



Restoration and Revitalization of Klang River @ Bandar Diraja Klang

Osman Mohd Tahir

Rivers are sensitive landscape areas. They are lifelines in all kind of aspects not only to human being but also other living things. River is dynamic, diverse and has complex ecosystem. It has always been a focus for numerous human activities since the early times. The rivers and their floor plains are normally used for many purposes. However, rapid increase in urban population and the growing demand of water and land for development have led to the degradation of many river ecosystems. Numerous modifications have been made to the rivers for adapting human needs and wants. Hence, the water quality and the habitats along the river corridor and in the river courses have been seriously disturbed and modified in the name of development. There were instances that priority was not given as the river is covered to give way to other activities and growth. Many of these modifications have degraded the potential of the river to support its basic functions. Hence, this chapter focuses on the restoration and revitalization of Klang River that runs through the Klang

town which is also known as Bandar DiRaja Klang (Klang Royale Town).

This assignment is undertaken by the landscape architecture student in their sensitive landscape area studio project. For years the development of the Klang town has been very rapid, resulting in weak and forgotten connection between humans and the river. This phenomenon creates a lot of issues such as water pollution, nature degradation and the abandonment of the river corridor. Hence, the ten projects have been carefully selected through rigorous studio critique and jury selection procedures. The projects highlighted various appealing ideas with diverse interesting concept and design strategies in tackling these issues. Furthermore most of the projects engage with sustainable and environmentally green solutions in order to restore and revitalise the Klang River to its glory.





Jury Review

Pulse of the city

-Muhammad Hijaz Sanusi

The student has done a good job in analysing and synthesizing the site, except that he left out the historical part of the river. The idea of making the river as a connector and the concept of "bringing back the clean water, greenery and people to the river" is vital as Klang town now is facing urban degradation. Taking into consideration of public participation in water conservation is also a good approach as it aligns with the Local Agenda 21. The proposal of dividing the area into 3 zones is a brilliant attempt but there are few points needing further consideration which are:

1. creation of islands in the middle of the river (Zone 3) since the width of the river is the constraint.
2. the missing historical values the old port of Klang-Pengkalan Batu at Zone 2.

Overall, it is a good and informative presentation.

-Norliza Mohd Yusof

The site issues are addressed well in the study but the most challenging is to transform the issues into development ideas. Here is where the designer could improve in providing non-typical solution that is perceived as new ideas of problem solving design approach.

Convergence of All

-Muhammad Hijaz Sanusi

It is an interesting project as it tries to relate the existing of the river with the image of Klang as a Royal Town. The presentation shows that the student understands the site and the issues arise concerning the river and its surrounding. It is well explained by emphasizing the importance of revitalizing the history and culture of the area by not leaving out the importance of restoration of the river (except for the location of the Gedung Raja Abdullah which is wrongly situated). By proposing more softscape instead of hardscape is a good design and most welcome approach as Klang town truly needs that badly.

-Norliza Mohd Yusof

The proposal analyses the basic issues of the site but in terms of transforming those issues into physical development, the concept ideas seems to be typical solution, and the in-depth study is seen lacking. It is advisable to provide more thorough study, in order to create profound design ideas.

Interweaving Biota

-Muhammad Hijaz Sanusi

It is a good attempt of this project to combined nature and urban in order to revitalize the river especially we know that river is one of the important asset of a city. Particularly Klang river which is been haunted by continuous pollution issue. The analysis should focus more on the history of the river as it is the soul of the area which can be explored and can become the attraction of the area. It is a straight forward design but comprehensive to benefit all folks of life.

-Norliza Mohd Yusof

The proposal describes the full sequence of the analysis, synthesis, river rejuvenation program and landscape improvement for Sg. Klang. The design idea aims the symbiosis of 'natural' and 'urban' would be the best solution to remodeling Sg. Klang as a new creation for a riverfront development. In this proposal, the explanation regarding the landscape improvement (natural solutions for sensitive area) catches the intention. With this approach, the landscape improvement program clearly transforms into design schemes, in all perspectives and illustration. In general, it provides an excellence graphic communication and presented in a clean and clear manner, as it speaks the designer's thought. The proposal presenting its study and design consideration in a clear sequence and illustrated in all design ideas.



Green Dissemination

-Muhammad Hijaz Sanusi

The idea of integrating eco-edu-river-land is good and commendable. A very good site analysis study has been conducted where the student manages to derived a clear project goal and objective that can contribute to the river revitalization in the Klang town. It is a good approach by creating more green spaces to attract and gather more people to the river as Klang is lack of open space. Overall, it is a well design planning process.

-Norliza Mohd Yusof

Green dissemination is the proposal concept idea, and it is explained that the designer aims to broadcast a message to the public. Naturally, the idea has good intent but upon close review throughout the presentation materials the reviewer finds the concept vague. The master plan and illustrations are beautifully drawn but the curves and forms would need more explanations in relating to the conceptual idea. Graphic presentation is fine and readable. The proposal could improve by highlighting the process and approach of the design intent in every illustration made for the project.

Symbiosis

-Muhammad Hijaz Sanusi

The student has done a good job in analyzing elements like heritage, movement, native and culture but perhaps much more emphasis need to be given to the project goal which did not relate much to the analysis. Equal emphasis should be given to the design process too as it is not so clear. The project concept towards symbiosis which concentrated more on the river seems like it is neglecting the other issues that were brought up in the analysis stage. The design strategy does not relate with the symbiosis concept much. The practicality of the floating island need to be studied in detail as it will trap a lots of rubbish that flow in the river and perhaps another method can be taken into consideration.

-Norliza Mohd Yusof

The word 'symbiosis' specified in the proposal is promoting an interaction between two or more biological species. An earlier study highlighted 4 main factors, namely i) heritage preservation, ii) nature conservation, iii) accessibility and, iv) culture of Klang Town. In general, the sequence of proposals lack thorough explanation. The concept of 'symbiosis' seems

'indistinct' especially at the end of the presentation. It is advisable to 'carry' the concept thoroughly especially in transforming the concept vocabulary into the physical design, be it master plan or detailing.

Green Inward Culturalisation

-Muhammad Hijaz Sanusi

From the presentation it shows that the student understands the site very well and has done a good job in analyzing the site by producing a comprehensive proposal involving good ideas, design strategies and a design programme. However, it missed to highlight the important elements which are the project goal and concept. Despite these slack, the incorporation of a Landscape Management Plan such as the long term planning of planting and activities for the area as part of the design is process is a positive action and most welcomed. The presentation is well explained and displayed.

-Norliza Mohd Yusof

The proposal emphasises on rehabilitation of Sg. Klang via three aspects which are living connectors, cultural enrichment and blue corridors. Beside those aspects, the design strategy also considers water treatment, tropical river city and contextual complementary. These aspects together are vital to the rehabilitation of the river, but, apparently the design approach is perceived as generating a typical design solution. This is analysed through the design components proposed for the project site. In this review, we are looking at practical solution and strong sequence of design approach that were taken into consideration for the rehabilitation effort to Sg. Klang. However, the graphic communication speaks the idea but the content is still insufficient to promote to designer's proposal. In other word, the design objective is unachievable. It is advisable that the designer look into the design content versus the concept ideas and site issues.

Bridging Royal + Nature

-Muhammad Hijaz Sanusi

The student has done a thorough study on the analysis which is well explained in its synthesis and issue. A very good design process and approach of using Royale

and Nature together as the concept. It is also a creative move by adapting the Sultan crown as a motive in the landscape design further to create a vertical landscape at the historical Kota Bridge is a bold action. The selection of plants that relates to the overall design was well explained. As a whole, the project is well presented.

-Norliza Mohd Yusof

The study focuses on an effort of marrying both significant aspects of royal and nature as a design concept. Reviewing the presentation boards, it is a challenge to marry both of this aspect and thus the final ending were just presenting the transformation of "keris" into design motives and other common detailing we had seen at ground. The designer's intelligence is better challenged in creating more interesting design analogy rather than literal thinking.

The Connection of Life

-Muhammad Hijaz Sanusi

A good site analysis but more elements at the site can be observed like the existing vegetation, linkages and history. The issues at the site are well explained. The design process and design strategy are clearly presented and commendable.

-Norliza Mohd Yusof

The study is considered a "surface" study in which it lacks the analytical findings and design ideas. Even though, there are linkages and connectors designed between places but the ideas are 'typical' design approach. In-depth study and creativity are needed in order to create more profound design ideas.

Didactic Room for River

-Norliza Mohd Yusof

A thorough study made to the project site, and explicit explanation made via statements, design graphic, as well as programs and events planned for the place. The proposal addresses tangible and intangible solution to the redevelopment of Sg.Klang. The proposal also touches on physical development and social aspects of the community. In a physical (tangible) design approach, the design addresses the basic main factors of each sub-areas (rooms), i.e. riparian (natural design solution) used

for water quality. The social (intangible) approach addresses the community needs and demands of outdoor spaces. Recognition shall be given to this study as it also highlighted the space function, the design that captured site problems and issues, the social needs of spaces for recreation activities as well as events lined up throughout the year to enlighten the designed spaces to fit the function. Therefore, this proposal presents a comprehensive study for rejuvenating the Klang Town through its river as well as sustaining the design ideas via programs and events. In general, the graphic communication is well arranged, and more importantly, successful in creating interesting readings to a reviewer. A comprehensive study is evident indeed.

Healing with Nature

-Norliza Mohd Yusof

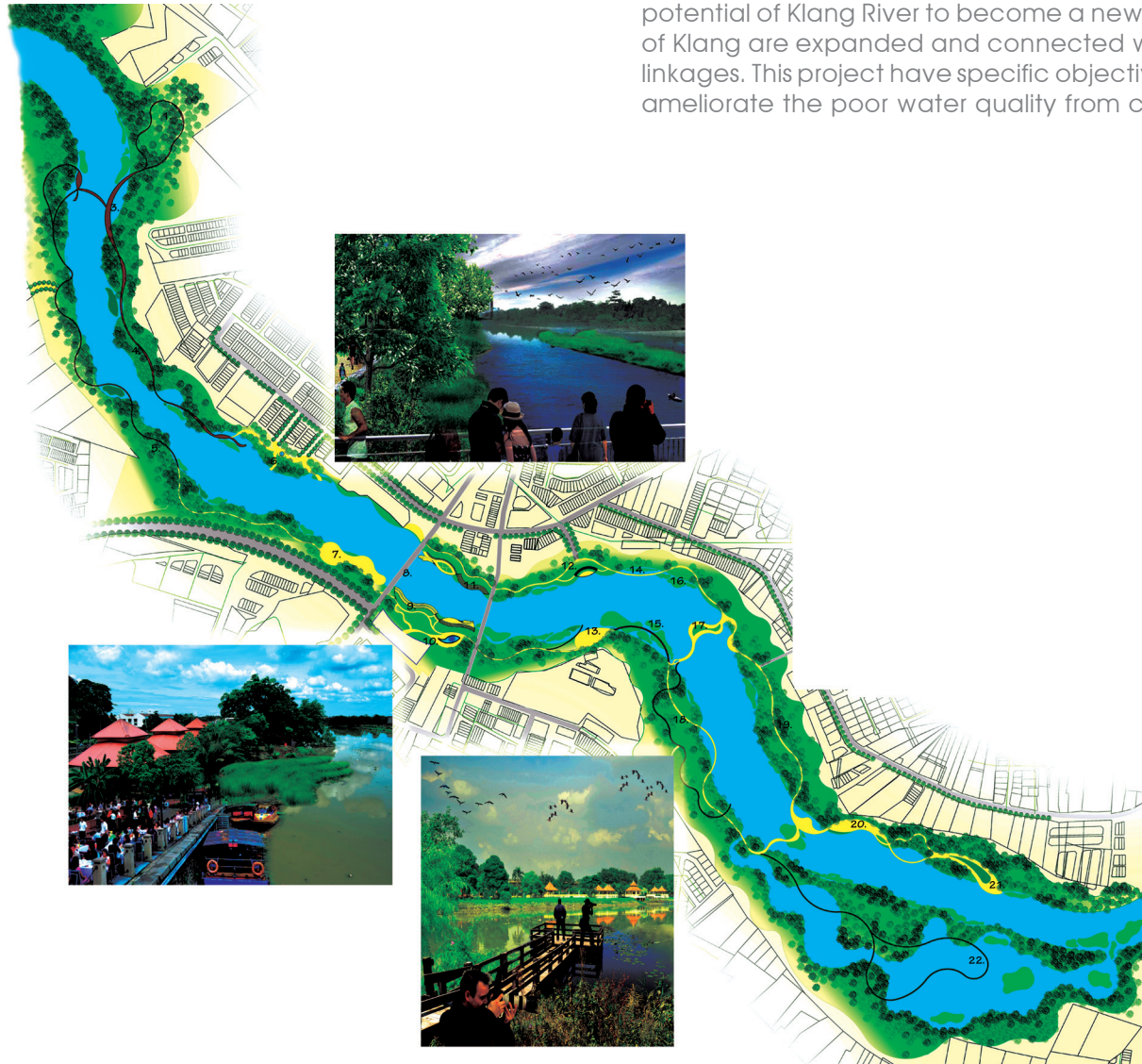
The design concept highlights its objective to mitigate the main issues, namely the Sg.Klang's water quality. The study aims to redevelop and improve the water quality, as well as sustaining the river's embankment by natural approach. In which, the concept statement "Healing with Nature" is the best approach, as this project site is classified under sensitive area. It is perceived that the design has taken into consideration the use of "nature" as a design solution and mitigation into the river redevelopment exercise. Introduction of riparian plantings in addition to creating green islands within/along the river are part of the efforts proposed in reducing the river's pollution. A thorough explanation of this approach is recommended though since without a clear explanation, the design's objective is unachievable. Graphically, the presentation is good, but it would be better if more thumbnail sketches on the site analysis and study are placed in the presentation board. They would explain the designer's thoughts and for supporting her/his design intent. The project shall present explicit understanding on river redevelopment and problem solving issues via natural approach and its program such as riparian approach using MASMA, filtration method, storm water drainage towards the river, slope and river bank erosion control, etc. These aspects are the crux of the project whereby without their further explanations, the design concept for the project is weakened considerably.



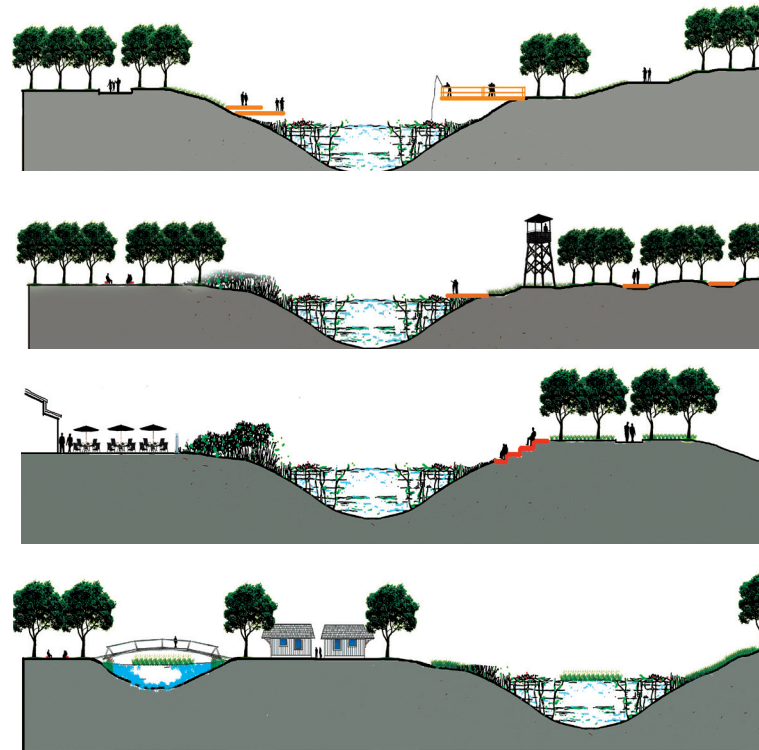
Pulse of the City

Mohd Kher Hussein, Murad Abdul Ghani, Osman Mohd Tahir & Abd Aziz Othman

Pulse of the City is the concept of transforming Klang River from an abandoned area into a more livable space. The designer tries to link and connect people through the ideas of bringing back clean water, greeneries and people for community to appreciate river in town setting. Therefore, the design strategy of the project was ensuring the river is a landmark, focusing on greeneries and activities and creating more functional spaces for urban dwellers. Consequently, the potential of Klang River to become a new thriving heart of Klang are expanded and connected with the urban linkages. This project have specific objectives which is to ameliorate the poor water quality from class 5 to class



3. It aims to augment the degraded ecological nexus with an abundance of greeneries as well as to infuse new amenities along Klang River. The applied concept will ensure that the Klang River will become the center and core of Klang City where economics, culture and ecosystem would co-exist. A new paradigm in development planning was introduced where public participation in water conservation has been stressed to ensure river sustainability. This is vital due to the fact that the city is facing urban degradation.



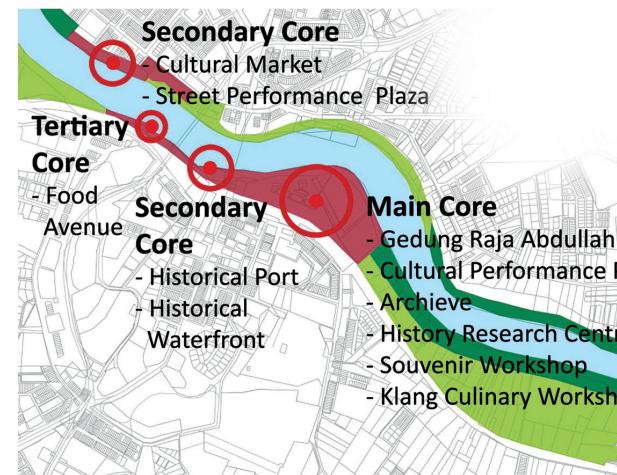
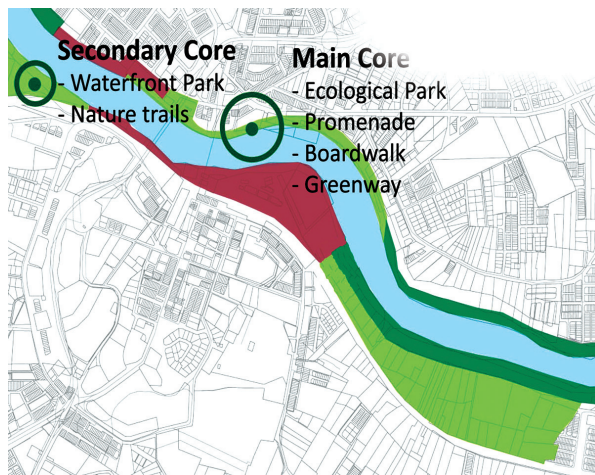
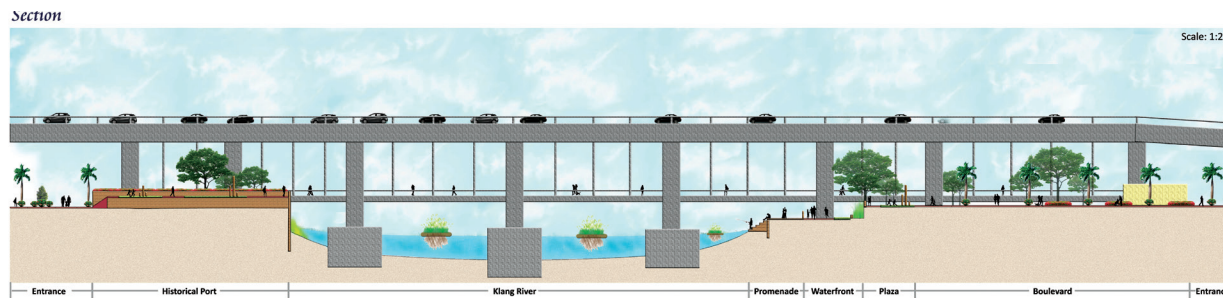
■ Liew Shin Tsai

Convergence of All

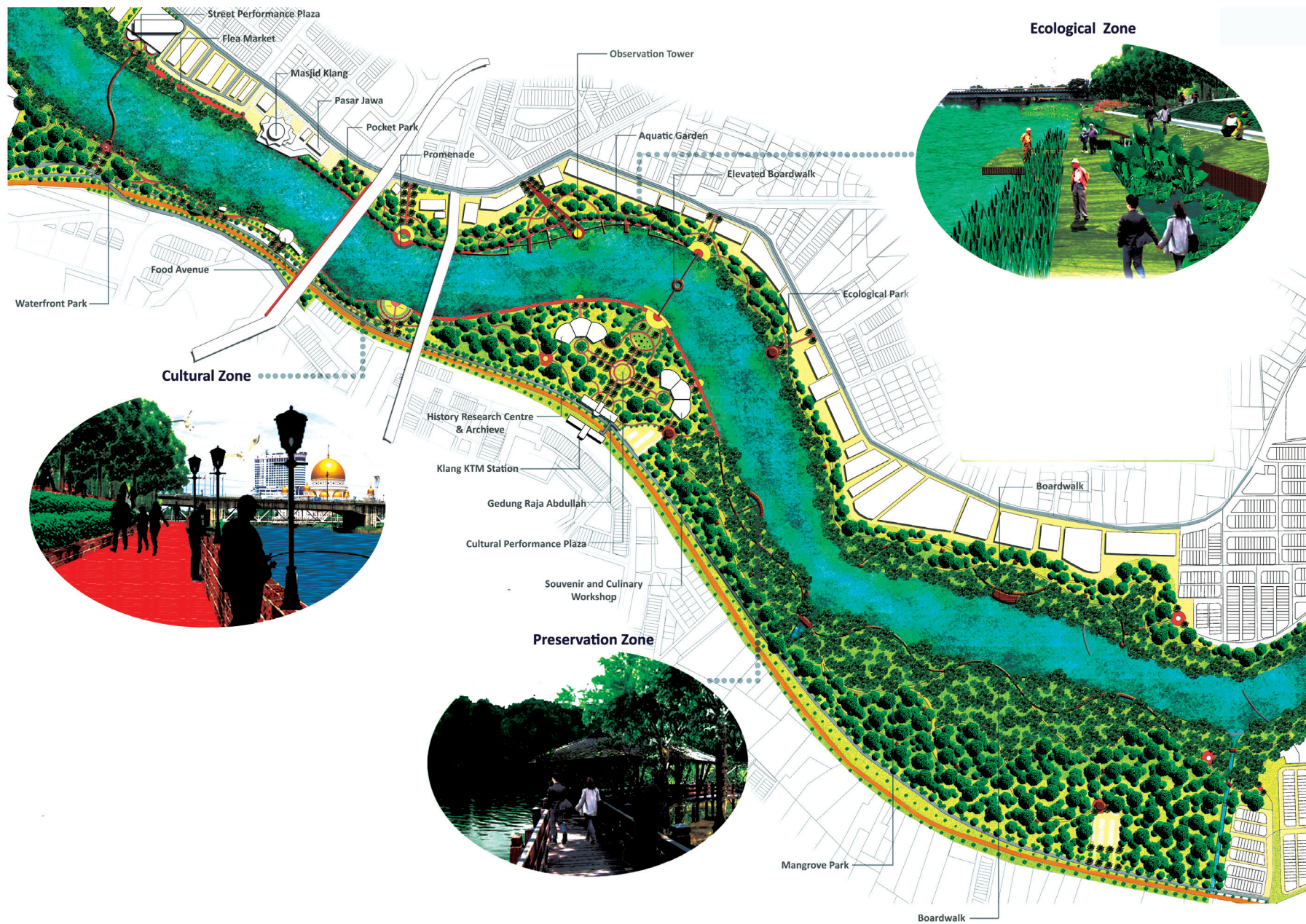
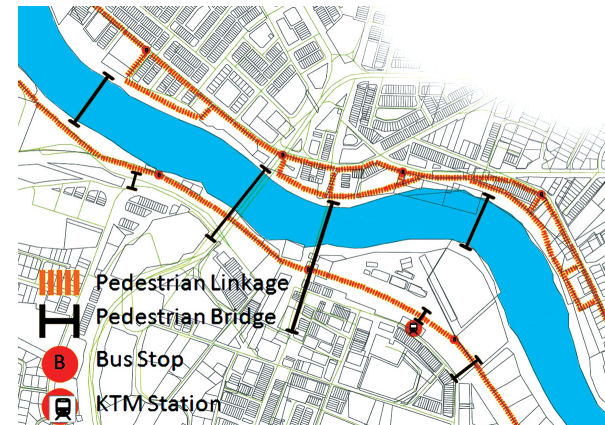
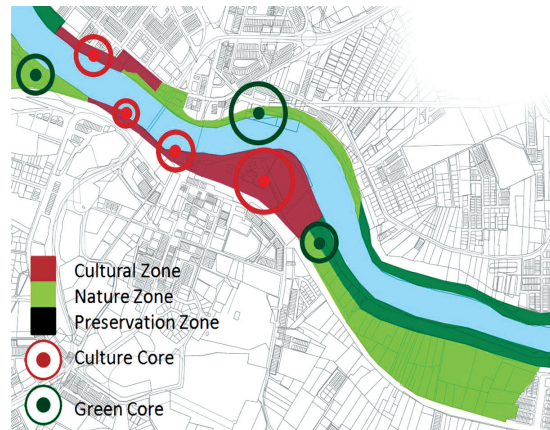
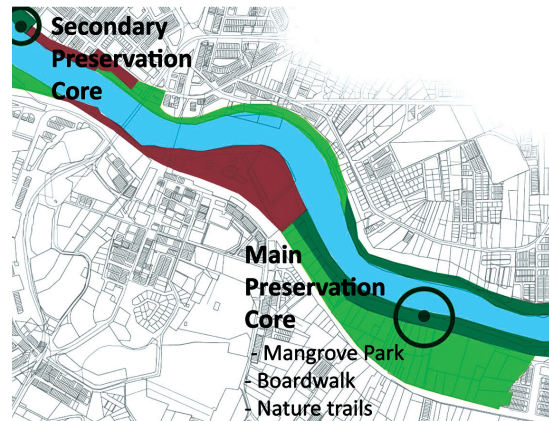
Mohd Kher Hussein, Abd Aziz Othman, Osman Mohd Tahir & Murad Abdul Ghani

The concept of this project which is 'Convergence of All' is derived from the form of a DNA helix structure. This concept tries to bridge the awakening of the city with its surrounding cultural and natural landscape. The site is divided into five main spaces namely cultural, nature, preservation, culture core and green core zone in accordance with the five main components of helix structure. All these spaces are connected to each other via pedestrian linkages and tree planting. Therefore, the design strategy is to restore the river water quality and habitats as well as to improve and enhance the linkages to the river corridor. Furthermore, it tries

to revive the identity of Klang town through its historical heritage and culture by infusing diversity of activities along the river corridor to promote social integration. Various proposed space areas help in revitalizing Klang River to become the convergence of all. This project is captivating as it merges the existing river with the image of Klang as a Royale Town. Hence, emphasizing the importance of revitalizing the history and culture, and indirectly restoring the Klang River for future generation.



■ Goh Bee Fang

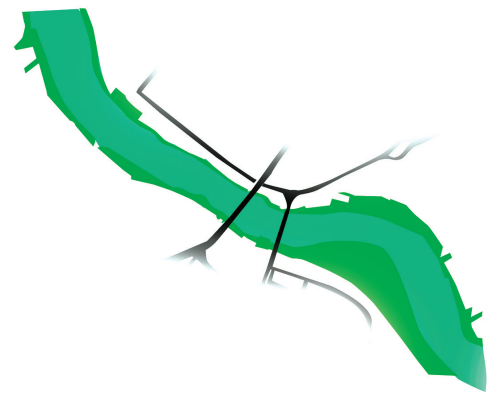
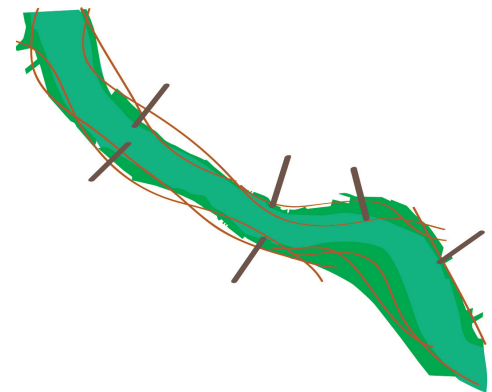
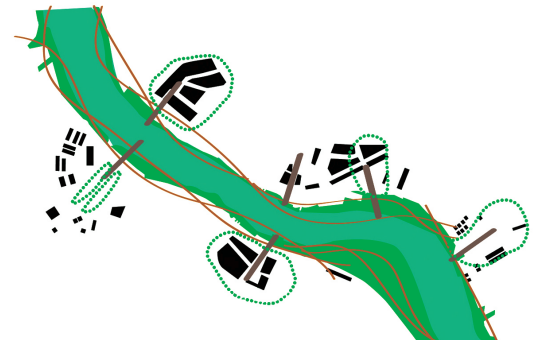


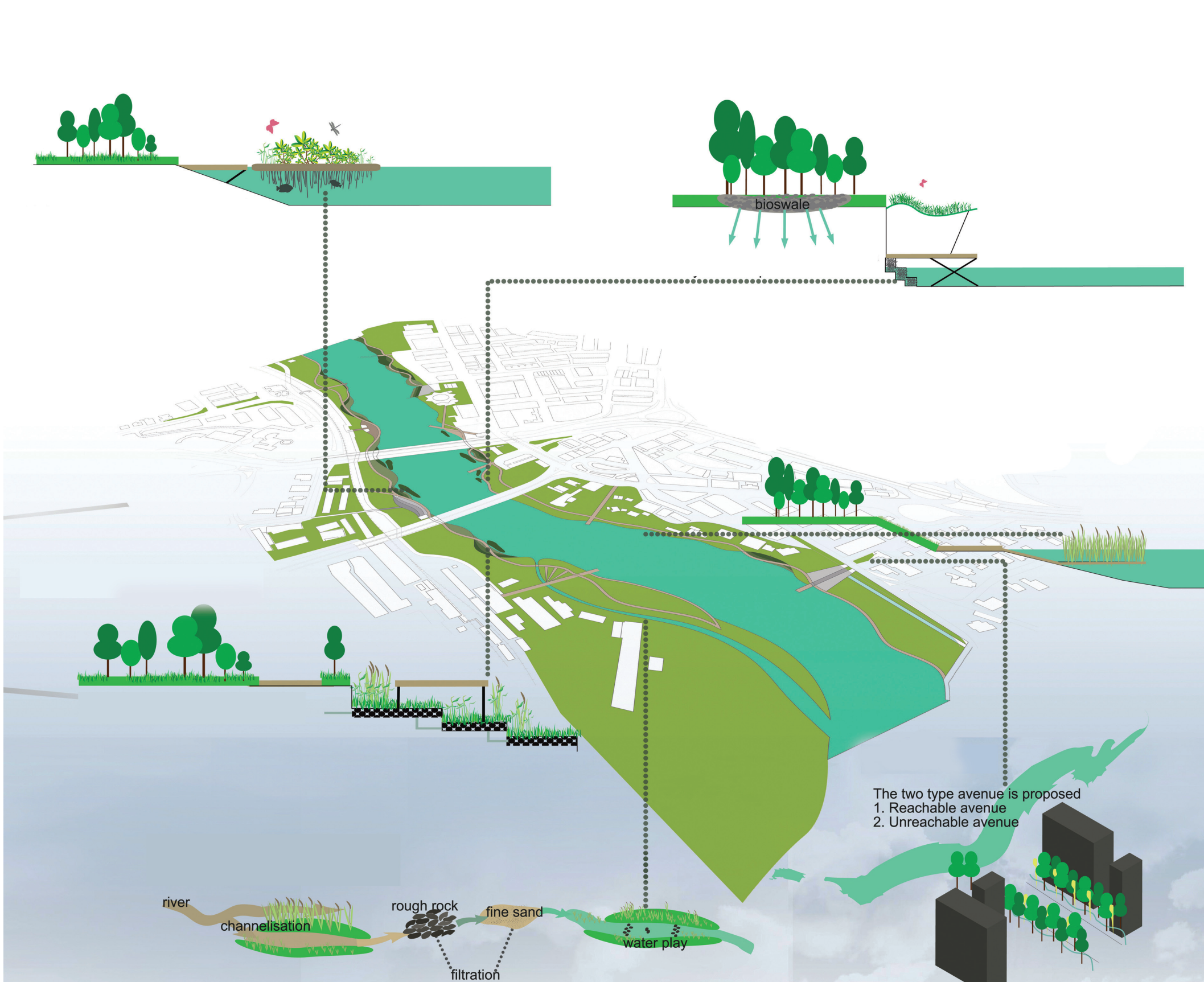


Interweaving Biota

Osman Mohd Tahir, Abd Aziz Othman, Mohd Kher Hussein & Murad Abd Ghani.

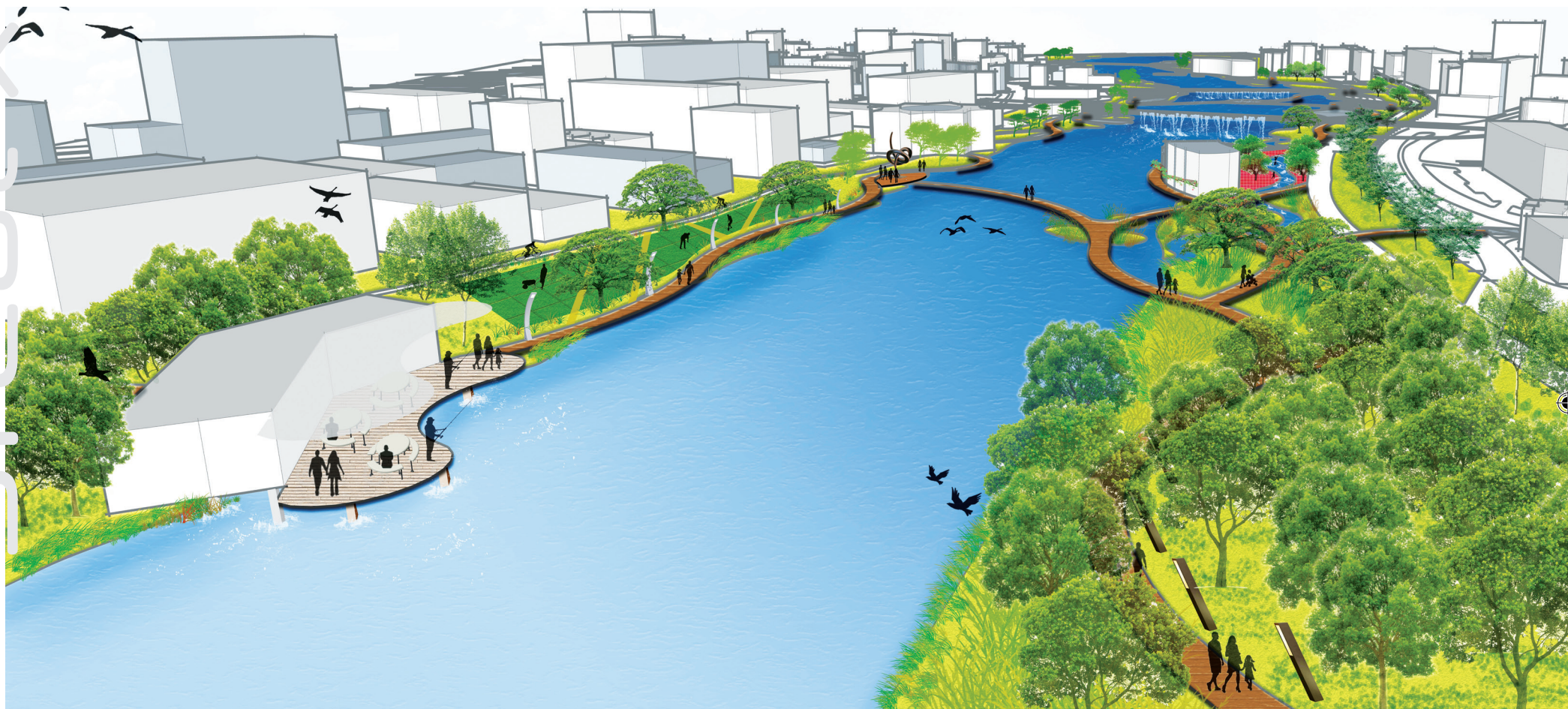
The idea of Interweaving Biota in this project is derived from the combination of natural and urban elements that are inexistence in the Klang River along the Klang Town. The designer, Nurul Atiqah, attempts to promote the natural environment in the urban context for enhancing the river corridor. Her intention is to create a new green linear corridor that could enhance the linkages for the users and at the same time develop ecological environment which could solve the water quality problem of Klang River. In realising this idea, certain design strategies are being engaged. For the community, the linkages to the river are being enhanced for them to appreciate and enjoy the beauty of the nature. Attractive spots are identified, organic parks facilities introduced, interwoven with park facilities and avenues. Consequently the potential areas to become green areas are expanded and connected with the urban linkages. Moreover, the project aims to improve water quality through storm water management system towards green environment. It includes the establishment of floating island, wetland purification terraces and linear wetland areas. Hence, this interweaving environment enhances the community's living environment for living, working and playing in healthy natural setting while the water quality of the river is being improved.





Green Dissemination

Osman Mohd Tahir, Murad Abd Ghani, Mohd Kher Hussein & Abd Aziz Othman



In undertaking the Klang City River restoration project, the designer endeavours towards Green Dissemination concept by integrating the ecological with educational aspects of the river and land that surround the area. The project aims to create a place where the user can appreciate and get closer or even be part of the nature. At the same time, the community can participate, garnish and sustain the natural environment. Furthermore, knowledge is being disseminated on the importance of the river and its ecosystem. The design engages several strategies for achieving this aspiration. They include the

■ Nabilah Abdul Latif



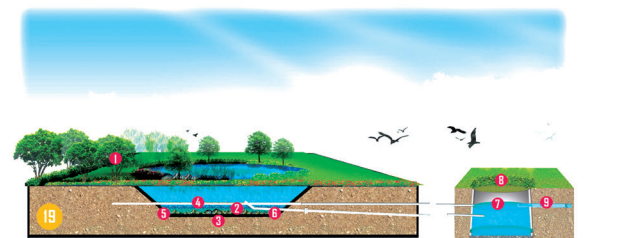
improvement of water quality, convalescing human interaction and activities, revitalizing the green corridors and reviving the river habitat and ecosystem. These are being translated into the development of an Eco-forest wetland mangrove, water play park, Edu-center, media garden with outdoor library, urban farm, water plant garden and many more. Hence, this project provides a place where people can be part of the green nature as well as understanding the magnitude that constitute an environmental offering.

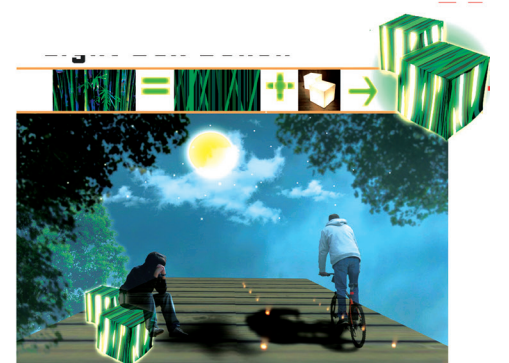
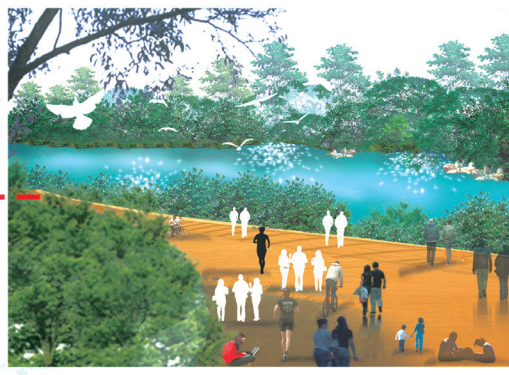
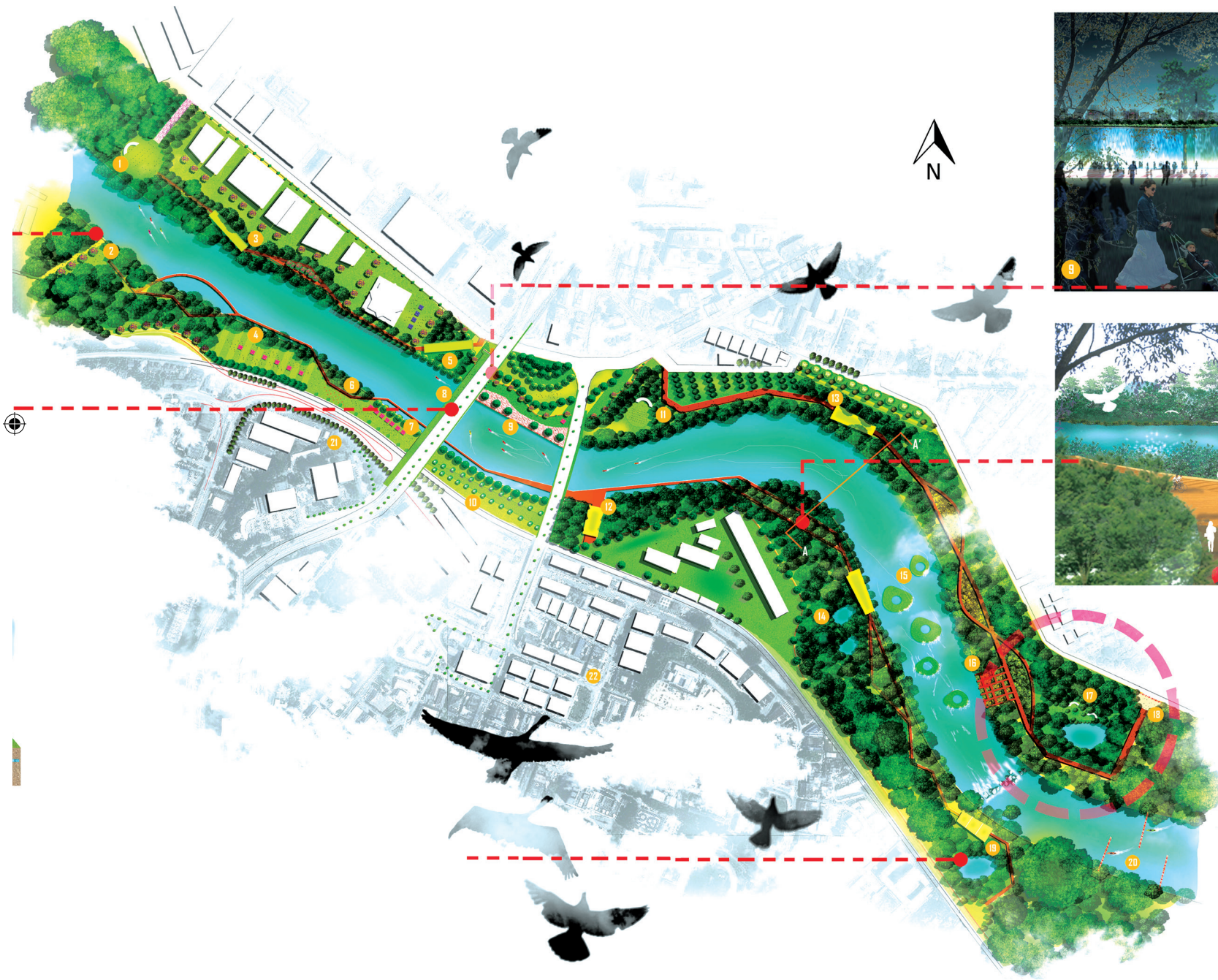


Symbiosis

Osman Mohd Tahir, Abd Aziz Othman, Murad Abd Ghani & Mohd Kher Hussein.

This project aims to enhance the quality and vibrancy of the River Klang in Bandar DiRaja Klang. The designer, Irwan, in the course of his design strives to improve the people perception of the River Klang which is synonym with pollution, to a greater result in making a symbiotic perfection. His objective is to amalgamate the heritage preservation, nature conservation, accessibility and cultural diversity in Bandar Klang in the midst of a symbiosis concept. He conceptualizes to develop an interaction process between two or more natural bases in a sustainable natural environmental system approach. This system protects biological resources in the natural environment, and seeks to restore or expand the habitats, forest, and water quality improvement and increase user's awareness. He introduces a functional natural ecosystem which contains a diversity of species in accordance with their natural environmental, cultural and geographical setting. The water quality is being upgraded through water purification process using plant absorption and micro-organism activities. Users are also being educated regarding clean water protection and sustainable mode of movement hence this design highlights the true riverine vibrant environment when enhanced with green area to improve human and wildlife activities. Concurrently, it preserves the natural mangrove area and improves night activities along the double-decker bridge and the river corridor.





■ Irwan Ibno

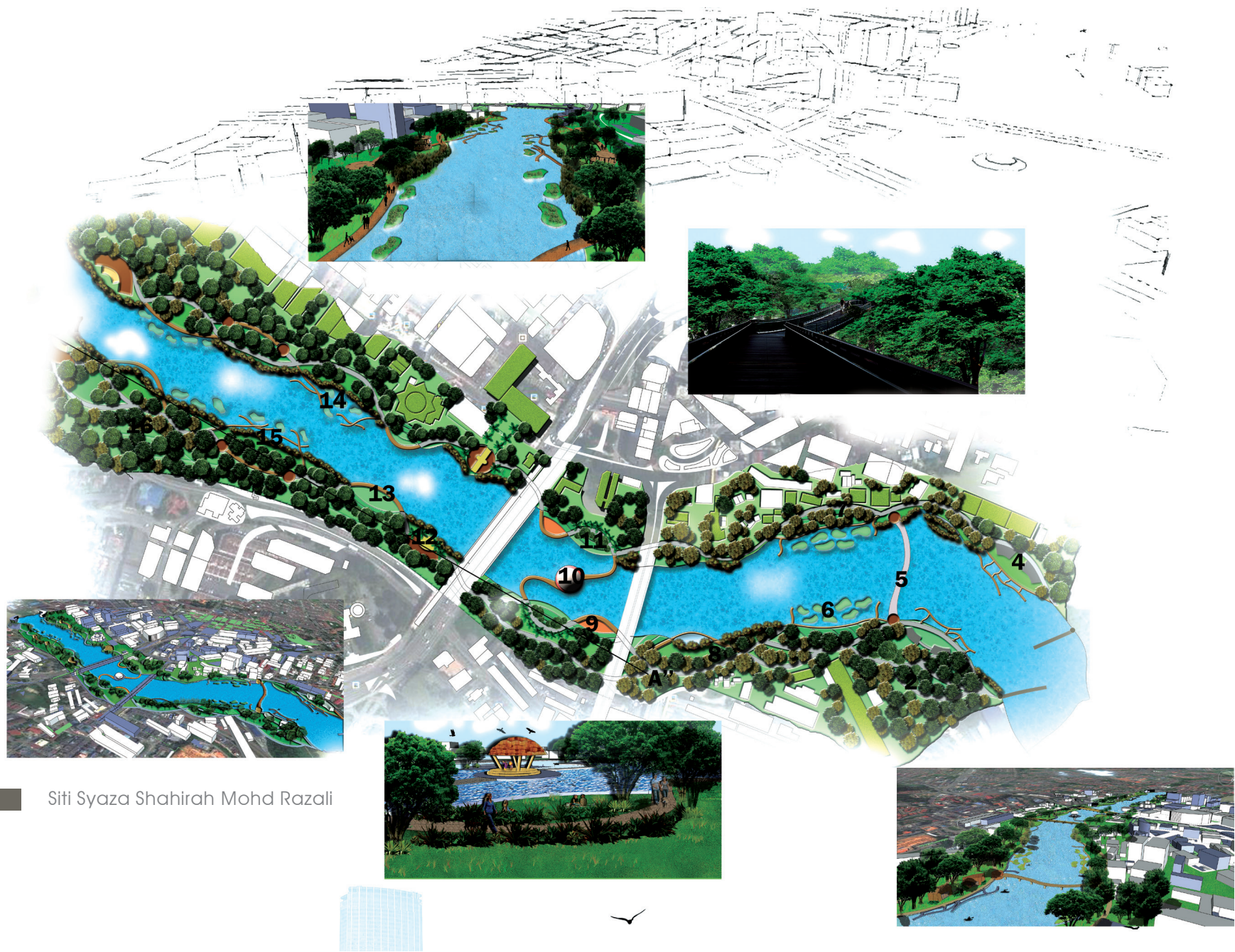




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LANDSCAPE ARCHITECTS

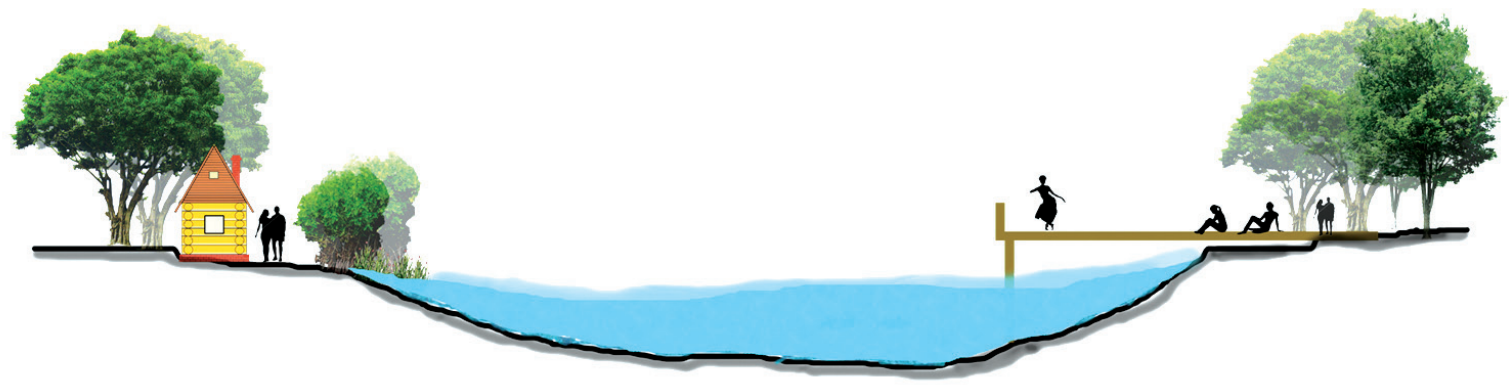
Green Inward Culturalization

Abd Aziz Othman, Mohd Kher Hussein, Osman Mohd Tahir & Murad Abd Ghani



■ Siti Syaza Shahirah Mohd Razali





The master plan represents a designer's effort to integrate both ecological history and stories of cultural landscape in an urban public space. These two aspects make the design unique. First, by evoking the nature, a green river corridor is designed with native riparian, mangrove and woodland community restorations. These communities recall those that had existed before urban settlement, way back when Klang was a mosaic of tropical rainforest communities complemented by a river valley. Second, the strategy is to encourage activities of cultural and recreational in fulfilling its aim of giving responsibility for balanced and sustainable human activity in urban area. The path system, for instance, provides access to difference spaces at the site as well as representative of either cultural or recreational activities with its integrated constructed habitats. The overall design, however, maximizes the spaces for human and nature as to safeguard and enhance the urban ecosystem.



Bridging Royal + Nature

Mohd Kher Hussein, Osman Mohd Tahir, Murad Abdul Ghani & Abd Aziz Othman

This project explores and creates a new environment to Klang Town by synchronizing the space that portrays an identity of Klang as Royal City by providing more attractions and activities along the river corridor. Three elements which are history, culture and space have been integrated in creating a better environment of the area. A fusion of Royale and Nature as the concept was adopted in designing the spaces. The motive of the Sultan's crown (awan larat) was applied in the landscape design and further creating a vertical landscape at the historical Kota Bridge. Awan larat motive are significantly applied on the floor form and linkages system that connect various spaces. Furthermore, the designer tries to enhance the characteristics of the buildings and facilities that possess cultural and historical values. She also strives to provide more spaces that enlighten users' emotion and enhance the treatment of river water quality for physical and recreational activity. This project takes into account the community's awareness towards history, cultural and nature appreciation that could lead to a river's sustainability.





Noor Azramalina Abdul Aziz

- Legend**
- A MAGROVE ZONE
 - B PANGKALAN BATU PARK
 - C FAMILY PICNIC GROUND
 - D SANTAPAN CULTURE AVENUE
 - E ROYAL MOSQUE AREA
 - F BALAI PENGHADAPAN PARK
 - G LAYARAN JETTY
 - H BALAIRUNG EVENT STAND
 - I KING PLAZA
 - J BALAI SENI WATERFRONT
 - K RIPARIAN ZONE
 - L WATER FILTER AREA
 - M GREEN BRIDGE CONNECTION
 - N FLOATING ISLAND

Planting Scheme

- Livistona chinensis*
- Brahea edulis*
- Salix babylonica*
- Melaleuca cajuputi*
- Fagraea fragrans*
- Nelumbo nucifera*
- Pennisetum x advena 'Rubrum'*

PROVIDE PALM TREE TO CREATE FORMAL FELLING AT KING PLAZA AREA AS FOCAL POINT.
Brahea edulis CREATE AXIS VIEW FROM GREEN LINK AREA TOWARD SCULPTURE AREA.

PROVIDE SHADE TREE LIKE *Salix babylonica* AND *Melaleuca cajuputi* TO GET SHADING AT RIVERSIDE AREA.

PROVIDE BUFFER ZONE WITH *Fagraea fragrans* TO DIVIDE TRAIN TRAIL AND GREEN LINK AREA.

PROVIDE *Nelumbo nucifera* AND *Pennisetum x advena 'Rubrum'* AT RIPARIAN AREA.

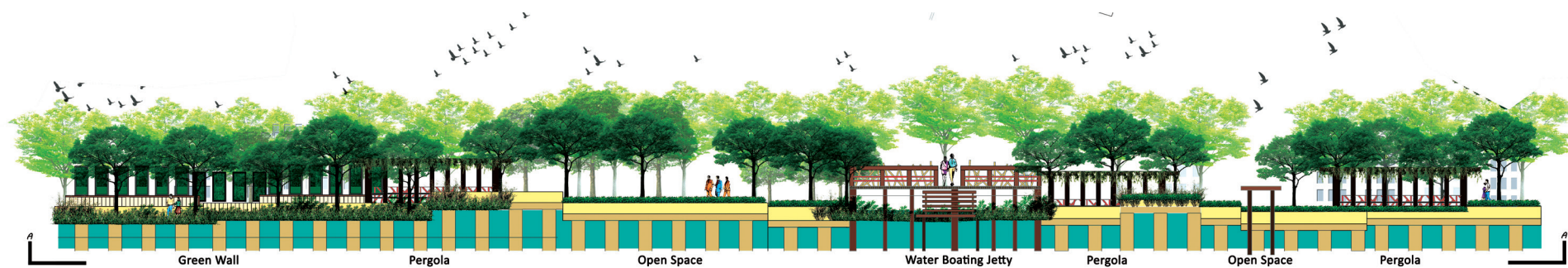
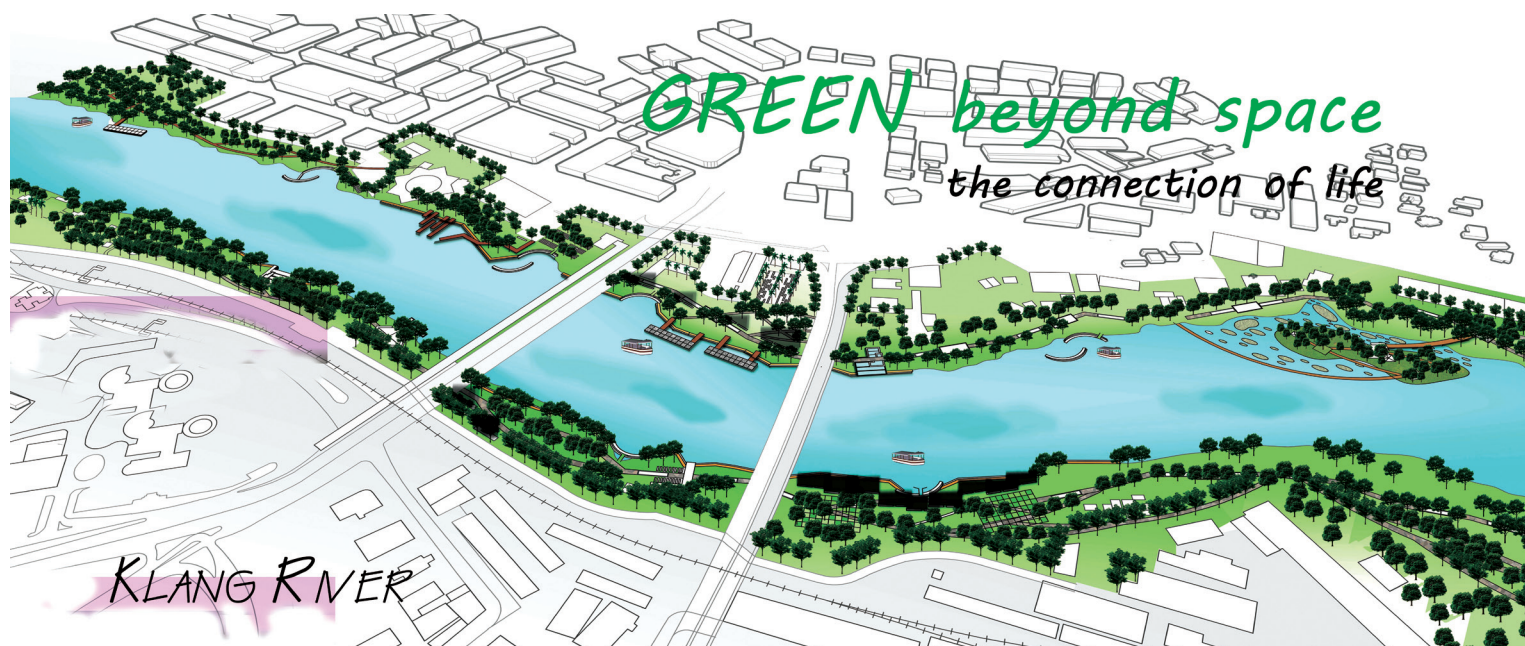
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The Connection of Life

Abd Aziz Othman, Osman Mohd Tahir, Mohd Kher Hussein & Murad Abd Ghani

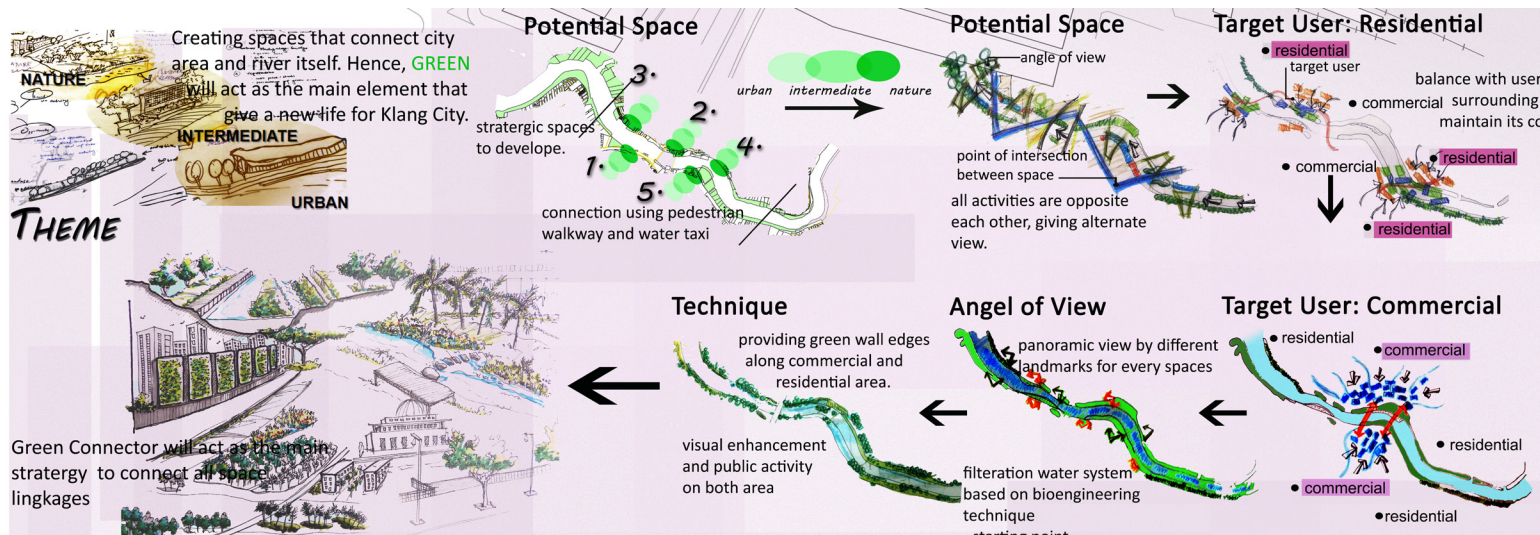
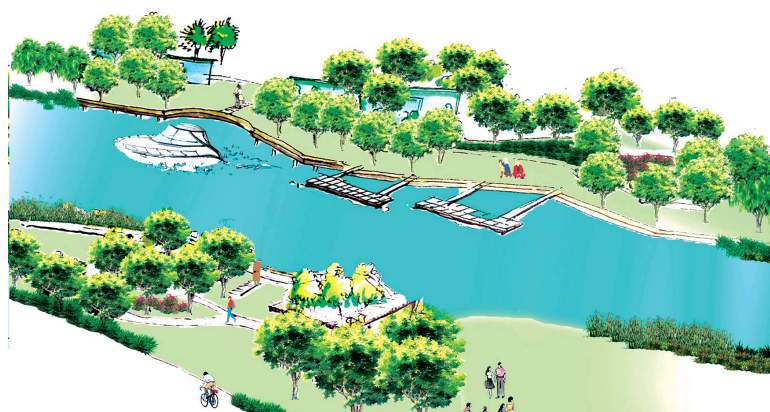
This is a town park – designed to attract people by offering a sense of retreat from its busy urban surroundings. The 'Green Beyond Space' is the concept that responds to connection of life in both natural and built environments. The landscape comprises a series of small parks that vary in scale, composition, and organic form besides displaying considerable restraint and simplicity for people and wildlife. Thus, the focus is on the sensitive approaches of ecological and conventional landscape design to improve Klang River

water quality. This promotes nature by creating a natural habitat within an urban area. The habitat creation is emphasized on the riparian planting, mangrove restoration and introduction of floating islands. The design also takes into account the community's use of outdoor spaces for socializing and recreation. In particular, the water feature, promenade and viewing points could provide rich and dramatic experience back to the nature.





Amyra Omar



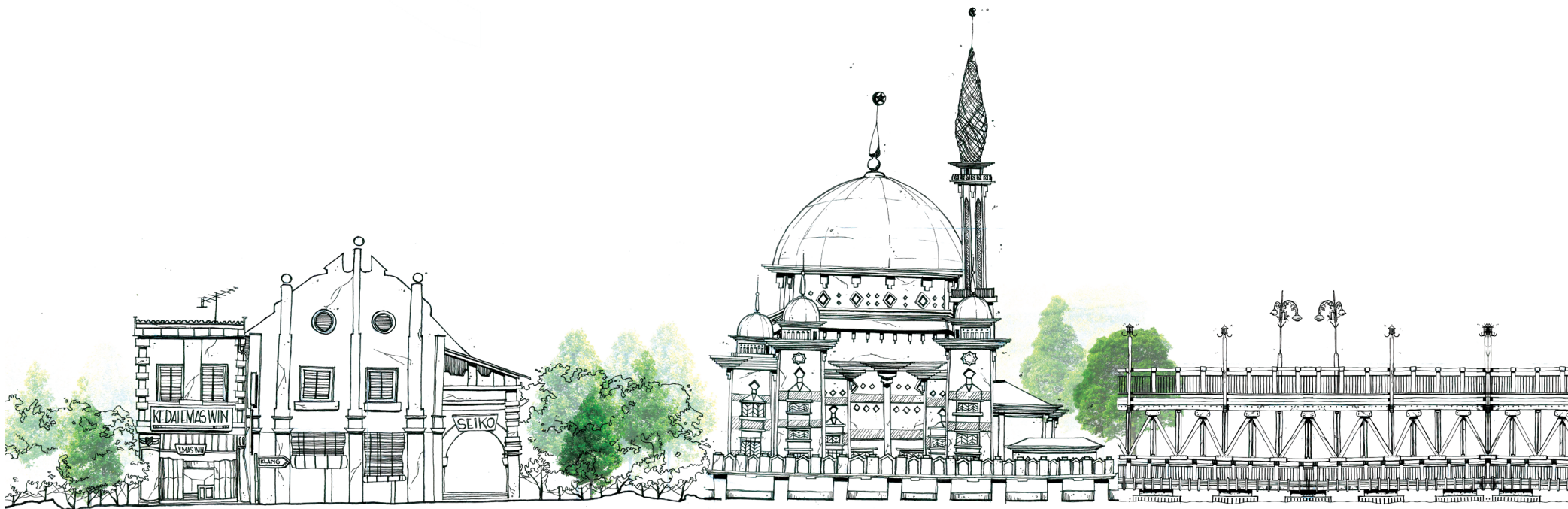
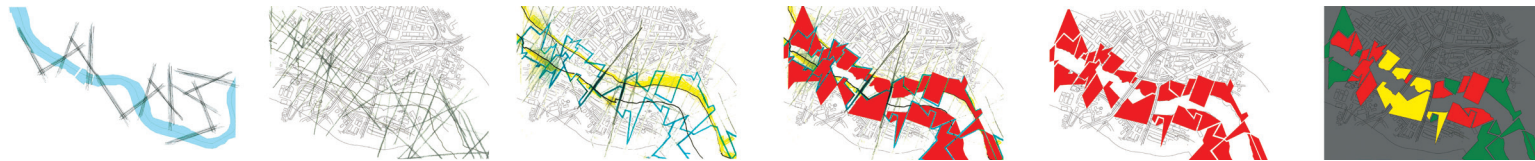


Didactic Room for River

Abd Aziz Othman, Osman Mohd Tahir, Mohd Kher Hussein & Murad Abd Ghani

'Didactic Room for River' adopts the Genius Loci philosophy – creating space with spirit and distinct character. Space is broken up into a series of outdoor rooms to create greens, plazas and paths. The plazas promote the meaningful activities between the greens, providing pleasant breathing spaces in capturing the essence of the Klang city. The design also takes advantage of the river's east-west linear orientation by ensuring the major activities along the river bank in continuously provided through significant linkages from the east to the west. The main green structures are located on both site's eastern and western ends thus serving

as an insulating buffer for the central plazas. Floating islands and riparian edges are also located in these well-insulated green zones. They serve to improve the water quality as well as to encourage biodiversity. One novel feature towards this end is the expansion of greenery such as green-roofs which could reach across some of the surrounding buildings that could enhance some of their significant buildings' façades which strengthen their character in portraying the historical and cultural values.





■ Nur Adibah Abdul Karim



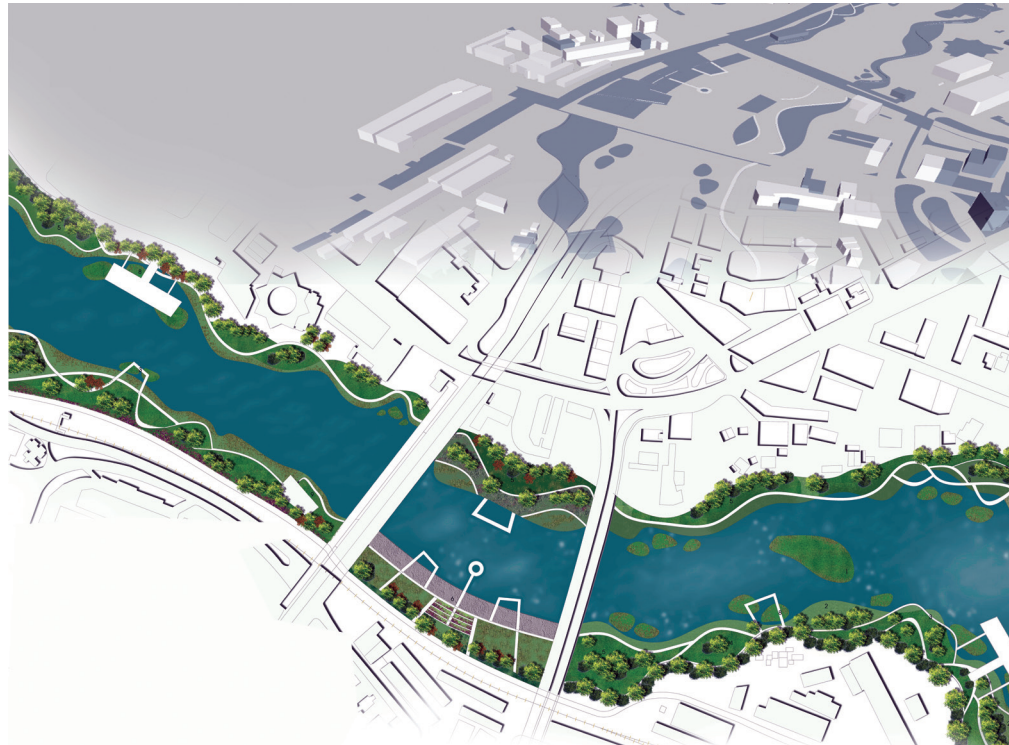


Healing with Nature

Osman Mohd Tahir, Murad Abd Ghani, Mohd Kher Hussein & Abd Aziz Othman

In embarking upon the environmental issues of the Klang River and the royal identity of Bandar Klang, the project lays down its design goal to redevelop the Klang River as a functional space that can provide opportunities to the community to interact and heal with nature. In realizing this idea, the project focuses on the enhancement of the storm water flow to the river by a bio-filtration system. This system could assist the improvement of the water quality and thus become a catalyst in the renewal of Klang town. Furthermore the local culture is enhanced by the development of a local

identity so as to be the main attraction of the township. Certain strategies and programmes are initiated which include cultural initiative to reflect the vibrant of the Klang culture and town, For example, there is 'Nature Treatment' to reveal the healing power of nature and landmark creation to symbolize the uniqueness of Klang and its river corridor. The 'Healing With Nature' concept could bring the GREEN and ROYAL glory of the Klang River and hence become the magnet for the town.





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