DESIGN IDEALS
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NATURE & STRUCTURE: MERGING BLUE & GREEN LANDSCAPE FOR HOLISTIC WELL BEING AT METROPOLITAN BATU PARK

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ABSTRACT

This project is about enhancing the holistic well-being of the community around Metropolitan Batu Park and Sungai Batu Retention Pond that might have face the urban issues in term of environment, social and economy aspect. Therefore this project is proposed to create an integration of the blue and green landscape element, infrastructure and technology in merging these two area into one family park that can give the platform in spreading the positive well-being effect to the users. The project is located at Metropolitan Batu Park which is 33 acres and Sungai Batu Retention Pond which is 253 acres.

INTRODUCTION

The aim of this project is to integrate the blue and green landscape element that can enhance the livability and the user well-being with minimal impacts to the environment in creating a sustainable design towards the society. This aim is focusing in creating the balanced of holistic well-being between the society, environment and also economical aspect. The issues of this project is highlighting on the urban security factors in aspect of the environment, user well-being and economical status in the community. For the environment aspect, the area is having the urban heat island issues with slight pollutions from the nearby waste system and lack of green space that can be use by the nearby community. In term of the user well-being, the community are having lack of the opportunity for recreational activities as well as the existing safety condition of the area with can be considered as poor. As for the economical aspect, this area mostly consists of low and moderate income of society and have lack of economical activities opportunity. The followings are the objectives of this project:

1. To create a design that have minimal impact to the environment as well as reducing the temperature and pollution through ecological approaches.
2. To encourage healthy lifestyles as well as livable community in securing the user well-being through recreational activities.
3. To increase the opportunity of economical activities as well as creating a job chances to the local community.

Figure 1: Key and location.

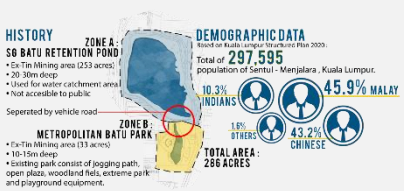


Figure 2: Demographic data.

The total area is 286 acres. Figure 1 shows the key and location plan of the selected site. Both area is classified as zone A (Sungai Batu Retention Pond) that consist of natural retention pond area that is not accessible to public engagement, and Zone B (Metropolitan Batu Park) which is a lake park consist of few recreational activities however is not being fully utilized due to maintenance problem Both water bodies of these two area is from the ex-mining open pit that have turned into beautiful lakes. Figure 2 shows the zoning area between these two parks throughout the planning process and the demographic data of the community area. This two zone is separated by Jalan 1/18D, a newly constructed road crossing the area connected to the main road.

LITERATURE REVIEW

Type of Parks: Metropolitan Park

According to the guideline of *Jabatan Perancangan Bandar dan Desa Negeri Selangor* (2010), a Metropolitan Park should be around 20 to 100 acres with the need of facilities such as various play courts and football field in term of small sport complex, swimming pool, children's playground area, camping or picnic zone, open space for adventurous game, closed hall, stalls, restroom, resting area, payphone, eating area, public transport accessibility area and parking area which consist of 35 car park for the first 5 acres of the park with 30% of motorcycle park and other needed enquiry depending to the area.

Landscape for Well-being

In creating a healthy well-being landscape design, there are five principles that is considered as essential in creating a healthy places (Evans & Bull, 2013). The first principle is creating a place that improve the air, water and soil quality, incorporating the sequences that helps the user in adapting to spaces and also help mitigating the climate change. The second principle is creating a places that help user in overcome health inequalities as well as promoting a healthy lifestyles. Third principle is about creating a place that is easily adaptable and create comfortable ambience that can encourage social interaction and reducing mental stress. The fourth principle is creating a place that have optimum chances of working, learning and development activities. The last principle is creating a healthy places that restorative, uplifting and healing for both mental and physical condition of user's health.

Blue and Green infrastructures

Urban environment is currently at the stake of facing balanced disturbance due to rapid development that need the ability of adaptation from urban system in bringing back the natural cycle from urban growth. Therefore, integrating the traditional grey approach, merging with blue and green infrastructure system

can help to mitigate most of the urban problems. The term blue and green infrastructure is reflecting the system and technologies that is mostly used of the natural approaches with a help of technology (Perini & Sabbion, 2017). Also as stated by Brears (2018), the need of blue and green city is for the holistic planning and management of water in urban area. Creating this city is a goal towards more sustainable, efficient, adaptive and resilient way in creating a healthy environment.

METHOD / PROCEDURE

Checklist and Observation

In conducting the methodology of data collection, the checklist for site inventory and observation method are done by mapping the existing site condition and taking pictures of the site condition.

SITE INVENTORY AND ANALYSIS

1. Landuse

Figure 3 clearly shows the percentages of landuse map as well as the analysis of the cross relation of each aspect. The highest percentage of the landuse is; residential area which are covering almost half of the selected area. Residential area are the target user for this project and given the opportunity of having a large percentage of target user is also one of the factor why this area need to be proposed for integration of blue green landscape design.

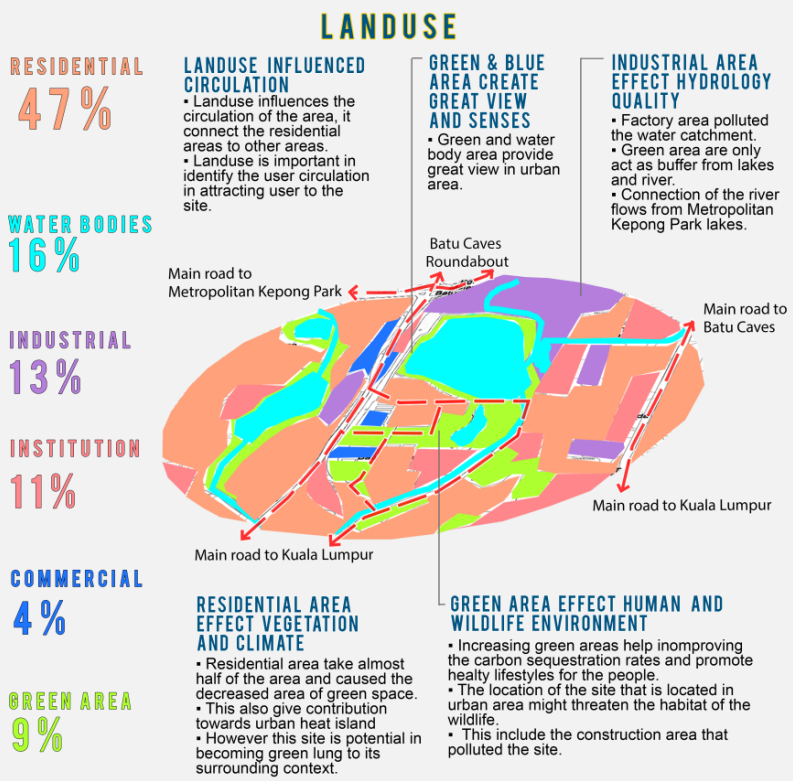


Figure 3: Analysis map for landuse

2. Site Context

Figure 4 shows the location of this site and its site context, nodes and landmarks. Sites context is important in considering the circulation and accessibility of the visitor as to the site.

The nearest park is the Metropolitan Kepong Park, located about 9.1km from this park. Thus it is clear that this park has potential to create a platform for healthy well-being for the community around the area.

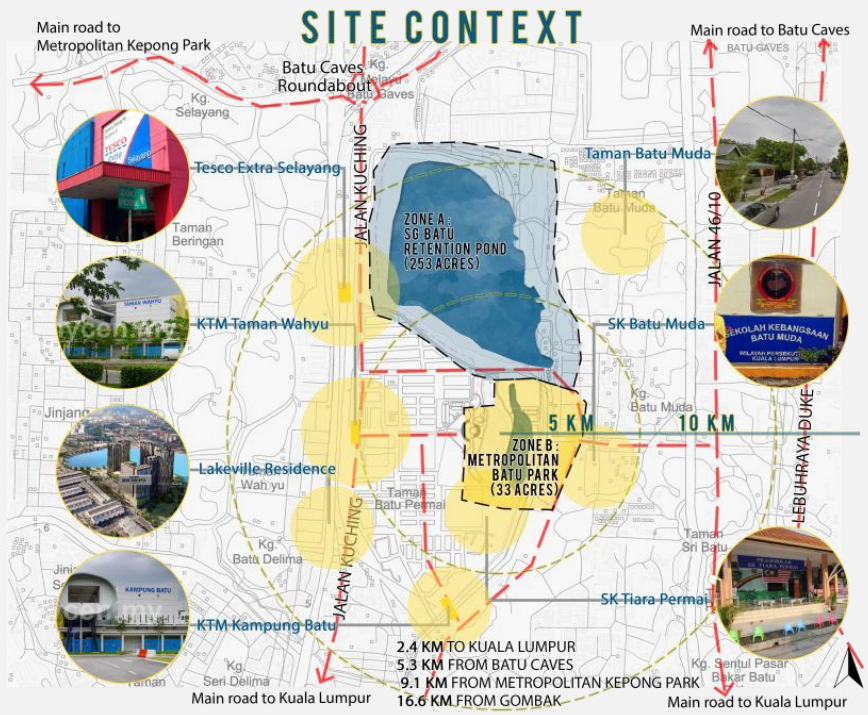


Figure 4: Analysis map for site context

3. Circulation

These two zone is actually separated by four lane of vehicle road that have cause the loss connection of green network and disturbing the green corridor. This newly constructed road is one of the factor for urban heat island as most of the street planting have low density of shady trees. However, this circulation route can be use as attraction for the user to cross over the road in connecting this two area (Figure 5).

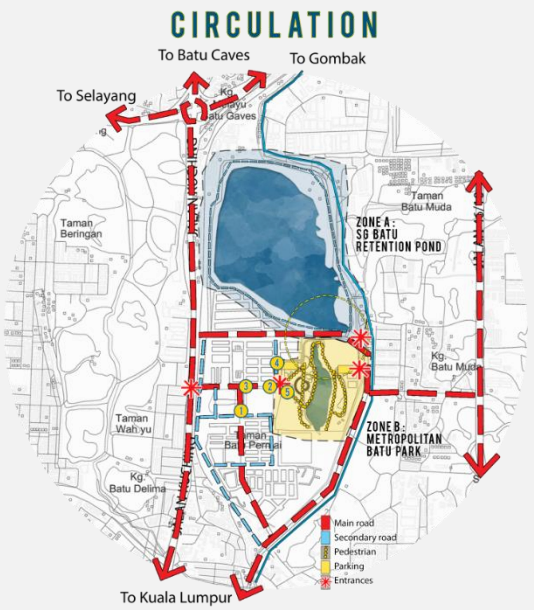


Figure 5: Analysis map for circulation

4. Topography

Figure 6 shows the level of topography layers according to Topographic Map (n.d), the deepest area is located at zone A retention that reach 25-20m deep.

Figure 6: Analysis map for topography.

Figure 7 is showing the sectional cut of the selected area on figure 6, which is highlighting the type of slope treatment in Zone A and Zone B. For Zone A, the area is not accessible to public therefore there is no initiative of design treatment to the slope area, and the slope is being naturally treated as there is high density of the vegetation on the slope that help to hold the slope stronger as well as filter and slows down the surface run off into the lake.

While for Zone B is using the terrace slope treatment in avoiding land slide however have less shrub planting that lead to slightly polluted surface water run-off into the lake.

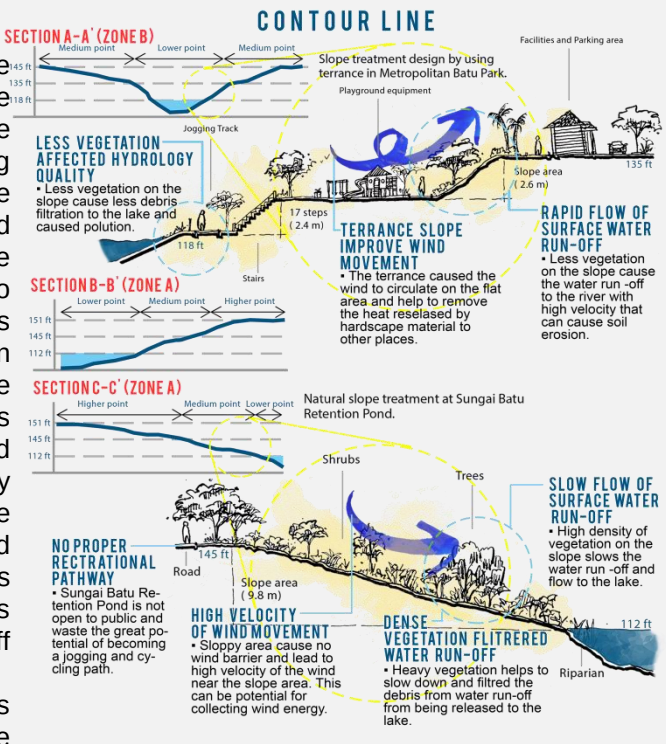


Figure 7: Topography sectional drawings.

5. Hydrology

Figure 8 shows the hydrology map consist of the water run-off flow and river flow of zone A and zone B. As the water bodies have quite large areas in this site, it have potential in becoming the sources of economy and water supply to the nearby community.

The water bodies also act as cooling factor in reducing the temperature of the urban heat stress. Zone A is consisting more of the natural ambience therefore is provide natural resources for wildlife habitat and have a great mirror sky reflecting view. Zone B is suitable in creating a water-based activity as well as introducing floating farming system to the users.

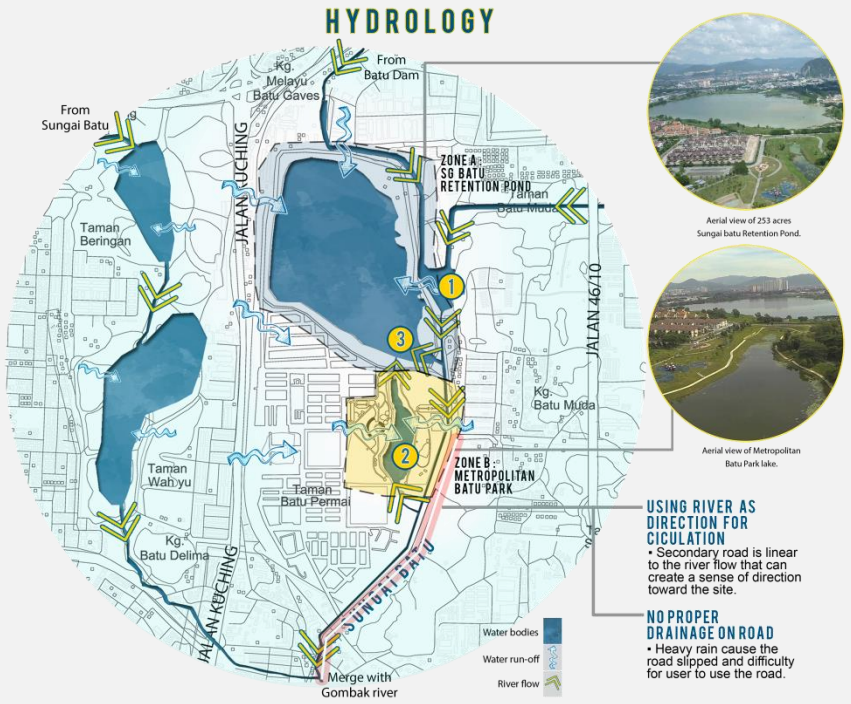


Figure 8: Analysis map of hydrology.

6. a) Vegetation

Figure 9, shows the diversity of existing vegetation that help to provide great views and senses to the surrounding areas and help in mitigating the climate changes. The study found that, zone A have a higher vegetation density compares to zone B, which have less vegetation coverage especially along the slope area.

6. b) Wildlife

Zone A is also suitable for habitat conservation area as for the high vegetation density at the area (refer Figure 9), however as these two area is separated by vehicle road cause the loss connection of the green corridor with can be a threat for the wildlife at the area.

7. Climate & View and Sense

Climatic factor are affected by the vegetation, plant materials, water bodies, and the surface reflecting material such as the colour chosen for the materials. These factor play important roles in reducing the heat of the site. As for the view and senses, most unpleasant sense are coming from the nearby construction site at the south end of the park. There are also unpleasant smell from the factory waste and filtration system that need further upgrades and enhancement.

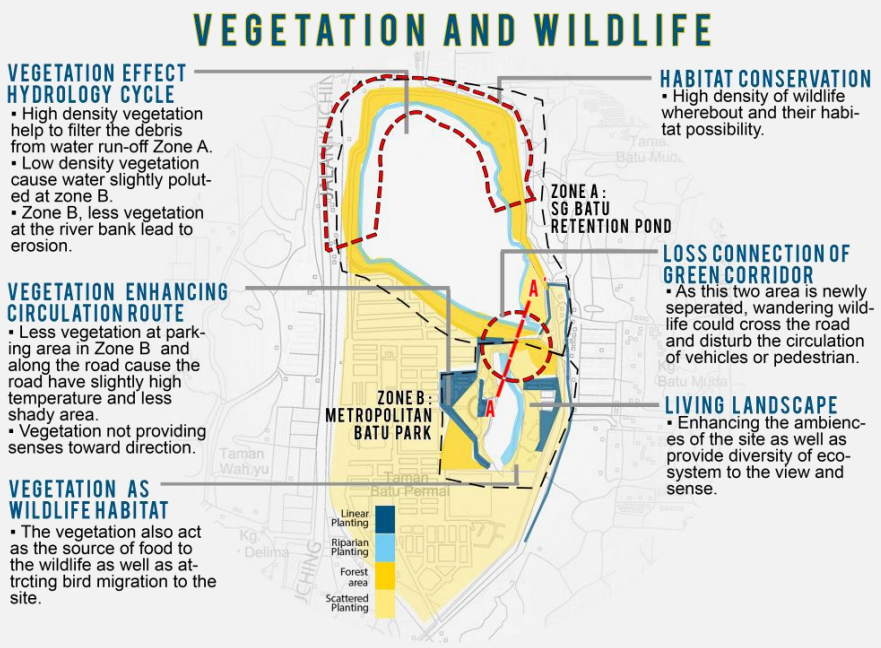


Figure 8: Analysis map of vegetation and wildlife.

SITE SYNTHESIS

Referring to Figure 10, the synthesis map is categorized by three stages, of potential are for development which consist of high (dark blue), moderate (light blue) and low (yellow) potential of development opportunities.

Figure 10: Synthesis map.

In term of land use and site context, there are potential of increasing a commercial area within the residential area around the park. Circulation, high priority in solving the green linkages issues. The needs to propose a new road to connect the two area. It is also important to install new connectivity that create great sense of welcoming to the site. Hydrology, to integrate the blue infrastructure, aligned to the aim and objectives in creating a holistic well-being. Implementation of green infrastructure to create the balance of the ecological cycle and diversity in vegetation and wildlife.

DESIGN DEVELOPMENT

DESIGN STRATEGIES

The strategies is developed by using Sustainable Development Goals (SDG) as the guideline, these strategies is also categorised by three aspect which is environment, social and economy. Figure 11, the highlighted SDG goals related to the proposed design.

Figure 12 shows the development of the design strategies that derived from the synthesis map. As for this stage, the area is located accordingly to the most suitable potential area for either environment, social and economy development.
Most potential area for the environment is focus around the northern part followed by social focus and economy focus of the site.

Figure 11: Related Sustainable Development Goals

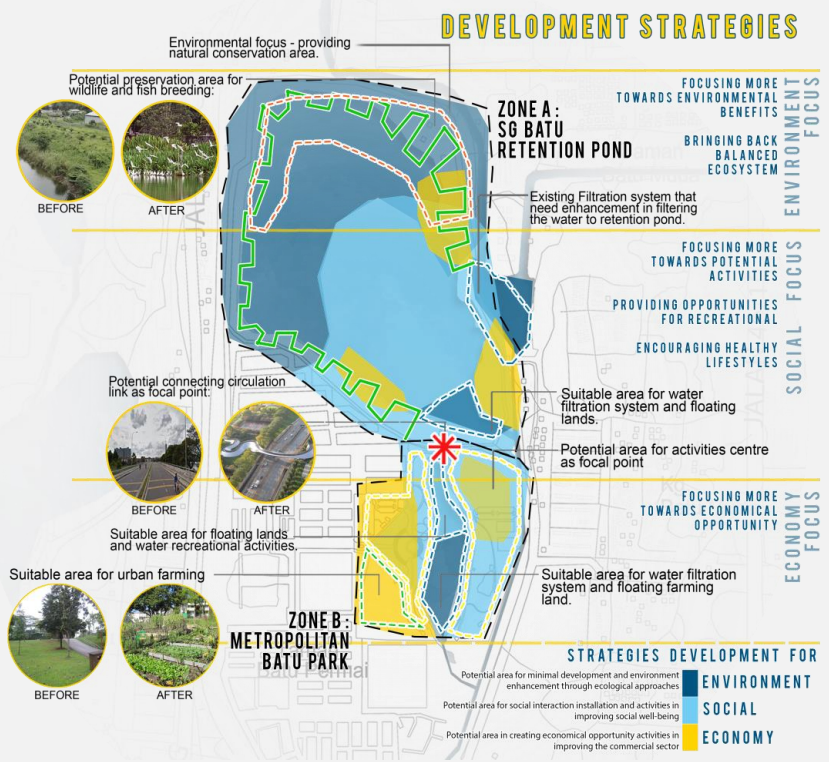


Figure 12: Development strategies map.

DESIGN CONCEPT

The design concept for this project are initially direct as the concept of this project is *Aqua Lush: the Lush Cay of Aqua Pura* or by literal meaning the combination of blue and green technology in creating a sustainable design (Figure 13).

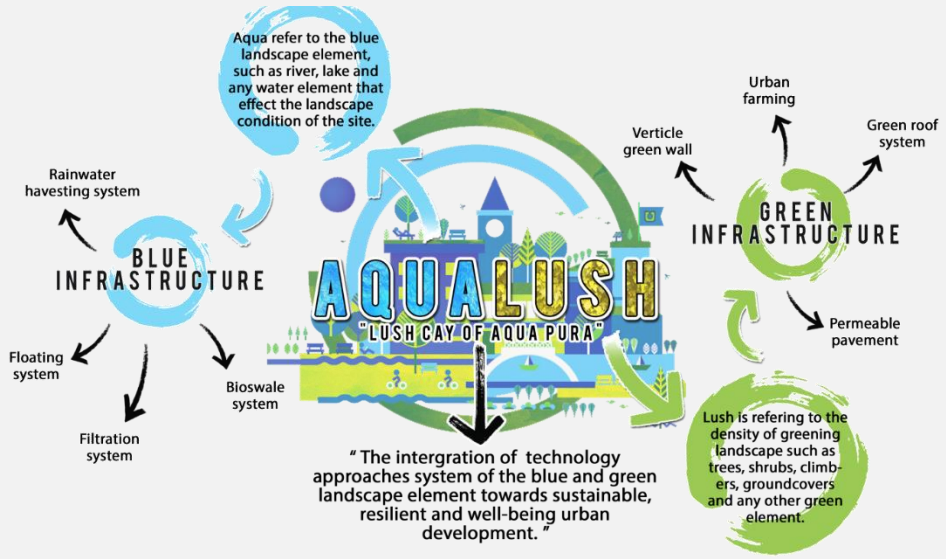


Figure 13: Concept diagram

SITE RELATED FUNCTIONAL DIAGRAM

The functional diagram is divided into four categories, the circulation, the nodes and landmarks, the blue area, and the green area.

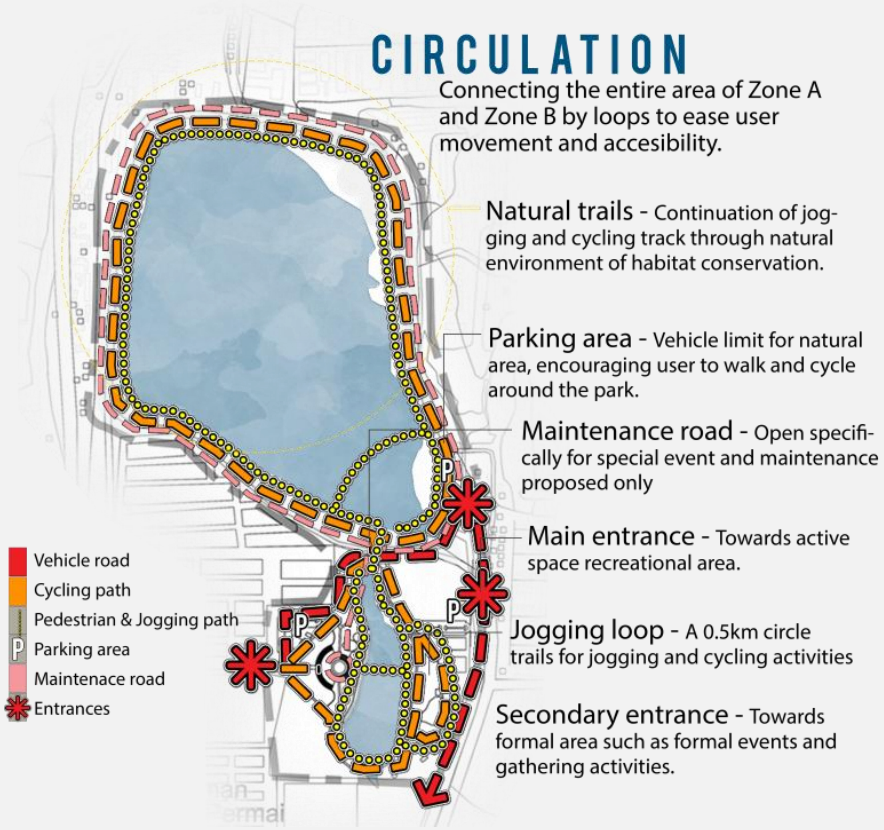


Figure 14: : Proposed new circulation, parking area and entrances.

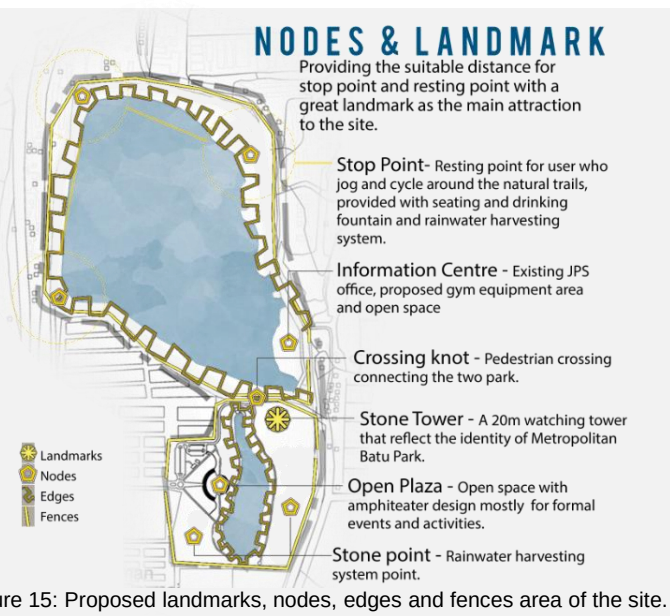


Figure 15: Proposed landmarks, nodes, edges and fences area of the site.

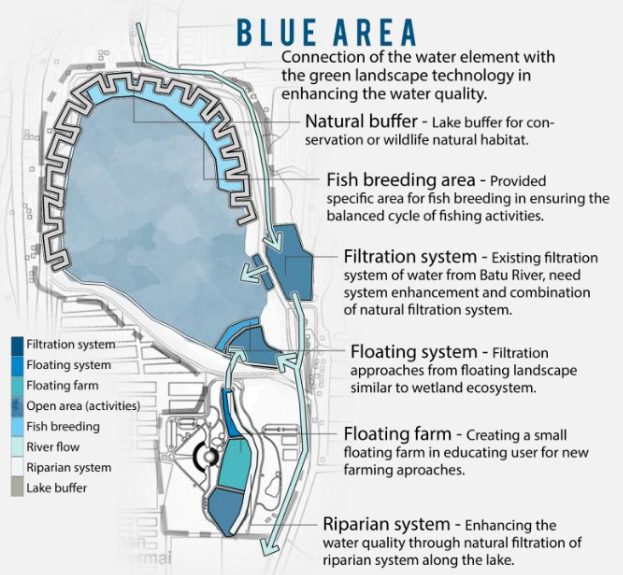
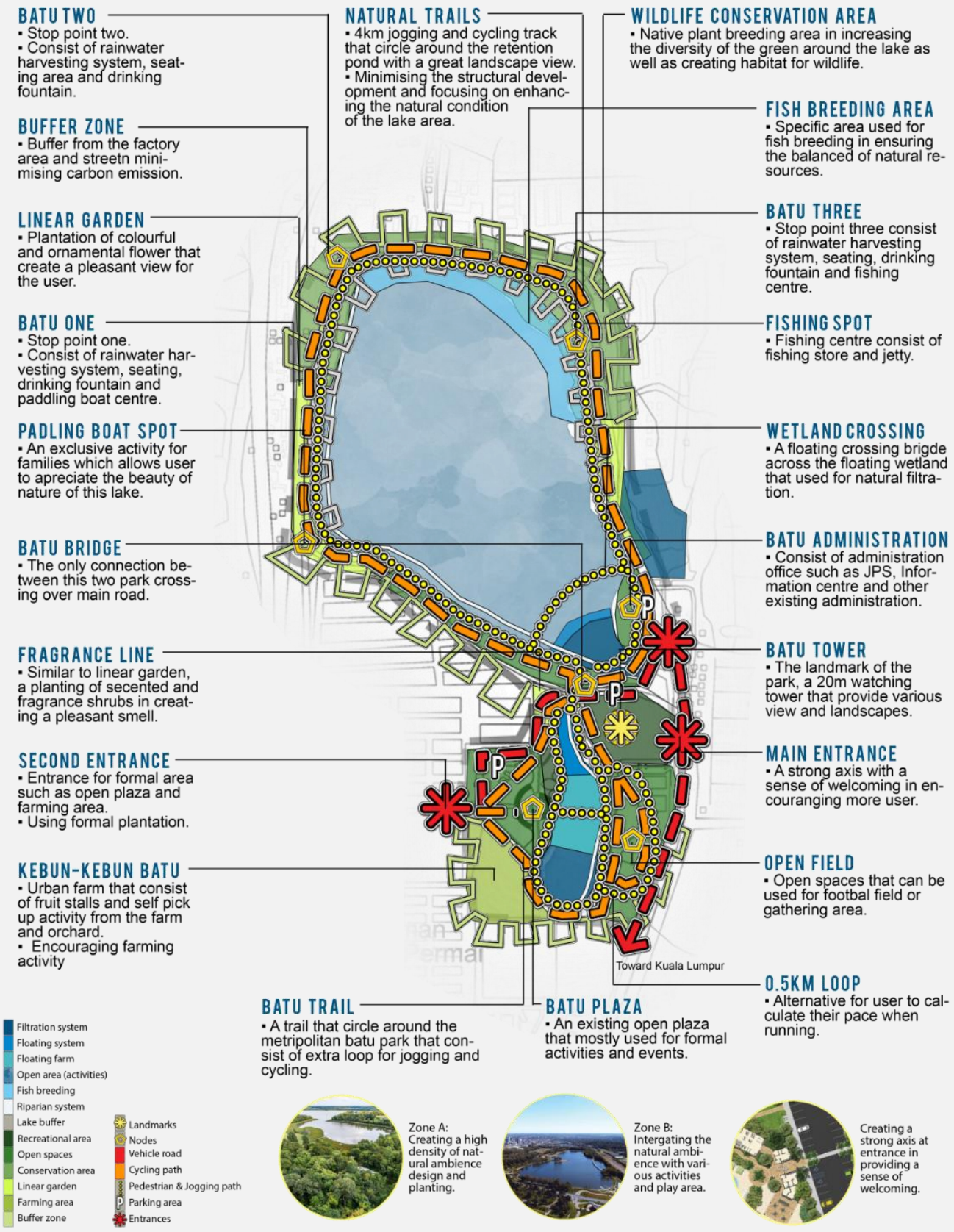


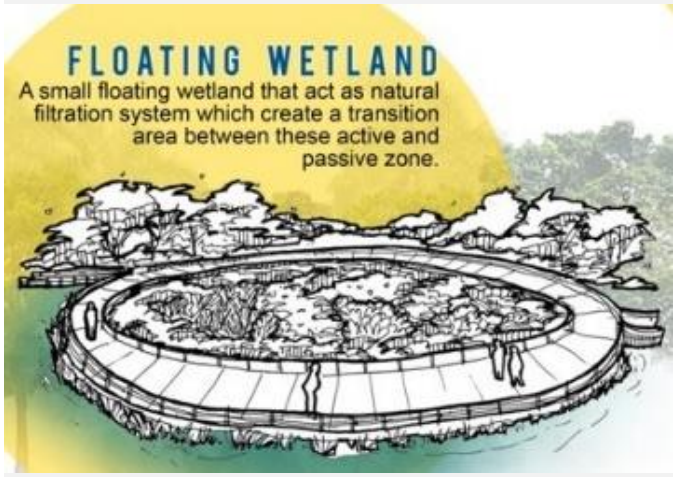
Figure 16: Propose blue infrastructures and technology design.

Figure 17: Proposed green infrastructures and technology design.

CONCEPTUAL PLAN

Figure 18 shows the conceptual plan, results of the merging layers of functional diagram and detail explanations on the element proposed to the site.





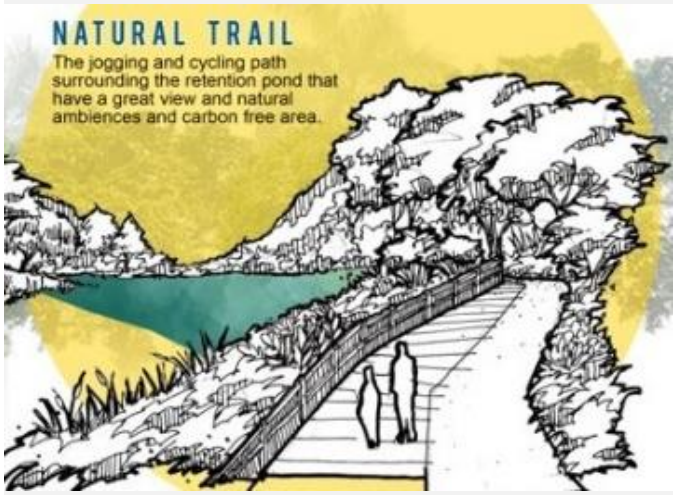


Figure 18: :Conceptual Plan

FINDINGS

PRELIMINARY MASTER PLAN

Figure 19 shows the preliminary master for proposed design of Metropolitan Batu Park.

Figure 19: : Preliminary Master Plan

CONCLUSION

The initiative of designing with integration of blue and green infrastructure is giving many positive impact towards the environment, society and economy aspect. The main important approaches that have been proposed is the nodes or rainwater harvesting system that act as the main attraction as well as treating the nature ecosystem nicely. This also helps the educate the user of the importance of keeping the balance between the nature and structure in our daily life.

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