colour	Cobalt blue	Black	Sky blue	Black	Black	Black and chrome	Black and chrome	Black	Cobalt blue	Silver
Body Dimension	67" X 40 " X 20"	70" X 30" X 20" deep	50' X 25' X 19" deep	95" X 43.5" X 39.75"	4' X 28" X 18" deep	60" X 36 " X 28" deep	5' X 30 " X 20 " deep	64"X36" X 18"	43.25" X70.45"X 22"	51" X 38" X 30"
Tire dimension (Tire and wheels)	4.8"-12"	110cm-90cm	8"	8"	5.30"-12"	5.30"-12"	5.30"-12"	5.30"-12"	4.8"-12"	8"
Empty Weight	237 lbs	140kg	115 lbs.	188 lbs.	170 lbs	215 lbs	220 lbs	225 lbs	253 lbs.	200 lbs.
Tongue weight	14 lbs	-	15 lbs	17 lbs	17 lbs	17 lbs	16 lbs	16 lbs	14 lbs	14 lbs
Storage capacity	350 lbs	250 kg	350.0 lbs	300 lbs.	350 lbs.	700lbs	500lbs	350 lbs	350 lbs	200 lbs.
Shape	Rectangular	Rectangular	Rectangular	Rectangular	Box	Box	Aerodynamic "V" Nose	Rectangular	Rectangular	aerodynamic
Features (Standard/Optional)	1.Custom spoiler with brake light and lid-activated interior dome light, 2. Spoiler with L.E.D. brake light. 3. Air shock system with an independent trailing swing arm design 4. Integrated spare tire compartment and utility storage areas	1. Front and rear opening (front gate and tail gate) 2. Stop light Indicator light 3. 2 rear reflectors 4. Umbrella holder	1. T-Lok Handles. Made to open at the left or right side 2. RV Style Taillights and signal light 3. Side Marker 4. RV Red tail lights for better visibility 5. Amber signal lights	1.Accu-Lube Hubs 2.Spare Tire Compartment 3.Watertight (Gasketed) Interior 4.Gas Assist Struts (On Lid) 5.Removable Tongue (For Easy Storage) 6.Powder Coated 7.Tubular Steel Frame 8.Beverage/Storage Compartment	1.Welded aluminium construction 2.Lockable Top lid 3.Aluminum Cooler Rack 4.Carpeting included 5.Heavy Duty Lock and Latch 6.LED Lights	1.Aluminum Cooler 2.Rack available wiring harness factory tested 3.Stainless steel latch with lock and 2 keys lid has self-assisted strut 4.Box is trimmed in diamond plate 5.Welded aluminium construction 6.Has Indoor/outdoor Carpet	1.L.E.D. Lights 10 year warranty 2.4 flat male wiring 3.wiring harness factory tested 4.Has Indoor/outdoor carpet	1.Carpeted interior 2.Rear lock and key entry with 2 keys 3.Front door lock and key entry with 2 keys 4.Goldwing type Lights 5.Chrome coupler 6.Interior Light 7.Smooth spoiler 8.Front door for easy access while traveling 9.Chrome Safety Chains	1.Custom spoiler with brake light and lid-activated interior dome light, 2. Spoiler with L.E.D. brake light. 3. Air shock system with an independent trailing swing arm design 4. Integrated spare tire compartment and utility storage areas	1.Factory matched colors 2.Aerodynamic styling 3.Chrome wheels standard 4.Carpeted interior 5.Zero bounce suspension 6.Interior light 7.Chrome tongue & coupler
Strength	1. Sleek and modern design 2.Advance engineering and system	1. Can transport heavy materials and goods 2. Standard maintenance 3. Free stainless steel construction 4. Available with new or old motorcycle model	1.Can custom made 2.Easy pulling trailers 3. Waterproof 4.Durable under normal driving conditions	1. Ideal for large motorcycles, trikes, and automobiles. 2.High class look with cheaper price 3.Excellent Impact 4. Strength and durability	1.Weather friendly 2. The box is constructed of welded aluminium. 3. The sides are powder coated black, aluminium.	1.Spacious 2. Durable for extreme activity	1.Sleek design 2.Good warranty 3.Durable 4. Spacious	1.Focus more on safety 2.Good colour treatment 3.Modern design	Improved the Independent Suspension by elongating the swing arm, changing the shock angle and adding a new Anti-Roll Suspension System.	
Weakness	Expensive	1. No lid 2. No absorber in the inside	Expensive because of the material	At least for 1000 CC bike	No spare tire	Only for big bike, trikes and automobile.	Design is too rigid	1.Heavy	Expensive	1. Heavy 2. Small capacity 3. expensive

PRODUCT MAPPING



Figure 2: Product Mapping
(Source: Google Website, 2017)

The direction of design was translated into a product mapping to guide designers to achieve the final design. According to Figure 2, four concepts of sidecar were analysed, which are fancy, sturdy, practical, and delicate. The axis for the map are: [sturdy – delicate], and [fancy – practical]. The proposed BITARA design is towards the practical and delicate group.

INTERVIEW

According to Hj Shamsul, a director of Shaifulzairul Aziz Sdn. Bhd (Figure 4), sidecar for business purposes was in high demand as self-employment is now trending in Malaysia. His company offers a coach building service for transportation such as bus, food truck, camper, mobile library, and sidecar. Self-employment is one of the ways to increase social and country economic value. Thus, he encouraged youth to participate in the business. His company receives an average of 1- 3 sidecar building request every month. All sidecar designs are custom-made upon request of the client. The selling price started at RM 14,000 together with a motorcycle. The price does not include inspection cost, insurance, and business license.



Figure 4: Director of Shaifulzairul Sdn. Bhd.

SURVEY RESULT

The questionnaire was divided into 4 sections. Section A comprises the seller's demographic profile. Section B highlights issues and problems. Section C includes product features, and Section D contains comments and recommendations. Some questions were in multiple-choice whereas some questions asked on users' perception using 5-Likert Scale (1-strongly agree to 5-strongly disagree). The questionnaire survey was conducted among 100 respondents at Jalan Tuanku Abdul Rahman and Jalan Masjid India, Kuala Lumpur. All respondents are the mobilepreneur of food and beverages (F&B) and service-oriented business.

Section A; demographic

60% male and 40% female respondents participated in the survey; age of 36-55 (57%), aged 20-35 (43%). Their working period; 11-15 hours per day (60%), 5-10 hours per day (40%). Their income; RM 2,000 and above (53%), RM 1,700 – RM 2,000 (20%) and RM1,300 – RM 1, 600 (27%). The income varies according to the location.

Section B; issues and problem

47% of respondents agreed that the existing sidecar is wide enough to accommodate equipment and tools for business purposes, while 53% said the opposite. 70% of them disagree to have slotting storage systems as they need a larger space to keep their goods, while 30% said the opposite.

Section C; product features

The respondents preferred storage (29%), umbrella holder (17%), front and rear gate (16%), cooking area (12%), selling platform (12%) as in the sidecar. (refer to Figure 3)

Section D; comments and recommendation

60% of the respondents knew about the mobilepreneurship, 27% of them never heard about the mobilepreneurship and 13% were uncertain about it. 93% of respondents agreed that the mobilepreneurship will improve their business income, while 7% did not agree because the income is an unpredictable matter. 94% of the respondents will promote the mobilepreneur concept to others while 6% did not have any interest in this concept.

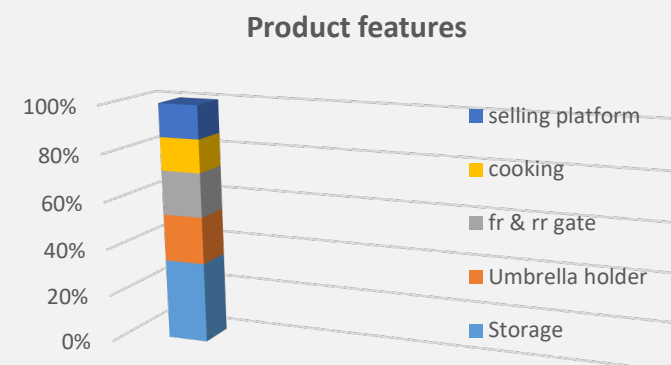


Figure 3: % for Product Features

OBSERVATION: SIDECAR MOTORCYCLE

During the survey questionnaire, an observation was also carried out at Jalan Tuanku Abdul Rahman and Jalan Masjid India, which started at 10.00 am as it is the normal starting hour of business. Most of the mobilepreneur were selling foods and beverages (F&B) as well as doing delivery service. The utility sidecar is used to transport goods to the selling site while selling sidecar is used to sell foods or drinks. Safety features such as capacity plates and speed limit are different by types of sidecar. Design features for utility sidecar are simpler than the selling sidecar (Figure 5). However, both must follow the rules restricted by Majlis Perbandaran Kuala Lumpur. Most of the sidecar, especially for the selling purposes, have been refurbished according to the needs of the business. However, sidecars were lacking in safety and design features. With the right design features, the sidecar can be improved in terms of its space as well as its safety requirement.



Figure 5: Design features for utility sidecar

FINDINGS: LINE UP, SURVEY, INTERVIEW

As a finding, sidecar motorcycle for mobilepreneur can be improved in two areas; design and safety features. The sidecar motorcycle can be refurbished according to the type of business; F&B and non-F&B. With the proper design and safety features, it will help the mobilepreneur to gain more space and a systematic storage area. A portable slotting storage system can also be introduced so that they can have more options for their business activities. Good safety features also need to be installed into the sidecar motorcycle to ensure the safety of the goods, for example using the sensor system at the sidecar to give information about the safety of the goods in the sidecar. Furthermore, with the improvement of the design features, the sidecar will have a clean image. Most of the respondents agreed that the mobilepreneur will help them in gaining more business income. As self-employment become one of the ways to increase the economy, it is a need to help the mobilepreneur by improving their transportation so that they can succeed in their business.

DESIGN DEVELOPMENT; SKETCHES AND DRAWINGS

In the BITARA design development, many stages were conducted to obtain the final design proposal; thumbnail, idea development, design proposals, and model making. The idea development or sketches for BITARA are as in Figure 6 and the design concept of BITARA is as in Figure 7.

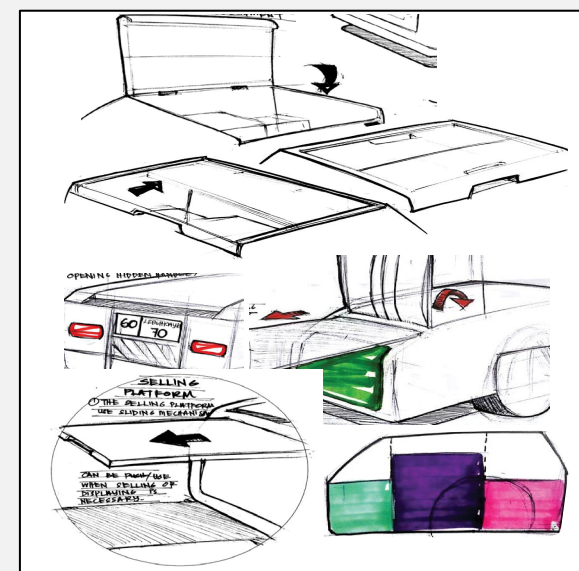


Figure 6: Sketches for BITARA

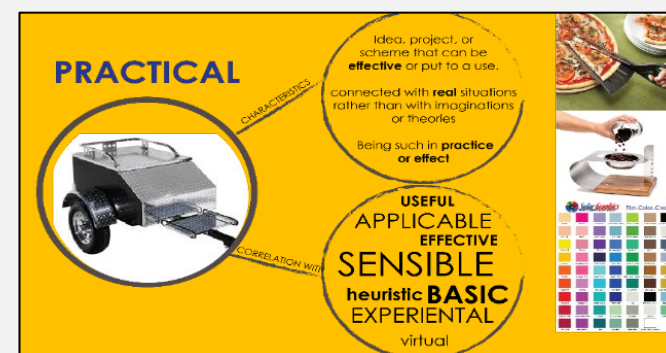


Figure 7: Design Concept for BITARA
(Source: Google Website, 2017)



Figure 8: Manual for Product Usage

COMMERCIAL POTENTIALS

BITARA is a flexible and sleek sidecar motorcycle, that is needed in mobilepreneur business (Figure 8). BITARA will give benefits for a start-up business for the young entrepreneur as well as to the current mobile entrepreneur. It can also be classified as a social enterprise product, where it will benefit both community and the country. BITARA will help in increasing the level of employability among the unemployed, fresh graduates and the low-income group. The cost of this product is reasonable (i.e. RM 1700-2500) for a young entrepreneur or self-employed business. It comes with several colour line-ups such as blue and red. As an improvement to the typical sidecar found in the local market, BITARA introduce modern design for better user experience. It also comes with flexible open storage to give more space and systematic storage. The proposed material is aluminum, where the CW/BDM is light for easy handling. It also has dual top openings and a front gate. A magnetic shutter at the top opening is designed for a better enclosure. In future, BITARA can be developed further in many potential design variations to fit various types of business (Figure.9).

CONCLUSION

BITARA is a potential solution for mobilepreneur in a service-oriented business, especially for the young entrepreneur as encouragement to do grow well in their business. By having innovative sidecar motorcycle, the mobilepreneur can run their business in various location such as in villages, suburban as well as in the urban areas. With the establishment of ICT tools and applications in smartphones, the mobilepreneur can be easily reached by their customers. This will allow more business opportunities to the mobilepreneur and give a better benefit for their customers. BITARA can be further developed with various design features to meet the nature of business. Potential stakeholders, among others are MARA, GIAT MARA, TEKUN and TERAJU.

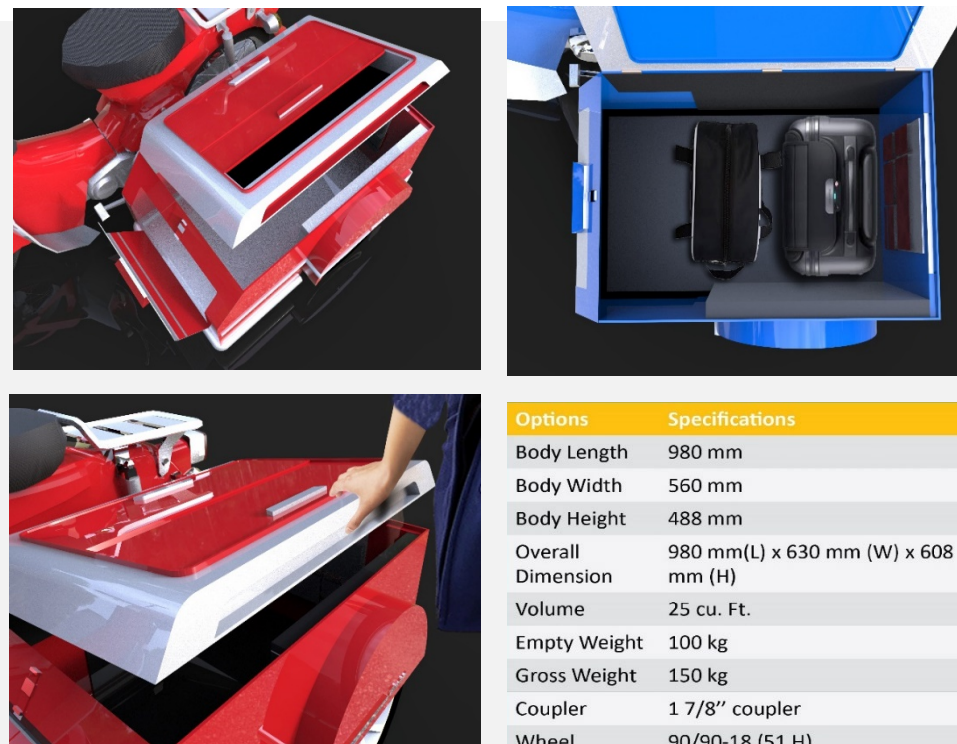


Figure 9: Design Variations

ACKNOWLEDGEMENT

The acknowledgment goes to the respondents who participated in this project; to lecturers in charge of Studio 4th Year 2017; Kulliyah of Architecture and Environmental Design (KAED); International Islamic University Malaysia (IIUM); all related parties and institutions that contribute various information for the success of this project.

REFERENCES

- Bernama. Peruntukan RM30 juta kepada Usahawan bergerak pada 2017 (13 Nov 2016). Berita Bisnes, Astro Awani. Retrieved 16 Sept. 2019 from <http://www.astroawani.com/berita-bisnes/peruntukan-rm30-juta-kepada-usahawan-bergerak-pada-2017-122504>.
- Nor Fazlina Abdul Rahim. Usahawn Muda Luar bandar Dibela (18 Nov 2017). Berita Nasional, BH Online. Retrieved 16 Sept. 2019 from <https://www.bharian.com.my/berita/nasional/2017/11/352307/usahawan-muda-luar-bandar-dibela>

08

SELANGOR STATE STRUCTURE PLAN (SSP): A WAY FORWARD TO 2035

Abdul Azeez Kadar Hamsa, Mansor Ibrahim*, Azila Sarkawi, Irina Safitri Zen, Aaliyah Bajrai, Ahmad Ariffuddin and Ahmad Zul Ikram
Department of Urban and Regional Planning,
Kulliyyah of Architecture and Environmental Design,
International Islamic University Malaysia

ABSTRACT

State Structure Plan (SSP) is a document that prepare a planning framework that will guide and control the state's physical development as required under the Town and Country Planning Act 1976 (Act 172). The study area is the Selangor State, located on the west coast of Peninsular Malaysia. This study adopts the process of state structure plan preparation in accordance to PlanMalaysia's Manual. The development concept proposed in the plan is "Interdependent Polycentric Economic Region", defined as economic corridor

and growth centres that are depending on one and another. There are 5 development thrusts with 32 policies that are being proposed. From the policies, a total of 9 high impact projects being proposed for the state of Selangor.

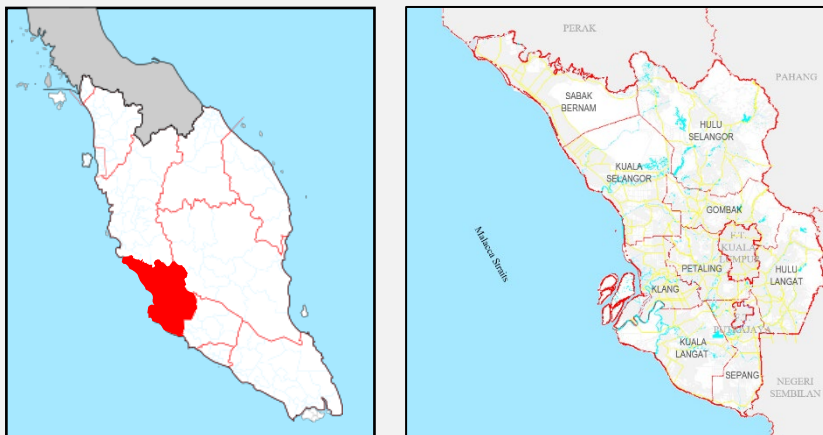
Keyword: *structure plan, development plan, planning system, Selangor, Interdependent Polycentric Economic Region.*

*Corresponding author: profmansor@iium.edu.my

INTRODUCTION

State Structure Plan is a document that prepare a planning framework that will guide and control state's physical development. This is stated in Act 172 Section 8 Town and Country Planning Act. The current Selangor State Structure Plan 2035 had been gazetted on 2 February 2017. It had outlined 60 new policies which based on 3 Thrusts. It is being reviewed to align state's development plan with the new policies that had been implemented at the national and international level.

Selangor is located on the west coast of Peninsular Malaysia bordered by Perak to the north, Pahang to the east, Negeri Sembilan to the south and Straits of Malacca to the west. The Federal Territories of Kuala Lumpur and Putrajaya is within the state. Selangor, also known as Darul Ehsan which means "Abode of Sincerity" is one of the 13 states in Malaysia. There are 9 districts in Selangor which are Gombak, Klang, Kuala Langat, Kuala Selangor, Petaling, Sabak Bernam, Sepang, Hulu Langat and Hulu Selangor (Maps 1&2).



Maps 1 & 2: Location Plan of Selangor

METHODOLOGY

Figure 1 below depicts the process and stages involved in the preparation of a State Structure Plan.

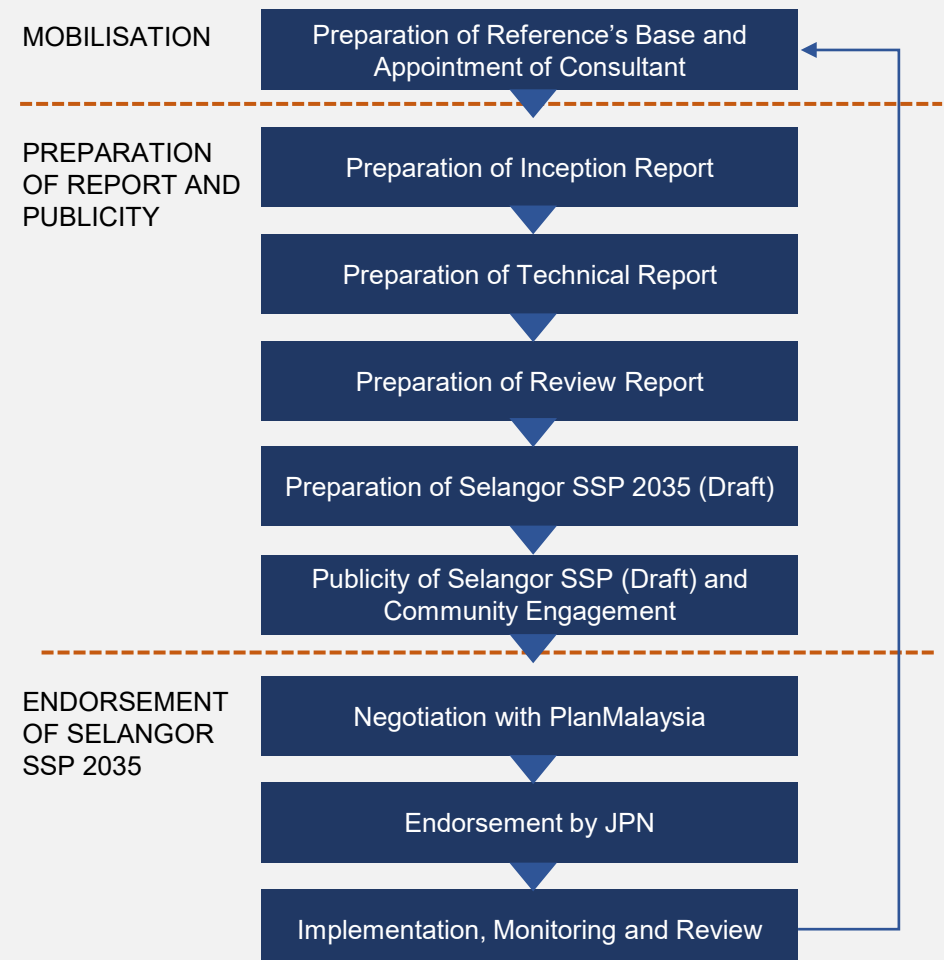
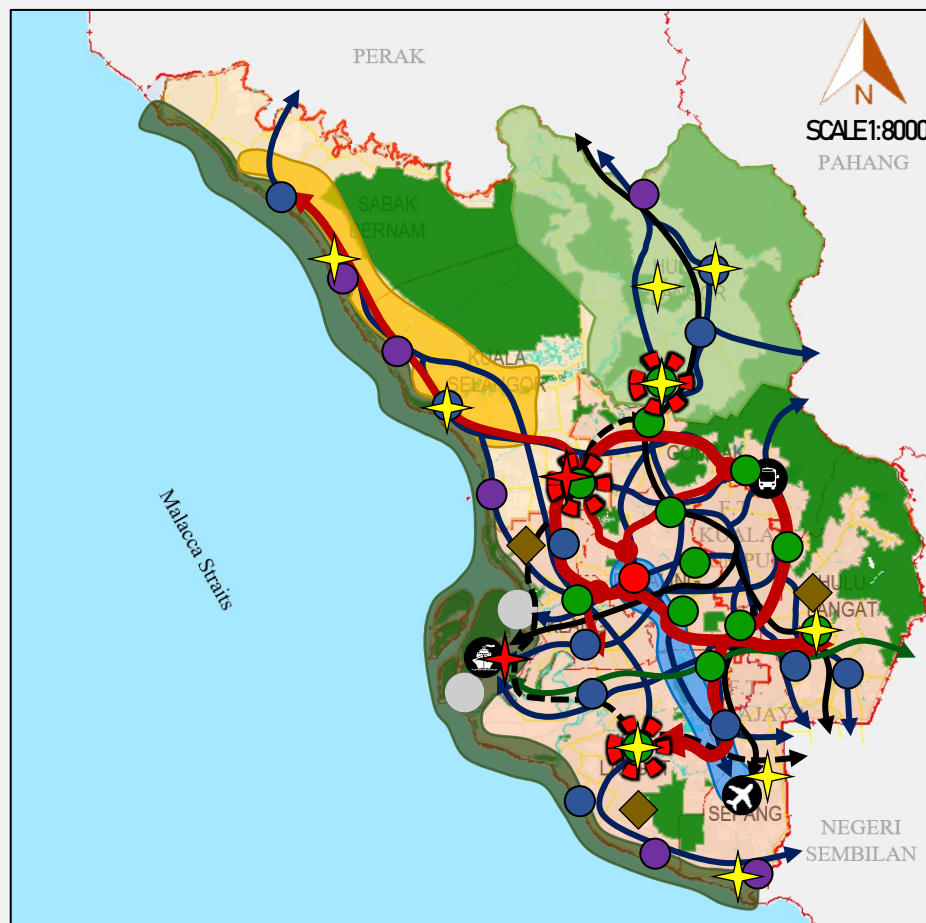


Figure 1: Flow Chart Process on the Preparation of State Structure Plan

DEVELOPMENT CONCEPT



Legend					
	Boundary		Existing Road Networks		Existing Rail Networks
	Proposed Public Transport		Proposed Rail Networks		ECRL
	Seaports		Airports		Transport Hub
	Proposed Transport Hub		Proposed Infrastructure		Tourism Nodes
	State Growth Centre		Major Growth Centre		Major Settlement Centre
	Small Settlement Centre		New Growth Centre		Water Bodies
	MICE Corridor		Marine Management Corridor		Permanent Agriculture Zone
	Selangor Eco-Region				

Map 4: Development Concept of Selangor State Structure Plan 2035

INTERDEPENDENT POLYCENTRIC ECONOMIC REGION

The Interdependent Polycentric Economic Region as the economic corridor and growth centres are depending on one and another. Each corridors and centres have different economic focused that support other economic sectors directly and indirectly.

This concept is suitable for this state with its strategic and geographic location to the sea, local resources and the capital city of Malaysia. Therefore, the plan of spatial development in this state are divided into two main components; Greater Kuala Lumpur Conurbation (GKL Conurbation) and Outer Greater Kuala Lumpur Conurbation (OGKL Conurbation).

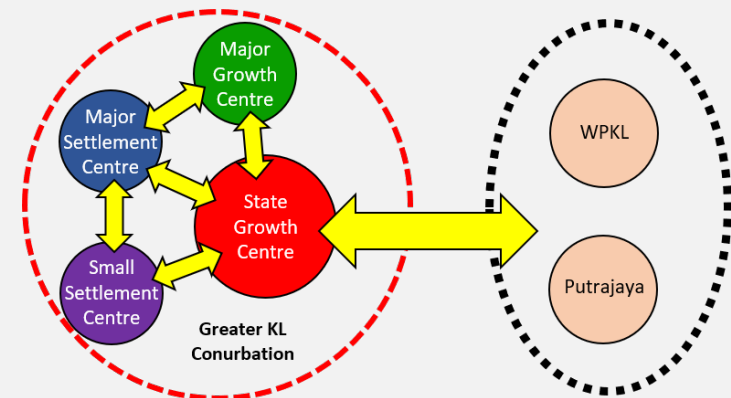


Figure 7: Development Concept of Greater KL Conurbation

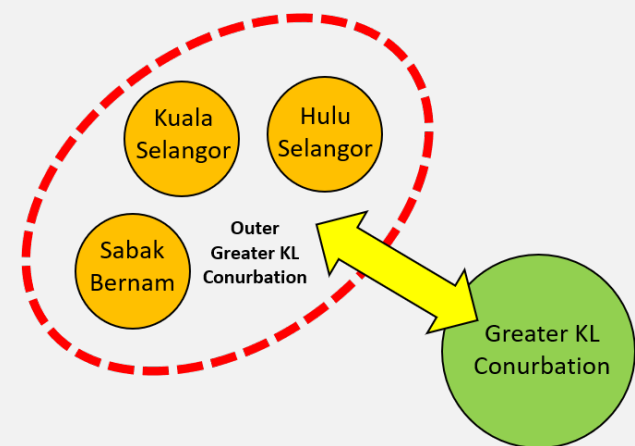
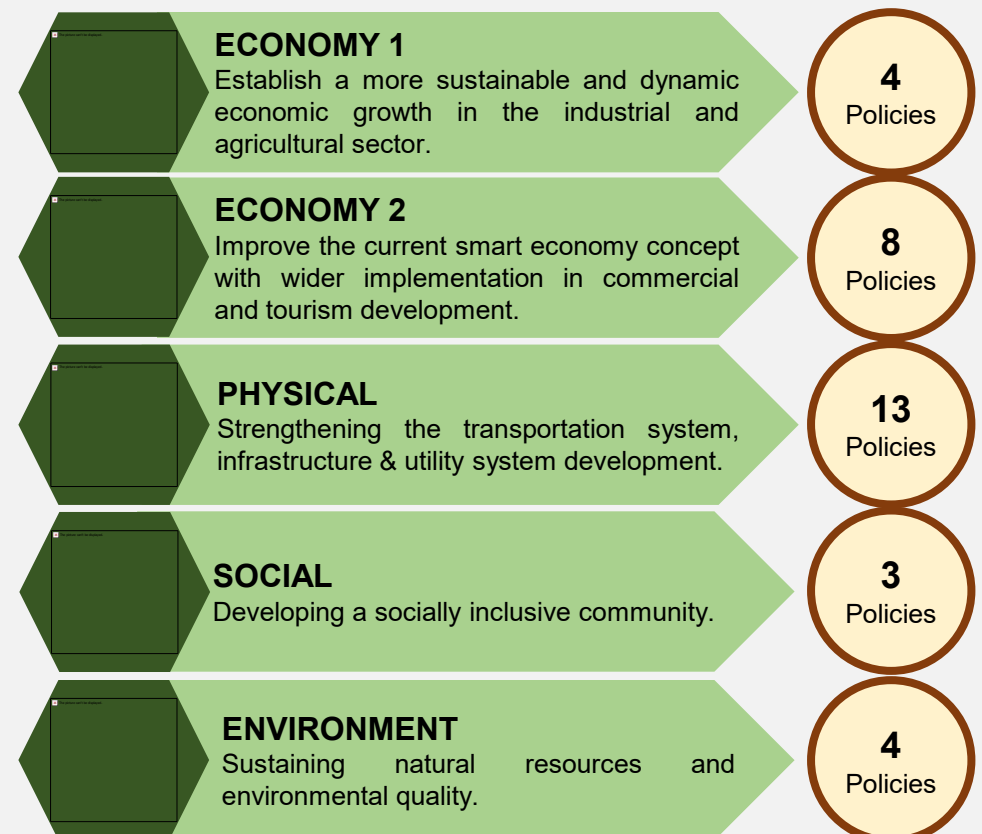


Figure 8: Development Concept of Outer Greater KL Conurbation

DEVELOPMENT THRUST



PROJECT FINDINGS

HIGH IMPACT PROJECTS 1 & 2: AGRO-INDUSTRY CORRIDOR & E-COMMERCE FULFILLMENT CENTRE

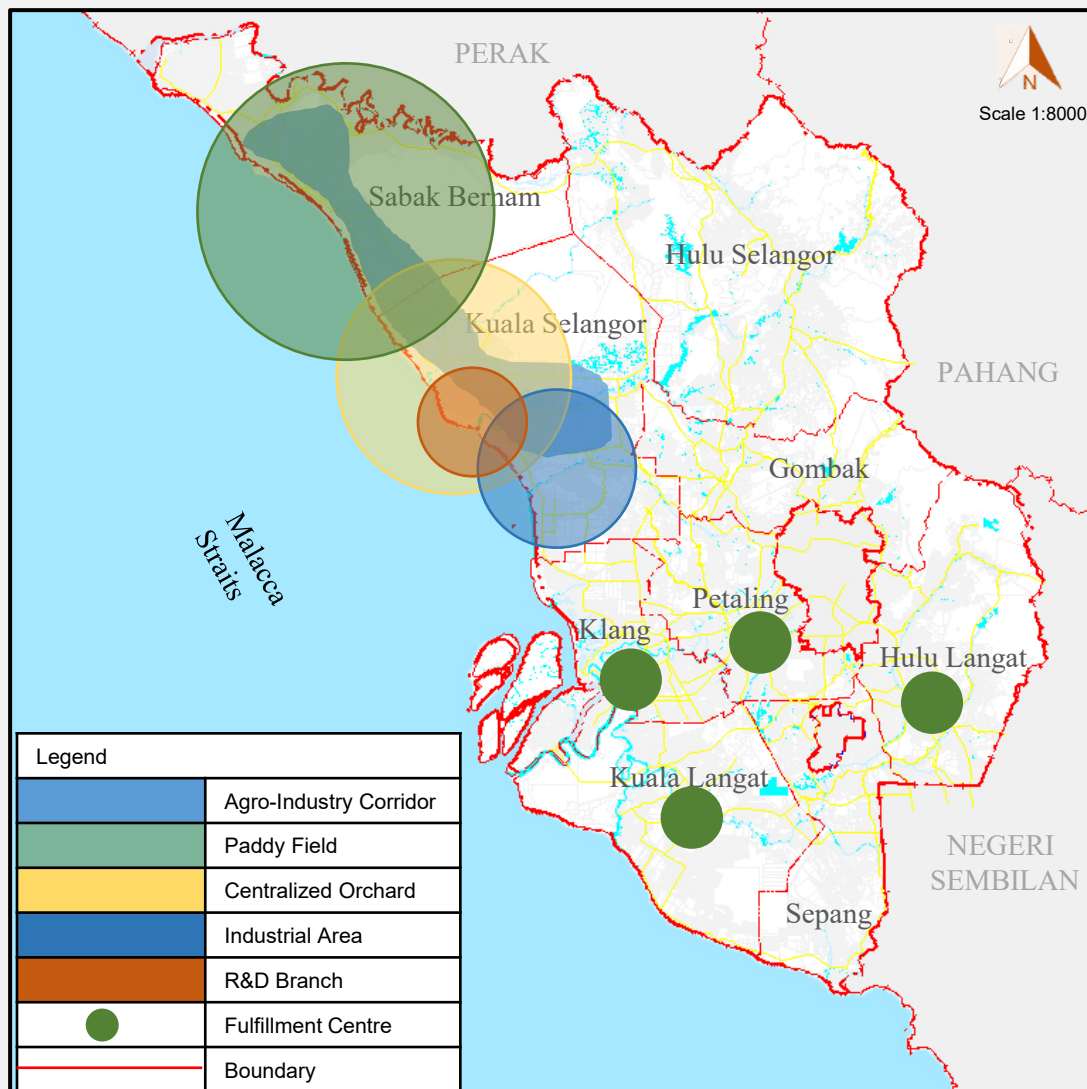
These projects are based on the major findings from review of the current development scenario in Selangor and Malaysia:

- About 0.7% of Selangor's number of household have income below the poverty line.
- Aquaculture products are located all along the coast of Klang, Kuala Selangor and Sabak Bernam.
- As of 2017, Selangor stands the third highest for online banking and buying after Kuala Lumpur and Putrajaya.
- Selangor is the 3rd largest contributor to the paddy and rice production in Malaysia with 10.8%.

Related Policies to help Selangor State future development:

RSB 1: Improving the productivity of industrial and agriculture activities to increase the GDP contribution of the State.

RSB 5: Improving E-commerce facilities to cater and support future commercial demand and transaction.



Map 3: Proposed location for Agro-Industry Corridor and E-Commerce Fulfillment Centre

COMPONENTS IN E-COMMERCE FULFILLMENT CENTRE



Figure 2: Example of Fulfillment Centre (Source: Bulger S., 2017)

The 3rd Party Fulfillment Model



Figure 3: The Model Of Fulfillment Centre. (Source: Finance Online, 2020)

COMPONENTS IN AGRO-INDUSTRY CORRIDOR



Figure 4: Hydroponic Farms (Source: Nosowitz D., 2017)



Figure 5: Centre or Branch Office (Source: Askew K., 2019)



Figure 6: Centralized Orchard (Source: Wani R., 2019)

HIGH IMPACT PROJECT 3: TOURISM PROJECTS

The projects are based on the major findings:

- Selangor has the highest domestic tourist receipts which are about RM 13.2 billion.
- Accommodation is under-capacity to cater for tourists demand until 2035.

Related Policies:

RSB 10: Promoting coastal and urban tourism products and activities to attract intrinsic and extrinsic tourists.

RSB 9: Preserve and strengthen the eco, agro and heritage tourism products and to raise public awareness, and maximizing the revenue of tourism sector.

MORIB WATERFRONT RESORT

Seeing the potential of Morib Beach, it will be developed to fulfill the tourists demand activities:

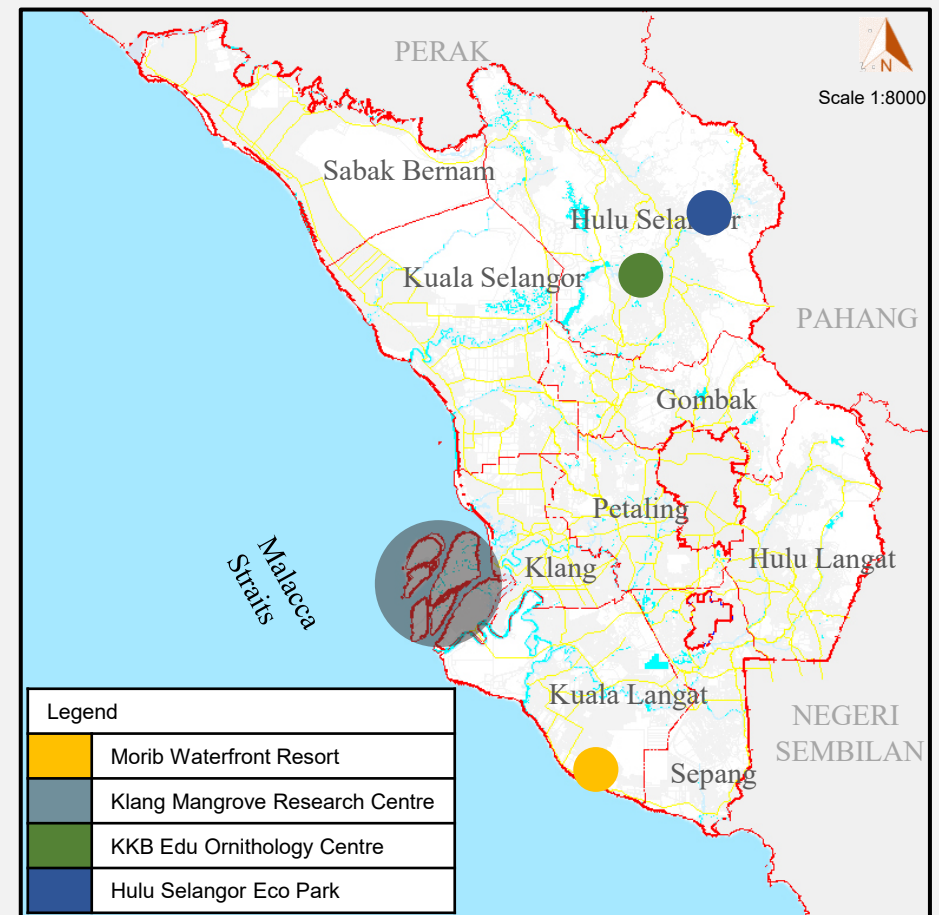
- Sailing activities
- Fishing
- Boardwalk
- Sunset lounge



Figure 9: Existing Site



Figure 10: Proposed Waterfront on Site



Map 5: Proposed location for Tourism Projects

HULU SELANGOR ECO PARK

Mining land in Rasa, Hulu Selangor was abandoned, hence to strengthen Hulu Selangor as Selangor Eco Corridor, the ex-quarry can be transformed to Eco National Park. Redevelopment is proposed to make sure that the ex-quarry will not pollute the environment.



Figure 11: Existing Site



Figure 12: Proposed Waterfront on Site

(Source: Tourism Perak, 2020)

KKB EDU-ORNITHOLOGY CENTRE

The bird watching and bird annual competition events held in KKB received the tourists from more than 30 countries. KKB Edu-Ornithology Centre will preserve habitat of birds in Kuala Kubu Bharu. To preserve and strengthen the ecotourism, KKB Edu-Ornithology Centre is one of the initiative to raise public awareness as well as maximize revenue in tourism sector.



Figure 13: Birds Flying Zone (Source: Jabatan Perancang Bandar & Desa Selangor, 2010)

Focusing on eco-edu tourism, Edu-Ornithology Centre is a branch of zoology that concern the study of birds, KKB Edu-Ornithology Centre strives for original research in behavioral ecology, conservation, education and strengthening and promoting annual events such as bird watching and bird competition.

HIGH IMPACT PROJECT 4: NEW SELANGOR INTEGRATED TRANSIT SYSTEM

The projects are based on the following major findings:

- The projected population of Selangor will reach a total of 9 million by the year 2035.
- 67.68% of the total area of Selangor can be developed without any constraints.
- All districts are well connected with expressways and road networks.
- The current modal split in 2015 is about 25% public transport users and 75% private transport users.
- The average growth rate of public transport users was about 1.9%, from year 2008 to 2015.

Related Policies:

RSB 13: Improve the transportation infrastructure in urban and rural areas in Selangor to support economic development and people's welfare.

RSB 14: Strengthen the infrastructure of seaport and airports in Selangor as ASEAN Transport Hub.

This proposed project includes several new transit lines around Selangor. It consists of Light Rail Transit (LRT), Bus Rapid Transit (BRT), KTM Railway and realignment of East Cost Railway Link (ECRL) and two Integrated Transit Terminals (ITT). The new integrated transit system will use the circle-radial system. The circle system will circulate around the urban area while the radial system will connect other places from the circle system.



Figure 14: Proposed Northern ITT @ Puncak Alam (Source: WesternWilliamson+Partners, 2020)



Figure 15: Proposed International Harbour Gateway @ Pulau Indah (Source: WesternWilliamson+Partners, 2020)



Legend			
	Roads		KTM Lines
	Boundary		ECRL
	BRT Lines		Interchange Stations
	LRT Lines		Integrated Transport Terminal

Map 6: Proposed New Selangor Integrated Transit System

Components:



2 LRT Lines



6 BRT Lines



3 KTM Lines

HIGH IMPACT PROJECT 5: WASTE-TO-ENERGY

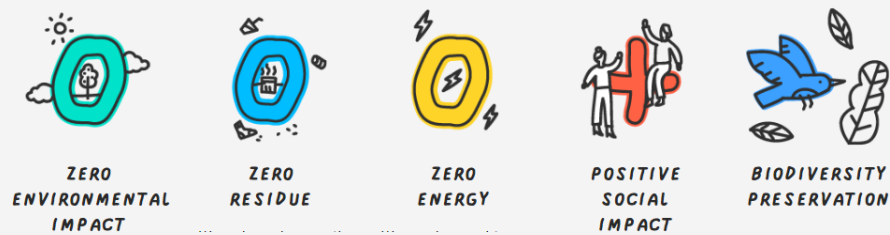
This projects are based on the following major findings:

- Electricity supply is enough to accommodate demand until 2035.
- Every districts in Selangor is connected to at least one internet service provider in 2019.

Related Policies:

RSB 18: Provide adequate and reliable infrastructure and utility system to meet the existing and future demand of population.

RSB 19: Diversify sources of the energy supply system to meet the economic output and reduce the dependency on non-renewable energy.



BIOFACTORIES PROJECT will produce 110,000 tonne of fertilizer yearly and 120 K tonnes of gas for gas supply and energy generation.

- Convert 100% of sewerage to fertilizers (100 tonne) for 500 acres plantation.
- Reduce non-renewable energy dependency by 50%.



Map 7: Proposed Site of Biofactories



Figure 16: Proposed Biofactories (Source: Marchant, T., 2018)



Figure 17: Proposed Biofactories (Source: PULPAPERnews.com. 2020)

WASTE TO ENERGY PLANT (Biofactories) converts municipal and industrial solid waste into electricity or heat for industrial processing. It works by burning waste at high temperatures and using the heat to make steam. The steam then drives a turbine that creates electricity.

BIOFACTORIES diversify sources of the energy supply system and reduce the dependency on non-renewable energy. It reduces solid waste generation rate and improve the population accessibility to modern high technology STP.

Impacts

	<p>ENERGY SUPPLY INCREASED Produce 5 MW of the energy supply which covers 50% of electric supply system yearly. Reduce non-renewable energy dependency by 50%</p>
	<p>RECYCLE PROGRAMME Encourage implementation of Recycling programme at disposal site</p>

HIGH IMPACT PROJECT 06: IMPLEMENTATION OF SELF-HELP HOUSING PROGRAMME

The projects are based on the following major findings:

- The projected population of Selangor will reach a total of 9 millions by the year 2035.
- About 0.7% of Selangor's number of household have income below the poverty line.
- 67.7% of the total area of Selangor can be developed without any constraints.

Related Policies:

RSB 27: Providing sustainable and harmonious community living through the good quality of affordable housing and housing development.

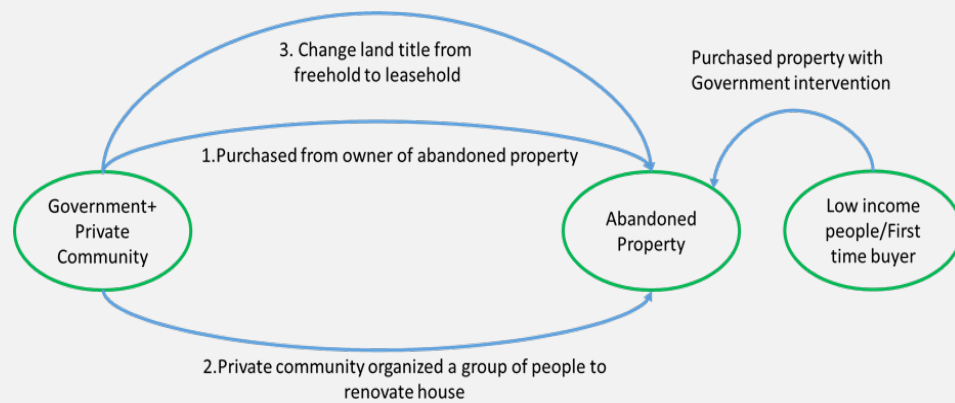
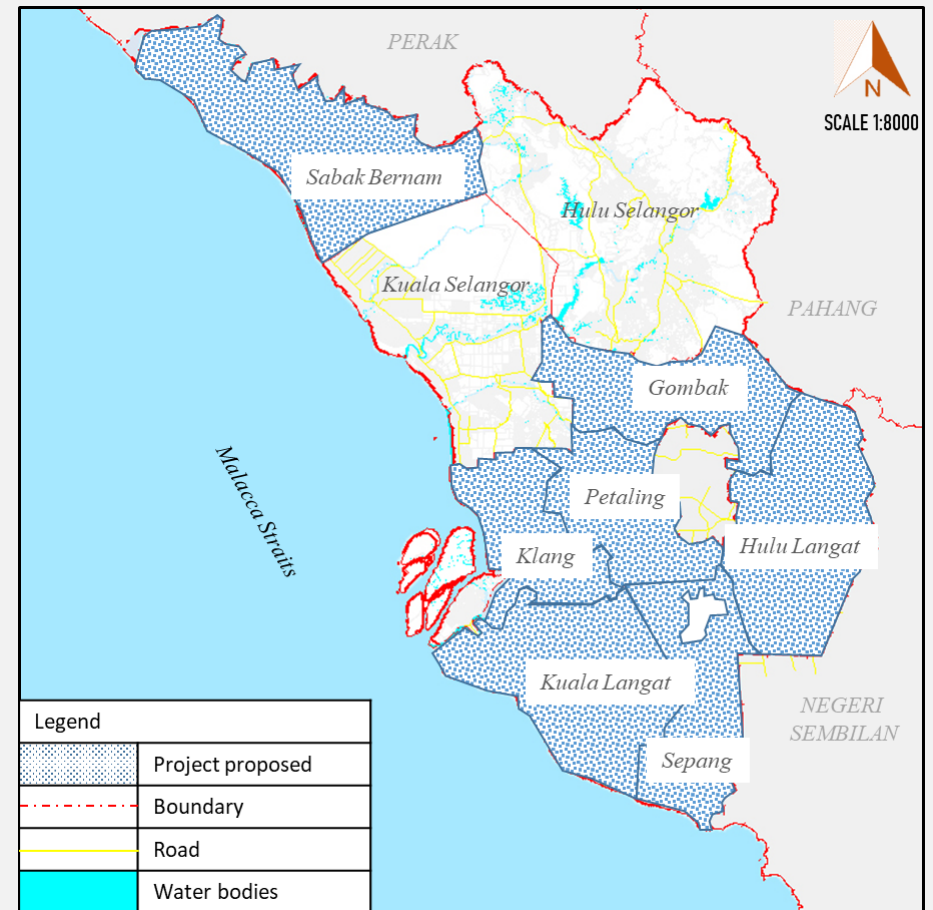


Figure 18: Self-help Housing Programme Procedure

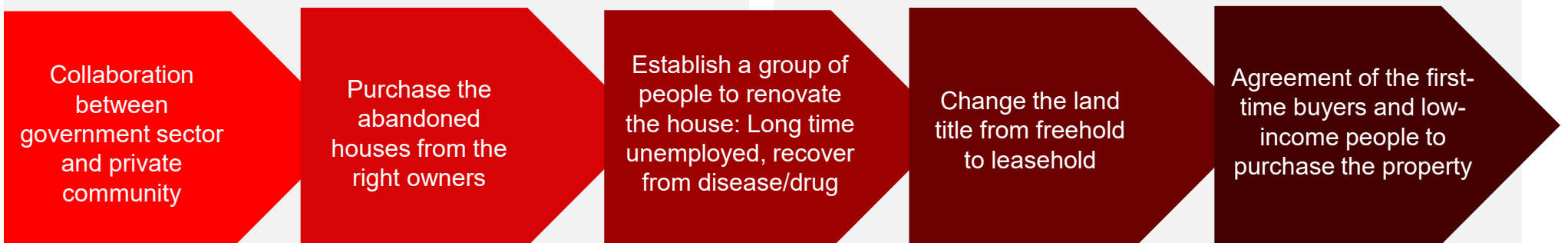
Self Help Housing Programme is a programme that focuses on reducing the number of abandoned housing to zero percent in Selangor in fifteen years span.

According to the various case studies, this programme has been conducted in many countries throughout the world. It shows that the efficiency of this programme in reducing the abandoned housing projects of the country (Riley, 2018).



Map 8: Proposed Sites of Self-Help Housing Programme

Components Of Self-help Housing Programme



CONCLUSION

The Selangor State Structure Plan 2035 prepared and gazette in 2017 had been reviewed to cater for the rapid development that had taken place in recent years. Selangor State has always been in the hub and fore-front of the new technological advancement in the country. Hence, a constant review, adjustment and improvement of the plan is important so to ensure Selangor stays relevance as well as in the leading role of the nation. The proposed *Interdependent Polycentric Economic Region Concept* is about each economic corridor and growth centres in the state are depending on one and another. Each corridors and centres have different economic focused that support other economic sectors directly and indirectly. This concept is deemed suitable for the state with its strategic and geographic location to the sea, local resources and the capital city of Malaysia.

ACKNOWLEDGEMENT

This project was carried out by a group of 3rd Year students (Planning Studio 5), Semester 1, 2019-2020. The project was to prepare a Selangor State Structure Plan. This studio project were under the supervision of Assoc. Prof. Dr. Abdul Azeez Kadar Hamsa, Prof TPr Dato' Dr. Mansor Ibrahim, Assoc Prof Dr Azila Sarkawin and Asst Prof Dr Irina Safitri Zen. Other members of the group led by Aaliyah Bajrai were Mohammad Ikhwan, Muhammad Akmal Hakim, Muhammad Alhakim, Muhammad Azmir Arif and Muhammad Murshid. The authors would like to extend their appreciation to PLANMalaysia Selangor for their cooperation.

REFERENCES

- Askew K., (20th Nov 2019). *From lab meat to vertical farming: How Europe's rejection of GMOs can help science in food.* (2019). Retrieved 19th April 2020 from <https://www.foodnavigator.com/Article/2019/11/20/From-lab-meat-to-vertical-farming-How-Europe-s-rejection-of-GMOs-can-help-science-in-food>
- Bulger S. (21th June 2017). *Fulfillment Center Defined & Pros vs. Cons.* Retrieved 24th January 2020. from <https://www.efulfillmentservice.com/2017/06/fulfillment-center-defined-pros-vs-cons/>
- Finance Online, (2020). *20 Best Order Fulfillment Services & Companies of 2020.* Retrieved 24th January 2020 from <https://financesonline.com/top-20-order-fulfillment-services/>
- Jabatan Perancang Bandar & Desa Negeri Selangor (2010). *Rancangan Kawasan Khas Bandar Kuala Kubu Baru 2025.* Shah Alam, Selangor.
- Jabatan Perancang Bandar & Desa Negeri Selangor (2017). *Rancangan Struktur Negeri Selangor 2035.* Shah Alam, Selangor.
- Marchant T. (6 Jul 2018). *La biofactoría que le cambió la cara y el olor a La Farfana.* Retrieved 24th January 2020 from <https://www.lacuarta.com/l4-sabado/noticia/la-biofactoria-le-cambio-la-cara-olor-la-farfana/271673/>
- Nosowitz D., (4th May2017). *Can Hydroponic Farming Be Organic? The Battle Over The Future Of Organic Is Getting Heated.* Retrieved on 19th April 2020 from <https://modernfarmer.com/2017/05/is-hydro-organic-farming-organic/>
- PULPAPERnews.com, (Apr. 18 2020). Retrieved 24th January 2020 from <https://www.pulpapernews.com/20190802/10412/onsite-waste-energy-plant-has-been-put-operation-blue-paper-mill?page=0%2C4>
- StudyMalaysia.com. (14th March 2015). *The Malaysian Higher Education System-An Overview.* Retrieved on 19th December 2019 from <https://www.studymalaysia.com/education/higher-education-in-malaysia/the-malaysian-higher-education-system-an-overview>.
- Tourism Perak, (2020). *Gunung Lang Recreational Park.* Retrieved 24th January 2020 from <http://www.tourismperakmalaysia.com/place/ZV6/gunung-lang-recreational-park>
- Wani R., (29th Oct 2019). *India's Article 370 gambit has created a new arena of violence: Kashmir's apple orchards.* (2019). Retrieved April 19, 2020 from <https://qz.com/india/1737215/indias-article-370-move-sparks-kashmirs-apple-orchard-violence/>
- WestonWilliamson + Partners, (2020). Retrieved 24th January 2020 from <https://www.westonwilliamson.com/projects/colombo-mmth>

09

A REVIEW ON THE STATE STRUCTURE PLAN OF SELANGOR 2035: RADIAL ECONOMIC NUCLEUS DEVELOPMENT CONCEPT

Abdul Azeez Kadar Hamsa* , Mansor Ibrahim, Azila Sarkawi, Irina Safitri Zen, Nurul Ain Nazihah Mohd Ikbal, Nur Shahida Abdullah, and Farah Husna Mohd Nor

Department of Urban and Regional Planning, Kulliyyah of Architecture and Environmental Design, International Islamic University Malaysia

ABSTRACT

This article is a review of Selangor State Structure Plan 2035 that is in line with the preparation of the state's 5 years' development plans. This review covers all items pertaining to the whole state development strategies, policies and indicatives areas. The review also commences if there is new or alterations on national plan policies or sectoral policies, which incorporated the alterations on policies at state level. It is in a way to incorporate the change of development trend intervened. The review of Selangor State Structure Plan 2035 consists of 46 policies, 160 strategies and 25 high impact proposals.

Keyword: *structure plan, development plan, planning system, Selangor, Radial Economic Nucleus Development*

* Corresponding author: azeez@iium.edu.my

INTRODUCTION

The State Structure Plan Review is a written statement that summarizes the general policies and proposals of land of a state which includes the social, economic, physical and environmental aspects of the areas under the Local Planning Authority as stipulated from Section 7 to Subsection 11B of Town and Country Planning 1976, (Act 172). The main purpose of this paper is to review the State Structure Plan of Selangor to formulate policies, strategies and proposals that are applicable for the state until 2035 due to changes in development.

Selangor is located on the west coast of Peninsular Malaysia bordered with Perak in the north, Pahang in the east, Negeri Sembilan in the south and Straits of Malacca in the west. Selangor also known as Darul Ehsan which means "Abode of Sincerity" is one of the 13 states in Malaysia. There are 9 districts in Selangor which are Gombak, Klang, Kuala Langat, Kuala Selangor, Petaling, Sabak Bernam, Sepang, Hulu Langat and Hulu Selangor. Map 1 shows the location of the State and Map 2 shows the districts in Selangor.



Map 1 & 2: Location Plan of Selangor

METHODOLOGY

1

Stage 1: Mobilization



At this stage, the State Planning Committee (JPN) offers the directive to Selangor State Director (PLANMalaysia) to conduct a study on reviewing the Selangor State Structure Plan. Therefore, to conduct the study, the references for the Selangor State Structure Plan review are provided by the State Director Selangor (PLANMalaysia), followed by appointment of consultants.



Stage 2: Preparing Reports and Publications

2

Seven reports must be prepared for State Structure Plan. The reports are:

- Inception report
- Technical report
- Survey report
- Public participation report
- Draft State Structure Plan report
- Executive Information System Application (EIS) report and
- Selangor State Structure Plan 2035 report

In line with the preparation of the reviewing of the Selangor State Structure Plan 2035, two publicity reports were made to public:

- Publicity Report of Review of Selangor State Structure Plan 2035 survey. From this publicity, publicity report and public participation report are provided.
- Publicity Draft Review State Structure Plan 2035 followed by preparation of Publicity and Public Disclaimer Report.

3

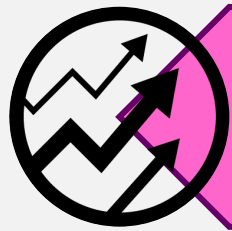
Stage 3: Structure Plan Approval



The third stage involves the approval of the Selangor State Structure Plan 2035. The processes implemented at this stage are:

- State Planning Committee (JPN) approval
- Consultation with National Physical Planning Council (MPFN)
- Final approval of the State Planning Committee (JPN)
- Consent and Reporting (MMKN)

OBJECTIVES



1. To enhance technological advancement, skilled employments in order to attract foreign and local investments to make Selangor as the main economic contributor.



2. To increase the provision of green and hi-tech facilities, infrastructure, and utilities to meet the population needs and secure the well-being of the community.



3. To solve housing and socio-economic issues of the population by creating a safe and inclusive community for enhancing the living standard of the population.



4. To establish an excellent transportation system, reliable connectivity, and seamless traffic flow in fulfilling the growing needs of the users.



5. To control and prevent the encroachment of development at ESA areas to minimize environmental degradation.



6. To establish environmental quality improvement plans for polluted area through pollution prevention program.

DEVELOPMENT THRUSTS

In line with the objectives, 5 development thrusts were identified namely:



PHYSICAL

Equipping advanced and reliable infrastructure

4

Policies

16

Strategies



TRANSPORTATION

Realizing an accessible, reliable and sustainable transportation system

7

Policies

29

Strategies



ECONOMY

Enacting dynamic, smart and prosperous economic growth .

7

Policies

29

Strategies



SOCIAL

Spurring equitable and inclusive community

12

Policies

44

Strategies



ENVIRONMENT

Sustaining the living environment

5

Policies

15

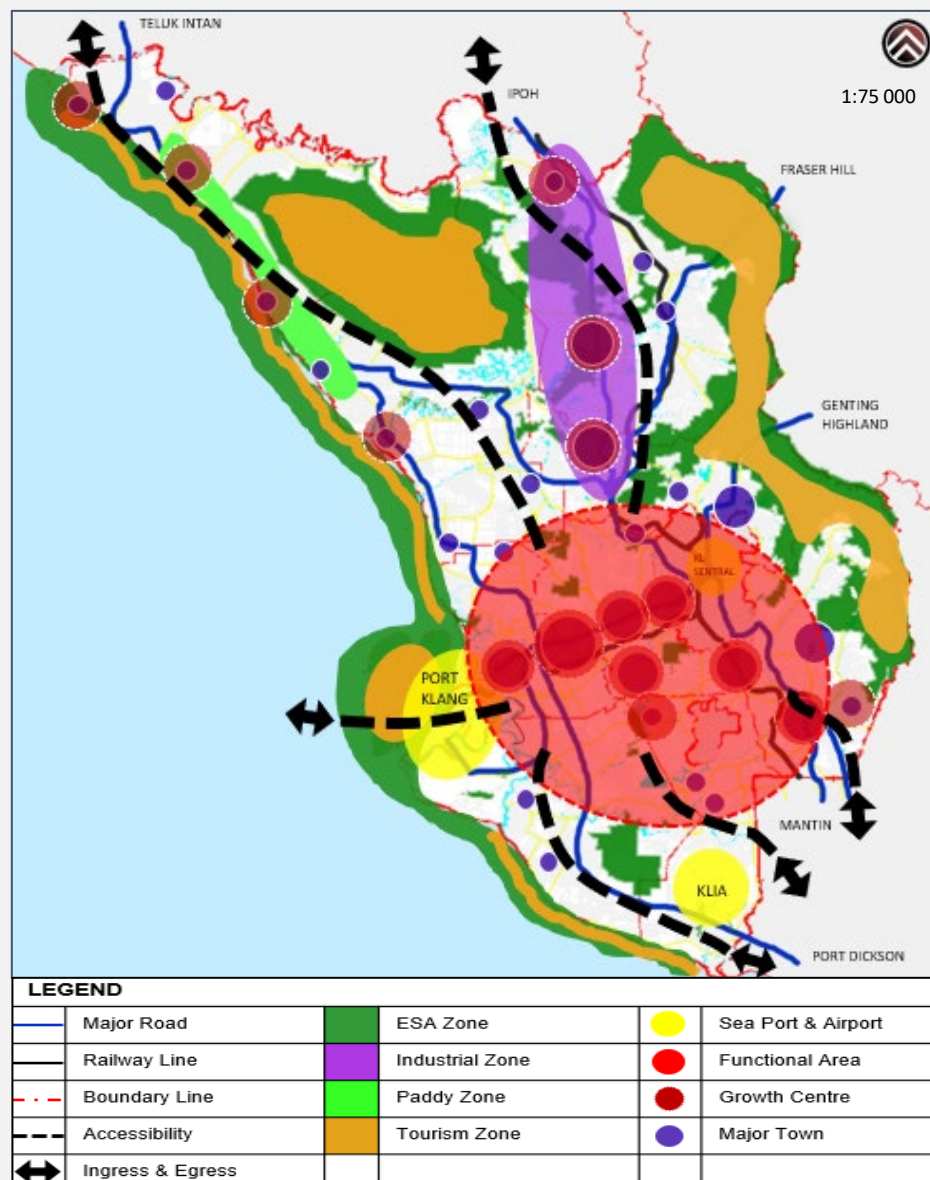
Strategies

DEVELOPMENT CONCEPT

The development concept describes the direction of the development of State Structure Plan of Selangor 2035 by presenting the strategic direction for the Selangor State development. These strategies are translated into land use and physical planning through the establishment of development concepts.

'Radial Economic Nucleus Development'

Radiated development comes from the concept of Le Corbusier and Ebenezer Howard's Garden City plan. In Selangor, Greater Kuala Lumpur (GKL) Conurbation plays a huge role for other districts to develop. The concentration for GKL involves three main aspects such as physical, economy, and social. Map 3 illustrates the development concept of Selangor.

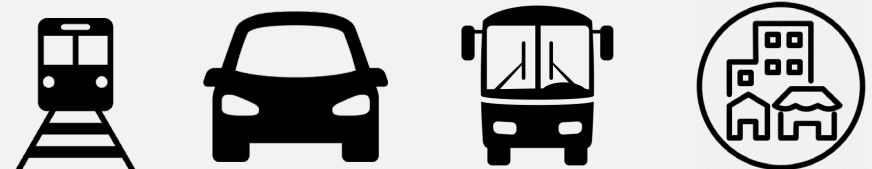
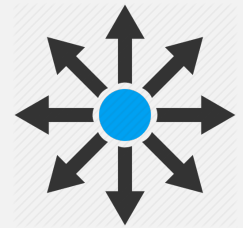


Map 3: Development Concept of Selangor State Structure Plan 2035

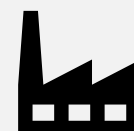


GKL acts as a pivotal hub (functional area) that involves various types of development based on three main aspects including administration, business, services, living, and working. This hub is also supported by the combination of international airport (KLIA), seaport (Port Klang), and transit center (KL Sentral).

Growth centers and major towns of Selangor in GKL are highly populated with massive built up area supported by efficient road and railway linkages. However, other towns outside GKL also have its specializations and it radiates from the functional area. Each districts has its own resources for economic growth and by 2035, it is assumed to be sustainable based on current development.



These major towns are polycentric which are related with urban hierarchy from big towns to small towns. The radial development expanded from the core conurbation are mostly in hinterland areas such as Sabak Bernam, Kuala Selangor, Kuala Langat and Hulu Selangor. It radiates through rail and road network. Even though these hinterland areas are further away from the hub, they have specific corridor which contributes to their economic growth; industrial zone, paddy zone, ESA zone, and tourism zone.



INDUSTRIAL ZONE

This zone will be developed for industry sector based on existing and proposed projects. From Rawang to Bernam Jaya, the zone is connected via road and rail transportation network and focuses on automotive industry.



PADDY ZONE

Type of soil and topography make Kuala Selangor and Sabak Bernam potential for agriculture sector especially paddy plantation. These rural areas are specifically developed by the local communities especially by farmers and fisherman at the coastal areas.



ESA ZONE

This zone involves greenery areas such as forest reserve, hilly areas, mangrove forest, wetlands and others which should be conserved and preserved.



TOURISM ZONE

Major products of ecotourism make improvement of most of ESA areas by nature-based activities. It is also located along coastal line which gives minimal impact for environment and attracts more visitors and foreign tourists.

PROJECT 1: ASEAN HEALTH HUB

ASEAN Health Hub is a project that enhances and integrates the existing health tourism in Selangor. Figure 1 shows this proposed hub.



Medical Health Tourism Council stated Malaysia healthcare tourism's compound annual growth rate has increased 17% from 2015 to 2018.

It is in conjunction with the fact that Selangor is rich with **more than 60 nature tourism products** as stated in National Eco-Tourism Plan 2025. Meanwhile, Selangor is strategically located in ASEAN Health Hub because of **Malaysia main gateway is in Selangor.**

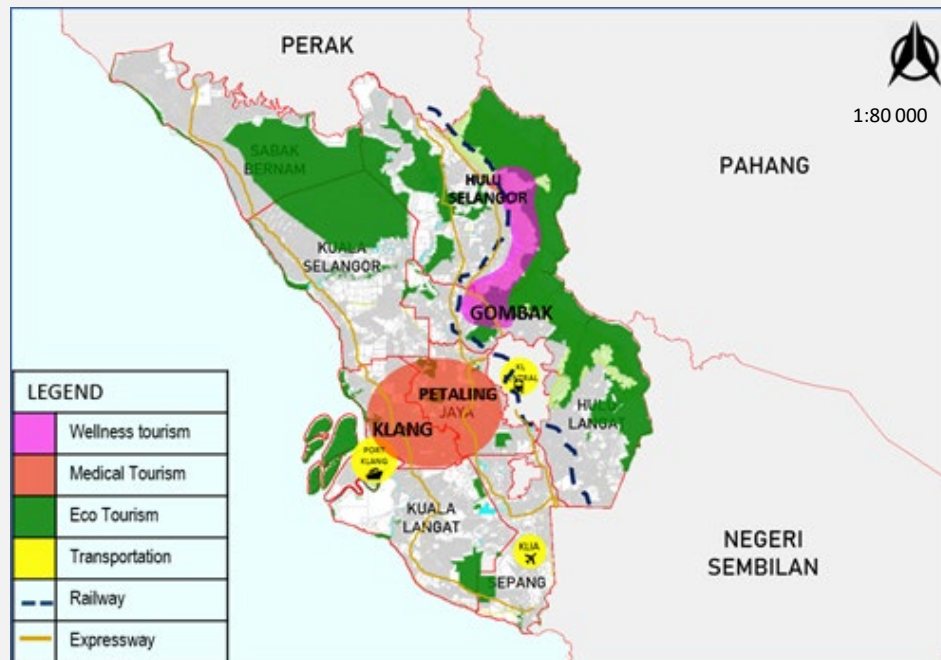
Related Policies:

- EC 1:** Strengthen Industrial Sector to Increase the Revenue of Selangor in Manufacturing Sector
- EC 10:** Strengthen Health Tourism Products as a Hub Health Tourism Destination in ASEAN to Increase Tourist Arrivals and Economic Growth
- EC 12:** Strengthen Business Tourism Products as International Destination for Foreign Investment
- SC 10:** Provide Adequate, Efficient, Safe, Usable and Accessible Public Facilities to Improve the Livelihood of the Community.



Figure 1: Proposed ASEAN Health Hub
(Source: Britneff, 2019)

Map 4 depicts the proposed location for ASEAN Health Hub in Selangor.



Map 4: The proposed location for ASEAN Health Hub

PROJECT IMPACT



RM8 billion
SELANGOR'S GDP



RM2 million
TOURISTS ARRIVAL



INCREASE
JOB EMPLOYMENT

PROJECT 2: HULU SELANGOR AUTOMOTIVE BELT



MITI highlighted Hulu Selangor as a **new automotive outgrowth**



Important hub for the development of national automotive assembly plant in Selangor.



MIDA highlighted Hulu Selangor as a **National Automotive Hub**, alongside Proton City, Tanjung Malim



GOAL: Selangor, the leading, sustainable **Smart City in ASEAN.**

Related Policies:

- EC 1:** Strengthen Industrial Sector to Increase the Revenue of Selangor in Manufacturing Sector
- SC 2:** Competitive and Viable Human Capital Development towards Sustaining the State

CASE STUDY: VOLKSWAGEN TRANSPARENT FACTORY AND AUSTRALIA'S AUTOMOTIVE HUB



Figure 2: Volkswagen Transparent Factory
(Source: Carsten K., 2020)

The Volkswagen plant in Dresden has developed in the Centre of Future Mobility, an innovative showcase of e-mobility and digitalization of the Volkswagen brand. Figure 2 shows the factory. With its "Think Blue. Factory." program, the Volkswagen brand has set itself clear targets for the environmentally sustainable positioning of all its plants. .

The Volkswagen brand already met the environmental targets it had set for 2018 in 2016, which is to reduce the environmental impact of all Volkswagen plants by 25%.

PROJECT COMPONENT

- Modern Architectural Design Factory Building, which can be a tourism product
- Research and Development Centre specifically for Next-Generation Vehicle (NxGV) and Energy-Efficient Vehicles (EEVs)
- Comprehensive Automotive Ecosystem

PROJECT IMPACT



RM30 billion
SELANGOR'S GDP



RM10.05 billion
FOREIGN AND LOCAL INVESTMENTS



710,000
JOB EMPLOYMENT

PROJECT 3: AGRO-LOGISTICS AND MARKET INTEGRATION HUB (ALMIH)

The proposed on Agro-Logistics and Market Integration Hub is to cater for the problems on decreasing agricultural production and plantation areas throughout the years. It is also to maintain and increase the current productions for future supply.



It is located in the district of Kuala Selangor which acts as a centre to collect all the agricultural products. It is located adjacent to Klang which will ease the delivery of the goods for export. It acts as a central collection and distribution point for the local and national market of agricultural products in Selangor.

Related Policies:

EC 7: Strengthen the Local Product and Sufficient Business Space Offered in Rural and Sub-urban Areas

SC 2: Competitive and Viable Human Capital Development towards Sustaining the State

EV 1: Control and Monitor All Form of Environmental Quality Index Allowed by the Environmental Standards



Figure 3: Warehouse and logistic services (Source: Corporate News, 2019)



Figure 4: Food Processing and packaging centre (Source: dreamstime.com, 2020)

PROJECT COMPONENTS

- It comprises of warehouse, food processing and packaging centre, and logistic service. Figure 3 & 4 show these centres.
- The warehouse will allow stock to be transported in bulk quantities that will reduce the transportation cost. There will be various warehousing services.
- It is to achieve the economics of large-scale production.
- Meanwhile the logistic services is to create a supply chain from the point of production to the customer or to export.

PROJECT IMPACT



RM14.9 billion
SELANGOR'S GDP



RM5.3 billion
VALUE ADDED



4,000
JOB EMPLOYMENT

PROJECT 4: 72 HOURS SELANGOR

Selangor known as a **second highest number of tourist agency in Malaysia** with a total number 942 agencies and 1930 tourist guides.



Unfortunately, there was a **decline in the number of occupancy rate 3.1% in 2018**, due to high number of single day trip stay. Therefore, this proposal aims to sustain jobs of local employees and boost the economic growth of Selangor.

Related Policies:

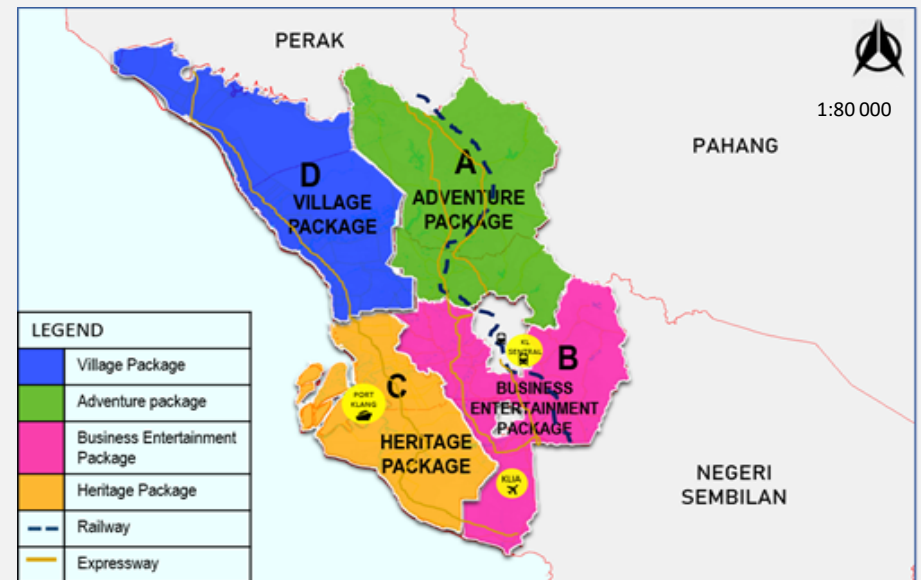
EC 7: Strengthen the Local Product and Sufficient Business Space Offered in Rural And Sub-urban Areas

EC 9: Improve and Manage the Historical Buildings and Cultural Heritage to Promote the Existing Heritage Values

EC 11: Establish the Integration of Coastal Tourism, Agro-tourism and Homestay Areas as Potential Tourism Destination Enhancing the Well-being of the Local Community

PROJECT LOCATION

The location of this project is selected based on National Physical Plan 3 development promotion zones such as Kuala Kubu Baru, Sabak Bernam, and Kuala Selangor. While other locations are concentrated in national conurbation area such as Gombak, Hulu Langat, Sepang Petaling Kuala Langat and Klang. 4 zones of 72-Hours Selangor Package are shown in Map 5.



Map 5: 72 –Hours Selangor Package is divided into 4 zone with a different categories and activities.

PROJECT IMPACT



INCREASE
SELANGOR'S GDP



INCREASE
TOURISTS ARRIVAL



SUSTAIN
JOB EMPLOYMENT

PROJECT 5: APPLICATION OF WASTE TO ENERGY IN ALL DISTRICTS

By 2030,

most of the sanitary field in Selangor **will reach its lifespan**. The capacity is limited to cater for the demand of solid waste in the future.

Related Policies:

PH 1: Provide Adequate Infrastructure System in Every District to Cater for the Future Demand

EV 1: Control and Monitor All Forms of Environmental Quality Index Allowed by the Environmental Standards

Figure 5 shows the proposed waste process centre that will be implemented in Selangor.



Figure 5: Proposed Waste Process Centre (Source: Bioenergy International, 2019)

PROJECT 6: APPLICATION OF SOLAR FARM IN SABAK BERNAM AND HULU SELANGOR

Based on the projection, **by 2035**, there will be a high demand on electrical supply. Solar farm is the best way to reduce carbon emissions as solar farm distribute clean energy. It is a renewable energy that can be harness in all areas around the world as long as there are sunlight. It has low maintenance cost.

Related Policies:

PH 1: Provide Adequate Infrastructure System in Every District to Cater for the Future Demand

PH 4: Application of Renewable and Green Technology in Water, Electricity, Sewerage and Solid Waste System towards Sustainable Approach

The proposed solar farm is depicted in Figure 6.



Figure 6: Proposed Solar Farm (Source: Giles, 2017)

PROJECT 7: SUSTAINABLE URBAN DRAINAGE SYSTEMS (SuDS)

This project is planned **to cater for flood issues**. Flood occurs due to **weak drainage system** reported in most of the cases located in the high saturated areas compared to other factors that lead to flood events. It is also **to cater for insufficient water supply caused by non-revenue water loss**.

Related Policies:

PH 3: Ensure Proper Drainage and Irrigation System To Reduce Flood Problems In Urban Areas

PH 4: Application of Renewable And Green Technology In Water, Electricity, Sewerage And Solid Waste System as part of Sustainable Approach

CASE STUDY: COPENHAGEN, DENMARK

SuDS is not just about drainage, it is primarily about managing water quantity, water quality as well as providing biodiversity and amenity.

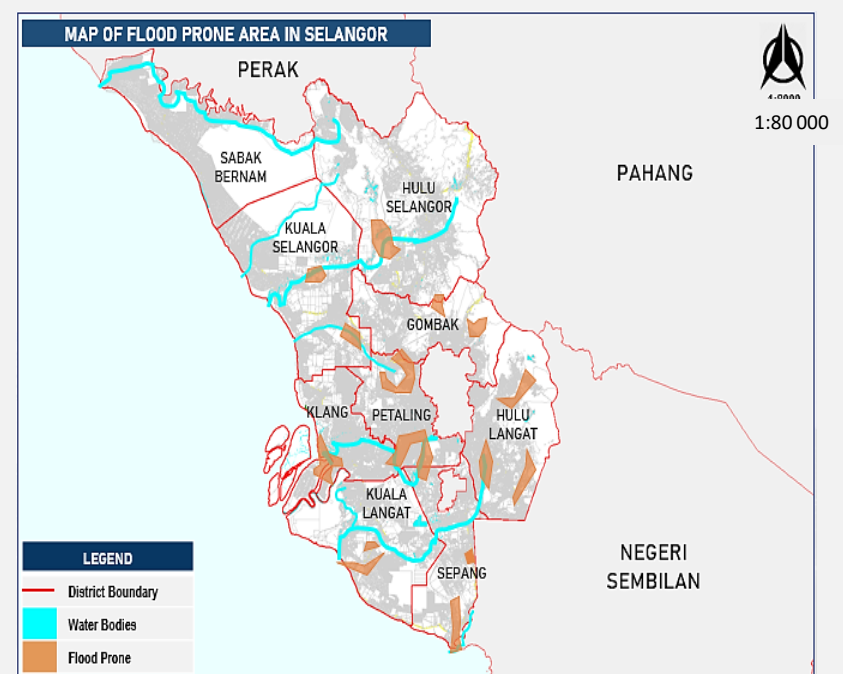
The application of SuDS is through a man-made structure, where during normal days it can be used for recreation and during heavy rain, it becomes a detention pond.

Figure 7 and 8 illustrates the application of SUDs at a recreational area in Copenhagen, Denmark.



Figure 7 and 8: Application of SUDs in Copenhagen, Denmark (Source: Cathcart-Keys, 2016)

The project will be implemented in all districts in Selangor but mainly focuses on the flood prone areas which is illustrated in Map 6.



Map 6: Flood Prone Area in Selangor

PROJECT 8: INTEGRATED UNDERGROUND FACILITIES (IUF)

The proposal of Integrated Underground Facilities is introduced because of the problem of inadequate supply of public facilities. This project will be implemented in all districts with high demand for public facilities and lack of land areas namely district of Petaling, Gombak, Klang, and Hulu Langat.

Related Policies:

PH 1: Provide Adequate Infrastructure System in Every District to Cater for the Future Demand

SC 9: Provide Integrated Public Facilities in An area to Minimize the Land Usage

SC 10: Provide Adequate, Efficient, Safe, Usable and Accessible Public Facilities to Improve the Livelihood of the Community

CASE STUDY: HELSINKI UNDERGROUND FACILITIES, FINLAND

Helsinki's underground public facilities construction started in the 1980s and continues until this day. This underground spaces is connected by several types of transit, pedestrian, and private vehicles. Figure 9, 10, 11 and 12 show the underground facilities in Helsinki, Finland.



Figure 9: Itakeskus Swimming Hall (Source: Helsinki Tourist Information, 2019)

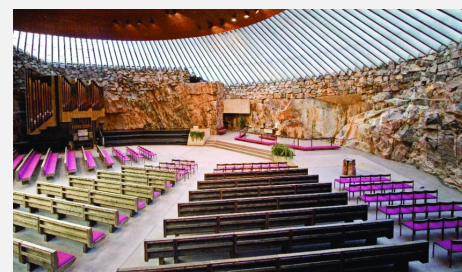


Figure 10: Tempeliaukio "Rock" Church (Source: Vahaaho, 2016)



Figure 11: Formula Center Helsinki (Source: Helsinki Tourist Information, 2019)



Figure 12: Leikkiluola indoor playground (Source: Helsinki Tourist Information, 2019)

PROJECT COMPONENT



Accessible by transit (LRT, MRT, KTM), bus, private vehicles, and also walking.



Consists of several high demand public facilities.



Supported by universal design to ease the movements of people with disabilities (PWD)



Supported by other supporting facilities such as toilets, and cafeteria.

PROJECT 9: CONGREGATE MOBILE FACILITIES HUB

Mobile facilities are facilities which move from one location to another, serving large number of communities. This congregate mobile facilities hub was proposed to serve the rural community that has difficulties in accessing public facilities. The facilities hub will be located in Hulu Selangor, Kuala Selangor and Kuala Langat.

Related Policies:

SC 1: Reduce The Income Disparity Between Population In Urban And Rural Area And Towards Realizing Zero Poverty

SC 4: Realise A Safe, Prosperous And Harmonious Social Life State

SC 5: Establish Inclusive Social Well-being To Ensure Better Life For The Aging Population

SC 10: Provide Adequate, Efficient, Safe, Usable And Accessible Public Facilities to Improve the Livelihood of The Community

SC 12: Improve The Management And Direction Of Educational, Health, Safety And Welfare Facilities To Ensure A Safe And Healthy Society

PROJECT COMPONENT

Mobile Facilities

Mobile Facilities will be in the form of a van that brings the basic services of public facilities to the community. Figure 13 and 14 portray the examples of mobile facilities that can be implemented in rural areas in Selangor.



Figure 13: Mobile Dialysis Unit (Source: Odulair Mobile, 2015)



Figure 14: Mobile Clinic (Source: Mathews Specialty Vehicles, 2018)

Mobile Facilities Hub

Figure 15 outlines the proposed mobile facilities hub which act as a one stop centre for all the mobile facilities. It also functions as a service centre and workshop for the mobile facilities van if any maintenances are needed.

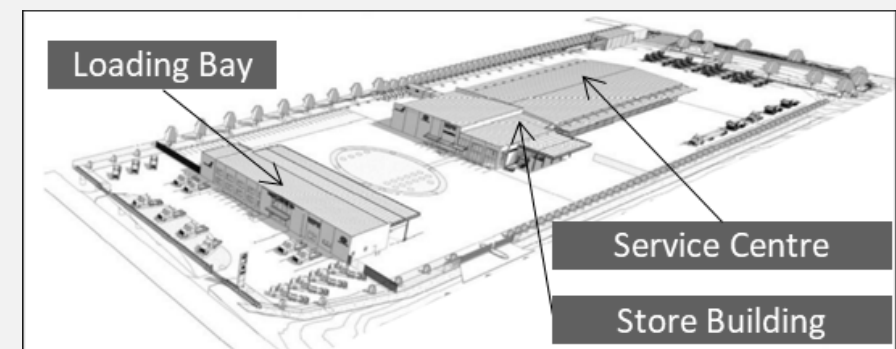


Figure 15: Proposed Mobile Facilities Hub (Source: Winkless, 2019)

CONCLUSIONS

In conclusion, based on the review, there are some amendments to the existing Selangor Structure Plan 2035. It is important to review the State Structure Plan to ensure the policies at state-level incorporate with the changes of development trend and aware of new alteration on national plan policies or sectoral policies. This is in addition to the process in which the State Structure Plan review is constructed. Therefore, the Selangor development strategy basically integrates with the vital components enacting dynamic, smart and prosperous economic growth. Realizing an accessible reliable and sustainable transport system, spurring equitable and inclusive community, sustaining the living environment and equipping advanced and reliable infrastructure. Hence, a comprehensive planning strategy could be attained in order to comply with Selangor's vision of becoming a self-sustained economic, social and environmental state in the future while fulfilling the goal of the Selangor Structure Plan 2035 which is empowering Selangor as a self-sustained State by 2035.

ACKNOWLEDGEMENTS

This project was carried out by a group of 3rd Year students (Planning Studio 5), Semester 1, 2019-2020. The project was to prepare a Selangor State Structure Plan. This studio project were under the supervision of Assoc. Prof. Dr. Abdul Azeez Kadar Hamsa, Prof TPr Dato' Dr. Mansor Ibrahim, Assoc. Prof Dr Azila Sarkawin and Asst Prof Dr Irina Safitri Zen. The authors would like to extend their appreciation to PLANMalaysia Selangor for their cooperation.

REFERENCES

- Bioenergy International (2019). *Consortium to construct four waste-to-energy plants in Moscow region*. Retrieved on 16th May 2020 from <https://bioenergyinternational.com/heat-power/consortium-to-build-four-waste-to-energy-plants-in-moscow>
- Britneff B. (2019). *Ontario investing up to \$75M in Orleans Health Hub, facility expected to open summer 2021*. Retrieved on 15th April 2020 from <https://globalnews.ca/news/5787900/ontario-orleans-health-hub-investment/>
- Carsten K. (2020). *Volkswagen Sachsen GmbH The Transparent Factory Dresden*. Retrieved on 15th April 2020 from <https://www.volkswagen-newsroom.com/en/volkswagen-sachsen-gmbh-the-transparent-factory-dresden-5906>
- Cathcart-Keays A. (2016). *Why Copenhagen Is Building Parks That Can Turn Into Ponds*. CityLab. Retrieved on 12th April 2020 from <https://www.citylab.com/design/2016/01/copenhagen-parks-ponds-climate-change-community-engagement/426618/>
- Corporate News. (2019). *Growth spurs supply-chain logistics investments*. The Star. Retrieved on 24th January 2020 from <https://www.thestar.com.my/business/business-news/2019/09/26/growth-spurs-supply-chain-logistics-investments>
- Dreamstime.com (2020). *Modern factory in the agro-food sector. Futuristic, floor*. Retrieved on 18th May 2020 from <https://www.dreamstime.com/modern-factory-agro-food-sector-modern-factory-agro-food-sector-fruit-image136828406>
- Giles F. (2017). *Are There Bright Futures in Solar Farming?* Growing Produce. Retrieved on 17th May 2020 from <https://www.growingproduce.com/citrus/are-there-bright-futures-in-solar-farming/>
- Helsinki Tourist Information. (2019). *Underground Helsinki*. MyHelsinki. Retrieved on 16th May 2020 from <https://www.myhelsinki.fi/en/see-and-do/underground-helsinki>
- Jabatan Perancang Bandar & Desa Negeri Selangor (2017). *Rancangan Struktur Negeri Selangor 2035*. Shah Alam, Selangor.
- Laws of Malaysia. Act 172. *Town and Country Planning Act 1976*
- Matthews Specialty Vehicles (2018). *Mobile Medical Clinic*. Retrieved on 16th May 2020 from <http://www.msvehicles.com/vehicles/mobile-medical/>
- Ministry of Tourism, Arts and Culture Malaysia. *National Ecotourism Plan 2016-2025*. Putrajaya, Malaysia
- Federal Department of Town and Country Planning (2016). *National Physical Plan 3*. Kuala Lumpur.
- Odulair (2015). *Mobile Dialysis Truck*. Retrieved on 16th May 2020 from <http://www.odulairmobileclinics.com/2015/02/mobile-dialysis-truck.html>
- Vähäaho, I. (2016). *Development for urban underground space in Helsinki*. Energy Procedia, 96, pp. 824-832.
- Winkless P. (2019) *NEW Truck Centre WA Forrestfield Branch Update*. Truck Centre WA Pty Ltd. Retrieved on 3rd May 2020 from <https://www.tcwa.com.au/2020/02/26/forrestfield/>

NOTES TO CONTRIBUTORS AND GUIDELINES FOR MANUSCRIPT SUBMISSION

INTRODUCTION

The **Design Ideals Journal** of the Kulliyah of Architecture and Environmental Design, IIUM is dedicated to creative output, product and proposal of ideas and designs related to theory, experiments, research, development and applications of the ideas and practices of the built environment professions in Malaysia and elsewhere.

The objective of the journal is to promote the creativity of the built environment profession through critique, dialogue and exchange of views. Design Ideals will welcome any news, feature articles, or peer-reviewed proposals (including book and article reviews, product design review, etc.) for publication. All articles should be original work by the authors. **Articles, views and features will not be taken to be the official view of the Kulliyah of Architecture and Environmental Design (KAED), and IIUM unless it carries the name of KAED, IIUM as the author.** This is to encourage open discussion on diverse issues, critique and opinion for the advancement of built environment practice.

GUIDELINES FOR MANUSCRIPT SUBMISSION

The manuscript should be emailed to designideals@iium.edu.my. The manuscript should ideally be in the format according to the template as specified below within the range of 8-10 pages long. Each manuscript should have a title page, an abstract of about 300 words and about 5 keywords. The title page should contain the title, full name(s), designation(s), organizational affiliation(s), a contact address, and an email address. All manuscripts are received on the understanding that they are not under concurrent consideration at another journal. Exclusive copyright of accepted manuscripts shall be assigned to the Publisher (i.e. KAED, IIUM or IIUM Press). This is an e-journal and open source journal.

Manuscripts will be acknowledged upon receipt. Only selected (preferred) manuscripts will be **reviewed by two (or three) referees** in addition to the editors. The editorial decision will normally be made within **two to six months**, but circumstances beyond control occasionally dictate a longer cycle. If authors are invited to prepare a revision for further consideration, the major issues to be resolved will be outlined and will be forwarded to them as quickly as possible. Authors of accepted articles will be requested to provide a digital copy of the manuscript, preferably in Microsoft Word and PowerPoint template to the Publisher. The template of manuscript for your reference is as follows;

01

PROPOSED TITLE

(Font Arial Bold 18pt. Title must not exceed 15 words.)

Author's name 1, Author's name 2 (Font Arial Regular 12 pt)
Affiliation 1. Affiliation 2

ABSTRACT - FONT ARIAL BOLD 14pt

Content not exceed 300 words, Main body of text font: Arial, Font size: 10pt, Alignment: justified, Spacing 1.0

Keyword:

* Corresponding author

RESEARCH / PROJECT INTRODUCTION (FONT ARIAL BOLD CAPITAL 14pt)

Corresponding and co authors name must be in full e.g. Mansor Ibrahim with no title and salutations, but includes the institution of the authors. Main body of text font: Arial, Font size: 10pt, Alignment: justified, Spacing 1.0. Minimum page per submission is 5 – 10 pages including photos and other illustrations. The photos and illustration must be original and clear with high resolution (dpi 300) or otherwise must be properly cited the original sources.

CONCEPTUAL PROCESS, PROCEDURE AND SCHEMATIC

METHOD / PROCEDURE

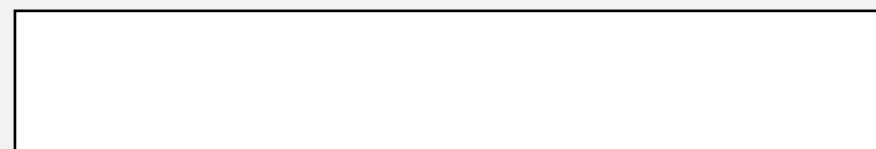


Figure 1: Font ARIAL 8pt
(Source: Author/Website, Year)

RESEARCH / PROJECT FINDINGS (FONT ARIAL BOLD 14pt)

This section consist of proposed outcome / design / prototype / masterplan and detail illustration

SUB-HEADING 1 - EXAMPLE : PROPOSED DESIGN (FONT ARIAL BOLD 12pt)

SUB-HEADING 2 - EXAMPLE : DETAIL (FONT ARIAL BOLD 12pt)

CONCLUSION

REFERENCES (APA STYLE)

- Mitchell, J.A., Thomson, M., & Coyne, R.P. (2017). *A guide to citation*. London, England: My Publisher.
- Troy, B.N. (2015). APA citation rules. In S.T, Williams (Ed.). *A guide to citation rules* (2nd ed., pp. 50-95). New York, NY: Publishers.
- Troy, B.N. (2015). APA citation rules. In S.T, Williams (Ed.). *A guide to citation rules* (2nded., pp. 50-95). Retrieved from <https://www.mendeley.com/reference>

Table 1: Font ARIAL 8 pt

A	B	C

SUB-HEADING 3 - EXAMPLE : PROTOTYPE (FONT ARIAL BOLD 12pt)

SUB-HEADING 4 - EXAMPLE : MASTERPLAN (FONT ARIAL BOLD 12pt)

ACKNOWLEDGEMENT

ETHICS STATEMENTS, DUTY OF AUTHORS, REVIEWERS & EDITORS

ETHIC STATEMENTS

The **Design Ideals Journal** of the Kulliyyah of Architecture and Environmental Design (KAED), IIUM is a peer-reviewed journal. This statement spells out the ethical behavior of all parties involved in the act of publishing an article for this journal, i.e. the author, the reviewers, the chief editor and editors, and the publisher. This statement is based on COPE's Best Practice Guidelines for Journal Editors. URL: http://publicationethics.org/files/u2/Best_Practice.pdf

DUTIES OF AUTHORS

Reporting Standards

Authors of original research should present an accurate account of the work done as well as an objective discussion of its significance. Data of the research should be represented accurately in the article. An article should contain sufficient detail and references to permit others to replicate the work. Fraudulent or knowingly inaccurate statements constitute unethical behaviour and are unacceptable.

Data Access and Retention

Authors may be asked to provide the raw data and design in connection with an article submitted for editorial review, and should be prepared to provide public access to such, if practicable, and should, in any event, be prepared to retain such data for a reasonable time after publication.

Originality and Plagiarism

Authors should ensure that they have written entirely original works, and if the authors have used the work and/or words of others this must be appropriately cited or quoted. Such quotations and citations must be listed in the Reference at the end of the article.

Multiple Publication

An author should not in general publish manuscripts describing essentially the same research in more than one journal or primary publication. Submitting the same manuscript to more than one journal concurrently constitutes unethical publishing behavior and is unacceptable.

Acknowledgment of Sources

Proper acknowledgment of the work of others must always be given. Authors should cite publications that have been influential in determining the nature of the reported work.

Authorship of the Paper

Authorship should be limited to those who have made a significant contribution to the conception, design, execution, or interpretation of the study, and should be listed as co-authors. Others who have participated in certain substantive aspects of the research project, they should be acknowledged or listed as contributors.

Corresponding Author

The corresponding author is the author responsible for communicating with the journal for publication. The corresponding author should ensure that all appropriate co-authors and no inappropriate co-authors are included in the paper. All co-authors have seen and approved the final version of the paper and have agreed to its submission for publication.

Acknowledgment of Funding Sources

Sources of funding (if any) for the research reported in the article should be duly acknowledged at the end of the article.

Disclosure and Conflicts of Interest

All authors should disclose in their manuscript any financial or other substantive conflicts of interest that might be construed to influence the results or interpretation of their manuscript.

Fundamental errors in published works

When an author discovers a significant error or inaccuracy in his/her published work, it is the author's obligation to promptly notify the journal editor or publisher and cooperate with the editor to retract or correct the paper.

DUTIES OF REVIEWERS**Contribution of Peer Review**

Peer review assists the chief editor and the editorial board in making editorial decisions while editorial communications with the author may also assist the author in improving the paper.

Unqualified to Review or Promptness

Any reviewer who feels unqualified to review the assigned manuscript or unable to provide a prompt review should notify the editor and excuse himself/herself from the review process.

Confidentiality

Manuscripts received for review must be treated as confidential documents. They must not be shown to or discussed with, others except as authorized by the chief editor. Privileged information or ideas obtained through peer review must be kept confidential and not used for personal advantage.

Standards of Objectivity

Reviews should be conducted objectively. There shall be no personal criticism of the author. Reviewers should express their views clearly with supporting arguments.

Acknowledgment of Sources

Reviewers should identify relevant published work that has not been cited by the authors. Any statement that had been previously reported elsewhere should be accompanied by the relevant citation. A reviewer should also call to the chief editor's attention any substantial similarity or overlap between the manuscript under consideration and any other published paper of which they have personal knowledge.

Conflict of Interest

Reviewers should decline to review manuscripts in which they have conflicts of interest resulting from competitive, collaborative, or other relationships or connections with any of the authors.

DUTIES OF EDITORS

The decision on the Publication of Articles

The chief editor of **the Design Ideals Journal** is responsible for deciding which of the articles submitted to the journal should be published. The chief editor may be guided by the policies of the journal's editorial board subjected to such legal requirements regarding libel, copyright infringement and plagiarism. The chief editor may confer with other editors or reviewers in making this decision.

Fair play

Manuscripts shall be evaluated solely on their intellectual merit.

Confidentiality

The chief editor/editors and any editorial staff must not disclose any information about a submitted manuscript to anyone other than the corresponding author, reviewers, potential reviewers, other editorial advisers, and the publisher.

Disclosure and conflicts of interest

Unpublished materials disclosed in a submitted manuscript must not be used by anyone who has a view of the manuscript while handling it in his or her research without the express written consent of the author.