



The Post-Industrial Landscape: Pretty After Ugly

Nor Atiah Ismail, Suhardi Maulan & Mustafa Kamal Mohd
Shariff

(Students: Marina Daud, Maizura Mazlan & Maryam Haddadian)

Introduction

As cities grow and compete to become more sustainable, their action is often to rectify mistakes of their unsustainable past. Remnants of industrial activity, brownfield sites provide opportunity where cities can undo the past and reinvent a greener future. Regeneration of post-industrial site or brownfield to greenspace in particular, has been used to help reverse social and environmental decline, with typical benefits including increased flood retention capacity, temperature regulation, habitat for wildlife, building communities, encouraging local engagement and providing space for play and recreation (Atkinson et al., 2014).

It involves changing the place aesthetically and functionally, from ugly to pretty in the eyes of the public and professionals. Successful brownfield site restoration is considered as one of the most challenging works in landscape architecture as the site need to be cleanse first to deliver multiple benefits to society and environment.

Examples of landscape ideas at post-industrial area will be exemplified by landscape design at landfill area, a retention pond that used to be an ex-mining land and a power plant in Iran. The above mentioned post-industrial areas namely the Landfill, the waste disposal land; commonly seen as an ugly area with its unbearable smell, retention pond that is always placed at the end of the development area to be hidden with buildings and bushes and a power plant place that is meant for energy generating station. These areas are considered as places that are not meant for people. The post-industrial

site has great potential to be re-developed as a place with great landscape for people. Research findings by Ittelson, Frank and O'Hanlon (1979) inform the potential of landscape design at post-industrial site for people as:

i.Environment as an external physical place where people present their sense of autonomous self;

ii.Environment as self-reveals that the everyday landscape not only can be identified with physical objects or with physical properties of the world, but also with one's experience and action in the environment;

iii.Environment as social system

Certain environments may lead human beings to develop relationships with other people;

iv.Environment as emotional territory

The direct emotional impact of a situation is probably part of all environmental experience, but sometimes becomes the dominant mode of experience so that a certain environment is able to represent emotions and associations that one feels;

v.Environment as setting for action

The environment affects action and action affects environment. As an analogy, environment is said to be a stage for the actors to perform any respective roles.

All these potentials will be described thoroughly in three landscape projects as follow:

Redevelopment of Worldwide Landfill Recreational Park, Air Hitam Puchong by Marina Daud (Figure 7).



Figure 1: Existing Site Conditions of Air Hitam Puchong landfill

Worldwide Landfill Recreational Park, Air Hitam, Puchong is surrounded with housing areas and public vicinity. Marina has to challenge various site weaknesses in her design that include; unaesthetically pleasing view towards gas collection pipe and leachate treatment plant, limited public access and connectivity despite being a recreational park, large parts of the area do not enable public to access or use.

Marina, in her solution to re-create a useful recreational park has come out with the idea to create a Sustainable Energy Landscape park. The design enhances the aesthetic, educational and recreational facilities while promoting eco-friendly development in the city. She proposes Sustainable Ecosystem that includes Mini Ecology Wetland, Wildlife Conservatory Habitat and Wave garden. These varieties of attractions meant to enhance wildlife habitat, utilizing native non-invasive plant species and implementing best management practices to reduce effect to the natural surrounding (Air Hitam Forest Reserved). This area will be planted with

hardy native species that can easily survive in local condition, require no irrigation and fertilization, resistance to local pest, discourage erosion and provide food and habitat for native fauna. Reforestation also will help to clean the air and reduce the odour created by landfill gasses.

In addition the design includes self-producing energy - Sustainable Energy that consists of Solar Farm Garden, Wind Turbine, Shade with Solar Panel creating a model for renewable energy sources which can foster renewable energy market and cater the increasing energy consumption. Currently, the methane gas is already processed and distributed to a home of two thousand.

Green Infrastructure - Rain Garden Parking and Waterfall will be a showcase of innovative conservation techniques such as rain water harvesting, filtered for used in toilets, watering the plants and waterfall. Permeable, porous materials are used to allow rainwater to be absorbed into the ground. Porous concrete will be used for walkways, jogging track, bicycle lane and plaza areas and rubberize material will be used in the extreme game park area. For public leisure, recreational facilities provided include extreme sport park, eco-bridge, xeriscape garden plaza, and observation tower which are accessible and well connected by bicycle track, jogging track and walkway. Detail attention is also given in designing the park furniture -benches, gazebos, lightings, bollards, information board, directional signage are placed properly to provide easy guidance, refuge and comfort (Figure 2-5).



Figure 2: Redevelopment Plan of Ayer Hitam Puchong landfilled



Figure 3: Use of Solar Panel as alternative energy source for the park



Figure 4: Air turbine provide aesthetic and landmark in addition to energy for the site



Figure 5: Central plaza for social activity and view

UPSI Lake Eco Nodes by Maizura Mazlan
 The historic Sultan Idris Training College (SITC) was established in 1917. The establishment started an era that spurred intellectual thinking and nationalism among Malays, a tradition that is upheld firmly by SITC predecessor Maktab Perguruan Sultan Idris (MPSI) and later changed to Institut Perguruan Sultan Idris (IPSI). In 1997, IPSI was granted a university status and the name was changed to Universiti Perguruan Sultan Idris (UPSI). In 2002, due to rapid expansion of UPSI, a new campus of UPSI, known as

Kampus Sultan Azlan was announced. The new campus was planned to house more than 30,000 students.

In developing the new campus, one aspects of development that need to be taken care of is storm water management issues. Maizura noted that the storm water run-off that was planned on the newly built campus are very much in-tune with engineering design that emphasized so much on letting the rain water to be flushed out from the areas into the UPSI lake as soon as possible. As a result, the retention pond is filled with sediments and the water quality of the lake might be polluted. The polluted lake water certainly will give impact other water bodies because the water from the retention pond is discharged to the nearby rivers. The problem is very significant because Tanjung Malim, where the campus is located, received 2899mm of rain per annum, above the average rainfall of Malaysian Peninsular (2400mm/annum). (Figure 6).



Figure 6: Current Storm Water and Water Surface Runoff Analysis

Therefore, what is the best solution to improve water quality in UPSI Lake? The UPSI Lake, which is about 30 acres (12.14 hectares), is important because it is a sole water body for UPSI Azlan Shah Campus and in the future, the lake is planned to be a part of the park and recreational area. case studies Edwards Lake Park in Melbourne, Santa Fe Railyard Park and Putrajaya Lake and Wetlands, Maizura synthesised that the possible solution is to use bio-retention system. These case studies presented solution for water surface run-off problems with the use of biological agents, flora and faunas, as mechanical tools to filter and purify storm water run-off that enter the lake.

In her design, Maizura proposed wetlands and perimeter planting as the main tool to control water surface run-off. The purpose of wetlands is to provide root zone in which, bacteria and microorganisms grow and flourish consequently to intercepts pollutants. Meanwhile, the perimeter plantings will help to intercept raindrops thus reducing the possibility of soils erosions. In addition, grasses will further slow down water surface run-off and increase surface water permeability. It is also believed that by having more natural flora system, biodiversity of the lake will increase the sustainability of the campus as a whole (Figure 7-9).

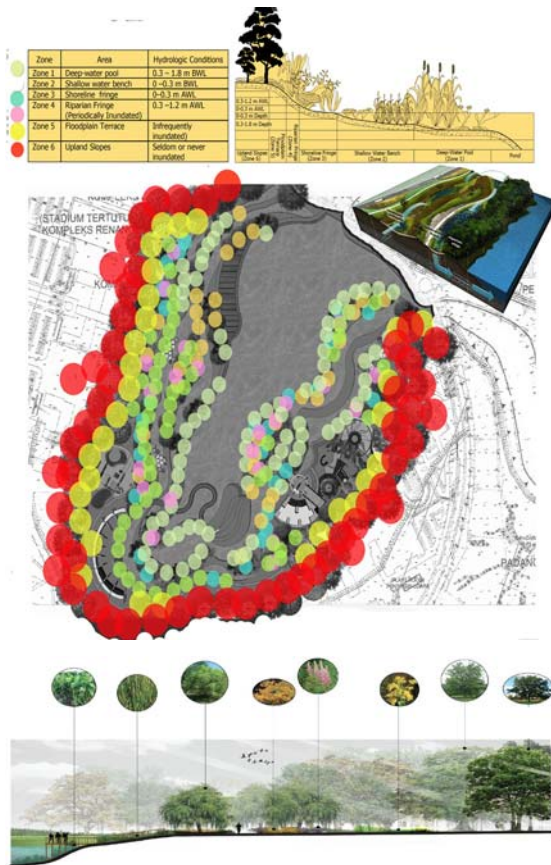


Figure 7: Perimeter Planting and Wetlands Concept by Maizura

By having the idea for wetland and perimeter plantings, Maizura further enhances the functionality and appearance of the lake as a major node for UPSI Azlan Shah Campus by providing recreational and social activities surrounding the lake such path, alumni plaza and exercise station. Maizura also intends to create wetland zone as a place for biological and environmental education to the students of UPSI and public at large.



Figure 8: Master Plan of UPSI Lake by Maizura.



Figure 9: Bringing People closer to Wetlands



Figure 10: Wetlands Stream



Figure 11: Wetlands as central components of the UPSI Lake

Spring of Knowledge and Energy: Rusheder Power Plant, Tehran, Iran by Mariam Haddadian

The Rusheder Power Plant is the first privately owned gas powered electricity generation plant in Iran. Located near to Tehran, it was established in 2007 to generate electricity mainly to the 8 million city's population. The plant is located on a 46 hectare arid natural site with some rich natural landscape resources such as its geology, hydrology, wind, flora, and fauna (Figure 12).



Figure 12: Night view towards Rusheder Power Plant

Maryam Haddadian proposed landscape planning and design of the power plant entitled "Spring of Knowledge and Energy" attempted to enhance the sustainability of the site through site sensitive landscape planning labelled as eco-revelatory (Figure 13)

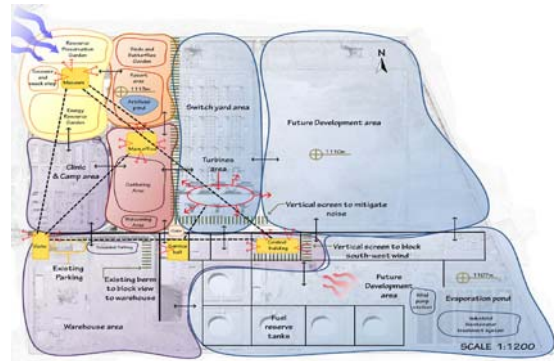


Figure 13: Concept Plan

This includes identifying and interpreting site resources and utilizing them in the environmental education program. She also proposes a program to be regularly conducted through the power plant's Energy Museum and outdoor exhibition, gardens, and playground that educate visitors especially school children regarding the importance of energy.

production, management, and conservation besides appreciating the flora and fauna in and around the power plant. Selective choice of indigenous motifs and landscape plants were proposed to enhance the sustainability of the site especially in conserving limited resources such as water and capturing the benefits of wind (Figure 14-18).

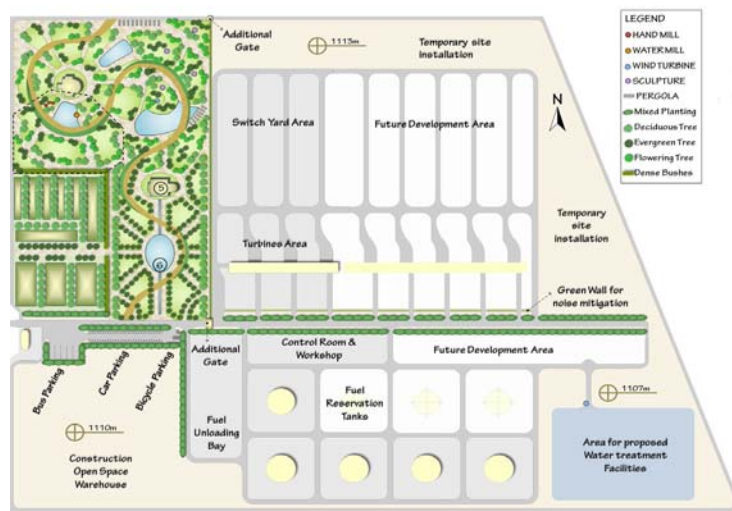


Figure 14: Master Plan



Figure 15: Human Energy Garden



Figure 16: Wind Energy Garden



Figure 17. Hydrology Garden



Figure 18: Solar Energy Garden

Conclusion

With open space shrinking and environmental awareness expanding, many governments have taken an initiative to reclaim and make productive use of older post-industrial sites. Today, in most countries in the world, post-industrial areas are designed from the start to ensure protection of the environment and public health and the safe and productive use of the site after closure. The current design at these three post-industrial sites are geared more towards engineering and environmental solution and much more can be done by using landscape architecture approach in giving recreational, educational and research purposed. The master plans for all three projects present a great opportunity

to showcase and pursue a sustainable future of otherwise polluted sites. They provide better environment and quality of life for the urban population especially for the residents surrounding the area in terms of environment, social and economic.

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