



Reforestation of Barren Landscapes at Bandar Sri Iskandar New Township

Asraf Abdul Rahman, Suhardi Maulan & Noorizan Mohamed
(Student: Yeoh Ai Wah, Lau Wai Mun, Yap Joe Ling & Nur
Khaira Mohd Salleh)

Introduction

The pressures of urbanisation can bring negative effect to the natural environment. Forests are being cleared to give way to development. One of the solutions is reforestation or forest restoration. Until now, most reforestation practitioners and ecologists have tended to see their jobs as strictly technical (Dinh Le, Smith and Herbohn, 2014), however, reforestation is as much a cultural activity as any other human endeavour. A proper and good reforestation requires a view expanded beyond the technical to include historical, social, cultural, political, aesthetic and moral aspects (Higgs, 1997).

Gazetted in the year 1979, *Majlis Daerah Perak Tengah* is known as one of the most rapidly developed districts in the state of Perak, mainly in the vicinity of Bandar Sri Iskandar. As a newly established town centre, Bandar Sri Iskandar attracts various types of development including housing, industries, higher educational institution and government offices. As a new town, it is perceived that most infrastructures have been properly planned and developed to support people's need at Bandar Sri Iskandar. Unfortunately, less attention was given by the local authority to develop recreational spaces that are environmentally friendly and aesthetically pleasing as part of the aspiration to achieve a conducive and dynamic township. To overcome these issues, several solutions have been proposed through a well-planned and well-developed landscape planning particularly by conserving and sustaining existing natural environment at Bandar Sri Iskandar.

Theory of Reforestation

Reforestation is defined as the process of restoring and recreating areas of woodland or forest that may have existed long ago but deforested or otherwise removed at some point in the past. Reforestation is natural or intended for restocking of existing forest and woodland that have been depleted usually through deforestation. Reforestation can be used to improve the quality of human life by soaking up pollution and dust from air, rebuilding natural habitat and ecosystem, mitigating global warming since forest facilitates biosequestration of atmospheric carbon dioxide and harvest for resource particularly timber. By using theory transition of reforestation for the subject matter, the rich mixture of existing and new plants can be introduced suit to the condition of the area. This theory will guide us to understand the shift of deforestation to reforestation and then the regrowth of a stable and extended forest cover (Mather and Needle, 1998); the issues are the result of economic, technological, institutional and cultural factors that are rarely considered before by the respective authorities.

Site Analysis

From a study conducted in the area, it is perceived that there is a lack of sensitivity to sustain, conserve and restore the existing natural environment before any physical development is carried out, causing most of the natural environment to be disturbed and changed.

The significant changes in ecosystem include the change in composition and volume of existing flora and fauna, change in shape of physical landform, and also the

availability of natural waterbodies and man-made reservoirs such as ex-mining lands. These changes are basically deteriorating or forfeiting the values of landscape that is crucial to cater for the needs of the people in the area, especially to the new township.

From the exercises being carried out by the students through projects for landscape planning studio, the students have come to a consensus that the existing natural resources in the proposed project site has to be restored, conserved and managed consistently especially to enhance the existing flora and fauna, physical landform and natural water resources and also to reintroduce the habitat for a few species of fauna that might exist in the area. However, at the same time the restoration and conservation has to run parallel with the needs of the people in the proposed site for the purpose of recreation and other local community activities.

Design Recommendation

Referring to issues previously mentioned, a few artefacts have been chosen to represent solutions that can be perceived as holistic practises from the landscape architecture perspectives. Yeoh Ai Wah for instance argued that the infusion of nature and community is important in designing a successful park. Through the concept of "union-connectivity", she proposed the importance of bringing nature closer to the people, based on the facts that human and nature continuously depend and interact with one another for survival. As part of the design solutions, on-site reforestation approach is proposed to increase the possible use of the spaces both by human and fauna through proper selections of plant species that are



Figure 1: Master plan of the area



Figure 2: Enhancing relationship between nature and man

The disturbed landform is to be reshaped and covered with plants especially grasses and the slopes is to be restored for recreational purposes such as adventure hiking and climbing. On the other hand, the existing small stream is upgraded to increase the water volume in the retention area to ensure the existence of water in dry seasons and also functioning as water retention during wet season to curb the flooding issue. The area for water retention is expanded as a man-made lake to attract people for recreational purposes.

Lau Wai Mun with the concept "forest" as a green space has the same approach with flora and water as the main element to create

spaces. To her, water body is not just water but a wetland, home for many species of water plants and habitats for fauna, which is ecological and educational at the same time (Figure 3-5).



Figure 3: Master plan of the area



Figure 4 : Spaces created by reforestation process.



Figure 5 : Activities in the reforestation area. To maintain healthy air quality, users are encouraged to walk, jog, and cycle in the park as car usage is limited to the minimal park area. According to the designer as a result of the reforestation, air pollution and

noise is reduced to minimum. The theory of restoration and rehabilitation focuses on ecological succession that can be applied to the graded ecosystem and it is aimed at re-establishing the self-sustaining ecosystem and a sufficient resilience to repair the ecosystem (WWF/IUCN, 2001).

Yap Joe Ling through his concept back to nature, suggests that nature is crucial and contributes a lot to us. Therefore, we humans have to give back to nature (Figure 6-7). Contact with nature can help relieve the mental fatigue and stress of modern living and can restore peoples cognitive function, relieve stress and improve physical health (Calkins, 2012).



Figure 6: Detail area plan of the area



Figure 7: Control reforestation created spaces for grassland.

In the concept of development, since this area is surrounded by residential and institution, it needs to provide public amenities and more passive and semi-active spaces to support

the concept such as a family garden, water garden, picnic area and ample walkways. A part of the disturbed area near the water body area, a grassland is proposed as the solution to re-establish the area and at the same time functions as an open space for recreation.

Referring to the framework species method of forest restoration by Elliott (1995), planting of indigenous forest tree species could enhance

natural forest regeneration and accelerate biodiversity recovery. This is stressed by Nur Khaira Mohd Salleh by suggesting that the concept of the woodland, to be the solution to the disturbed land. Planting a lot of indigenous forest tree species and shrubs could create an interesting green space, as a surprising factor to visitors. In addition, water body will be the complementary element to the whole environment (Figure 8).



Figure 8: Master plan of the area

Conclusion

In summary, the lesson learnt from the rehabilitation practice is that graded environment can be restored from intensive and catastrophic human impact. A restored site will also give a better quality and complement the natural environment, which will create a connection of flora and fauna, and also other natural elements, and the process will go on in the cycle of ecosystem. At the same time, the need of local users for spaces for recreation and socialization, appropriate with their lifestyle in the dynamic new township. Therefore, it is crucial in the future, the development of a new township that landscape architects will practice reforestation approach to reinstate disturbed environment and at the same time promote with landscape planning that runs parallel with physical development. The moral of this study shows that protected environment is very important, comes from high awareness of people, and physical design should be down to earth to integrate the nature and human of the next generation.

References

Calkins, M. (2012). *The Sustainable Site Handbook*. New Jersey: John Wiley & Sons, Inc.

Elliot. S., V. Anusarnsunthorn, D. Blakesley and N.C. Garwood. (1995). Research needs for restoring the Forest of Thailand. *Natural History Bulletin Siam Society*, 43: 179-184.

HaiDinh Le, Carl Smith and John Herbohn (2014). What drives the success of reforestation projects in tropical developing countries? The case of the Philippines. *Global Environmental Change* 24, p. 334,348.

Higgs E.S. (1997). What is good ecological restoration?. *Conservation Biology*, 11, pp. 338,348

Molner, D.J. and Dahl, B. (2003). *Anatomy of a Park*, Third Edition. Long Grove, Illinois: Waveland Press, Inc.

Russ, H.T. (2009). *Site Planning and Design Handbook*, Second Edition. New York: McGraw-Hill.

WWF / IUCN 2001. *Forest reborn-East Africa inception Workshop*. Mather A.S, Needle C.L. (1998). *The Forest Transition: A Theoretical Base*. Area, 30, 117-124.