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**The Effect of Landscape Design and Maintenance on  
Perception of Personal Safety at The Neighbourhood Parks: A  
Case Study of Subang Jaya Municipal Council, Selangor,  
Malaysia**

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*To my husband, Abdullah Ismail  
Our two darling boys, 'Abid & Idris Marbawi  
My all-time supporters, Mak & Ayah,  
Thank you for always believed in me.  
**'For every hardship, there is an ease'***



## ABSTRACT

Individual perceptions of personal safety have a huge impact on the utilization of space and social activities in urban public spaces, including neighbourhood parks. Even though a decline in crime rate is observed, the index of fear of being a victim of crime can still rise. The perception and feeling of fear are emotional responses that are built through times during individual experiences in the park environment. This case study research has investigated the impact of maintenance on perception of personal safety through the exploration of traces of maintenance and physically contributing factors in three neighbourhood parks in the urban context that are under the supervision of Subang Jaya City Council (MBSJ) in Selangor, Malaysia. During the initial study to understand current maintenance, a flaw in management processes was revealed: there is one maintenance procedure followed to fit all types of park and maintenance, besides the lack of documentation for many of the processes. Two research techniques were adopted to provide critical discussion on twelve physical traces of maintenance issues, and to explore the factors contributing to the feeling of personal safety, fear of being a victim of crime, and feeling of physical security further. One hundred and eighty respondents among local residents and people at three neighbourhood parks in Selangor completed a self-administered questionnaire and their responses were analysed using SPSS (version 25). In addition, twenty-six participants, gained through on-site recruitment, participated in focus group workshops led by the researcher. The huge amount of data yielded in the form of mapping, photography, and narratives were partly analysed via NVivo, Adobe Photoshop was used to overlay the mapping, and the narratives were coded manually and analysed. The questionnaire findings indicated three contributory factors of perception of personal safety, namely, 'maintenance and appearances', 'planting design and organisation', and 'environmental satisfaction' resulted in the dimensions constructed from the Exploratory Factor Analysis (EFA). The findings confirmed that maintenance and appearances are the strongest factors affecting the perception of personal safety, especially relating to still and stagnant water and fly-tipping and illegal dumping of waste. Intervening attributes were revealed as underlying factors contributing to people's perception, particularly those who were aware of park environments, and preferences. The qualitative findings further explained two outcomes of maintenance regulated the perception of personal safety. The first outcome is visual apprehension, which was perceived as more likely if the aesthetic quality of the environment was considered, as well as visual accessibility. These two factors are interconnected with each other by means of perceived openness and low concealment that affect the feelings of safety and fear of being a victim of crime. In addition, signs of incivilities such as excessive waste and overflowing rubbish bins signal poor periodic maintenance in a park, which invite other consequences such as a fear of wild animals in the park environment. Visual apprehension was also associated with the fear of being a victim of crime in the area with a clear trace of incivilities, and presence of strangers, especially in poorly maintained areas with few people. In contrast, the second outcome regarding functionality revealed that there is weak

association between preferences for high function areas such as outdoor gyms and active areas with extensive facilities, even though the feeling of safety is significantly lower because of the traces of poor maintenance. These findings supported existing theory and previous research and contribute to recommendations for improvement of maintenance procedures in the future. The research recommends overcoming the challenge of perceived personal safety in relation to public satisfaction by the government tackling specific perceptions and feelings towards traces of particular forms of maintenance and physical factors based on the spatial form of a neighbourhood park.

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## INTRODUCTION

### **1 Introduction**

This chapter introduces the issues of maintenance in neighbourhood parks and their effects on users' perceptions of personal safety. It also highlights the importance of examining the relationship between the study of maintenance and the perception of safety in such areas, outlining the research questions which are the fundamentals of this research. The last section reviews the thesis organization, summarizing the gist of each chapter.

#### **1.1 Research Background and Context**

Neighbourhood parks have numerous benefits for the community, as well as stakeholders, by providing social, physical and cultural services that contribute positively to the mental health and well-being of surrounding communities. The reason for this is that they offer nature experience within the vicinity of the residential areas, instead of a distant/faraway forest or national park. They provide for people's recreational needs and, at the same time, can help restore ecological balance in the midst of rapid urban development. Nevertheless, such benefits can only be gained if good maintenance is provided to ensure the park functions well and is sustained in the long run (Dempsey, 2012a).

The neighbourhood park is the core of green space system provided within close proximity of residents (Moulay et al., 2017) as an essential infrastructure to enhance the quality of life of a community. This is supported in a report by CABI Space (2005) which stated that 91% of people agreed that parks have improved their quality of life. The nature experience contributes to this in many ways. However, perceived quality of life among Malaysians has shown a decline between 1990 and 2002 with the substantial increase of crime rate and fear of crime (Economic Planning Unit, 2004; Khairiah, 2008;

PLANMalaysia, 2006). Despite low numbers of crime cases in a particular area, the feelings of insecurity and fear are usually greater than the actual cases (Khairiah, 2008; Abdullah et al., 2015). A study on community perception in 2004 indicated that nearly half of the issues were attributed to perceived crime and public safety issues (Khairiah, 2008). Safety is the top priority for a person prior to attending other complex needs. It is a key determinant for people to enjoy and feel comfortable in their outdoor environment (Ramanujam, 2006). Hence, the degree of safety, either real or perceived, contributes significantly to the way people are living (Khairiah, 2008) and their quality of life.

A well-maintained landscape is claimed to encourage physical activities and exercise in public parks (CABE, 2004), and enhance the liveability in the community (Moulay et al., 2017). Comfort and enjoyment are also factors that influence users to engage in activities in their outdoor environment (Ramanujam, 2006). Safety is therefore necessary to ensure that users enjoy and feel comfortable to be outside (*ibid*). In contrast, the lack of maintenance of public spaces can greatly contribute to physical and social decline (Bedimo-Rung et al., 2005; CABE, 2004), and the enjoyment and comfort might diminish as the users feel unsafe or fearful of being a crime victim. Consequently, many parks face deterioration because of the fear instilled by the outdoor condition itself (Economic Planning Unit, 2012; Schroeder & Anderson, 1984). The negative perception caused by outdoor experiences such as the feeling that no one cares and negligence have made people feel reluctant to utilise public green spaces (CABE Space, 2007). Therefore, the identification of specific maintenance cues could greatly contribute to knowledge about maintenance and inform designers such as architects, landscape architects and urban planners (Paramita, 2019).

## 1.2 Research Problem Statement

### 1.2.1 Crime index, perceived of safety and the effect on park liveability and well-being in Selangor, Malaysia

According to the Malaysian Crime Prevention Foundation (MCPF), crime incidences contributed to the decline in quality of life (QOL) in Malaysia between 2002 to 2011 (Economic Planning Unit, 2012). The rise in crime numbers, or news about crime has gradually increased fear among Malaysians (Suryati, 2016). The Economic Planning Unit has conducted research on quality of life since 1999 and has produced four MQOL reports (2004 to 2011) explaining the QOL index. The latest one is the Malaysian Well-being Report 2013 which reported the Malaysian Well-Being Index (MWI). As the extension of QOL, MWI comprises fourteen (14) components covering economic and social progress, instead of the eleven (11) components in QOL (refer to table 1.1).

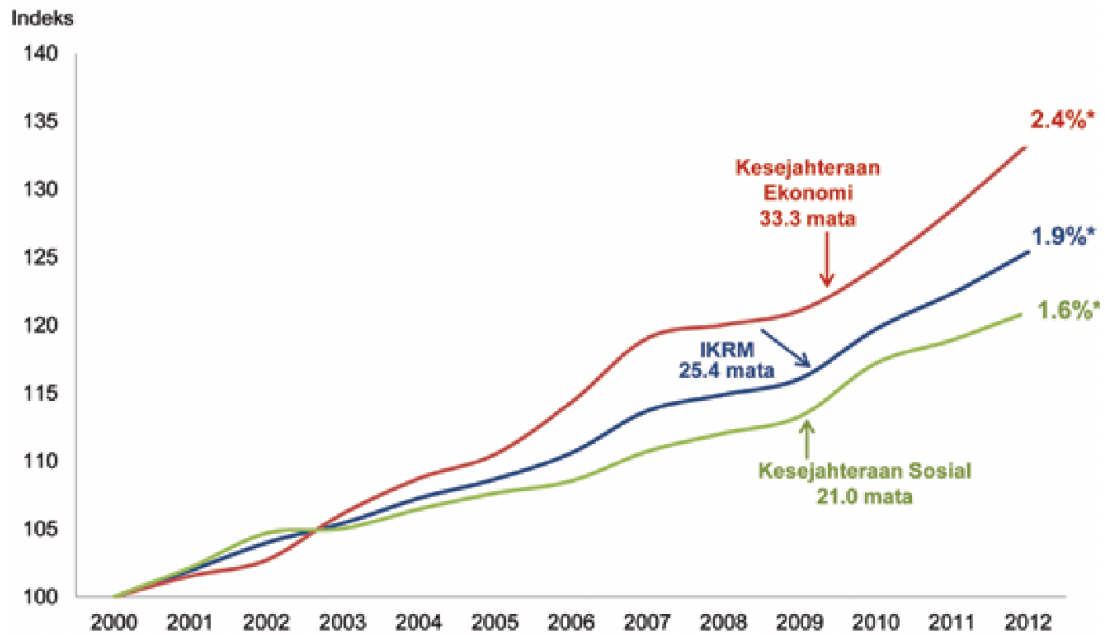
Table 1.1 Indicators of Malaysian Well-being Index (MWI) 2013 and Malaysian Quality of Life Index (MQLI) (Source: Drawn by author based on MWI and MQLI reports)

INDICATORS	Malaysian Well-being Index (MWI) 2013	Malaysian Quality of Life Index (MQLI 2004-2011).
Economic Well-being	Transportation Communication Education Income and distribution Working environment	Education Transportation and communication Culture and recreation Income and distribution Working environment
Social Well-being	Housing Recreational Governance Public safety Social participation Culture Health Built environment Household	Housing Public safety Health Social participation Built environment Household living

According to the Human Development Index (HDI), Malaysia is ranked sixty-fourth (64<sup>th</sup>) out of 186 United Nations countries in 2012. In comparison, Malaysia was ranked thirty-six (36<sup>th</sup>) out of 111 countries in 2005 based on QoL Index which was developed by the Economist Intelligence Unit (EIU). The Malaysian Well-being Index 2000-2012 indicated that the subcomposite of Economic Well-being Index has a significant increase of 2.4 percent per year



as compared to the Social Well-being Index (Economic Planning Unit, 2013). Among the fourteen components, transportation and housing indicated the highest climb, while household showed the least. The public safety index showed a decrease in crime incidences and road accidents, but at the same time contributed to the positive index from cumulative efforts of various parties in curbing crimes (*ibid*).



Notes: Kesejahteraan Ekonomi (Red) is Economic Well-being  
 Kesejahteraan Sosial (Green) is Social Well-being  
 IKRM (Blue) is Overall performance of well-being  
 \*the annual growth rate

Figure 1.1 Graph of the Malaysian Well-being Index (MWI) from 2000 to 2012  
 (Source: *Malaysian Well-being Index 2013* by Economic Planning Unit, 2013)

Public Safety component index has sought many initiatives that focus on fighting crimes at national levels, local governments, as well as community participation. The National Key Result Area (NKRA) initiated in 2009 has set forth the aim to reduce the number of crimes as one of its development thrusts, starting with the four leading states in crime statistics. Selangor is one of the four states identified as a crime hotspot as it is ranked 2<sup>nd</sup> highest in crime recorded by the Royal Malaysian Police (or known as PDRM) (Dass & Ananthan, 2019; P. Sundramoorthy, 2014) (refer to figure 1.2). The NKRA focuses on five key areas to reduce crime in these hotspots which are to reduce reported crime index, reported street crime and fear of being a crime

victim, and to improve justice system, in order to increase public satisfaction towards PDRM (P. Sundramoorthy, 2014).

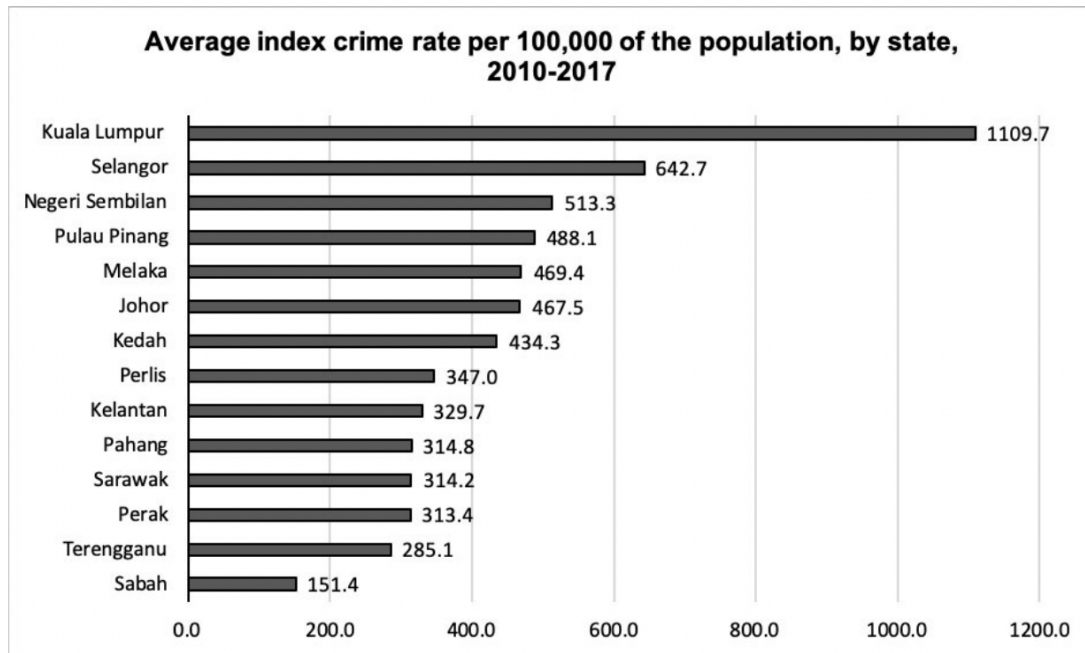


Figure 1.2 Average index crime rate per 100,000 of population by state from 2010-2017 (Source: drawn by Dass and Ananthan (2019), based on MAMPU and EPU database on crime index).

Another initiative taken was the Safe City Programme under PLANMalaysia which helps authorities to deter crime through active and passive prevention methods. Even though a decline in crime rate is observed, the fear of being a crime victim index (Indeks kebimbangan menjadi mangsa Jenayah) witnesses fluctuating scores. The Economic Planning Unit (2013) reported that following the increase in fear of being a crime victim index from 2009 to 2011, the index escalated in 2012 which is caused by the widespread of crime incidences news through email, SMS, and crime reviews from independent local websites.

Table 1.2 Index of Subcomponent Public Safety in MWI 2013

Keselamatan Awam	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Kadar jenayah (setiap '000 penduduk) (-)	7.7	7.6	7.2	7.5	7.2	7.0	8.7	9.1	8.9	8.9	7.4	6.5	6.0
Kemalangan jalan raya (setiap '000 kenderaan berdaftar) (-)	23.6	23.5	23.2	23.3	23.7	22.3	21.6	21.6	21.5	21.0	20.7	21.1	20.4

(Source: Economic Planning Unit, 2013)

Table 1.3 Index of Subcomponent Public Safety in MQoL 2011

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
1.7 Indikator Keselamatan Awam											
Kadar Jenayah (setiap '000 penduduk)	3.8	3.6	3.7	3.9	3.7	3.9	4.2	5.6	7.2	7.4	7.1
Kemalangan Jalan Raya (setiap '000 kenderaan)	19.4	19.5	22.5	24.0	23.8	23.6	24.6	25.2	23.1	23.0	23.7

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Indikator Keselamatan Awam										
Kadar Jenayah (setiap '000 Penduduk)	6.5	6.0	6.2	6.0	5.9	7.4	7.7	7.7	7.5	6.3
Kemalangan Jalan Raya (setiap '000 kenderaan)	23.5	23.3	23.3	23.7	22.2	21.6	21.6	20.8	20.9	21.2

(Source: Economic Planning Unit, 2013)

The 'Safe City Programme' by PLANMalaysia in 2004 is one of the initiatives taken based on QOL report to acknowledge the condition of public green spaces as a possible factor that correlates with crime and the perception of safety.

### 1.2.2 The impact of perception of personal safety on the deterioration of public green spaces

Despite the decrease in crime incidences and initiatives taken, the challenge to increase public's perception of safety prevails (P. Sundramoorthy, 2014). Even though the crime rates declined, 52.8% of the public still does not feel safe. The government also agrees that public's perception and fear of crime remain negative (*ibid.*).

*"The public should not only be safe, but they need to feel safe at the same time and this is a very big challenge to the government..."*

*Datuk Seri Dr Ahmad Zahid Hamidi  
Deputy Prime Minister of Malaysia (The Sun Daily, 2017)*

This implies that the public's perception on safety and fear are beyond the occurrence of crime incidences (Khan, 2015; P. Sundramoorthy, 2014; The Sun Daily, 2017). Khan (2015) emphasized perception as a key determinant of how people perceived safety in their environment with two factors; fear of crime and feeling unsafe in outdoor environment. Similarly, Dempsey and Burton (2012) argued that feeling unsafe leads to discomfort and encourages

misperception of safety. Safety and comfort are two key factors of the utilisation of safety (ibid), and misperception on safety often leads to deterioration of public spaces.

Bacon (1976) discussed the influence of experience on emotions that determine users' perceptions and preferences. These emotions were perceived during exploration of the outdoor environment (Maruthaveeran & van den Bosh, 2015). A good quality environment could evoke positive memories and provide good experiences, hence encouraging regular use of parks (Hussein, 2014). For instance, several studies emphasized that poor maintenance might make people lose interest with a space, hence causing it to be under-used (Bacon, 1976; Schroeder & Green, 1985; Banchiero et al., 2020), and abandoned (Nam & Dempsey, 2020; Newman, 1972a). Similarly, Moulay et al. (2017) claimed that the low quality of physical attributes contributes to lack of social interactions, thus causing it to be underutilised.

Despite the abundant research on physical factors influencing users' perception of safety in utilising public green spaces, there are only few studies that focused on recreational and cultural components which are among the factors that affected the QoL index (Economic Planning Unit, 2012). The provision by the local government on the development only fulfills the 10% requirement of green spaces, and it still overlooks the importance of provision on good design and quality of park (Hamdan et al., 2017). It is therefore crucial to investigate these factors which influence public's perception of safety of the outdoor spaces.

Research Aim and QuestionsBased on the issues discussed above, this research aims to investigate the influence of the existing maintenance on users' perception of safety in utilising neighbourhood parks. This is achieved by providing critical discussions on the key issues of physical conditions and visual appearance, and specific implications concerning the perception of personal safety among neighbourhood park users.

Hence, the study intends to address the main research question: how does maintenance affect users' perception of personal safety?

To help answer this main question, the following research questions are addressed:

- 1) What are the factors affecting users' preferences with regard to their neighbourhood park landscape?
- 2) What are the issues of maintenance that people perceive with the current park design and site conditions?
- 3) How do traces of maintenance issues become cues that affect people's perception of personal safety?

### **1.3 Research Strategy**

This research strategy is designed to ensure that the study is conducted in a systematic manner to address the research questions. To achieve the expected outcomes, the study includes five (5) phases of research development.

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
Research Framework	Conceptual framework	Results Analysis	and Discussions	Recommendation and Conclusion
<p>1) Literature (LR)</p> <p>i. Literature on the subject of the study, which are (a) <b>landscape maintenance procedure</b>, (b) physical factors and visual appearances</p> <p>ii. Theoretical discussions on perception of personal safety and fear</p> <p>2) Background study of <b>case study-</b> Landscape and Maintenance Policy and procedure for neighbourhood park</p>	<p>Conceptual framework development from LR</p> <p>Research methodologies to answer RQ1, RQ2 and RQ3</p> <p>Methods of data collection</p> <p>1) Survey Questionnaire</p> <p>2) Focus Group Workshop</p> <ul style="list-style-type: none"> <li>- Colour dots mapping</li> <li>- Photograph</li> <li>- Small group discussion</li> </ul>	<p>Test of relationship</p> <p>Quantitative results:</p> <p>i. Landscape preferences</p> <p>ii. Perceived on lack of maintenance: Physical conditions and visual appearance</p> <p>iii. Maintenance cues: Effects of certain maintenance results on perception of personal safety</p> <p>Quantitative results:</p> <p>i. Node's formulation-dots distribution mapping</p> <p>ii. Codes from discussion transcript</p>	<p>Issues of Maintenance from management perspectives</p> <p>a) maintenance management</p> <p>b) operational procedure</p> <p>RQ1: Users' preference on spaces, landscape component, ambience</p> <p>RQ2: Perceived aesthetic values, signs of lack of maintenance, signs of incivilities and disamenities</p> <p>RQ3: Maintenance cues: Perceived Effects on Perception of Personal Safety</p> <ul style="list-style-type: none"> <li>- Perceived insecurity</li> <li>- Feeling unsafe and threatened</li> </ul>	<p>Causes on perception of personal safety</p> <p>Design strategy of low-key landscape maintenance</p> <p>Recommendation for improvement on landscape maintenance</p>

Figure 1.3 Summary of the research process

## LITERATURE REVIEW

### **2 Introduction**

Figure 2.1 provides a conceptual framework which is the basis of how the relationship between landscape maintenance and perception of personal safety is discussed in this chapter. This chapter is structured briefly into two sections. The first explores the main subject of the study - landscape maintenance. A broad discussion of the meaning of landscape maintenance and physical upkeep, as well as the process of maintenance on related landscape elements and spaces, are given in this section. It is followed by articulating the effect of maintenance on the visual and physical appearance, and how people perceive maintenance through it. This section also addresses the increasing references that establish the significance of maintenance to the community and emphasises the impact of maintenance on the users' preferences, as well as the perception of safety.

The second section explores the theoretical study of personal safety and landscape perceptions. This section starts by familiarising the reader with theoretical studies from earlier research that initiates the perception and preferences of landscape, as well as from the current literature. The exploration of perception and preferences highlights the significance for landscape architectural research, especially in terms of understanding its relationship with preference on park landscape, park usage, perceived maintenance, and perception of safety and crime in the park. This section continues with the main subject - a theoretical study of sense of personal safety. It addresses the early research that discusses the theory of safety, exploring related feelings that have an impact on space utilisation, and thereafter on the perception of personal safety, at the neighbourhood parks. This second section ends by establishing the traces of problems related to

maintenance and conditions, known as the maintenance cues. This involves a discussion of the impact of these prevailing factors, including the physical and non-physical, resulting from poor maintenance, or failure of such, on the perception of personal safety.

The structure of this chapter is organised to tackle the overall topic in such a way that the reader can understand the importance of this research, namely in exploring the impact of maintenance on the perception of personal safety. Therefore, the two keywords, i.e., landscape maintenance and perception of personal safety, are the main subjects of the research that are highlighted throughout this thesis.



## 2.1 Developing Framework for A Study on Relationship between Landscape Maintenance and Perception of Personal Safety

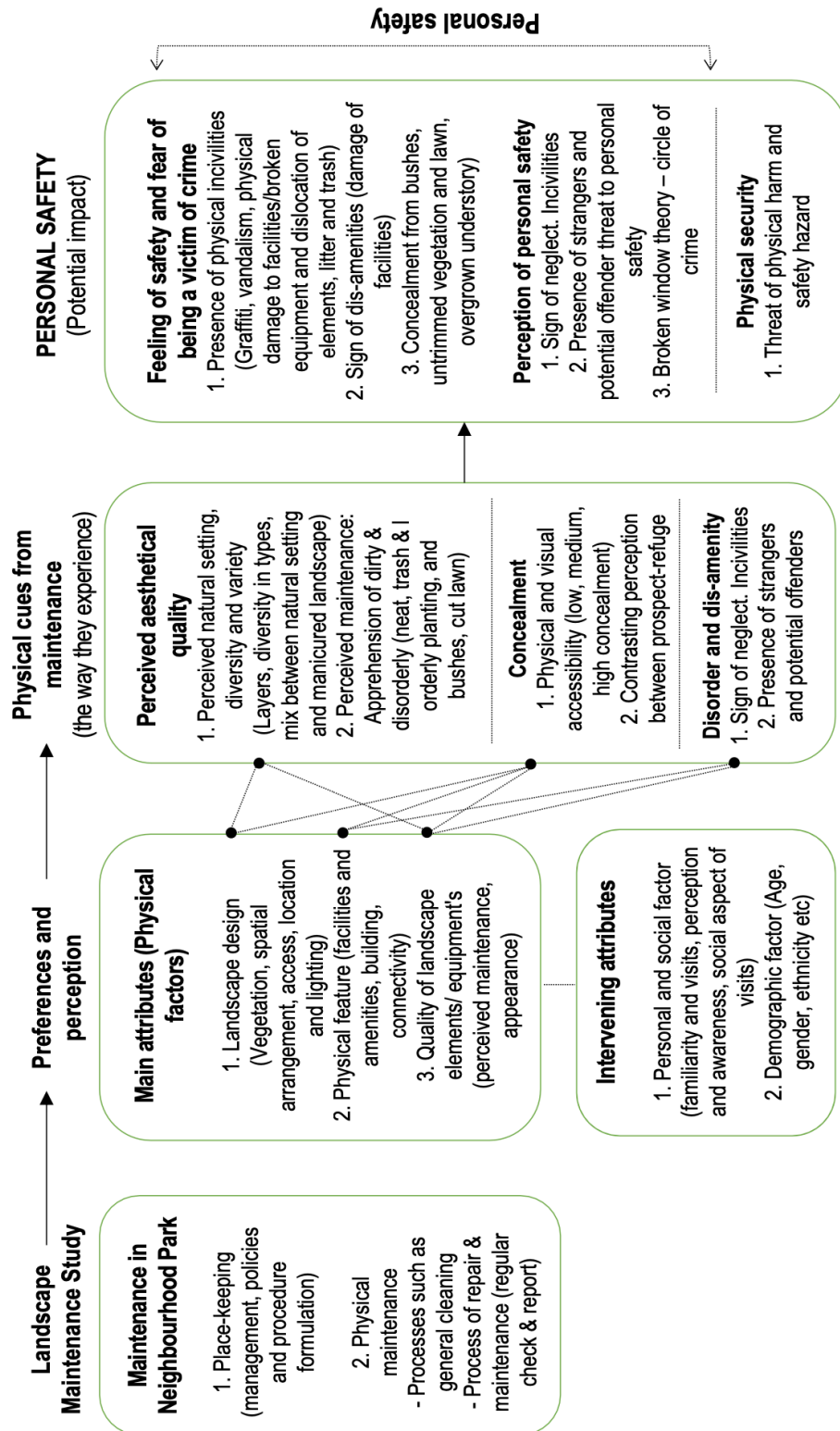


Figure 2.1 Conceptual framework to establish relationship between landscape maintenance and perception of personal safety for this research

## **2.2 Landscape Maintenance Study**

There are very limited references that offer a comprehensive study of maintenance and the understanding of the overall concept of maintenance (Dempsey, 2012b; Paramita, 2019). Besides this lack of exploration of the overall concept of maintenance, especially in terms of appearance and perceived conditions, there is growing discussion on the aspect of management and budgetary of maintenance. However, the associated arguments did not ultimately allow for a sufficient understanding of maintenance from the perspectives of landscape appearance/conditions, and hence that intersects with people perceptions of their impact on personal safety. This research argues that the use of public parks is determined by the two related factors, which are people's preferences of landscape features and facilities, as well as landscape conditions as a result of maintenance.

Previously, research mostly acknowledges the budget and capital of maintenance (Dempsey & Burton, 2012), however, this study literature discusses maintenance on its tangible attributes and outcomes of the maintenance practices. The tangible attributes include the physical attributes of maintenance, and on the other hand explores the intersections between cues from maintenance issues, and perception of personal safety. In short, this literature set to gauge the important impact of maintenance that contributes by physical appearances of maintenance, that is usually poorly highlighted.

The recent research by Paramita (2019) highlighted the significant contribution of maintenance knowledge to designers such as architects, landscape architects, and urban planners. To summarise, the knowledge of maintenance of public spaces contributes to the understanding that maintenance based on spaces and elements, as well as types of user, leads to the appropriate actions required to maintain, repair, and service it (Paramita, 2019). On the other hand, this understanding later becomes a parameter for future development to provide a suitable development approach that is cost effective and low in maintenance of public spaces, yet that fulfils people's needs.

### **2.2.1 Understanding landscape maintenance: Definition and processes**

There are several definitions of maintenance from various fields following the increase in research on this subject. By definition, maintenance can be understood as *'the act of keeping something in good condition by checking or repairing it regularly'*, and *'the act of making a state or situation continue'* (Oxford Online Dictionaries, 2021). Accordingly, maintenance as described by environmental researchers, such as urban geographers and landscape architects, as an operation that involves a range of land management techniques to ensure a place is always fit for its intended purposes, either daily or periodically (Nicola Dempsey & Burton, 2012). Similarly, Graham and Thrift (2007) defines maintenance as an ongoing process, repetitive and routine activities, that ensure everything works in good order. (Bedimo-Rung et al., 2005) explained that the landscapes of parks have two states, namely that some are amenable to change over time, whilst others are fixed according to their initial planning. This means that maintenance processes deal with both conditions and allow their appearances to have an impact in the long run (CABE Space, 2007).

As they constitute ongoing and routine activities, maintenance processes are seen as part of the urban fabric and ensure liveability in urban areas (Graham & Thrift, 2007; Paramita, 2019). These processes of maintenance respond to visible problems such as failures and absences (Graham & Thrift, 2007; Paramita, 2019), as well as to hidden issues that cause discomfort and the deterioration of a space (Paramita, 2019; PPS, 2008a). Maintenance also deals with design issues including spatial organisation, topography and levels, accessibility, visual appeal, and aesthetic features in parks (Bedimo-Rung et al., 2005). These responses, according to Paramita (2019), involve material or systems, cleaning, and general upkeep.

In her thesis, Paramita (2019) outlined maintenance as a process that has three components, i.e., maintenance, repair, as well as vigilance and surveillance (p. 41). These three components determine the order of work, and how it being conduct. The process of 'repair' responds to any issues of failure or broken elements (Henke, 2007; Paramita, 2019). Hence, the 'repair'

process, according to Henke (2007) is a management and control approach to dealing with environmental order and change. Henke (2007) defines the 'repair' aspect of maintenance as:

*“Repair as maintenance is an attempt to solve problems by ‘tweaking’ elements within the structure of a system, keeping as much of the system intact while remedying the trouble... In most cases, repair as maintenance is the ‘default’ form of repair.”*

(Henke, 2007)

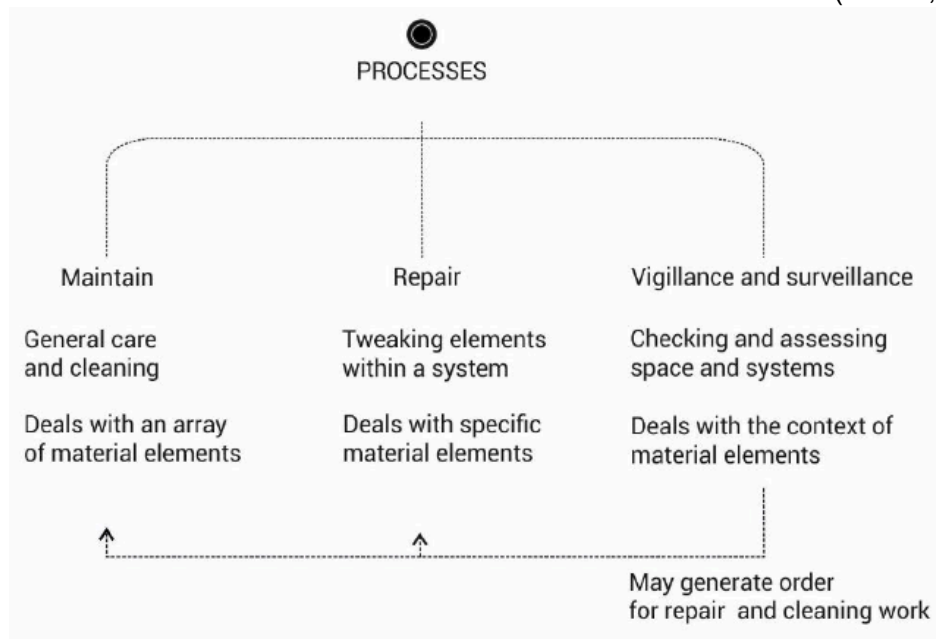


Figure 2.2 A maintenance process diagram (Source: Paramita, 2019)

Likewise, the maintenance of neighbourhood parks can be described as having three dimensions. One of the ideas of landscape maintenance highlighted by (Nicola Dempsey, 2012) is place-keeping. Place-keeping can be understood as a responsive and long-term management approach to ensuring good quality of a space. The current body of research on place-keeping argues that it is more importance to providing a good environment instead of place-making or the initial stage of design (Nicola Dempsey, 2012). Place-keeping involves preplanning and identification (Dempsey & Burton, 2012) and control processes that deal with order and changes in the landscape throughout time (Henke, 2007). Earlier in place-keeping, preplanning is one of the aspects of park management that commences during the early development and design of the landscape. This involves the identification of maintenance needs, including those relating to equipment as well as expertise (Dempsey & Burton, 2012). The identification process examines the types and

characteristics of park landscapes, and the landscape element in the park design. On the other hand, the users and context of place are also identified (Dempsey et al., 2014; Mathers et al., 2015). These factors become an indication of the level of maintenance required, and hence the means to provide the appropriate procedure based on the typological characteristics of park landscape.

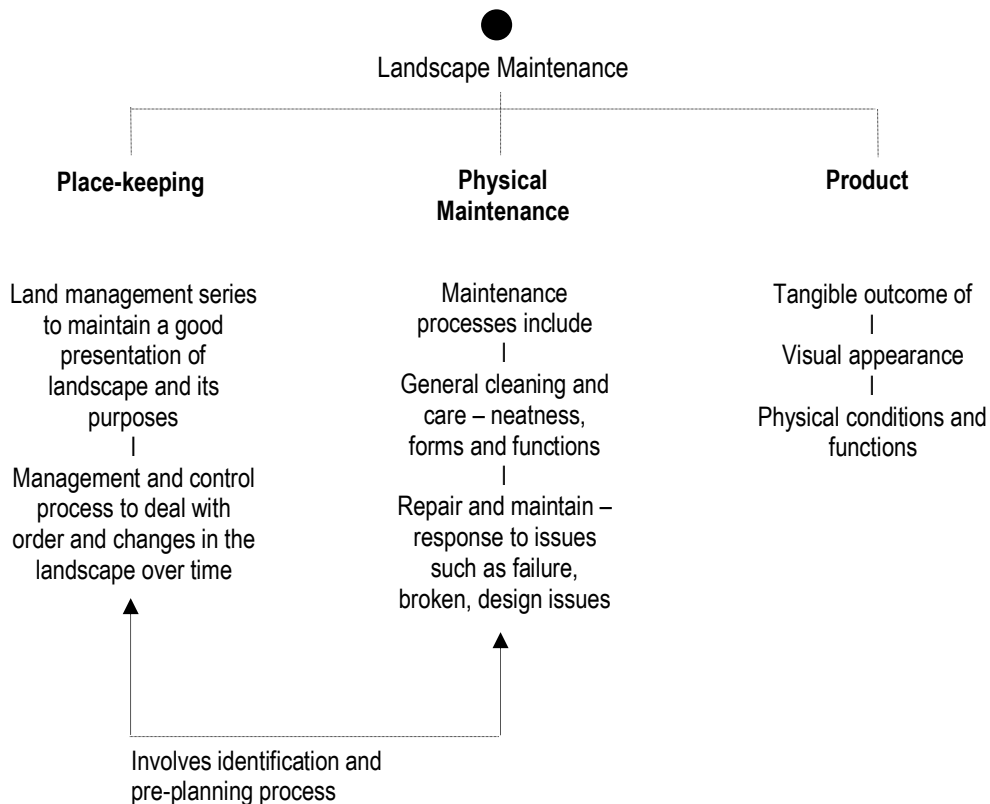


Figure 2.3 A landscape maintenance diagram (Source: Drawn by author in reference to the relevant literature)

Physical maintenance is the action of maintaining the physical elements of the landscape (Dempsey & Burton, 2012). During this stage, the identification process also takes place in response to issues or problems that occur with the physical landscape. There is also a need to consider the changes of landscape throughout time that happen naturally or due to human intervention. Therefore, there is the need to replan during any maintenance processes in response to changes in landscape and environment. For instance, spaces with play equipment, such as an outdoor gyms and playgrounds, may need regular maintenance to avoid deterioration in function or not being utilised because of the poor conditions of the area or equipment.

Besides long-term management and control (place-keeping), and physical maintenance, the other dimension of maintenance is known as product (Dempsey & Burton, 2012). Maintenance as a product is a tangible outcome that presents a good quality of space to the people, hence always comes last in the place-keeping discussion (*ibid.*).

These three dimensions of maintenance work together to ensure the upkeep of a place and that the elements remain in good working order for longer periods. A well-planned programme for maintenance makes sure every element longevity is extended as much as possible to avoid rapid deterioration and breakages, as well as to offer a good-quality environment (Dempsey et al., 2014; Hussein, 2014). Hence, maintenance is seen as an important activity that helps to shape people's experiences of quality green spaces (Graham & Thrift, 2007; Paramita, 2019).

### **2.2.2 The benefit of well-cared landscape**

There is considerable research into landscapes that explores the benefits of public green spaces to the community, from health and well-being, social development, as well as for physical and recreational needs. Though there is less evidence about the direct benefits on health and well-being, there are studies that offer hypothetical explanations for the pathways that lead the great potential of public green spaces (Bedimo-Rung et al., 2005; Lachowycz & Jones, 2013), especially in terms of providing good-quality and well-cared-for environments. Thus, as discussed previously, maintenance in itself is an ongoing and mandatory process to allow the original purpose of a place to be adaptable to change over time (Dempsey, 2012b). Therefore, in other ways, it could be understood that maintenance starts and maintains a well-cared for landscape setting to cater for people's experiences and memories. This is because people's understanding and appreciation of a landscape develops continuously over extended periods of time, rather than in limited time, and it also responds to changes (Cakci, 2012).

The American Public Health Association (APHA) noted an associated reduction in illness and stress, increased physical activity, and an excellent contribution to social capital when one receives sufficient and quality access

to nature through green spaces (APHA, 2013). One of the better contributions of public green spaces found in urban areas is that they provide environmental balance (Sreetheran, 2017). For instance, the trees and vegetation in public green spaces are the main components effecting the capture of carbon dioxide and can buffer the noise produced from vehicles and other urban activities such as construction (APHA, 2013), and in the building energy consumptions (Shukri, 2011). The mass production of carbon dioxide from urban activities are of global concern and have brought considerable discussion as to the effect of heat islands, and global warming. The presence of public green spaces and green patches are perceived to represent a 'superior good' with regard to sustainability by safeguarding the compact urban environment, and which act as mechanism to mitigate global warming (APHA, 2013; Jim & Chen, 2010; Shukri, 2011).

On the other hand, public green spaces also provide well-being for the wildlife that enriches urban biodiversity (APHA, 2013). The tremendous development of urban sprawl all over the world resulted in the overexploitation of natural resources, turning former green land to the hard surfaces of buildings, and roads (Shukri, 2011). The development of green spaces, including public parks and green corridors, are the efforts to revert towards environmental balances and to support the well-being of urban dwellers (Shukri, 2011). In her study on the environmental corridor in Kuala Lumpur, Shukri suggested that better maintenance provides a quality environment that could restore the ecological balances in big cities such as Kuala Lumpur (*ibid.*). The addition of well-cared-for public parks could alter the urban environmental systems and be key to reducing the loss of species, and finally revive the diversity that was diminished due to rapid development (*ibid.*).

It is widely recognised that urban green spaces have a really important contribution to play in making urban areas more liveable, hence contributing to social sustainability (Jim & Chen, 2010; Norouzian-Maleki et al., 2018). One of the studies on residential liveability found relationship between environmental quality and social sustainability (Norouzian-Maleki et al., 2018). This study found a positive relationship of physical components, the scales of landscape, and the usage of an area, with neighbourhood liveability. There are also other physical characteristics that influence the livelihood of a space. such as

enclosure, as well as shading cast from any trees or structures such as buildings, especially in hotter climates (*ibid.*). Besides, the scales of landscape are also found to be a good indication of liveable spaces, and indicate the naturalness, as a key component in park landscapes, for the promotion of the psychological well-being of residents (Marselle et al., 2013; Nasar, 1990; Norouzian-Maleki et al., 2018).

Over the years, the increasing research on the contributions of outdoor green spaces substantiates the effects on people's health and well-being. (APHA, 2013) themselves encourage cooperation from all parties, including the community, health practitioners as well as designers and managers from park and housing departments, in the promotion of people-nature contact, and to provide productive landscapes so the associated benefits can be realised by everyone. (Eisenman et al., 2019) explained the biophysical processes of park ecosystems, such as trees, could increase air quality and consequently contribute to human health (in their study, for cases of asthma). Their systematic studies in the literature elaborated on 'biophysical process', with trees as a 'tool' in pollution-removal processes for the gaseous emission problem.

Meanwhile, the contribution of green spaces in terms of their health benefits through various resources provided for physical activities are being discussed. The evidence for such, as presented by a group of surgeons, can be found in (Manley, 1997), which establishes that the benefits of physical activity provided by green spaces includes improvements in mental health, physical functioning and disease, and even on mortality. Indeed, the insufficiency of physical activity is "one of the leading risk factors of death worldwide" for both older and younger adults ((WHO), 2018; Manley, 1997). Though there are adverse effects of excessive physical activity and exercise, the impact of 'regular' physical activity offered by green spaces to health-related quality of life needs to be emphasised.

Access to landscape encourages people to live a healthy lifestyle. Public parks, for instance, offer various resources and facilities for physical activity including running, cycling, and other sports activities, and for leisure activities such as walking, jogging, and light exercise including yoga and meditational exercises (Lachowycz & Jones, 2013). Lachowycz and Jones



(2013) suggested close proximity to parks significantly encourages residents to adopt healthy behaviour compared to ones that live afar. Meanwhile, several studies associated proximity to parks with a number of factors that attract residents such as views of the landscape and facilities, and accessibility to the physical activity (Lachowycz & Jones, 2013)*bid.*). However, this study also suggested that one of the three main characteristics that encourage physical activities and continuity in the activity is a well-cared-for park landscape. A well-cared-for landscape has been demonstrated in previous studies to include good condition of parks, adequate number of facilities, suitability in locations, satisfaction with the quality of the facilities, enjoyable scenery, and presence of other people doing exercise (Bedimo-Rung et al., 2005; Lachowycz & Jones, 2013). This is supported by the study of (Jansson et al., 2013) that associates a high quality of neighbourhood green spaces with higher levels of physical activity.

Research by the NHS shows that physical activity also improves people's psychological state. The experience in nature, through viewing and activities, creates an interaction between man and nature that results in psychological benefit (R. Kaplan, 2001; R. Kaplan & Kaplan, 1989; Lachowycz & Jones, 2013). A compilation of previous research found that physical activity boosts self-esteem and affects people's mood, which can reduce the probability of mental disorders such as stress, depression, dementia, and Alzheimer's disease (NHS, 2018). Earlier studies on the contributions made by landscapes highlighted the instant relationship between man and the environment, and how aware man can become of the benefit of such landscape to their well-being (R. Kaplan & Kaplan, 1989). (Lachowycz et al., 2012) distinctively state that a well-cared for landscape is one of contributory factors in recovery from stress and fatigue (*ibid.*). According to (Ulrich, 1983, 1986), the landscape stimulates the psychological system and pushes it towards more encouraging emotional states. However, there are different benefits and effects of the association of man with nature according to demographics, living context, and the type of green space itself (Lachowycz & Jones, 2013).

However, (Lachowycz & Jones, 2013) argue that the causal pathways on the quality and type of green spaces lack sufficient study, hence offering very vague empirical explanations on how this works.

Green space is one of many public spaces that provide a place where people can join together: places for social cohesion. Besides the above benefits to mental health, promoting physical health, and as mitigation to environmental problems, this is included in one of the nine pathways that links the benefits of urban green spaces to health and well-being, according to the World Health Organisation (henceforth, the WHO) (WHO, 2016) The WHO, with evidence from previous studies, emphasise that urban green spaces play a part in fostering social interaction between communities and promoting social cohesion (R. Kaplan, 2001; R. Kaplan & Kaplan, 1989). Increased social interaction promotes healthy relationships between communities and increases the sense of belonging and of community (WHO, 2016), which helps with psychological growth among communities (R. Kaplan & Kaplan, 1989). (Catharine Ward Thompson et al., 2016) explained the importance of spaces for social interaction in order to meet psychological needs, increasing social support and making people feel less lonely. Nevertheless, Vries *et al.* (2013) highlighted the strong association between quality of landscape and achieving social cohesion.

### **2.2.3 Perceived maintenance through landscape appearance**

*“Care may be a way to engage people in planetary stewardship by connecting their responses to what they notice in everyday life with their effect on larger environmental systems.”*

(J. I. Nassauer, 2011; P.321)

The perception of care can be said to be the immediate response to what people notice, and their evaluative assumptions from the appearance of the surrounding environment (J. I. Nassauer, 2011). The responses invoked from the aesthetic appearance affect people’s behaviour. It might influence fear levels in an area when the perceived landscape of the park decreases because of disorderly and poor conditions (Hur & Nasar, 2014; A. Jorgensen et al., 2002; J. I. Nassauer, 2011).

The definition of care by Oxford Learner's Dictionaries (2020) can be understood to be *'the process of caring for something and providing what they need for their health or protection'*, and *'attention or thought that you give to something that you are doing so that you will do it well and avoid mistakes or damage.'* To understand in the context of the study, care means protecting and maintaining an area of concern. According to J. I. Nassauer (1993), care is a presentation of aesthetic quality according to the local context and condition. J. I. Nassauer (1993) describes the perception of care as one of the acts of 'stewardship', as well as the reflection or responses to the normative and to aesthetics. The normative is a perception of what something should look, as given to the cultural norms, and aesthetic as a instinctive reflection of pleasure or displeasure. Landscape that appears to be out of the normative and that has poor aesthetic representation always looks uncared for (PPS, 2008b), and suggests an undesirable place (J. I. Nassauer, 2011). Undesirable spaces are often left underused (Jacobs, 1961; PPS, 2008b; Schroeder & Anderson, 1984). By direct contrast, a well-cared-for landscape leaves people with good feelings (J. I. Nassauer, 1988; Sampson et al., 2017).

When a landscape is perceived of being as less cared for, this raises assumptions among people. An immediate assumption from the visible sign of poor care of landscape, is that it is either unmonitored or nobody cares (Mak & Jim, 2018; J. I. Nassauer, 1993). For instance, in a park, the public may think that the authority who care for it is irresponsible (PPS, 2008a). It can also give the perception of an irresponsible neighbourhood who does not care about the management of their public landscape (PPS, 2008b). This can also be translated as a sign of negligence. Consequently, the presence of signs of poor maintenance promotes the perception of lack of safety (PPS, 2008b).

Besides the immediate assumptions, some researchers argue that some signs of poor maintenance, such as incivilities and disorder, could alter neighbourhood attitudes especially with regard to carrying out the responsibilities related to physical upkeep (CABE Space, 2007; PPS, 2008b). There are several factors and appearances that become cues for people to start being responsible for their landscape. A 'cue' in this instance is defined as meaning *'an action or event that is a signal for somebody to do something'* (Oxford Dictionaries, 2021). In this research context, 'cue' means the physical

condition that triggers an action from somebody. There are several cues underlined by Nassauer through her studies on cues to care. Those most relevant to this research are:

- i. Neatness and order (no litter, things are put away, no weeds)
- ii. Structures in good condition (e.g., well-painted, unbroken)
- iii. Fences between park and private property
- iv. Trimmed trees and hedges or plants in straight rows
- v. Trimmed grass, especially in sports activity spaces.

Some of the above cues are also discussed by Nasar in his research. Nevertheless, the cues and perceptions of physical condition however vary according to context (Hur & Nasar, 2014; Nasar, 1990; Nasar & Fishert, 1993).

Meanwhile, Hur and Nasar (2014) argue that these five cues are perceived aesthetically. Research has found that aesthetic appearance is one of the most important factors in encouraging satisfaction in a neighbourhood (Hur & Nasar, 2014; S. Kaplan, 1995). The cues by J. I. Nassauer (2011) and later, Hur and Nasar (2014) suggested the signs of incivilities through the landscape conditions include broken pavements, peeling paint, and graffiti. These signs of incivilities are another cue that causes dissatisfaction that affects feelings of safety. Once people feel dissatisfied, they start to avoid such spaces where they feel the quality has deteriorated (CABE Space, 2007; PPS, 2008b). This avoiding behaviour is one of the affecting behaviours caused by feelings of discomfort with the appearance and conditions of a landscape (J. I. Nassauer, 2011; PPS, 2008a, 2008b).

Hur and Nasar (2014) discussed the relationship of people's perception of care with satisfaction as one of the *'intermediate aspects of a bigger concept of 'quality of life''* (p.187). In their research, they proved that the place-keeping of a place encourages neighbourhood satisfaction with the quality of the space, and as well as perceived safety from crime. Hence, if the perception of safety is improved, neighbourhood satisfaction also increases. Further, (Nicola Dempsey, 2008), in many of her studies, emphasised the strong association between maintenance and the quality of space and space utilisation (see also Nicola Dempsey & Burton, 2012). In detail, the study showed that the presence of litter has a direct effect on satisfaction (Dempsey & Burton, 2012; Hur &

Nasar, 2014), though has only an indirect effect on the perception of safety (Hur & Nasar, 2014). Broken elements and empty buildings have a direct impact on perception of safety. These are further discussed in Section 2.2 on the physical and non-physical cues affecting perceptions of safety.

Users' perception of landscape maintenance is an assessment that is affected by two factors, i.e., visual attention and the landscape input (Khachatryan et al., 2020). This assessment, however, is dependent on several background factors such as the experience of users in a particular space such as familiarity, and the user's knowledge of maintenance aspects. (Khachatryan et al., 2020) emphasise that the perception of maintenance is often related to users' preferences about their landscape, consequently lessening the utilisation of green space. (al Zelinka & Brennan, 2001) suggested that this is because a space can influence positive or negative perceptions through visual presentation. Besides, one of the research projects also concluded that poor maintenance eventually resulted in disorganisation of space, and provided a visually unpleasant area (Nurfadilah, 2011).

## **2.3 Personal Safety and Perception Study**

### **2.3.1 Landscape perception and preference**

Early study by R. Kaplan (1985) measured that the perception of people's preferences is greatly affected in certain environments. Perception is the process of gathering, organising, and interpreting knowledge obtained through the senses. It is a dynamic interaction between the organism and its environment (Cakci, 2012). People's perception of the landscape aids them in comprehending and reacting to the surrounding environment, and where this process happens all the time (R. Kaplan, 1985). People's perceptions are influenced by social and cultural background, as well as experience with the landscape (R. Kaplan & Kaplan, 1989). Therefore, an understanding of the surrounding environment is learned, selective, complex, interactive, and unique (Lee, 1973 found in Cakci, 2012).

Several theories have considered what influences people's perceptions and preferences when it comes to landscapes. For example, the prospect-

refuge theory (Appleton, 1988) or the information processing theory, which claims that based on a similar evolutionary context, there is a common desire or aversion for landscape features based on intrinsic, biological reasons (R. Kaplan & Kaplan, 1989). Other theories claim that learned behaviour and people's cultural backgrounds influence landscape perception and preferences (Zube et al., 1982). Landscape preferences are most likely formed by both evolutionary and cultural factors.

The landscape perception affected by various factors is contributed to by the elements and character of the environment (Forster, 2010; R. Kaplan, 1985). One of the huge contributing factors is the visual preference of the landscape's appearance (*ibid*). Kaplan (1985) explained that the visual elements such as form, line, colour and texture, determine the landscape character and develop interesting elements in a landscape as the attractions to the users. These interests in visual elements are perceived aesthetically and increase based on the diversity in the landscape.

Nevertheless, the perception of landscape is also affected by scale (Forster, 2010). The bigger the scale of the landscape, the more complex people's perceptions can be. Other significant factors affecting environmental preferences are the variation of physical characteristics as well as a landscape's components (Norouzian-Maleki et al., 2018). Hence, the visual qualities of a landscape are made within the landscape components (R. Kaplan, 1985). These components could be grouped based on the physical characteristics.

The concern with providing good quality in the long run is to encourage utilisation, where many studies have emphasised, poor maintenance may cause reduced interest and engagement among people with a space, hence causing underuse (Bacon, 1976; Banchiero et al., 2020; Schroeder & Anderson, 1984) and, ultimately, abandonment (Nam & Dempsey, 2019b; Newman, 1972a). Bacon (1976) discussed that the influence of the experience built up from continuous use over time imposes emotions that determine the associated perceptions and preferences. Thus, the good long-term environment provides positive memories and develops good experiences, hence encouraging its ongoing use (Hussein, 2014). Hence, the well-cared for

landscape allows these environments to be 'enjoyed' by all (Cohen et al., 2013; Hadavi et al., 2015; Jim & Chen, 2010).

### **2.3.2 Background Studies on Perception of personal safety**

Several emotions occur when people explore public spaces. The emotions occur for a combination of reasons that people perceive during their exploration of such green spaces (Sreetheran & van den Bosch, 2014). This research looks at the impact of appearance and maintenance on perceptions of personal safety. The perception of personal safety is studied in a broader context, including the emotions caused by danger (such as sense of security) and fear of being a victim of crime, as well as perceived lack of safety because of incivilities or disamenities. However, it is not the intention of this research to look at actual crime, or crime rates. Rather, it focuses on the physical environment as one of the factors that may prevent crime from happening or can actually lead to incidences of crime.

Safety is the primary requirement before a person can attend to more complex needs. Safety is described as '*the state of being safe; protection from the occurrence or risk of injury, threat, or loss*' (Feagan, 2011: p. 8). The need for safety comes together with the need for protection, especially in a public space. Feagan divides protection into two dimensions, i.e., psychological and physical safety. Psychological protection can be understood in terms of where people have control of their surrounding environment so that they are familiar with the space and time. This control avoids people becoming '*socially or physically lost*' in their own space (*ibid.*).

Protection is a need invoked by the feeling of fear. Fear is an emotion experienced by any creature, including animals (Gray, 1987; Bixler & Floyd, 1997). Fisher (1982) describes fear as an emotion that is perceived from danger. It is usually perceived from the external factors, such as an object, a place appearance or a situation encountered as danger (Bixler, Floyd & Hammitt, 1995; Bixler & Floyd, 1997), which trigger feelings of fear (Bixler & Floyd, 1997). Perceived danger may lead to behavioural changes, such as people avoiding places of contact in public spaces even though the actual risk of being a victim of crime is normally lower than they believe, and nervous

system changes when perceiving an eliciting occurrence, such as walking alone at night in a remote region (Rangajeewa, 2017).

Sreetheran and Van Den Bosch (2014) suggested that the fear of being a victim of crime in a green space is contributed to by a combination of factors. Similarly, Aldrin (1999) added the different elements that envelop fear include the fear of going out at night alone, or fear of any offences. Dimmick (2004) highlighted that these fears can be rooted by three factors, which are: the lack of maintenance of an area which could generate fear, people feel vulnerable to crime in certain places such as in isolated areas or dark streets at night, and a place that looks like a fortress.

Besides the external factors, fear can be also caused by internal factors such as personal experiences and knowledge of something dangerous. It may be gathered from direct experience or from news one has heard, or through what a person learns. For instance, a study in Malaysian urban green spaces in 2014 and 2016 found that almost all people fear being a victim of a crime, as well as fear of wild animals such as snakes especially in an area with bushes (Farbod et al., 2014; Keeler et al., 2019; Roziya, 2016). These two fears may be gathered from indirect experience (Bixler *et al.* 1994; Aldrin, 1999; Bixler & Floyd, 1997; Sakip & Abdullah, 2012), such as from news heard among friends or neighbourhood (Aldrin, 1999; Aldrin, Mohd Najib, et al., 2012; Sakip et al., 2016). According to Ulrich (1986), these indirect experiences, i.e. news of incidences have a greater impact on the feeling of fear rather than the crime incidence itself (Khairiah, 2008; EPU, 2013).

The following discussion explores the theoretical studies of the perception of safety, crime and victimisation that affects the feeling of safety and security in public green spaces specifically.

**a) *Understanding predictors on perception of safety, and fear of being a victim of crime***

The perception of personal safety is necessary to ensure users can enjoy the outdoor environment as well as feeling comfortable being outside (Ramanujam, 2006). However, this enjoyment and comfort can be destroyed because of fear of crime and victimisation. Many researchers agree that the



fear of being a victim of crime is more serious than the number of incidents of crime itself (Aldrin, 1999; Aldrin, Nordin, et al., 2012; EPU, 2013; Nasar et al., 1993; Sakip et al., 2015). Consequently, many outdoor environments have become underused because of the fear that develops from the outdoor condition itself (Economic Planning Unit, 2012; Schroeder & Anderson, 1984). Therefore, this background study aims to understand the factors contributing to perceived safety, fear of being a victim of crime, that were argued by many have a strong association with the outdoor setting and physical conditions, as well as demographic characteristics (such as gender, age, etc.) (Schroeder & Anderson, 1984; Sreetheran & van den Bosch, 2014).

Fear of being a victim of crime can be understood as a 'feeling or anxiety of being involved in a crime', or feeling afraid of being a potential victim of a crime (feeling victimisation) (Aldrin, Mohd Najib, et al., 2012; Mak & Jim, 2018; Mohit & Hannan, 2012). Fear of being a victim of crime was seen as a social problem (Mak & Jim, 2018) as it affects human development including that of the individual or of the community (al Zelinka & Brennan, 2001; Aldrin, 1999). Hence, the damaging effect is the same as the effect of crime itself (Thompson, 2000).

A place-based or physical setting study emphasised strong association of perceived visual quality on the perception of safety, and fear (Nasar, 1990; Schroeder & Anderson, 1984). Hence, according to (Lynch, 1960), the quality of a space evokes a strong image to people, and encourages user appraisal of a space. Perceived visual quality comes from outdoor physical features, that is, the surrounding environment that people experience. (Appleton, 1988) in his theory of 'prospect-refuge', claimed that the appropriate arrangement of space could provide place concealment and enclosure, while accommodating aesthetic satisfaction to strengthen perception of safety. (Nasar, 1990) suggested five aesthetic responses to the outdoor environment that cause fear, i.e., maintenance, distinctiveness, naturalness, pleasantness, and arousal. Meanwhile, Dimmick (2004) associated fear of being a victim of crime with three factors, i.e., a fortress-like place, isolated areas or dark streets, and poor maintenance.

The concept of prospect-refuge by (Appleton, 1988) defines as the *'scenes where physical attributes allow an individual to see into an*

*environment while remaining hidden from dangers'* (Bixler & Floyd, 1997). This theory preserves victims' ability to see potential threats and offenders (prospect) without being seen (refuge) by helping them by strengthening their sense of safety (Ramanujam, 2006).

Appleton listed several environmental elements that could affect protection or risk, as well as aesthetic responses (Ramanujam, 2006). However, the main factor is the arrangement of the landscape elements that create such scenes that comply with prospect and refuge theory. One of the elements that is vital in terms of determining the prospect-refuge is views. Appleton (1975) explained that there are two types of views that symbolise a prospect that is known as a direct prospect and closed prospect. Direct prospect is a view direct from the observed point. Meanwhile, a closed prospect can be understood as '*restricted views uninterrupted in the immediate foreground*' (Appleton, 1995; P. 80). There is also a blocked prospect caused by physical concealment. Physical concealment is an element that causes a visual obstruction, which an offender can potentially use to hide in and attack from (Ramanujam, 2006) This was also found by (Schroeder & Anderson, 1984), where their study emphasised scenic quality in terms of views. One of the findings is the sense of security as perceived from open areas with long views.

Later, (Fisher & Nasar, 1992) strengthened the theory by Appleton (1975) by creating a typology to evaluate victims' perceptions of safety (see Table 2.1). This typology was used to identify preferred design features that boosted perceived protection, such as a lack of hiding places and a greater depth of view (Nasar *et al.*, 1993; Schroeder & Anderson, 1984). Hence, they added one feature to Appleton theory of area, i.e., 'escape, exit route from potential threat or connection to other in any cases happen.' (p. 40). This study argues that the safest space would be a space that offers users an open prospect (can see what is coming) with a high opportunity of escape, while potential offenders have almost no areas that can be used for refuge (no hiding).

Table 2.1 Typology of Perception of Safety (Fisher and Nasar, 1992; P.39)

		<i>Victim Prospect</i>		
		<i>High (Open prospect)</i>	<i>Low prospect</i>	<i>(Blocked prospect)</i>
<i>Offender</i>	Low (no hiding places)	Most safe	Moderately safe	
<i>Refuge</i>	High (many hiding places)	Moderately unsafe	Most unsafe	

Prospect-refuge theory also has similarities to arousal theory by (Nasar, 1990), which states that when an individual experiences a space or scene that has a degree of ambiguity or novelty about it, feelings of pleasure increase, but if uncertainty is increased, feelings of anxiety begin to appear (Berlyne, 1951 in Dosen & Ostwald, 2016).

To date, the study on the predictors of fear on crime and victimisation has extended from the theories discussed above. The study by Sreetheran and van den Bosch (2014) explored on socio-ecological aspect that evoke crime and they argues that the perception of safety, and fear, are affected by a combination of various attributes rather than just one. This study discussed three dimensions to the socio-ecological aspect, i.e., personal, social, and physical attributes. Personal attributes are related to demographic factors of fear, while social is a psychosocial process between men and is related to behavioural action causing fear, such as incivilities and strangers, while physical factors is where men perceived from physical appearance and traces of incivilities.

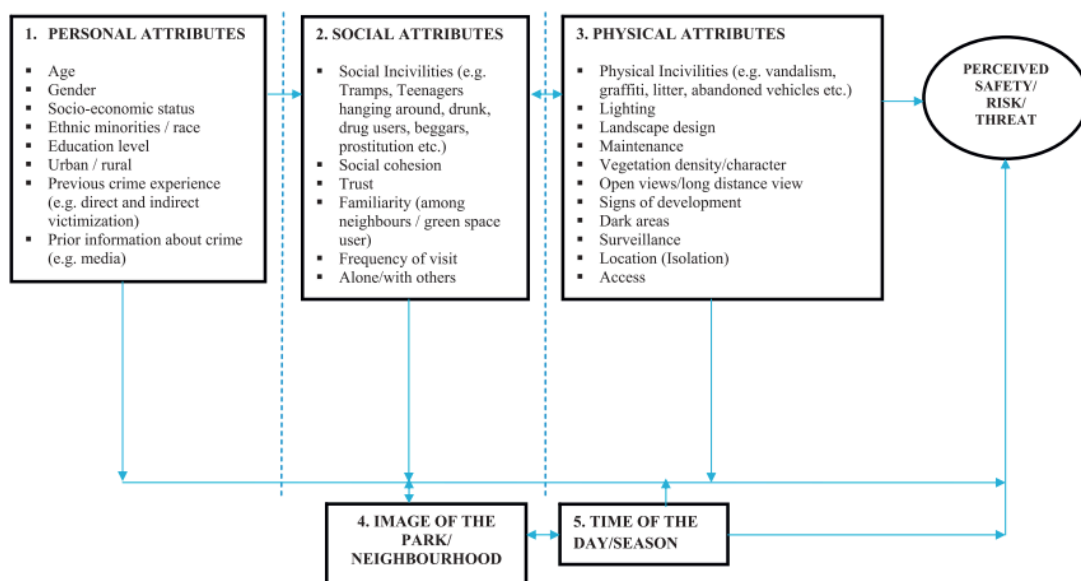


Figure 2.4 A socio-ecological technique to study the 'fear of crime' by (Sreetheran & van den Bosch, 2014)

Besides the physical environment factors, various studies have established that perceived safety and fear are also different based on demographic attributes. Many studies have supported gender and age as two of the most common factors discussed with regard to perceptions of personal safety (CABE, 2004; Mak & Jim, 2018; Siti Rasidah & Aldrin, 2012a; Sreetheran, 2017; Sreetheran & van den Bosch, 2014). It is always found that women and the elderly have a higher level of fear when it comes to the use of an outdoor environment such as a park, which are perceived as particularly unsafe especially at night and when alone (Sreetheran & van den Bosch, 2014). Hence, the frequencies of visits by female users were less than for males because of these safety issues (Sreetheran, 2017; Ward Thompson, 2007). A study by CABE Space (2005) exposed that dirty street with rubbish and graffiti were often avoided by women with children. Hence, a poor space definition that causes conflict in activities also becomes an issue for women and the elderly, with regard to young people (CABE Space, 2007). Besides age and gender, being a minority group also significantly contributes to feelings insecurity and vulnerability.

Another predictor studied with regard to perceptions of safety that has been discussed is the experience of victimisation. According to (Bacon, 1976), experience provides a collective perception of the built environment that affects people considerably. There are direct and indirect experiences of victimisation, which both evoke fear and cause people to keep away from public spaces (Mak & Jim, 2018). According to (Sreetheran, 2017), though indirect victimisation occurs to someone who hears of incidents from others, the emotions that result are somewhat similar to those of someone who has direct experience of victimisation. Hence, emotions such as anxiety about being a potential victim is greater among women when they hear such news (Foster & Giles-Corti, 2008). Consequently, experiences of victimisation also influence quality of life.

#### ***b) Theoretical background on crime prevention study***

There are many theories relating to crime prevention as promulgated by criminologists and urban geographers that associate crime with psychological

factors and effects (see Table 2.2). The study on the built environment factors was inspired by the book written by Jane Jacobs (1961), *'The Death and Life of A Great American City'*. Jacobs emphasised the importance of social interaction in a space. She highlighted that spaces that are very 'private' are less convenient, especially in terms of providing interactions between communities. Jacobs (1961) argued that mixed land make a space more vibrant, and provides natural surveillance among the users themselves.

Jacobs' idea about having 'eyes on the street' as one indicator of providing natural surveillance between community was then corroborated by (Newman, 1972b), and is known as a defensible space. This idea underlines the importance that having natural surveillance over a space is a useful consideration for parks, especially when it comes to small spaces for individual activities. Nevertheless, in contrast to Jacobs' mixed characteristics of space approach, Newman suggested a clear hierarchy of space, a distinct demarcation between public, private, and semi-private spaces. (Jacobs, 1961) argued that a space hierarchy could accommodate more power of control among a community over its own space, and that increased surveillance represented one of the more effective tools by which to monitor crime (Reynald & Elffers, 2009).

These defensible spaces provide three measures to control crime through environmental design as listed by Newman; two are similar to the those of the Crime Prevention Through Environmental Design (henceforth CPTED) concept by Crowe (2000), i.e., territoriality and natural surveillance, with an additional measure being image/milieu (Newman, 1972a); meanwhile Crowe (2000) added natural access control. Nevertheless, all these measures are actually related to each other and contribute to greater prevention of crime. Territoriality encourages legitimate users of a space to adopt a sense of control and offers surveillance of their own spaces, limiting access by outsiders and preventing crime from taking place (Newman, 1972a). One of the underlying ideas of territoriality that is significant to this research is the concept of having a clear space hierarchy, i.e., public and semi-public spaces, and private outdoor spaces for individual exercise and meditation. The territorial attitudes of its residents often contribute to an area's image. A positive image of an area increases pride and motivation to care for the surroundings (Newman, 1972).

By contrast, the negative image of space encourages anxiety and results in deterioration in use because people avoid the space. According to Crowe (2000), territoriality helps to minimise the opportunity for crime to take hold as the senses of belonging and control are increased.

Following the crime prevention study is the theory of 'situational crime prevention' (henceforth SCP) by Clarke (1995) that emphasised reducing the opportunity for crime to occur. SCP aims to minimise harms due to immediate changes or situational factors of the environment where crime usually occurs. The approach on looking at the situation with the landscape is the intended aim of this research. This research focuses on the physical factors that contribute to perceptions of safety, either directly (such as broken property that reduces security of use), or indirectly (such as broken property as a sign of vandalism that become a cue to the feeling of being unsafe, or overgrown vegetation and bushes that can be perceived as potential areas in which someone could be concealed).

Newman, 1972a) come with the 'broken window' that is established within the theory of CPTED. This theory however considers relatively minor issues such as rubbish, graffiti, as well as social issues. Though it is looked upon as a trivial issue, it does have a significant impact on users, especially in a park where users could feel annoyed and afraid of potential harm, resulting in their avoidance of the particular space in question (Wilson & Kelling, 1982). People that perceive disorder in the landscape spend less time outdoors because of feeling vulnerable to crime (Gatersleben & Andrews, 2013; Sas et al., 2021; Wilson & Kelling, 1982). Hence, they highlight the cycle of crime that causes anxiety and, ultimately, withdrawal.

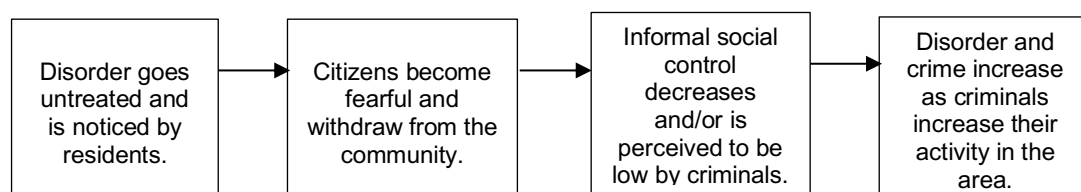


Figure 2.5 The Broken Window theory

This study into the theoretical background helps to understand the environmental and social factors that trigger people's perceptions of personal safety and their preferences with regard to landscape. The broad research that

comes out with the framework to combat crime intensively explores the factors that contribute to people’s fear of the landscape and its setting.

Table 2.2 Theories on place-based crime prevention

<b>Authors and Years</b>	<b>Theories</b>	<b>Prevention elements</b>
Jane Jacobs (1961)	Eyes on street	Clear demarcation of spaces Natural surveillance Mixed land uses
Oscar Newman (1971)	Defensible space	Territoriality Access control Building images Milieu
T. R. Jeffery (1974)	Crime prevention through environmental design (CPTED)	Natural surveillance Natural access control Territorial enforcement
Ronald V. Clarke (1980s)	Situational crime prevention	Increasing efforts Increasing the risk Reducing anticipated rewards Remove the excuses <i>(Consist of 12 overall elements in design and planning as prevention methods)</i>
Wilson and Kelling (1982)	Broken windows	Police monitoring (patrol) Order-maintenance for social and physical factors

*(Source: Drawn by researcher from the literature)*

### **2.3.3 Traces of problem in appearance and maintenance: The impact on sense of personal safety**

Maintenance, as a part of physical upkeep, is understandable in built-up areas, regardless of design and planning stages, as it plays a major role in preserving the quality of public spaces. Maintenance, according to Carmona et al. (2010), is a “process” in which a service is provided and a “product” that is gained as a result of the process (e.g., a litter-free area) (Dempsey & Burton, 2012). Maintenance is about the quality of a service rendered by the local government as well as the quality of the physical environment in certain ways (Dempsey, 2008). A landscape with a poor appearance can perpetuate the cycle of crime and provoke people’s feelings about their surrounding environment; they could feel unsafe, or safer in certain landscapes because of the appearance. Therefore, the discussion of this subtopic explores the factors that evoke these feelings of personal safety and emotions among users.

**a) Sense of security and elements that affect security**

According to Waleed (2012), the sense of security is described as how people view their physical surroundings in order to assess their chances of not being assaulted, insulted, or harmed in a given situation, and/or the likelihood of receiving immediate assistance should the worst happen. It has the potential to have negative psychological effects on people. Fear of being a victim of crime can restrict people's mobility, prevent them from engaging in outdoor activities, and, as a result, affect their satisfaction with public spaces in cities and regions (Sanduni et al., 2018). Besides, (Wilson & Kelling, 1982), in the Malaysian Quality of Life Report 2011, emphasised that society fears regarding crime are greater than the actual number of incidences of such. Consequently, this causes the deterioration in their quality of life, especially in the aspect of sense of security (Economic Planning Unit, 2012), in such a way as to affect people's state of mind, and which could deter stable community development (Economic Planning Unit, 2012).

A study by (Siti Rasidah & Aldrin, 2011) found an association between sense of security and landscape appearance. The appearance can be a result of the maintenance that people perceive visually. A well-maintained area enhances the sense of security among people (Schroeder & Anderson, 1984). One of the findings indicates a high security perceived from the long distance view, and an area that is closed to residential or other development areas (PPS, 2008b).

Research by Matchett & Davey (1991) described another factor pertaining to sense of security. They suggest differences in negative reactions to certain animals, especially which users perceive as dangerous. For instance, animals such as snakes and spiders impart both fear and disgust (Bratman et al., 2012; Roziya, 2016), while slugs and snails only impart feelings of disgust (Schroeder & Anderson, 1984). Fear of danger addresses why individual prefer certain environments, based on the need to avoid danger (*ibid*).

*“Negative perceptions of wild landscape environments also lower the appeal of a wide range of activities and careers”*

*(Bixler & Floyd, 1997)*



***b) Physical cues - contributing factors resulting from maintenance on feeling safe and unsafe***

Many researchers have in some manner highlighted the consequences of poor maintenance in public parks including neighbourhood parks. Poor maintenance can be seen from space conditions that could either encourage or discourage undesirable behaviour and crime (Dimmick, 2004). Dimmick argues that the lack of maintenance of a landscape can be a root factor that invokes the fear of being a victim of crime. The previous subtopic discussed theoretical studies on the perception of safety looking at wider aspects including perceived safety, fear of crime, and fear of being a victim of crime. Hence, earlier subtopics discussed the theory of perceived maintenance, on what is perceived as visually good or bad by the park users. This subtopic focuses on the cues, which means the results of maintenance that affect feelings of personal safety. The cues are divided into two kinds, i.e., physical cues, which relate to perceived visual appearance, and non-physical cues, the other side effect of maintenance that make users feel unsafe.

Numerous studies have found that the physical environment conveys signals of danger or safety (Bixler & Floyd, 1997). Perceived danger is a fear of being a victim and often causes people to avoid going to a particular area.

***The effect of enclosure and openness***

One of the associations with enclosure and openness are how these two characteristics could evoke both safety and feelings of lack of safety in park users. The idea of enclosed and open landscapes or spaces are closely associated with visual accessibility allowed by the landscape design and organisation offered to the park users. An enclosure is defined as a layout of surfaces that surround the medium to some degree (Gibson, 1979, p. 34). A space included within or marked off by boundaries is termed an enclosure (Weiner & Simpson, 1991, p. 147).

Appleton (1975) denoted a positive impact of enclosure as a potential refuge from harm, while one is in a space with a clear demarcation of boundaries. Though the term enclosure was not used by Appleton, it is a term with which we become acquainted through the literature associated with the

main prospect-refuge theory. The idea of refuge suggested by Appleton, in a public park context, can be defined as 'an area surrounded with bushes and higher vegetation' that makes people feel safe to play while being able to observe their surroundings and be aware of any potential offenders or threats approaching (Ramanujam, 2006).

In contrast, there are different perception on enclosure that made of planting design and its maintenance. Enclosure described as a practical issue of space division and definition that affects site security (Nicola Dempsey & Burton, 2012), and can evoke feelings of being unsafe among users (Farbod et al., 2014; Foster et al., 2011; Ramanujam, 2006). The planting approach to give the effect of enclosure can be achieved through different levels of ground (such as topography and change of level/stairs), multiple levels of trees with understory (Lis et al., 2019), or using vertical landscape or elements as a barrier to enclose a particular space (Dempsey & Burton, 2012). These design approaches are used in park design to provide semi-public spaces that allow individual or small group activities such as outdoor gym points or light meditation exercise, as can be seen in many of neighbourhood parks. The idea of these enclosed spaces is to provide privacy and divide the spaces to meet their functions. However, there is a study showing that poor maintenance of these enclosed spaces reduces feelings of personal safety. For instance, overgrown planting, untrimmed trees, and bushes because of poor maintenance, invoke feelings of fear because they provide potential hiding spaces for offenders (Dimmick, 2004)

Openness is preferable in common practice as it allows for more visual penetration (Lis et al., 2019). For instance, in the theory 'seen and be seen' in situational crime prevention, Clarke (1995) argues that a certain degree of openness could encourage feelings of safety among users. This degree of openness is provided through design and the organisation of trees with minimum application of understory (Lis et al., 2019). Visually accessible space, such as an open or partially open space, allow users to be aware of the presence of other park users, and users can be seen by other park users in a particular space in the park so that people can feel safe and away from harm. This kind of space allows control measures to be taken such as the surveillance by park users whereby everyone can be aware of the presence of

other park users, passers-by, or even offenders (Blakely & Snyder, 1998; WHO, 2016). These are emphasised in the theory of defensible space (Newman, 1972), in which natural surveillance can increase the feeling of security among users, despite active surveillance by police or park guards to patrol the park (Aldrin, 1999; Marzbali et al., 2020; Newman, 1972a; Siti Rasidah & Aldrin, 2011)

Numerous studies have found various associations between demographic background with feelings of personal safety. For instance, a study by Mohit and Hannan (2012) found that good quality open space was likely to encourage walkability among older people. Meanwhile, there are many studies on the different responses of perceptions of safety between gender (women and men), and age (children, young adult, and adult). Similar to the idea of refuge, an open area makes people visible and users can observe their surroundings and be aware of any potential offenders approaching (WHO, 2018). WHO (2016) emphasised the point of visibility that makes people feel safe in the landscape, especially public spaces. Hence, an area with blocked visibility (such as a dump site) is amongst those areas where people feel unsafe because it has restricted lines of sight.

The Broken Windows theory shows that there are signs of 'no one cares' in a landscape (Nasar & Fishert, 1993). One such is signs of disorder, such as beggars, drunks, drug addicts, rowdy teenagers, prostitutes, loiterers, and mentally disturbed people (*ibid*). This presence of disorder causes fear among users, especially with regard to being alone at times. The broken window theory also highlights the repeating issues and crime in an area.

*'Broken windows is a signal that no one cares, so breaking more windows costs nothing.... Social psychologists and police officers tend to agree that if a window in a building is broken and is left unrepaired, all the rest of the windows will soon be broken.'*

*(Wilson & Kelling, 1982; P.2)*

### *Apprehension of dirt and disorder from waste and littering*

Waste and litter are other issues of maintenance associated with human attitudes and behaviour in parks. Waste also can be part of the issue when there is a lack of a maintenance programme. (Wilson & Kelling, 1982) reported several research efforts that highlighted evidence regarding waste and litter as

factors causing space avoidance and fear. One such piece of research showed that young mothers with children will avoid using a park that is untidy, covered with rubbish, or where there is graffiti (CABE Space, 2005). This research indicated two problems, i.e., irresponsible action of park users through littering, and poor maintenance of the rubbish and waste that creates uninvited ambiance (CABE Space, 2005). Consequently, the poor appearance of the space imparts fear, causing people to leave. It is also agreed by (CABE, 2004), that people will avoid a 'poorly maintained area and be more likely to use spaces free from litter... and with a good quality of facilities such as bins' (P.15). A study at St. Agnes Park, Bristol, showed a similar issue regarding a poor maintenance programme becoming a factor that invited offenders, and imparted fear, because of the absence of maintenance workers.

On the other hand, Dempsey and Burton (2012) exposed one of the irresponsible behaviours where normally the attitude of littering by park users always happens in an area that is already dirty. Litter on the pavement, for example, serves as an environmental cue to passers-by that others have broken the anti-litter rule. Seeing such a signal is likely to have an effect on one's own behaviour (Siegwart, 2011). Consequently, it was found that the presence of uncollected rubbish results in the deterioration of a space, and invites incivilities such as vandalism (CABE Space, 2005). People are far less likely to litter in an area that is clean. This attitude shows that negative spaces invite many other negative attitudes to take place. Hence, it was reported that dirty places encourage incivilities such as vandalism and other antisocial behaviour (Brown et al., 2004; PPS, 2008b). The studies discussed above carried the 'Broken-window' theory by Wilson and Kelling where waste and littering encourage other anti-social behaviour to takes place.

### *Sign of incivilities and dis-amenities*

Incivilities and dis-amenities are another sign of poor maintenance perceived visually from the park's appearance and condition (CABE Space, 2005, 2007). In their research, CABE Space describe incivilities as 'low-level breaches of community standards that signal erosion of conventionally accepted norms and values' (p.89). Besides disorderly appearances because of litter, there are also studies that show that signs of incivilities and antisocial

behaviour are just another indication that 'no one cares' (Bedimo-Rung et al., 2005). Signs of incivilities and antisocial behavior, as well as the presence of strangers are the non-physical cues which increase the fear of being a victim of crime. Similarly, (PPS, 2008b; Wilson & Kelling, 1982) divided the disorderly into two, i.e., disorderly physical surroundings such as trash and graffiti, and disruptive social behaviour, such as drinking and loitering. Bedimo-Rung et al. (2005) suggested that the physical incivilities act directly upon offenders and reduce the physical quality of the landscape.

Meanwhile, fly-tipping or illegal waste disposal is another physical trace of maintenance that affected perception of personal safety. Fly-tipping involves dumping a household rubbish to large waste as well as construction waste illegally, that impact appearance of an area (Zero Waste Scotland, 2017). It usually deposited on street, footpath, and side of the road (Zero Waste Scotland, 2017), on greened sites (Hunter et al., 2019), and in semi-derelict open space (Roziya, 2016). There is different acceptance from the public from those majority that find unacceptable, and others that are more accepting this act of fly-tipping and did not see as offence at all, especially in a particular context (Zero Waste Scotland, 2017). Nonetheless, it is noteworthy that fly-tipping is also another visible signs of anti-social behavior, similar to graffiti, that encourage cycle of crime that spread disorder and trigger additional threatening behaviour (Joo & Kwon, 2015). Studies in United Kingdom (CABE Space (2005), and Suwon, Korea (Joo & Kwon, 2015) found that it does impart fear, especially among woman and young mother to use the park (CABE Space (2005). A study by Zuriatunfadzliah et al. (2013) also found similar effect among women in Pantai Dalam, Kuala Lumpur where they tend to adjust their routine activities to avoid spaces that they are afraid of because the clear visible sign of anti-social behaviour. Besides, these deterioration appeal of a space also gives perception on lack of care by the responsible authority.

There is also empirical evidence from the British Crime Survey indicated that poorly maintained signs such as abandoned property, waste and litter, drunk and rowdy people, and teenagers hanging around in parks are greatly associated with the fear of becoming a victim of crime (Brown et al., 2004). One of the usual signs of incivilities happening in parks is vandalism, and it

always happens at communal barriers (Brown et al., 2004; CABE Space, 2005; Skogan & Maxfield, 1980; Wilson & Kelling, 1982).

One of the concerns about incivilities are the appearances of physical cues that cause the deterioration of the quality of spaces. To understand the physical cues, Hur and Nasar (2014) suggested three categories of such based on previous research, i.e., fixed, semi-fixed, and movable. Fixed physical cues can be seen in permanent elements such as vacant buildings; semi-fixed are elements that are less permanent and easier to change, such as overgrown weeds and broken elements. The presence of the physical cues such as broken elements influences behaviour, transmitting vital information or eliciting an emotional response (Siegwart, 2011). According to Jansson et al. (2013), Lestari, (2010) and Zuriatunfadzliah et al. (2013), damage to facilities and broken elements are visible signs of vandalism that make people feel unsafe and uncomfortable. Unrepaired damage and equipment in disrepair shows an inadequate maintenance (Nicola Dempsey & Burton, 2012).

Other concerns regarding incivilities include the presence of strangers and antisocial behaviour that increases the potential harm not only to the park landscape features, but also to its users. Though antisocial behaviour and vandalism is caused by a small minority (Wilson & Kelling, 1982), or even if is not potentially harmful, the presence of strangers makes park users avoid using the park or certain spaces in the park, which again leads to deterioration of the space (CABE Space, 2005).

*'Despite the fact that not a single crime had occurred there, the spot was mentioned as the most dangerous.'*

(Hedayati Marzbali et al., 2016; Lupton, 1999)

This scenario was observed in Baltimore in cases of the presence of strangers in the street, where half of the participants in the survey said that they would cross the road to avoid groups of youths hanging around (Wilson & Kelling, 1982). Similarly, in a case study in Pantai Dalam, Kuala Lumpur, it was found that the fear of being a victim of crime was affected by the presence of potential offenders, especially among women (Zuriatunfadzliah et al., 2013).

The study suggested that women are more inclined to alter their routines and avoid those spaces in which they felt unsafe (*ibid.*).

On the other hand, there is also an interesting finding regarding trimmed lawns reducing incivilities (Zuriatunfadzliah et al., 2013). A study by Harris and Brown (1996) (discussed in (Brown et al., 2004)) mentioned that an unkempt lawn is one of the physical cues that implies an outdoor landscape that is in poor condition. Brown, Perkins and Brown (2004) argue that this is also related to place attachment and how offenders see that poor attachment offers opportunities for crime going unnoticed.

Another physical sign of incivilities always found in parks is graffiti. (Brown et al., 2004) suggested that the antisocial behaviour and vandalism caused by a very small minority has a significant impact on perceived visual quality, imparting the feeling of being unsafe. Graffiti is another cue to the perception of lack of safety (CABE Space, 2005). A study by (CABE Space, 2005, 2007; PPS, 2008a, 2020; WHO, 2016) found the areas that rated as highest in terms of the fear of being a victim of crime contained unpleasant visual features, including the presence of graffiti, bushes, and abandoned buildings. Women and young mothers are again more strongly affected such cues, which leads to space avoidance behaviour on their parts (Zuriatunfadzliah et al., 2013).

One of the strategies used by the Sunderland Park Authority concerning antisocial behaviour is to provide a specific wall for graffiti, as well as to reduce damage to public facilities (CABE, 2004; CABE Space, 2005). Interestingly, this strategy turns a negative sign of antisocial behaviour into street art, as many researchers considered this to be a form of artistic expression (CABE Space, 2005). According to Lestari (2010), graffiti was used as a medium to express dissatisfaction during the Roman era, as discovered in Pompeii town's remnants, unlike during the current age, where graffiti is used as a provocation as to what is happening in the surroundings. Despite the intention behind the graffiti, individuals and the public still consider it another sign of vandalism, which induces fear.

*The preference for naturalistic setting and orderly planting or manicured landscapes*

The idea of natural vegetation has been described in various ways by various researchers. Many studies have found positive attitudes towards natural settings, especially during late 1980s. These natural settings of the landscape were found to be highly preferred (Sarah, 2020). (Jorgensen et al., 2002) claim that natural settings in general do not necessarily affect the sense of safety, but that spatial arrangement does. Similarly, in a more recent study by Hoyle et al. (2018), it was found that the apprehension of 'wild' landscape perceived from spatial arrangement of planting impacted the aesthetic value of the vegetation. In a more recent study in Malaysia, there was a significant preference for natural settings in urban park landscapes in general among Malaysians, and they claimed to feel safer with such settings (Farbod et al., 2014). However, to some extent, the perception of safety is still affected by the fear of being a victim of violent and social incivilities in such settings, especially when there are strangers in such spaces (*ibid.*).

There are contradictory reactions to naturalistic landscapes (Jorgensen et al., 2002), as discussed above. Studies on naturalistic landscapes, especially on vegetation are conducted, whether in Western or Malaysian studies, did show an impact on public perception of safety. This perception of natural settings gained through the visual experience and associated with its beauty and aesthetic quality. There are different ways in which the public can perceive natural settings, it is therefore important to understand why the reaction differs by people.

The natural setting is often perceived as 'untidy' (Filibeck et al., 2016; Page, 2016), and messy (J. Nassauer, 2013; J. I. Nassauer, 1995), especially when it is poorly maintained. For instance, many studies have noted that perceptions of dense vegetation and untrimmed trees are ones of hazards to safety, and as potential areas for crime and antisocial activities (Jorgensen, 2003c). This dense vegetation is perceived as having the potential for concealment – a place where an activity cannot be seen by other park users, and consequently invokes the fear of being a victim of crime without being noticed (Filibeck et al., 2016; J. I. Nassauer, 1995). Similarly, poor design of hedge planting as fences, to control the space or mark territory, can result in potential concealment that may cause people to feel afraid for the reasons



above. These fears, according to Dimmick (2004), are caused by the perceived lack of security issues triggered by park users.

These ‘messy ecosystems’ are alleged to be the result of poor maintenance and a sign of negligence (Gatersleben & Andrews, 2013; Luymes & Tamminga, 1995; Nurfadilah, 2011). The perception that nobody cares or does not give appropriate intention to care invokes the feeling that criminals ‘could potentially hide here’ amongst people. This perception was initially noted by Appleton (1975) and later by Ramanujam (2006) regarding the idea of concealment.

The threat to public safety is observed to be related to the perception of the physical characteristics of the surrounding settings. Fear-evoking factors was found reducing perceptions of safety especially in naturalistic planting in urban parks in Kuala Lumpur, Malaysia (Farbod et al., 2014; Roziya, 2016). Table 2.3 listed factors that contributes to fears based on Farbod et al. (2014) case study in Kuala Lumpur, Malaysia, of which three are related to personal safety.

Table 2.3 Fear-evoking factors from the threat in natural setting based on study in urban parks in Kuala Lumpur, Malaysia

<b>Personal safety</b>	<b>Physical safety</b>
Fear of getting lost	Seeing snake
Getting separated from friends	Stepping on a snake
Not getting back before dark	Being caught in a windstorm
	Being caught in raging thunder and lightning
	Getting a spider bite
	Being chased by a swarm of bees

(Source: Drawn by author based on Farbod et al., 2014)

## **2.4 Landscape Maintenance and Perception of Personal Safety in Urban Green Spaces in Malaysia**

### **2.4.1 Management and Maintenance Management of Neighbourhood Park in Urban Context in Selangor, Malaysia**

Urban areas worldwide are facing a decline in natural areas due to development needs related to rapid population growth and urbanisation. Our natural land is being turned into housing, infrastructure, and commercial and industrial areas (Nor Akmar, 2012a). Nevertheless, cities around the world

have begun to shift quite dramatically towards new approaches to control urbanisation to allow for more sustainable development. Following the resolution of the Second World Urban Forum 2004 in Barcelona, as organised by UN Habitat, the Malaysian Government, through its National Landscape Policy (NDP), drew up a national guide with the aim of making Malaysia a garden nation by 2020. Towards achieving “Malaysia: A Beautiful Garden Nation”, the development of urban area must have an optimal balance between social, economic, and development needs, as well as ensuring the preservation of the environment, with an emphasis on unique identity of the Malaysian landscape (Azhan, 2006).

The main idea of the NDP to include the natural setting along with the rapid urbanisation is part of rehabilitation process of the urban environment. The rehabilitation is for air and water quality, as well as to restore the ecosystem services and habitat that have come under threat of loss.

*“Development plans in Malaysia have long recognized the need for green strategy by way of conservation, promoting green networks in urban neighbourhoods, promoting walkability and sustainable public transport.”*  
(Ydira et al., 2010)

Urban parks development in Malaysia started with botanical garden in 1888 to leisure and recreational park in 1896 during the colonial period and was managed by the British government (Roziya, 2016). The urbanscape of Kuala Lumpur has been continuously changing since then. Alongside this, the rapid urbanisation of Kuala Lumpur as the capital city of Malaysia in 1963 not only affecting the amount and extent of green areas, but also its neighbouring city, Klang Valley, including Selangor, and it continues to growth until now (Nath, Zhe Han, & Lechner, 2018; Nor Akmar et al., 2011). As the closest city to Kuala Lumpur, Selangor has seen more rapid development than anywhere else in the country to meet infrastructure-related needs especially for housing and institutions (PLANMalaysia, 2006).

In Malaysia, as in many countries around the world, the responsibility for managing public green spaces falls lies with the local government. There are classifications of parks based on different typologies that are themselves based on three factors: area, size of population, and function. These park classifications are based on the ‘*Standard Planning and Guidelines Manual*’

issued by the Department of Urban and Regional Planning (currently known as PLANMalaysia). The guideline classifies open spaces into seven categories, as illustrated in Figure 2.7.

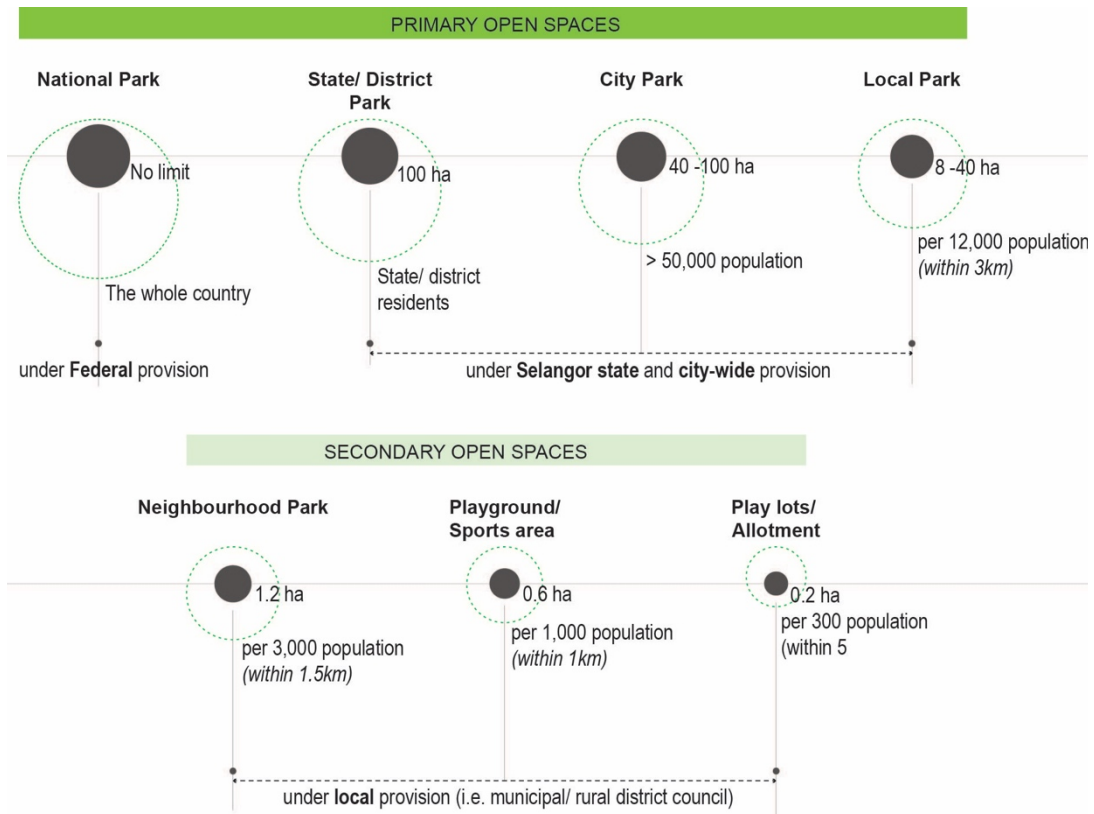


Figure 2.6 Malaysian open space and recreational hierarchy, adapted from Selangor State Standard Planning and Guidelines Manual Second Edition (Source: Drawn by researcher based on PLANMalaysia Selangor 2010)

The characters and provision for park management and maintenance of primary and secondary open spaces differs. The primary open spaces are large in terms of area, and the population they cater for is larger. Normally, primary open spaces offer facilities to everyone and for any occasion. Therefore, the provision of those parks falls under the jurisdiction of federal authorities such as the National Landscape Department (also known as, *Jabatan Landskap Negara*, henceforth JLN) and under the state and city councils, such as Kuala Lumpur City Council and Putrajaya City Council. The neighbourhood parks is a secondary open spaces, therefore the provision falls under the jurisdiction of local councils, i.e., city, municipal or district councils, subject to the appropriate administrative boundaries.

The neighbourhood park is a vital part of urban infrastructure planning, especially when attempting to achieve the aim of a sustainable city (Chiesura,

2004; Jim & Chen, 2010). It is always referred to as part of the 'superior good' (Cohen et al., 2013) that provides social, physical, and cultural services for the surrounding community (Bertram & Rehdanz, 2015; Cohen et al., 2013; Jim & Chen, 2010). The experience of nature offered to the community in their neighbourhood park contributes to their general well-being as well as their mental health (Bertram & Rehdanz, 2015; Chiesura, 2004). Neighbourhood parks in Malaysia cover about 0.1 hectares to 2 hectares of green area with a population of up to 12,000 people in an area, with main parks falling under the supervision of local government. The definition of a neighbourhood park according to PLANMalaysia is a recreational area in a neighbourhood that provides recreation, sports, and social activities for the local people (PLANMalaysia, 2013). It may consist of open space, a plaza, pocket space and courtyard, etc., depending on the size of the area and the local population. Therefore, the term 'neighbourhood park' will be used throughout this study to refer to a neighbourhood park in the urban context this are managed by the local authority, which, in the case of this research, is Subang Jaya City Council (known as *Majlis Bandaraya Subang Jaya*, or MBSJ).

Park management and maintenance are considered to follow the definition offered by (Roziya, 2016) for the purposes of this study, where park management in the urban context by local authorities in Malaysia mainly focus on the 'regular operation and maintenance of the developed landscape' (p.12), including managing technical as well as operational procedures for both the vegetation and physical resources available in a park. Further discussion of specific maintenance and management of the three case study areas by MBSJ is given in Chapter 4 of this thesis.

#### **2.4.2 The natural setting in urban green spaces in Selangor, Malaysia**

The are several definitions of naturalistic planting, including naturalistic settings (Farbod et al., 2014; Sarah, 2020) and naturalness (Chee, 2016), amongst others, in the Malaysian context. In the Malaysian Planning Guidelines for Brownfield Area Development, natural settings can be understood to be the "natural aspect of greenery and development that has beautiful scenery that may include water elements such as rivers and lakes"

(Ydira et al., 2010). Meanwhile, Chee (2016) distinguished the differences between natural and naturalness, where the natural is achieved without the intervention of humans or human technology, while 'naturalness is the degree to which is natural, in between entirely natural, and entirely artificial' (p. 14). Chee (2016) explained that the 'naturalness' of a place is reduced according to the application of native tropical vegetations and proximity to forest structure (refer Figure 2.6).

In this research therefore, the term "natural setting" is used to refer to the degree of the natural landscape setting applied in the park landscape as suggested by Foo (2016), because it is more suitable to describe in a context of Malaysian urban green spaces.

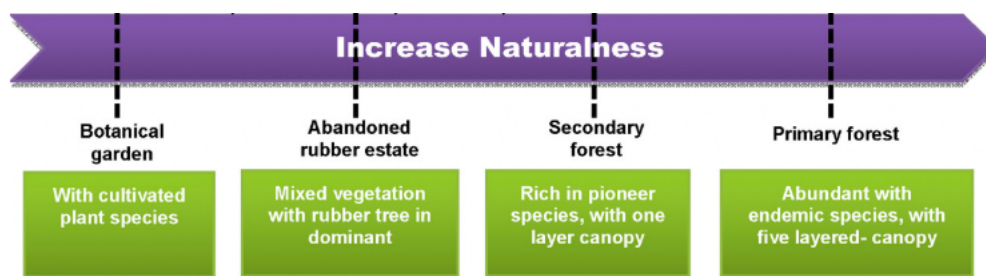


Figure 2.7 Degree of naturalness, as defined by Chee (2016)

However, naturalness is often associated with vegetation dominated by tall trees (Sugiyama & Thompson, 2006). Similarly, the context of a nature-like landscape in Western countries, for instance woodland settings, is defined by its multiple layers of dominant tree species (Jorgensen, 2003b). However, the woodland setting also presents the understory, that make it rich and diverse with an ecological style or approach, hence allows dense vegetation (*ibid*). The association of ecological style with the naturalistic is also prevalent in research in Malaysia (Farbod, 2013; Farbod et al., 2014), especially with regard to the urban green spaces within major cities in Malaysia, such as Klang Valley (Kuala Lumpur and Selangor). However, there is one major dissimilarity in the natural setting of these urban green spaces compared to woodland, in which the application of understory is usually very minimal and manicured, or sometimes there is no understory at all. Farbod et al. (2014) recognised this as 'designed landscapes but made to look more natural than formal landscape'.

The above was also discussed recently by Sarah (2020) study in Kuala Lumpur, and Hitchmough & Dunnett (2004), in that the evolution in the thinking regarding the concept of naturalistic planting is not necessarily biased towards the use of native species anymore. These can be seen in many urban green spaces in Malaysia, one of which is the famous ex-mining land, Taiping Lake Garden, located in Perak. The park was developed during the colonial period by the British and has been designed from out of the natural environment. Nevertheless, towards achieving “Malaysia: A Beautiful Garden Nation”, the local tropical character has also been emphasised in the development of green spaces, yet with significant numbers of tropical rain forest specimens that connect with urban green spaces (Azhan, 2006).



Figure 2.8 Kuala Lumpur Urban Park, Taman Tasik Perdana (or Perdana Lake Garden)  
Source: <http://wikimapia.org/>



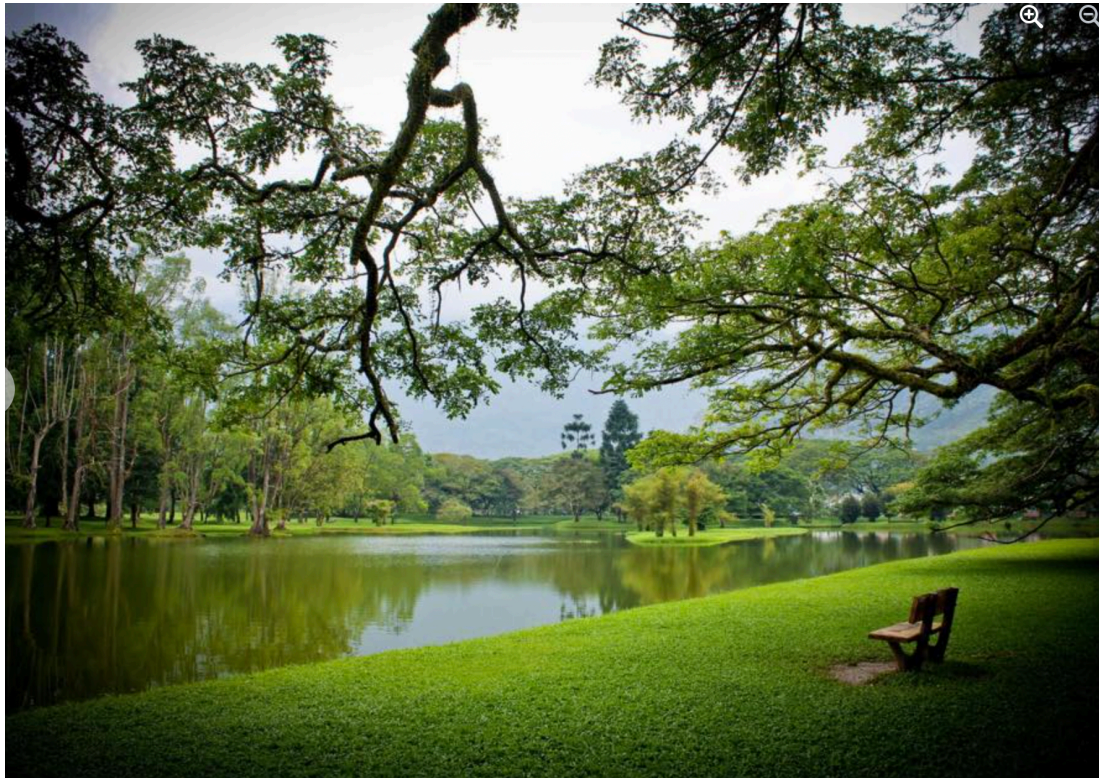


Figure 2.9 Taman Tasik Taiping, a park in Taiping District, Perak (or Taiping Lake Garden) (Source: Tourism Perak Facebook Page)

#### **2.4.3 The study on perceived maintenance, fear of being a victim of crime, and perception of safety in park in Malaysia**

The social well-being benefits of the outdoor environment allow the public to have interaction between nature, and between humans. This contact offers a social cohesion that encourages a sense of place and promotes positive perceptions of safety and security (Chee, 2016). The initiatives by the Malaysian Economic Planning Unit (EPU) to measure the impact of development among Malaysians have led to the formulation of the Malaysian Quality of Life Index report (MQLI 1999 to 2011) and, most recently, the Malaysian Wellbeing Index report (MWI, 2013). A set of social indicators were listed to measure the factors effecting Malaysian well-being with the aim of providing a holistic approach towards sustainable development (Aisyah et al., 2016; Hamdan et al., 2017). In both the MQLI and MWI, public safety was recognised as fundamental to achieving social stability, which is one of the preconditions of public well-being. Hence, the understanding of public safety

echoes the requirement for the freedom to move around in outdoor spaces without being anxious about security and personal safety.

In 2004, the Federal Town and Country Planning Department of Malaysia (PLANMalaysia), in collaboration with the Malaysian Ministry of Housing and Local Government (KPKT), introduced the '*Safe City Programme*' to strengthen the safety of urban communities (Ainur Zaireen & Jalaluddin, 2010). This programme was initiated in Malaysia to follow the Safe City Programme that was launched by Un-Habitat in 1996 at the global level (Ahmad Nazrin et al., 2012). The purpose of this programme was to acknowledge the condition of public green spaces as a factor that may correlate with perception of safety, regardless of actual crime statistics (Ainur Zaireen & Jalaluddin, 2010), in order to help create a city that was free from crime (Ahmad Nazrin et al., 2012; Mohit & Hannan, 2012). The MQLI 2014 report confirmed the statistic that fear results in deterioration in quality of life, rather than incidences of crimes themselves (Khairiah, 2008; Malaysian Economic Planning Unit, 2004). This aligns with one of the responsibilities of local authorities such as the MBSJ: to apply the Safe City guidelines in both new green space development, as well as to respond to issues related to public safety raised by public in their management and maintenance procedures (Roziya, 2016).

PLANMalaysia adopted the CPTED concept in the safe city programme and provided three strategies with twenty-three steps of prevention. The three strategies are environmental design initiatives, target hardening, and social activity and public awareness (Ahmad Nazrin et al., 2012). The CPTED's concept is one of reducing crime by tackling the issues with the physical environment that are associated with the behavioural aspects of both criminals and potential users (Aldrin, Mohd Najib, et al., 2012; Aldrin, Nordin, et al., 2012). Besides, the CPTED measures are developed based on capability, opportunity, and intention of possible crime taking place within the physical environment (Nurfadilah, 2011). Indeed, the study found that poor housing quality and a poor-quality physical environment perpetuates crime (*ibid.*).

In a more recent study on maintenance by Roziya (2016), stakeholders also raised issues of the safety requirements needed to satisfy public preferences. The Kuala Lumpur local authority (KLCH) emphasised that



regular maintenance contributed to making a good impression amongst the public, and associated 'clean, beautiful, and tidy' as contributing to the safety of the public in parks. Similar to its adjacent city of Kuala Lumpur, the Landscape Department and Maintenance Unit in Selangor local government aims towards having a clean, comfortable, and safe environment (Jabatan Landskap Negara, 2011; Roziya, 2016).

Urban green space design, including neighbourhood parks in Selangor, emphasises both manicured landscapes and natural settings in parks. However, these two settings are designed separately to give the public choices in exploring their outdoor environments based on their preferences (Roziya, 2016). Further, this separation also contributes to more effective maintenance, which indicates that spaces need regular or periodical maintenance. Thus, the study by Roziya (2016) found that natural settings may need regular maintenance to remove wildlife such as snakes that are always reported as posing a threat to the public's physical safety. However, Farbod et al. (2014) argued that natural settings can be more alarming with regard to the fear of being a victim rather than concerns relating to wildlife. These fears are most associated with the facilities and services available in parks (*ibid.*). Yet, it was not clear in their research whether those facilities' and services' issues were related to inadequacy or maintenance.

Sharifah Khalizah et al. (2015) note that not only the public but also landscape industry stakeholders in Malaysia remain sceptical about the natural settings in urban park landscapes, especially in terms of public safety. This study was later corroborated by a later study by Jorgensen (2003a), in that local government and stakeholders often regard naturalistic settings as being unsafe and inappropriate to the urban setting. By contrast, a more recent study by Sarah (2020) found that such natural settings are preferred by Malaysians and were not directly associated with safety or the perception of safety (FARBOD et al., 2014; Sarah, 2020).

## **2.5 Summary**

Therefore, a considerable body of research has established that landscape maintenance contributes to the perception of safety and fear in urban green

spaces in Malaysia (Aldrin, Mohd Najib, et al., 2012; Nurfadilah, 2011; Sreetheran, 2010). Bedimo-Rung et al. (2005) noted that park landscapes have two states, which is that some are amenable to change over time, and some are fixed according to their early-stage planning. This means that maintenance processes have to deal with both states, and this has an impact on their appearances in the long term, which chimes with findings elsewhere in the world (CABE Space, 2007). As they constitute ongoing and routine activities, maintenance processes are seen as part of the urban fabric, and ultimately ensure continued liveability in urban areas (Paramita, 2019). Recently, in her study of maintenance in a neighbouring country, Indonesia, Paramita suggested that the processes of maintenance respond to visible problems such as failures and absences (Paramita, 2019).

The fear of parks and perception of safety is shown to affect the utilisation of the park. Physical disorder is indicative of poor or inadequate maintenance, and at the same time is a sign of negligence, which may trigger the fear of being a victim of crime (Sreetheran & van den Bosh, 2015). The associated cues determined from the study related to maintenance are 'dilapidated buildings', 'dirty with the presence of graffiti', and associated with the establishment of perception and fear such as the 'bad people waiting inside the building' (abandoned), 'vandalism', as well as 'fear of visiting poorly maintained areas alone' (*ibid.*). However, Sreetheran concluded that fear is not a factor of park visits, but that other factors, such as proximity, weather, and having companions present, are. This is contrasting to the findings presented by Paramita (2019), which suggested that the process of maintenance revealed hidden issues that themselves can cause discomfort and the deterioration of a space (PPS, 2008a). There is therefore a clear need to explore the wide range of factors when investigating the influence of maintenance on users' perception of safety when using neighbourhood parks in the Malaysian urban context. The next chapter sets out the methodological approach taken in this research to address this gap in knowledge.

### 3 Introduction

This chapter describes the research design and techniques relating to the case study method, and the techniques for data collection and analysis of data relating to three neighbourhood parks. At the end of the chapter, a preliminary consideration of the case studies and their city councils is presented. Both qualitative and quantitative methods are applied in this case study to explore the maintenance aspect and sense of personal safety, and their relationship with each other.

#### 3.1 Research Design and Techniques

Research design according to Zeisel (1984) is:

*‘When an investigator chooses to study a problem depends on the way the problem is defined, what the investigator wants to know, the nature of the object being studied, previous knowledge the study is based on, and the type of results desired.’*

As case studies for this research are designed to understand an object as a whole (Zeisel, 1984), and explores topics related to maintenance processes and personnel, neighbourhood park landscapes, perceived landscape and perceived maintenance, and perceptions of personal safety.

Multiple data collection techniques are applied to trace the physical results of landscape maintenance that influence a person’s perception of personal safety in their neighbourhood park. The findings will then be discussed in relation to three topics based on the research questions, i.e., RQ1: What are the factors affecting users’ preferences and perceptions of their neighbourhood park landscape? RQ2: What are the issues of maintenance that people perceive with the current park design and site conditions?, and

RQ3: How do traces of maintenance issues become cues that affect people’s perception of personal safety?. Through these three topics, a robust explanation can be presented that is supported with comprehensive evidence in both qualitative and empirical forms. The following table briefly illustrates the process, techniques, and tools involved in this research to allow for ease of understanding.

Table 3.1 Types of data collected and analyses tools

No.	Research techniques	Types of data	Tools of data analysis
1	Survey questionnaire	a. Returned questionnaire	Statistical results Descriptive analysis
2	On-site focus group workshop	b. Participants photograph	Photo description
		c. Marked maps	Analyses maps
		d. Small group discussion (voice recording)	Discussion transcript
			Coding

### 3.1.1 Case Studies Approach

The research aims to investigate the influence of existing maintenance on users’ perceptions of safety when utilising three neighbourhood parks that are maintained under the jurisdiction of Subang Jaya City Council (or MBSJ), Selangor. To achieve this aim, this research adopts a case study approach. Case study approach is widely applied in landscape architectural research (Francis, 1999) and is described as:

*‘... a well-documented and systematic examination of the process, decision-making and outcomes of a project that is undertaken for the purpose of informing future practice, policy, theory and/or education’*

(Francis, 1999)

This approach, as adopted from Yin’s case study design (Yin, 2009), involves a series of studies taken in a logical order (Deming et al., 2011) so that an in-depth understanding of and evidence (Yin, 2009) regarding the objectives targeted can be discussed and explained in the final chapter of the thesis. For multiple case study areas, each study area is treated as a single case to establish a full description (Shi, 2008) beforehand in order to establish compelling findings through a robust exploration (Yin, 2009) of the feasible physical results from maintenance, which affects perceived safety and leads to an exploration of the main objectives of the study, as relating to the perception of personal safety both onsite and offsite (actual environment).

Considering one of the potential weaknesses of case study methods - 'as it is not effective on a new project' (Francis, 1999), one of the considerations regarding the selection of the three neighbourhood parks was their ages. The three neighbourhood parks that were selected have existed for a number of years, although the exact age of each cannot be confirmed by the local authorities.

Though Francis (1999) expressed the ability of case study to obtain the negative aspects of a project, because as an approach it is often less favoured by professionals, as the research found that, especially with regard to the physical cues that result from maintenance, this leads to user dissatisfaction and discomfort within their neighbourhood (Dempsey & Burton, 2012), and identified as important to provide evidence on specific phenomenon (Yin, 2009). A selection of a city councils, i.e., MBSJ, and three neighbourhood parks under their supervision were considered close in context to the real-life situation of the subject (Francis, 1999; Yin, 2009) that led to a better understanding of the contrasting issues (Deming et al., 2011) in landscape maintenance and perception of personal safety.

The final results offer profound evidence that was derived from multiple relevant sources besides the literature, i.e., observation maps and documents of physical traces, records and related documents acquired from first-hand information to address the particular process and historically-related (Yin, 2009) issues of maintenance, as well as maps and photos elicited from focus group interviews and the statistical results from quantitative analysis of questionnaires to bring the discussion into broader issues including the range of behavioural aspects displayed by users (Yin, 2009), to support the discussion of the overall findings.

### **3.1.2 Selection of case study area: The three neighbourhood parks**

It is clear that the open space policy differs among the local authorities (Hussein, 2014), as well as the maintenance processes and organisational structure. This research focus on one local government (which is MBSJ) without comparing with any other authorities. This is to gain a more profound understanding of their physical traces of maintenance so that the weaknesses

in processes and implementation can be tackled later to ensure the long-term quality of the landscape meets users' satisfaction (Dempsey & Burton, 2012; Hur & Nasar, 2014; Hussein, 2014).

After the selection of local government as the study case, three neighbourhood parks were selected after several meetings with the top management personnel from the Department of Landscape, MBSJ. The first priority in the site selection was the type of park, i.e., neighbourhood parks.

However, the shortlisting process did not take long as it was found that there were only four neighbourhood parks under the jurisdiction of MBSJ and only three are located in built-up urban areas in Subang Jaya, namely Taman Tasik Seri Serdang (henceforth referred to as TSS), Taman Puchong Perdana (henceforth referred to as TPP), and Taman Wawasan Recreational Park (henceforth referred to as TTW). The one that was not included in the study was Taman Tasik Seri Aman. This neighbourhood park is located in a rural area, hence was not suitable for the context of this study. Therefore, the three neighbourhood parks were straightforwardly selected. (Refer Table 3.2 and Figure 3.1).

Table 3.2 Three neighbourhood parks selected for multiple-case studies

<b>Neighbourhood park</b>	<b>Code</b>	<b>Development block (BP)</b>
Taman Tasik Seri Serdang	Neighbourhood Park 1	BP7
Taman Puchong Perdana	Neighbourhood Park 2	BP5
Tasik Wawasan Recreational Park	Neighbourhood Park 3	BP5

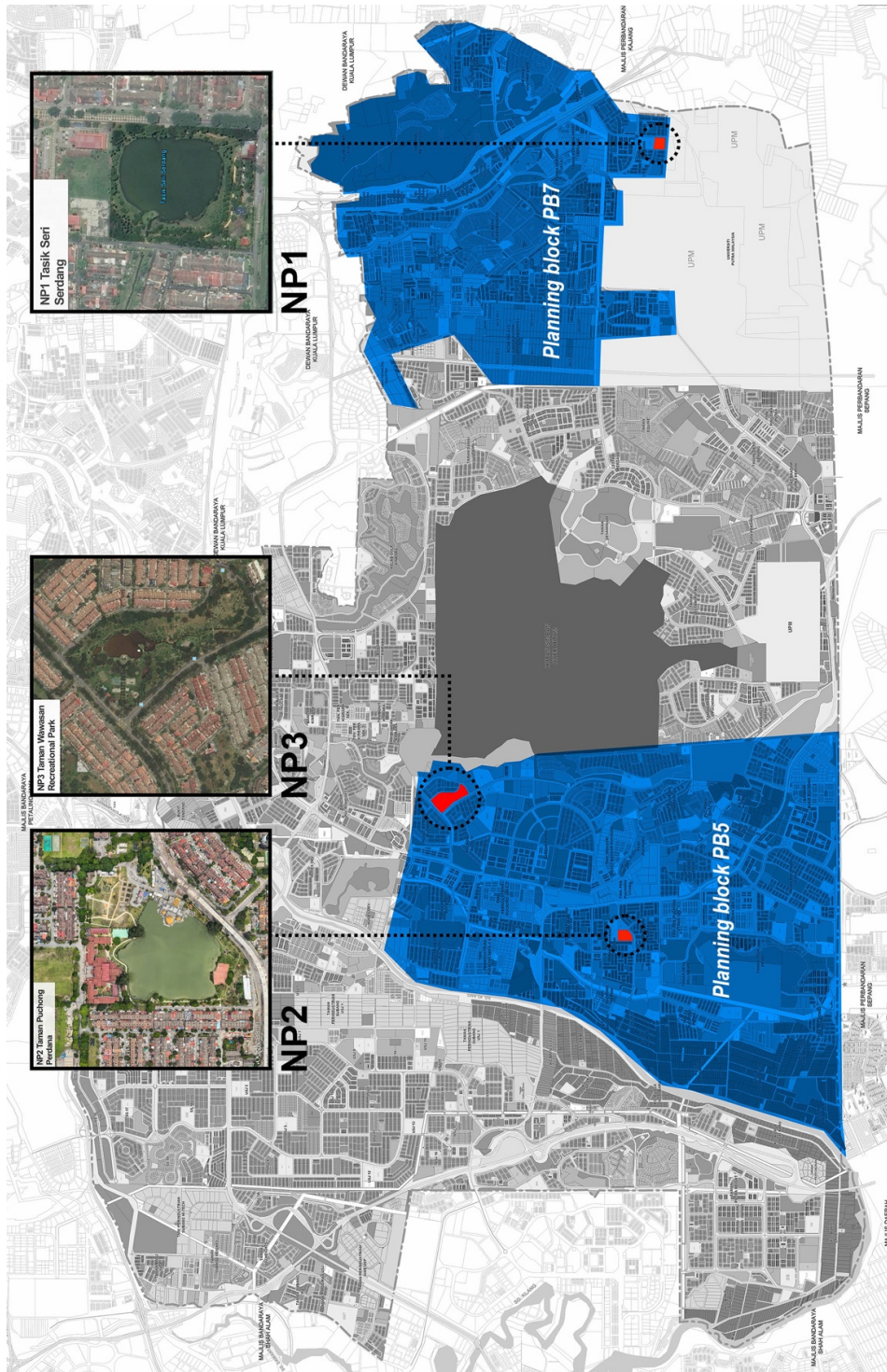


Figure 3.1 Location plans of three selected neighbourhood parks- Taman Tasik Seri Serdang, Taman Tasik Puchong Perdana, and Taman Wawasan Recreational Park

### 3.1.3 Site Verification Process

Before the data collection began, site verification was conducted in three selected neighbourhood parks (TSS, TPP, and TTW) ( $n = 3$ ) and the surrounding residential area (see Figure 3.1). Observing physical traces in this study represented a preliminary piece of fieldwork that aimed to 'systematically observe the physical surroundings' (Zeisel, 1984) to explore their significant attributes (Deming et al., 2011), i.e., the physical cues. Zeisel (1984) draws attention to the fact that what physical traces may offer researchers is not limited to overall appearance but also how it became that way and how people feel about particular surroundings (p. 89). The context and the phenomena connected to the site have also been observed, including activities and users' behavioural patterns.

The verification involves site observation, and photographs provide the researcher with a suitable landscape masterplan, and act as an assisting tool for site inventory, synthesis, and analyses (see Table 1.3). Further, pre-evaluation of current site conditions and tangible maintenance measures was also conducted and presented in inventory maps and photographic elicitations. The physical cues differ among users based on familiarity and preference regarding parks (Kaplan, 1985; Kaplan & Kaplan, 1989) (explained in Chapter Two) and potentially have implications regarding the perception of personal safety that might also be encouraged by their experience in the outdoor environment (Cheng, 2012; Dempsey, 2012a; Hamidah, 2007). Nevertheless, the significant relationship could not be demonstrated through qualitative study. Therefore, the researcher decided to apply multiple techniques for data collection, with the main data collected through qualitative methods. The main data collection is a qualitative method adopted from the onsite focus group workshop, which combined three approaches: colour dot mapping, autophotograph, and discussion. Before the main data collection was conducted, secondary data collection through a survey questionnaire was performed, whose first aim was to provide empirical evidence that supported the qualitative findings.



### **3.2 Secondary Data Collection: Quantitative Methods using Survey Questionnaire**

A quantitative approach was applied in the research to obtain statistical data to answer the third research question (RQ3) on how do traces of maintenance issues become cues that affect people's perception of personal safety. The statistical results explained the impact of maintenance on the sense of personal safety.

This study was conducted in the form of a questionnaire survey. Survey study is one of the procedures of quantitative research, which involves the collection of numerical data using questionnaires (Creswell, 2011). In addition, survey methods are also often used to study relationships, and correlation to explore the relationship between the variables in the study (*ibid*). Therefore, survey methods were used to explore the relationships between the different variables in the study (Gall et al., 2003). For this quantitative survey, the researcher used a bilingual (Malay and English) questionnaire as a tool to collect data to study on the Effect of Landscape Design and Maintenance on the Perception of Personal Safety at Neighbourhood Parks.

#### **3.2.1 Questionnaire design**

The main purpose of questionnaire design is to identify the effect of maintenance on users' perception of park design and their sense of personal safety. To achieve this, the questionnaire is divided into four sections. Two sections are based on the two main attributes that we wanted to explore the relationships of, i.e., 1) Part B - park design and maintenance, 2) Part C - perception of physical environment (conditions) and personal safety. To measure these main attributes, other independent variables were also included in other sections, i.e., 3) Part A - respondent's background, and 4) utilisation of park and park context (see appendices - Survey Questionnaire).

The two independent variable sections were designed to include close-ended and dichotomous questions. The latter draw direct answers, i.e., yes, no, and prefer not to say/no answer. The results were also very straightforward and illustrated descriptive results regarding the level of utilisation of parks and patterns of use. Though it looks simple, the descriptive results explained the

demographic characteristic of the sample that portrays the actual demographic character of the populations.

Part B and Part C of the questionnaire were designed in a Likert-scale style. Despite the usual five-point Likert-scale (one to five score), the researcher decided to format the score from one to ten (1-10). As adapted from Zeisel (1984), the highest scores for the item (e.g.: 8, 9, and 10) indicate that the respondent was 'very much' satisfied (with indication of 80 per cent, 90 per cent, or 100 per cent) or agree with the statement in the questions. The median, between 5 to 7, scales indicate a 'positive reaction but less than very much', while the lowest score (1 and 2) signifies total dissatisfaction or a negative reaction that could be described as 'ambivalent or negative' towards the subjects' questioned about neighbourhood park design and maintenance (see Figure 3.2).

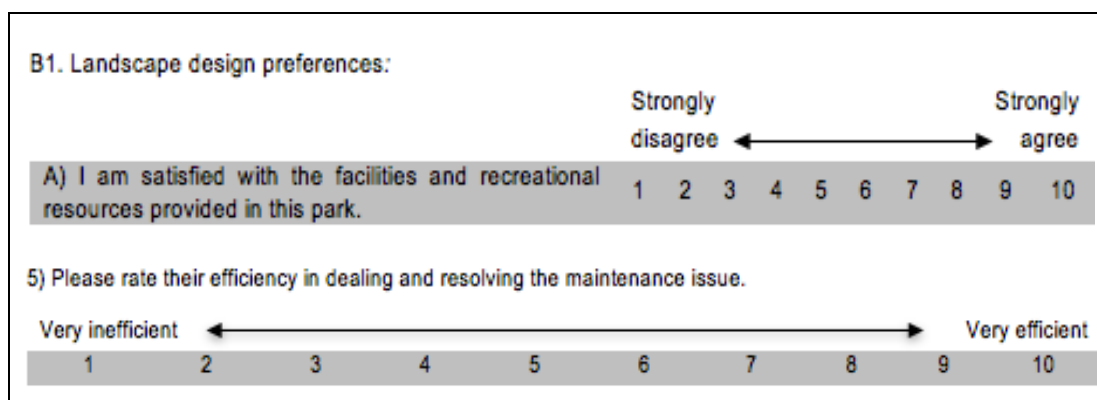


Figure 3.2 The Likert-scale questions with scores of 1 to 10

Additionally in Part C, the actual neighbourhood park photographs were used as a reference to judge their preferences based on a scale of 1 to 10. These image-based questions (see Figure 3.4) is one of the ways the researcher can present the actual physical setting and scene of the environment to help obtain more accurate answers from the respondents. Hence, according to Kaplan and Kaplan (1989), "the use of two-dimensional sources as a representation of the actual sites could offer a surprisingly similar responses as they were in the actual site itself" (p. 16).

The photographs were taken during the site observation for the preliminary study run by the researcher. The photographs taken not only illustrated the scenes, but also gave an indication of quality and related stimuli that could explain the respondent's preferences (Kaplan & Kaplan, 1989).

Therefore, the actual pictures from the three neighbourhood parks were used as a tool to help the respondents understand all twelve variables uniformly and be able to provide answers to help fulfil the objectives of the study. The respondent's views were gauged on the planting types and visual, planting structure, maintenance and waste management based on the ten-point (10) Likert-scale from low to high ranked.

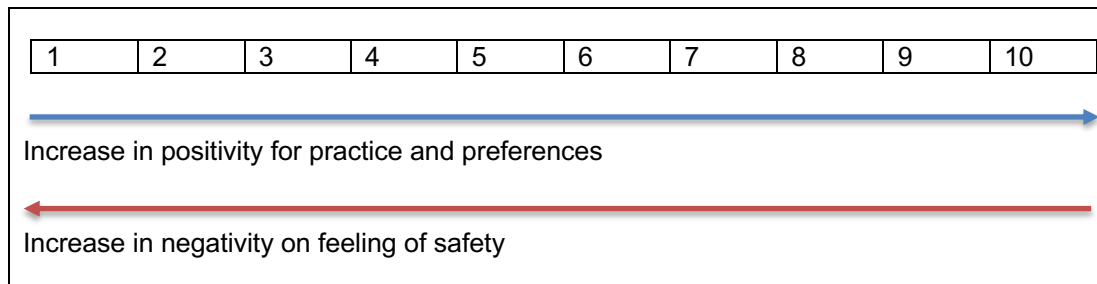


Figure 3.3 The 10-point Likert-scale and the interpretation of the negativity and positivity of the responses (adopted from <https://www.fieldboom.com/blog/likert-scale/>)

There are four (4) classifications based on variable types, with an overall thirteen (13) items that were used to measure the responses.

Table 3.3 Part C variables and items

<b>Variables types</b>	<b>Items</b>
Types of planting and view distance	1. Single layer with long-distance view
	2. Multi-layer with wide view
	3. Multi-layer and overlaid with limited visibility
Planting structure	4. Organised planting
	5. Naturalistic planting effect
Facilities and maintenance	6. Trees and plant maintenance/ bushes
	7. Defective/ faulty equipment
	8. Broken walkway/ track
Cleanliness and waste management	9. Near the building and structures
	10. General waste and trash
	11. Still and stagnant water
	12. Tipping and illegal dump waste

Besides asking users' preferences about the current landscape, the satisfaction with maintenance, and perception of safety questions on their experience of crime and making reports on maintenance were also asked. These are to evaluate the relationship of feeling unsafe and experience in incidents of crime, and on the satisfaction with maintenance services with the feedback obtained when they deal with MBSJ.

**PART C: PERCEIVED OF PHYSICAL ENVIRONMENT AND PERSONAL SAFETY  
(PERSEPSI KEPADA FIZIKAL TAMAN DAN KESELAMATAN DIRI)**

C1. Physical appearance in the park effects differently to each person, and each individual has a different susceptibility to the character of the park and surrounding environment. The following questions would want to know your opinion on current practice and maintenance issues in your neighbourhood park, your preference on it, do you perceived safe in such condition/ environment).

(Penampilan fizikal di taman memberi kesan yang berbeza kepada setiap orang, dan setiap individu mempunyai penerimaan yang berbeza terhadap karakter taman dan persekitarannya. Soalan seterusnya adalah untuk mengetahui pandangan anda berkenaan praktis semasa dan isu penyelenggaraan di taman kejiranan anda, pilihan anda, dan adakah anda merasa selamat ditempat berkenaan).

- a) **Practice** – I noticed this in the park (Saya perasan keadaan ini di taman)
- b) **Preference** – I like the design and landscape appearance in the picture (Saya suka rekabentuk dan penampilan landskap seperti didalam gambar)
- c) **Perceived safe** – I feel safe in a place as shown in the picture (Saya merasa selamat berada ditempat seperti yang didalam gambar)

Please rate the following statements **1 for lowest** and **10 for highest**. [Sila nilaikan pernyataan berikut **1 untuk paling rendah dan 10 untuk tertinggi**.]

**IN TERMS OF PLANTING AND VEGETATION**

**1. Layers of planting and view distance (Jenis-jenis tanaman dan jarak pemandangan)**



1. A layer of trees with long-distance view (Satu lapisan tanaman dengan jarak penglihatan yang jauh)

	LOW	←	→	HIGH						
a) Practice	1	2	3	4	5	6	7	8	9	10
b) Preference	1	2	3	4	5	6	7	8	9	10
c) Perceived safe	1	2	3	4	5	6	7	8	9	10

Figure 3.4 The place’s image-based questions with 1 to 10 scores of Likert-scale

Therefore, this section investigates the possible physical signs and cues for twelve measures (listed below in the following subsection) that tested the impacts that contributed the least and most to the perception of personal safety. With regard to every measure listed in Part C of the questionnaire and for the purposes of analysis in this section, three questions were asked about the following:

- i. Practice - Evaluation of the statement ‘I noticed this in the park’

- ii. Preference - Measured the two statements, ‘I like the design and landscape appearance as in the picture’ OR ‘The maintenance is sufficient’
- iii. Perceived safety - Measured the statement ‘I feel safe in the picture as shown’

The purpose of the first question on the practices was to identify what people did and did not notice in the park regarding the twelve variables. According to Hur & Nasar (2014) people noticed something of their physical environment as led by their experience of that particular environment, and because they are aware of something, it influenced their perception of maintenance in a different manner to someone that had not noticed.

These photograph-based questions consist of twelve (12) questions in total (see Table 3.3). Additionally, there are questions on management and maintenance issues and reports made by respondents, including the responses received and efficiency in resolving the issues in Part B, questions B2.2, B2.3, B2.4, and B2.5 (see Table 3.4 below).

Considering that the ten-point Likert scale is a scale data, the analysis performed on the linear regression, and one-way ANOVA test of relationship. The means that above 5.5 is considered to be a positive score.

Table 3.4 Planting design, physical signs and maintenance data in Part C

<b>Categories variables</b>	<b>Variables question</b>	<b>Type of variables</b>
Planting types and visual	C1.1 Single layer with long-distance view	Ordinal
	C1.2 Multi-layer with wide view	(Ten-point Likert scale)
	C1.3 Multi-layer and overlaid with limited visibility	
Planting structure	C1.4 Organised planting	Ordinal
	C1.5 Naturalistic planting effect	(Ten-point Likert scale)
Facilities and maintenance	C1.6 Trees and plant maintenance/ bushes	Ordinal
	C1.7 Defective/ faulty equipment	(Ten-point Likert scale)
	C1.8 Broken walkway/ track	
Cleanliness and waste management	C1.9 Near the building and structures	Ordinal
	C1.10 General waste and trash	(Ten-point Likert scale)
	C1.11 Still and stagnant water	Ordinal
	C1.12 Tipping and illegal dump waste	(Ten-point Likert scale)
Overall perceived cared	C6 Overall, did you feel that this neighbourhood park is well cared for?	Ordinal (Ten-point Likert scale)
Making report	B2.2 Have you made a report on maintenance?	Nominal (Binary ‘Never’, Yes’)

B2.3	Did you get any feedback/ response?	Nominal ('Never', 'Yes')
B2.4	Response rate from the responsible parties	Ordinal (Ten-point Likert scale)
B2.5	Efficiency in resolving maintenance issues rate	Ordinal (Ten-point Likert scale)

### 3.2.2 Sampling methods for Quantitative Survey Respondents

The strategy was to distribute the questionnaires at the neighbourhood areas within 1.5 kilometres (km) of the three neighbourhood parks (as defined by PLANMalaysia Selangor (2010)), and onsite (at the park) distribution. These target respondents represented the two significant end users of the neighbourhood park. There are three elements of consideration for sampling (Mohit & Hannan, 2012), i.e., sex, ethnicity, and age differences, so that the questionnaire could dynamically represent the population (Elsawahli, 2010).

Selection of the houses used semi-stratified sampling based on the following characteristics:

- i. House location and proximity to the parks (very close - park can be seen from house, within walking distance - 5 minutes' walk, within 1.5 km from park)
- ii. House typology - landed housing refers to terraced housing and terraces, and high-rise refers to walk-up apartments.

Based on the characters above, the housing samples were firstly marked according to the plan obtained from JUPEM (*Jabatan Ukur dan Pemetaan Malaysia*, which can be translated as Department of Survey and Mapping Malaysia). 300 random houses were marked as samples, 100 houses for each neighbourhood park.

During May 2016, 300 questionnaires were distributed by posting them directly to the preselected houses ourselves. The questionnaire included participant information sheets, a consent form, and an envelope to return the completed questionnaire to the researcher. The decision to post the questionnaire was made after considering the limitations on time and costs, and the concern that if we posted them through the normal system some would

not arrive at the selected houses. Regardless, none of these questionnaires were, or have been, returned.

The second phase was conducted as an alternative to the first round of survey distribution. Three research assistants were recruited to distribute the questionnaires at the housing areas within the three neighbourhood parks. In this phase, each questionnaire was given to house owners who were ‘the main wage earners of the household’. Each of the questionnaires were self-administered.

Adapted from Schroeder & Anderson (1984), the onsite questionnaire surveys conducted at three neighbourhood parks targeted the parks’ users who volunteered to take part in this survey. A convenience sampling technique was adopted so that the researcher could easily approach anyone to participate (Lapham et al., 2015), and which is also known as opportunity or haphazard sampling. This technique was selected after thorough consideration of the timeframe and cost.

Table 3.5 Respondents according to group for the three neighbourhood parks

Neighbourhood park		Taman Tasik Seri Serdang	Taman Tasik Puchong Perdana	Taman Wawasan Recreational Park	n
<b>Group</b>					
Sex	Male	33	24	45	102
	Female	27	36	15	78
	Grand total	60	60	60	N= 180
Ethnicity	Malay	47	51	20	118
	Chinese	6	2	20	28
	Indian	5	5	5	15
	Other Bumiputera*	1	1	4	6
	Others	1	1	11	13
	Grand total	60	60	60	N=180
Age	Under 17	0	8	9	17
	18-24 yo	28	29	17	74
	25-34 yo	24	11	13	48
	35-44 yo	3	7	15	25
	45-54 yo	2	3	1	6
	55-64 yo	1	2	5	8
	65 and above	2	0	0	2
	Grand total	60	60	60	N=180

\* *Bumiputera* stands for the ethnicity groups includes the Malays, aboriginal, and the indigenous people of Sabah and Sarawak state.

The total number of respondents in each of the three neighbourhood parks through the two methods of distribution was 60 (n = 60), and the grand

total of returned questionnaires for all neighbourhood parks was 180 (N = 180). The distribution of respondents with regards to their group can be seen in Table 3.5.

Table 3.6 List of quantitative data and analysis tools

No.	Research techniques	Types of data	Tools of data analysis
1	Survey questionnaire	a. Returned questionnaire (N=180)	Statistical results
			Descriptive analysis

### 3.2.3 Statistical analysis

The quantitative data comprises 74 items including park design and maintenance, perceived of physical environment and personal safety, and experience of crime. Quantitative analysis was designed to explore possible factors or cues from maintenance, in terms of visual and physical conditions that influence the perception of personal safety (RQ3). The SPSS Statistics software package was used as a tool for statistical data analysis for this research. It is noteworthy that the quantitative findings provides an empirical results as a secondary evidence for this research, triangulated with the primary results from the qualitative analysis.

All the questions (refer Table 3.5) were first analysed descriptively to identify the pattern of answers, hence to see the uniform between sociodemographic variables such as age, gender, and ethnicity, as well as visitation pattern and proximity to the park. The results of descriptive analysis are presented in Chapter 4, as a case study background. It is worth noting here that the demographic information also comprised factors that can potentially influence the preferences and perception of personal safety.

The data in Part C were utilised the ordinal variable with values from 1 to 10 reflecting the ten-point Likert scale adopted, 1 was 'low' and 10 was 'high', to measure the low and high concept of the current practice, acceptance, and perceived related to physical environment and personal safety. Meanwhile, the data in Part B question 2 was converted into a nominal binary variable, i.e., 1 and 2 for 'Never' and 'Yes', denoting whether the respondents had ever or had not made any reports regarding landscape maintenance.



Further analysis on the dataset of Part B and C were conducted to answer research question 3 (RQ3)- to analyse the statistical significance of these maintenance variables to perception of safety. Firstly, a simple correlation test were carried out to explore the association between physical and space conditions and perceptions of safety. For instance a strong positive association of negative correlation between these variables will be established.

Assuming the probability that the correlation alone would be insufficient to indicate that the perceptual judgment can be predicted by measuring the place conditions and/or from the independent effects of individual measures, further analysis will be undertaken, such as regressions for predictive relationships test or ANOVA to compare more than two groups of safety factors, i.e., gender, age, location, time. According to Wilson and Kelling (1982), the elderly are more vulnerable to become a victim of crime compared to a younger person, as they are physically defenceless. There is a considerable body of research that also refutes this; therefore, the probability that encourages the perception of safety according to gender and age will be tested.

The analysis results that shows negative correlation between variables on perception of safety, which led to further analysis comprising exploratory factor analysis (EFA). EFA was adopted to see how the items (responses in the questionnaire survey) clustered together into factors. EFA has been used in the past to classify factors into smaller sets especially for large sets of variables by testing them in different contexts (Hur & Nasar, 2014). Principal component analysis (PCA) is utilised and in terms of rotation, assuming that the factors are correlated (Brown, 2009), Oblimin with Kaiser Normalization were used. Sufficient for the purposes of conducting EFA, the sample size for this research is 187 (N=187).

### **3.2.4 Reliability Test**

The 12 items that measured the preference or acceptance: C1.1(b) to C1.12 (b), and perceived safe:C1.1(c) to C1.12(c) were tested separately using Cronbach's coefficient. The main purpose of this was to test the reliability of the questionnaire used in the actual study. According to Mohd. Majid (2005),

reliability refers to the consistency of the results obtained by the researcher symbolizes the level of skills in the study.

According to Mohd. Majid (2005), the appropriate reliability coefficient used in research for measuring instrument is one that has a reliability coefficient of more than 0.60. Whereas according to Sekaran (1992) a reliability coefficient of less than 0.60 is considered weak, 0.61 to 0.79 is acceptable and more than 0.8 is said to be high or good (Hair, Money, Samouel, & Page, 2007; Mohd. Majid, 2005; Sakaran, 1992). A pilot study for this research instrument was conducted openly in the three neighbourhood park involving a total of 30 respondents. The use of sample sizes in excess of 30 units should be encouraged because of the assumption that sample sizes in excess of 30 units will meet the normal distribution (Azizi, Shahrin, Jamaludin, Yusof, & Abdul Rahim, 2006). Therefore the reliability of this study instrument based on the pilot study is shown in Table 5.1.

Table 3.7 Cronbach Alpha value and classification

<b>Classification</b>	<b>Cronbach alpha value</b>
Unacceptable	< 0.5
Poor	0.5 – 0.59
Questionnaire	0.6 – 0.69
Acceptable	0.7 – 0.79
Good	0.8 – 0.89
Excellent	0.9 – 1.00

The reliability of the variable is high if Cronbach alpha > 0.6 as suggested by Hair et al. (2010). This high alpha value indicates good internal consistency between the items in the scale.

***Brief report of reliability test***

Reliability test were run to twelve measures of ‘Perceived of Physical Environment and Personal Safety using the Cronbach alpha ( $\alpha$ ) analysis. The results of the analysis demonstrated the perception (similar to the actual Questionnaire survey Part C (b)) on twelve measures were valid to be used to measure the concerned dimension as the  $\alpha = .77$ . This as according to George and Mallery (2003), the realibility value for perception considered as acceptable. Meanwhile, for the feeling safe under twelve measures recorded

the high and good value demonstrated that it is also valid to be used to measure the concerned dimension as the  $\alpha = .83$ .

Table 3.8 Reliability instrument based on pilot study

<b>instrument</b>	<b>No of items</b>	<b>Cronbach's alpha</b>
Preference/ Acceptance	12	.77
Perceived safe	12	.83

### **3.3 Main Data Collection: Situating maintenance and sense of personal safety through qualitative method using Focus group workshops**

The purpose of the main data collection in which onsite focus group workshops were conducted was to acquire rigorous outcomes pertaining to perception of park design, maintenance, and users' sense of personal safety at the actual site. Kim et al. (2014) emphasised that more detailed exploration of perceptions of personal security may be gathered in situ at the actual site. It is, therefore, the ultimate aim to provide comprehensive answers to all three research questions that can be said to be representative of neighbourhood parks in general, and in response to the actual case study areas.

#### **3.3.1 Methodology development and selected components**

Hennink (2014a) described focus groups as a method that involves "an interactive discussion" on specific issues between predetermined groups of people with a trained researcher.

The role of the trained researcher as that of a lead moderator is particularly important to ensure the groups run smoothly as per planning and within the pre-set time limit. The lead moderator acts as a point of reference from whom participants can gain clarification and to keep the discussion focused on the topic and related issues. In addition, it is important for the researcher to provide a comfortable environment so that participants feel welcome to express their perspectives and share their experiences (Hennink, 2014b; Hennink & Leavy, 2015). Successful discussion within focus groups will uncover a broad and deep range of responses, leading to a collection of unique data. In this study, as the main researcher, the author planned the overall process of focus groups, and acted as their lead moderator.

Therefore, to gain in-depth responses and richness in data analysis, this study employed three approaches to the data gathering and documentation, i.e., adhesive colour dot mapping, autophotographs, and discussion. The combination of these three approaches to the process will herein be referred to as a ‘focus group workshop’.

To explore the three research questions, four descriptors were formulated based on the literature, preliminary background study, as well as from the secondary data collection. These were designed to be used by participants to identify places matching the descriptors during the focus groups workshops at the three selected case study areas. The final descriptors are listed in Table 3.7 below.

Table 3.9 Four descriptors for focus groups

<b>Descriptors</b>	<b>Adhesive dots colour code</b>
i Preferred landscape design, environment setting and vegetation	Green
ii Landscape design, setting, and vegetation that respondents did not like	Yellow
iii The landscape elements and vegetation, and spaces that were less maintained	Orange
iv Physical conditions and environment that the respondents felt unsafe with	Red

### **3.3.2 Colour dot mapping adapted from needle methods, autophotographs and discussion**

The colour dot mapping was adopted from the needle method designed by Norbert Ortman (Deinet & Krish, 2006). It is commonly used in design development studies for social spaces (Shao, 2014). The needle method requires respondents to pinpoint a location on printed maps of the study area with a colour pushpin. The advantage of this method is that it represents different descriptors that provide immediate and visual results (Deinet & Krish, 2006).

After understanding the needle method, the author identified the first drawback and limitation in conducting the workshop on site. The design of the workshop was to have an in-situ method of data collection. The researcher planned to take participants on a walk around the neighbourhood park to understand their ‘experiences’ and how they perceived the descriptors based on their experiences in the park. Given that the comfort of the participants is

one of the more significant goals, the researcher must provide a suitable form of map, and tools for the participants to point out a place on a map that can be easily held, and hassle-free to handle while walking around the park.

The pushpin method is usually used in conjunction with a single large map, i.e., all participants use a single map. The use of pushpin is suitable if the responses of each participant will be given after walking around the parks, such as an indoor location with a stiff wall or board (such as cork board) to which to paste the large map so that it can be pinned. Hence, the use of pushpins with a single map could result in certain constraints in marking commonly identified features, as their overlap might make it hard to identify and may lead to inaccuracy with regard to exact location when there are too many responses any given area.

For the above reasons, adhesive-colour dots and individual maps were selected as the tools for the task elicitation. The adhesive colour dots were used to indicate the locations of the given descriptors. The colour dot maps were scanned, digitised in the form of layers, and overlaid on the Geographical Information System software (GIS) during the analysis phase to identify significant nodes matching all the descriptors.

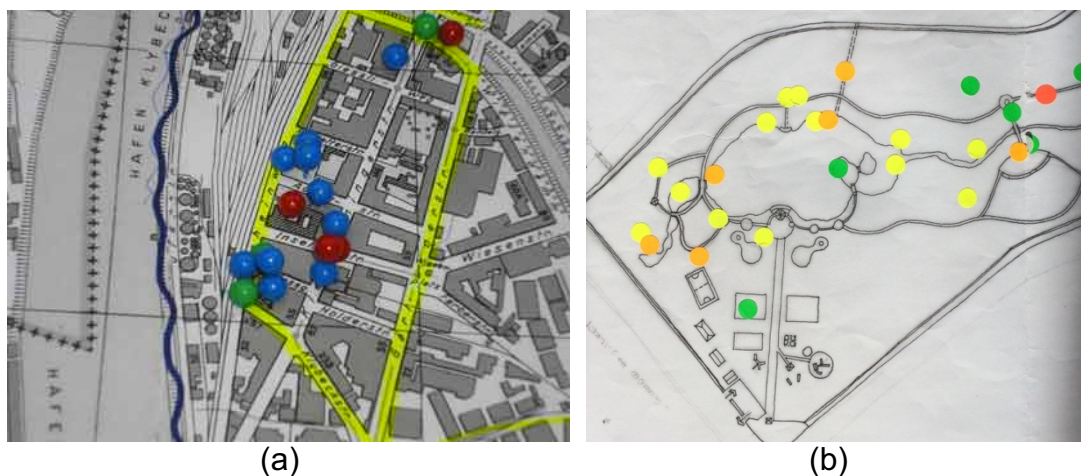


Figure 3.5 (a) The needle method designed by Norbert Ortmann (Source: <http://www.sozialraum.de/nadelmethode.php>, Deinet and Krisch, 2009). (b) An example of the use of adhesive-colour dots for mapping from the focus groups workshop organised at Taman Wawasan Recreational Park (Source: author, 2016)

The participants were also asked to take photographs during the workshop. An autophotography approach was adopted for the task. In brief, autophotography can be understood as:

“... asking participants to take photographs of their own environment and using the photographs as actual data.”

(Glaw et al., 2017, p.1)

This participant-based approach has been used to obtain visual images of actual sites captured through participants' eyes (Glaw et al., 2017; Solehin, 2019). Specifically, participants were asked to take photographs of the features matching the four descriptors identified in their colour dot mapping. One of the strengths of this method of data collection is that the photographs are generated by participants themselves (Glaw et al., 2017) based on their own experiences, reflections, and feelings on site.

Autophotography normally uses a disposable camera as a tool (Solehin, 2019; Drew & Guillemin, 2014; Shell, 2014; Bridge, 2013). Nevertheless, the researcher used participants' mobile phones instead for this task. Mobile devices are a relatively new technology that has developed rapidly and is now being applied in modern research (Bilge et al., 2016). It allows a quick generation and sharing of responses, that are suitable in this study case as it allows easy access to photographs during the discussion sessions in the workshop. There are various mobile applications that allow for the exchange of photographs between respondents and moderator, such as Bluetooth sharing, Airdrop (between Apple devices only) and WhatsApp. Photographs that significantly illustrated and supported the descriptors could be labelled and stored on the moderator's devices, such as mobile phones or portable computer. This brief process can help avoid mistakes in the future during the analyses process.

The last approach in the workshop is discussion. The aim of the discussion was to draw more deeper insights and explanation of the responses in the maps and photographs (Shao, 2014). As emphasised by Gotschi et al. (2009), the discussion later allows for verbal exchange that could not be captured in either photograph or marked on a map. This verbal exchange allows two forms of interaction, i.e., consensual, and argumentative (Bedford & Burgess, 2001). The flow of conversation in focus groups encourages dialogue between group members and allows each respondent to agree or even to argue about others' interpretations or assumptions (*ibid*). Because of this, focus group discussion always offers an interesting and unique insight

that the researcher can learn during the process. The dynamic of the insights can allow for the exploration of individual responses versus group responses, interweaving the different views and experiences.

Bedford and Burgess (2001) explained that one of the benefits of focus group is to recruit groups of people with either similar backgrounds, experiences, or interests to provide common ground for their discussion (p. 124). This research gathered groups of people with similar backgrounds (community with much closer proximity to the park, ethnicity, and gender), similar experiences (park users that were recruited while using the park, as discussed in the following subchapter on selection of sample). This common ground led to the dynamic insights that interwove the individual responses and led to consensual responses from their experiences in situating design concerns, maintenance problems, and their impact on sense of personal safety.

### **3.3.3 Participants recruitment for focus group workshop**

#### ***a) Sampling Methods explained***

The sample size of participants for focus group discussion varies. It is usually a small number, of between six to eight participants (Hennink & Leavy, 2015). For instance, Lee et al. (2008) recruited between seven to eight respondents among mothers in a study into children's food-related behaviour. By contrast, Bedford and Burgess (2001) engaged a smaller number, between four to eight participants, for their discursive constructions of environmental responsibility by different sectors in the British Retail Consortium (BRC).

Despite the argument that a smaller number of participants will reduce the dynamic in the discussion, researchers are much more concerned with drop-out rates (Bedford & Burgess, 2001) in many focus group cases. This is after having trouble gathering volunteers from among survey questionnaire respondents for these focus group workshops. Hence, Kitzinger and Barbour (1999) suggested the sample size can be as small as three participants depending on the study design, whilst Bedford and Burgess (2001) suggested two to four members are ideal for random sampling methods as we do not

have pre-existing social or interest groups. Hence, focus groups that involve public/non-profit sectors tend to be smaller in size 'to enable sufficient time for each participant to exchange views and concerns and to explore alternative opinions' (Hennink, 2014a, p. 14).

Besides limitations on the moderator in assisting large numbers of participants in a group, other limitations were also considered such as the design of activities, and time consumption. This study was designed to be in a community setting (Hennink, 2014a), i.e., neighbourhood parks, where the researcher will walk around the park along with the participants. The main concerns of this technique are to explore broad views of perception in order to understand the context of the users' experiences of the parks. Focus groups for academic study are often applied to explore diversity in experiences and perception without focusing on finding consensus on the issues (Hennink, 2014a). Thus, Kong et al. (2014) emphasise that the quantity of respondents is not more important than the quality of the information itself. Drawing from the above arguments, this study aimed to recruit a small number between three to ten participants for each workshop.

Participant recruitment is first based on the demographic criteria to allow an equal chance of each population's background of being selected to form part of the sample (Mohit & Hannan, 2012; de Vause, 1991). Based on the preliminary information of data on the population obtained from the Department of Statistics Malaysia for Selangor Population Census 2019, the workshop participants were randomly selected based on the following criteria:

- i. Ethnicity: Malay and Bumiputera, other Malaysian ethnic community - Chinese and Indian, other groups of users from other ethnicities/ non-Malaysian backgrounds
- ii. Gender: Male and female
- iii. Age group: Adult users that are not younger than 17 years old up until 60 years old (the average retirement age in Malaysia)

The criteria listed above did not represent any meaning of hierarchy of groups, but it is a population study that may influence in contributions of dynamic responses.



The timeframe for the workshop was set based on three different blocks of time - morning: 7 am to 11 am, evening: 4 pm to 7 pm (before dark, which is a research limitation), and during weekdays and at the weekend. This draws different groups of users based on time preferences, and allows the researcher to explore the diversity of responses between them (Solehin, 2019).

### ***b) Recruitment of focus group participants***

The participation in this focus group workshop is on a voluntary basis. The first strategy was planned to obtain volunteers from the survey questionnaires. On the last page of the questionnaire set, there is information about the focus group workshop that will take place at their community neighbourhood parks. The information includes a brief explanation about the focus topic, activities and the token of appreciation that will be given to participants. Issues regarding anonymity and confidentiality were also explained to the potential participants in order to build trust and encourage their interest in becoming participants. Anyone who expressed their interest was asked for their contact details for the record to be contacted later, prior to the workshops. Nevertheless, it is sad to say that this approach failed to recruit any volunteers from the feedback form.

The second strategy was to approach the community representatives, i.e., the councillors, of each three neighbourhood parks to get their help in gathering volunteers. This snowball sampling technique was used to target recruitment of a pre-established group related to the research interest in order to gain help from these personnel in bringing their friends along as participants (Bedford & Burgess, 2001). Nevertheless, this approach only gained the help of a Taman Tasik Seri Serdang councillor who successfully recruited five participants from the local community, including himself, as members of the associated focus group workshop. The members of this group (named SG2) consist of the Indian-male community, and who are from different age groups. Though it was part of the researcher's responsibility to explain the criteria for group member selection, the researcher had to accept that the group was the best that the councillor could recruit. However, as Bedford and Burgess (2001) argue, a group of members with common demographic characteristics may drive more sensitive responses that illustrate the impact on demographics. As

we were unsuccessful in getting to meet the councillor of Taman Wawasan Recreational Park, therefore we were not able to recruit a pre-established group from there.

As it was expected that there was a high probability that both pre-planning strategies would not succeed, an onsite recruitment strategy was adopted. Onsite recruitment was planned at each neighbourhood park. The sampling frame for this onsite recruitment still followed the criteria outlined from the beginning, including the timeframe. Firstly, recruitment points were pre-determined. Earlier, the researcher considered each park's entrance to be good recruitment points. Park entrances are usually used as a landmark, or as points of reference for gathering. Hence, entrance draws a point of entry from two different spaces, for example, a private space to the public space (Bentley et al., 1985). Moreover, a park with a number of entrances indicates that various patterns of movement occur in the park (Bentley et al., 1985).

After preliminary studies, the researcher considered two final characteristics for recruitment points, which are the entrance with physical permeability, and in a major area of activity. In her paper, Yavuz (2017) summarised physical permeability as diversity (Bentley et al., 1985; Campbell et al., 2003), accessibility (Bentley et al., 1985; Montgomery, 1995), and readability (Thompson, 2001) of ways offered for users from inside and outside the parks.

Low- and high-level permeability park entrances were identified as recruitment points. High-level permeability in this study case refers to an entrance with easy capacity to enter the park (Montgomery, 1995), for example, the entrance with a designated car park, entrance near a public transport stop, that are close to other activity areas in the park (Yavuz, 2017). As discussed later at the end of this chapter, two sites, i.e., Taman Seri Serdang and Taman Puchong Perdana, consist of small food court areas with designated car parks near the recruitment points. Hence, it is also major activity area and centre of attraction to the parks. Therefore, one of the recruitment points for both Taman Tasik Seri Serdang and Taman Tasik Puchong Perdana was at the entry point of the park from the food court area. On the other hand, Taman Wawasan Recreational Park offers a different functional entrance, which was also used as one of the recruitment points, with

a designated car park near the recycling house provided by the local authority. This entrance leads immediately to the main attraction of the neighbourhood park, consisting of multifunctional courts, a children's playground, and a gazebo.

Meanwhile, a low level of permeability is similar in character for each neighbourhood park. This entrance connects the housing area to the park. Similarly at each neighbourhood park, this entrance is designed to be far from the heart of the park with a diversity of activities that leaves it less vibrant compared to the other areas in the park. However, only two neighbourhood parks, i.e., Taman Tasik Puchong Perdana and Taman Wawasan Recreational Park, low level permeability entrances were selected as other recruitment points. The entrance to Taman Tasik Seri Serdang is unsuitable as a recruitment point because of the location of the park at the back of the service building and because it does not have a suitable area for recruitment (for example, a gazebo). Therefore, only Taman Tasik Seri Serdang has one recruitment point at the wood decking area near the high permeability entrance point, whilst the other two neighbourhood parks, Taman Tasik Puchong Perdana and Taman Wawasan Recreational Park have two recruitment points for focus group workshops. These recruitment points were also the starting points for the workshops that were conducted afterwards. The selected recruitment points are highlighted in yellow in Figures 3.6 and 3.7.

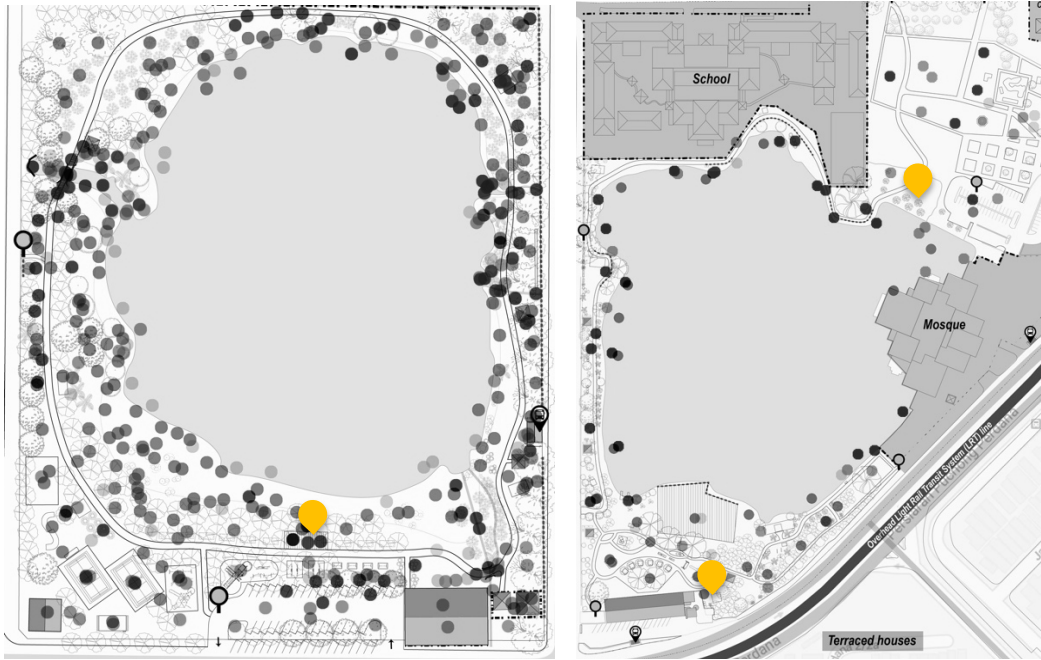


Figure 3.6 Park entrances and final selection of recruitment points for TSS (left) and TPP (right)

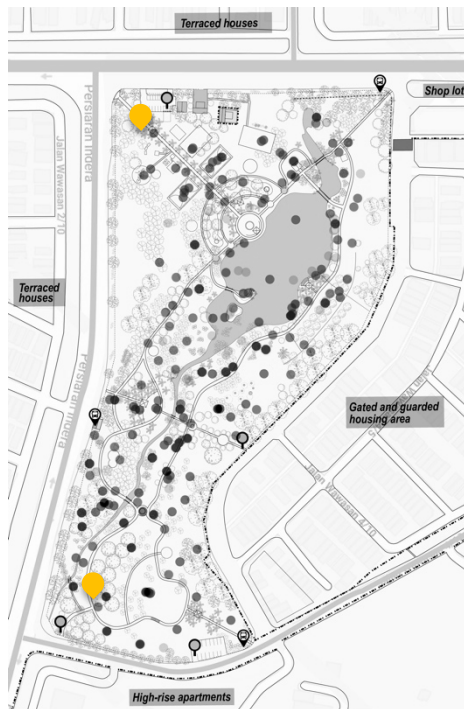


Figure 3.7 Park entrances and final selection of recruitment points for TTW (Source: Drawn by author)

The on-site recruitment was performed about 20 minutes before running the main workshop. Because of the limitation in time for recruitment, participants were approached in groups. Groups of three to five people were approached directly, and the researcher started by introducing themselves, and followed with a brief explanation about the workshop. Potential

participants who showed an interest were given the workshop handouts that consisted of participant information, consent form, and tools, i.e., map and adhesive colour dots. There was further explanation about the workshop procedure, issues relating to anonymity, confidentiality, and that the use of all the information gathered was purely for study purposes including presentation in conferences and publications. The use of the tools in gathering data such as maps (given to each participant), the participants mobile phones for photography and voice recording during discussion, are highlighted.

Table 3.10 Number of focus group participants according to Neighbourhood parks

No.	Three NPs	Small Group	Respondents (n)	Demographic character	Time
1	Taman Tasik Seri Serdang (TSS)	SG1	3	Student, female, Malay, non-Malaysia (Korean), Adult	Weekend, morning
		SG2	6	Indian-male	Weekend afternoon
		Total	9		
2	Taman Tasik Puchong Perdana (TPP)	SG1	3	Malay, male, female	Weekend, evening
		SG2	5		
		Total	8		
3	Taman Wawasan Recreational Park (TTW)	SG1	4	Indian & Malay, Male & Female, Adult	Weekend evening
		SG2	5		
		Total	9		
		<b>Grand total</b>	<b>N=26</b>		

### 3.3.4 Ethical issues and limitations

#### **A chronological process of the focus group workshop**

Behind any advantages in method of data collection, there are also predictable problems that have themselves been discussed by many researchers. Therefore, it is important for a researcher to draft an initial planning of the workshop including the flow, piloting to acknowledge the difficulties, prepare the tools, and finally to run the workshops.

#### **1) Drafting the focus group workshop**

To ensure that the workshop runs as smoothly as possible, the author drafted the focus group workshop. In the draft, there are three phases involving the

preplanning, piloting, and protocol in conducting the workshop. The preplanning was first drafted after the decision to conduct onsite recruitment was finalised.

The preplanning is an initial draft of the workshop that scheduled the process systematically. In this preplanning, the researcher had outlined two items which are scheduling the onsite workshops (including recruiting strategies - sample, time, and place, and designing questions and tools, estimating the pretime limit), and drawing up a chronological process for the workshop (the step by step). As the first two strategies outlined by the researcher were less fruitful, this preplanning was drafted based on the onsite recruitment strategy with the random sampling of three to ten participants a time. The onsite recruitment was planned to be organised on the day of each workshop, and at the selected recruitment points of each neighbourhood park. Three different blocks of time for workshops drawn by previous researchers are morning, afternoon, and evening.

For this particular workshop, the blocks of time considered the vibrant times by users of the park are morning before work, evening after work, and at weekends. Therefore, the blocks of time for the workshop were set based on three different block of time - morning: 7 am to 11 am and evening: 4 pm to 7 pm (before dark as this is a research limitation), during weekdays and weekends. The pretime limit for each activity was set accumulatively to a maximum of two hours. As a matter of time, four descriptors were formulated based on the workshop's aim to acquire rigorous outcomes pertaining to perceptions of park typologies and design, maintenance, and users' sense of personal safety at the actual site.

The workshop started with the recruitment of participants about 20 minutes to 30 minutes beforehand. The researchers and two of her assistants planned to approach people in groups, but were less likely to approach a single person at a time. However, if this happened, the potential participants will be gathered at the recruitment point until the minimum number of workshop members is achieved, i.e., at least three participants.

Table 3.11 Four descriptors for focus groups

	<b>Research subject</b>	<b>Descriptors</b>	<b>Tools</b>	<b>Adhesive dots colour code</b>
i	Park typologies and design	Preferred park design and character	Photos, voice record, colour dot maps	Green
ii		Less preferred park design and character	Photos, voice record, colour dot maps	Yellow
iii	Maintenance	Landscape elements, vegetation, and spaces that were seen as less maintained	Photos, voice record, colour dot maps	Orange
iv	Sense of personal safety	Physical conditions and environment that made the respondents feel unsafe	Photos, voice record, colour dot maps	Red

The workshops were designed to include two main activities, starting with walking around the parks and discussion. During the walk, participants are required to fill in the maps with adhesive colour dots and take pictures using their own mobile phones that represent their responses to the above descriptors. This was estimated to require about an hour for this particular activity. After the walk, the researcher will moderate a discussion at a gathering point, which will probably be the earlier recruitment point. The discussion will also cover the four descriptors. This discussion was planned to last about 15 to 30 minutes, and this includes exchanging photographs taken on participants' mobile phones to the researcher's gadget for data restoration, for example, mobile phones, iPad, or laptop.

## 2) ***Pilot testing process***

Prior to the main workshop, a pilot test of the onsite evaluation was conducted on the 19th of February 2017 during the afternoon at Taman Tasik Puchong Perdana. The pilot study helps the researcher to carefully design the research technique as it involves users' participation and ensures the main workshop runs as planned (Yin, 2009). Taman Tasik Puchong Perdana was selected for the pilot test because it is the largest neighbourhood park under the Subang Jaya City Council (MBSJ).

This pilot testing is intended to test the suitability of the block of time, and the pre-set time limit of each activity. Besides, piloting also helps to validate (Farrell, 2011) the designed descriptors to ensure that it is clear to the

participants understanding. Hence, these pilots help to uncover unforeseen circumstances that may become a setback during the actual workshop. For this pilot, one participant was selected. This participant is our hired assistant and also, as a user of one of these neighbourhood parks, could be considered an ideal sample of the population (Farrell, 2011).

The process of this pilot study is similar to the drafted process of the actual workshop. This is to enable the researcher to priest the time limit for the actual workshop based on the time recorded from this pilot study. This pilot study started with a briefing about the workshop that consisted of giving brief information about the research and an explanation about the purposes of the workshop. The issues on anonymity and the use of the data for study purposes that includes conferences and journal publications were also highlighted. The role of the researcher as the usher and moderator of the workshop is also emphasised, and the responses will be carried out solely by the participant. However, participants could ask any questions or make any enquiries related to the workshop, their roles, or regarding the descriptors. After the briefing, participants were given time to go through the descriptors and the map given, and to ask any questions. This briefing took 8 minutes and 5 seconds to complete, and is thus within the expected priest time of about 10 to 15 minutes.

The workshop then continued with the main activity, i.e., walking around the park, with the main researcher as the usher. This main activity required participants to carry out their two tasks, namely marking the given maps according to the descriptors based on the four colour codes and taking photographs that illustrated their responses on the map. During the walk, the researcher talked infrequently, except to answer questions from respondents regarding their tasks, one question being about how many pictures were necessary to explain their responses on the map.

The researcher also recorded the movement pattern and times of the activities. The walk finished around 11.30 am, about 1 hour and 15 minutes after it started. After the walk, the researcher brought the participants to the restaurant in the park compound to give a short summary. The decision to have a short summary at the restaurant was because of the time and weather conditions. Since it was more one-to-one question and answer, the outcome of the summary represents only one perspective and did not form any kind of



discussion that consisted of any consensus or arguments on the responses given. The summary ran for about 15 minutes and was not hard to end because the researcher still had control over the activity, as there was only one participant. This short summary is a piloting for the focus group discussion in the actual workshop. The total time taken for this pilot study was 1 hour and 38 minutes, nearly approaching the maximum priest time limit, i.e., 2 hours.

After the pilot workshop ended, informal feedback was accumulated from the participants, and reflections from the researcher. The feedback and reflections are listed as follows:

i) Definition and difference in understanding - Perceived safety, and comfort.

The participants may have different understandings of the word 'safety'. The researcher needs to highlight the meaning of safety in this context, namely being a feeling of being worried about crime, and the feeling of becoming a victim of crime. Participants seems to understand 'safety' in the context of prone to accidents or incidences that may cause injury or damage to their property.

It was also found that participants barely relate their feeling of comfort in the park, in the meaning of what this study actually wanted to explore. The researcher explained that the feeling of discomfort here was actually feelings of being unsafe in the designated environment in areas that may seem to be a prone to incidents of crime, an environment that is seen to be as a hiding place, and that might facilitate the escape of a criminal. Therefore, during the briefing session the researcher needed to explain the working definitions of the descriptors to ensure that the responses represented the meaning related to the study.

ii) Time constraint - Suitable time for workshop, and priest time limit

It was observed that time is one of the things that causes discomfort, especially after the half hour of the workshop. During the pilot study, starting around 10 am in the morning and ending at nearly 12 noon seems unsuitable for walking around the park. This is because it was the time where the sun rises and was at the peak at noon. The extreme

hot weather could cause discomfort and discourage participants from continuing to carry out tasks until the end of the workshop. Hence, the time spent throughout the workshop (more than 1 hour) somehow is the average time people spent in the park for their individual activities. Therefore, participants should be informed of the expected time and prior time limit for the workshop during recruitment.

*iii) Difficulties carrying out tasks - taking pictures and dot maps at the same time*

Every participant was given an A3 size map, a consent form, and descriptor sheets with colour coding that required them to fill in the maps during the walk. At the same time, they were asked to take photographs of any significant landscape and the surrounding environment that illustrated their responses on the map. This task may be difficult to carry out for certain people such as the elderly. As the photographs will be taken from the personal mobile phone of participants with their consent, the researcher needs to consider their safety from the perspective of possible snatch theft or accidentally dropping their devices during the task elicitation. On the other hand, there could be a person with mobile illiteracy that may need assistance in taking photographs.

*iv) Discouraging factors in the middle of workshop - difficulties and constraints*

During the walk, the participants were asking a few questions that were not related to the study. This was a distraction technique to help them to stay focused to the research topic and on the site features. However, as the researcher reflects back, this was due to the time taken to walk around the park being too long and that they needed to elicit the task by themselves. Focusing on the map and pictures with less conversation may cause them to become tired. This may cause them to become disinclined to continue with the next activity, i.e., discussion. Therefore, the researcher tried to blend with the situation, in which when needed, the researcher will casually ask their responses

to the descriptors during the walks. The researcher also considered this to represent a 'back-up' discussion, considering the possibility of participants skipping the round-up discussion later.

The feedback from the pilot study encouraged the researcher to thoroughly consider three limitations: i) number of persons in group, especially for the round-up discussion; ii) time taken for the workshop; and iii) holding some discussion while walking around the park during the task elicitation as a back-up, considering the possibility of having to skip the round-up discussion later. Through thorough preparation, the main focus group workshops were ultimately conducted in three neighbourhood parks with a total of twenty-six respondents (N = 26).

### **3) *The actual process of the main focus group workshops***

The actual process of each small group workshop involves three stages: briefing, walking, and short discussion. In the briefing stage, participants are informed about several guidelines with regard to answering the questions, as well as the tools for the workshop, i.e., maps and respondents' mobile phones. In the briefing, the researcher also highlighted some other considerations:

- a) Safety of participants is the primary concern of the study - the participants were advised to walk closely within the group, and avoid any harm or danger that they encountered during the walk. If in any cases, the park ambiance reflecting the questions (especially with regard to safety) triggered any emotional effect such as anxiety, the participants were advised to stop immediately.
- b) Despite answering the questions, participants were advised to respect other park users' privacy. Concerning the photographs, participants were advised to avoid taking any individual faces, or interrupt any activities that may cause discomfort.

Besides this advice and reminder, the researcher highlighted the expected outcomes such as photographs and colour dot mapping as the most important data for the study's purposes. Besides, it is important to brief the ideal composition of photography, finding the right focus and elements in accord with the verbal statements about such. The researcher also

encouraged participants to note any response on paper, especially those that might involve important points regarding the four statements.

In the pre-walking, participants were given time to review and familiarise themselves with the four statements so that the walking process could be run according to the time set for this activity. The walking process took about 20 to 45 minutes as all the site studies are large in size because of the presence of lakes in the middle of the sites. During all the small group workshops, the researcher and two assistants walked around with the participants for various reasons such as to offer assistance especially for older people and young adults, or offering brief explanations to any enquiry. However, the researcher and her assistants are well aware of not giving ideas on particular statements to avoid bias. Because of the walking part taking a long time, each of the short discussions at the end were limited to approximately 10-15 minutes, except for Group 2, NP1 where the participants were eagerly answering the four statements, and explaining the issues, and where the discussion of which took about 30 minutes.

### **3.3.5 Data Analysis within the research**

This section details the methods of analysis for the focus group workshop and associated steps. The aims of the workshop are to provide rigorous answers to the research questions outlined at the beginning of the research, and on the actual site.

- 1) What are the factors affecting users' preferences with regard to their neighbourhood park landscape?
- 2) What are the issues of maintenance that people perceive with the current park design and site conditions?
- 3) How do the traces of maintenance issues become cues that affect people's sense of personal safety?

The first questions aims to describe the factors that influence people's preference at the park to understand and explore the possible differences between demographic and site context in the three neighbourhood parks. The second exploration is to examine issues on maintenance, based on the typological character (design and context), as well as physical condition. The

typological exploration on sense of personal safety brings a narrower focus to the following research questions in researching its maintenance. The knowledge of typological character and design of parks is to inform us regarding their (typology and design) effect on maintenance, which may also affect sense of personal safety.

The second research question aimed to further explore the typological and design character of a park, which has a strong influence on maintenance practices and consequently affects one's sense of personal safety. The first way in which this can be studied is by researching the effects of park typology and design on the spatiality of maintenance. This includes the service types for maintenance based on the necessity of the park itself. Service types consist of hard and soft landscape maintenance (including tree and grass trimming, broken equipment), as well as waste collection. As these three neighbourhood parks have huge water features, it is also essential to observe the effects of this on users. Concern as to the consequence of the local organisation of the authority may 'subversively create temporal occupation of spaces' (Paramita, 2019) within the parks, where this occupational space and its impact on users will also be explored. The occupational spaces with which we are concerned include such issues as illegal vendors, tipping, and dumped personal waste. The empirical study derived from this second questions focuses on establishing the physical cues that consequently affect the sense of personal safety.

Based on the discussion above, this study can obtain rigorous recommendations regarding maintenance with concerns of personal safety by assembling: 1) a profound knowledge of the maintenance strategies by typological character and design, and 2) maintenance strategies to confirm personal safety.

### **3.3.6 Three-steps process of analysis**

As discussed earlier in the workshop methods, this thesis developed a three-step process as forms of analysis to situate the responses. The three-step process started with mapping the responses of four descriptors. This mapping is the main tool of analysis that situated the four descriptor points, i.e.,

preferred landscape, less-preferred landscape, less-maintained landscape and spaces, feeling unsafe in the landscape and the environment. The situated maps analysis annotated the most common landscape and spaces, which will herein be referred to as nodes. These situated maps also visually informed the spaces and landscape of less concern in the study.

This then follows an analysis of the text of the narratives from the discussions. The analysis of the narratives employed both deductive and inductive strategies. The deductive coding was first developed during the background study based on the literature, known as categories. There are three categories, i.e., perception of park typologies and design, perception of maintenance, and sense of personal safety. The text will then be analysed via inductive analysis. Inductive analysis derives codes from the narratives itself. The inductive coding represents the study of the main categories above.

The last process involves matching the photographs with the categories and codes from the narratives, and with the nodes from the mapping. Photographs provide additional details about the nodes and codes from both mapping and narratives. It further illustrates the important nodes. These photographs taken by participants illustrate the visual perspectives of what people perceived at the park, and from what they experienced.

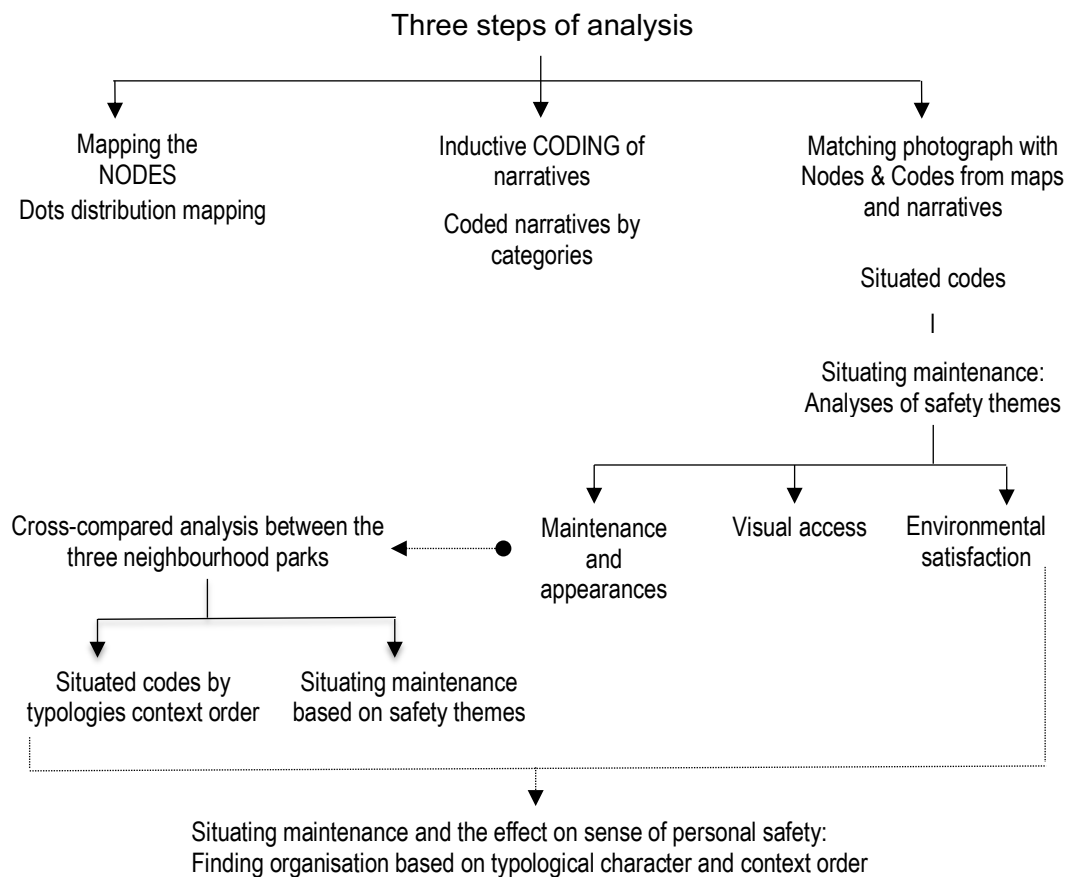


Figure 3.8 Three-step analysis process for focus group workshop

**a) *Dot distribution mapping - analysis of colour dot maps***

One of the most well-known dot maps ever used was in 1854 where a density map was produced to see the distribution of cholera patients in London. The density maps successfully established the spatial pattern from the plotted maps, where it showed the high areas. And this led to the discovery of the spatial relationship with the cause of the cholera.

The analysis of distribution maps started from the single dot that marks a single occurrence, to the set of accumulated data points. The representation of these dot maps allows the visualisation of the scatter of the data points, and illustrates the occurrence of clustered data. The scattered and clustered data illustrate the spatial patterns of the analysis categories.

Unlike other thematic maps where the symbols or colour represent or scale by value, the distribution maps in this study can be seen through the density of the data attributes or features. The single dot in this data simply

represents an individual response. The bright colour illustrated in the maps shows the overlays of the results gained from more than one individual. The colour brightness instantly provides insights into 'where instances of an occurrence are clustered' (Isaac, 2017). A high density of answers in a single spot indicates a node.

However, the drawback of this study using dot maps is the size of adhesive dots themselves. They are too big to compare with the size of the printed maps given (in A3) to the participants. Nevertheless, the maps were used to present the density, and draw spatial patterns for the categories discussed. The use of photographs and narratives afterwards will further explore the specific attributes related to the categories that supported the nodes in these distribution maps.

### ***b) Image analysis of the photograph***

As previously mentioned, the researcher has highlighted that the photographs taken by the participants will be used to support responses from both distribution dot maps and narrative codes. Therefore, the analysis of photographs follows the categories and themes as explained in both subchapters.

In Chapter Six, both original photographs and photographic collages made out of the original photographs were produced to present the image analysis. The sources of the photographs are the participants in the focus group workshops. The analysis of the image locates a human figure in the collage to indicate the estimated point and angle of view of each node. These collages were digitalised by the author using the photographs taken by the participants during the workshops. In the collages, human figures were used to indicate the estimated points of view either towards or from the nodes. Furthermore, the quotes extracted from the group discussions help to gain further details about the exact points as well as explain the perceptions in detail. The use of abbreviation to elaborate upon the backgrounds of the participants for each quote follow this sequence (participant's ID, gender, ethnicity, age).



Firstly, the researcher gathered and categorised the photographs based on four study descriptors. According to the nodes from the distribution mapping analysis, the significant photographs that supported the nodes are gathered in one drawing together with the maps. The selected photographs significantly present the image of a space, the character, and types of attributes that contribute as factors to the nodes.

All the responses are gathered into category-coded narratives (as in Table 2.10). The photographs will be gathered on a map of particular categories, and matched with the nodes. The nodes mark the responses of the four descriptors. In this density map, the high and low prone areas are shown.

### ***c) Coding process of the narratives***

Coding is a 'process of adding tags or keywords to text segments' (Kvale & Brinkmann, 2015) that represent research themes, which this study refers to as categories. The coding process started with the development of categories from the background study. This process is known as deductive coding and is used as a main reference that guides throughout the coding process. The categories are perceived park typologies and design, perception of maintenance, and sense of personal safety.

Later, inductive coding was adopted to examine the discussion transcript. The transcript is referred to as text, highlighting similar information to the categories. This coding process is intended to analytically record the data in separate groups and selected annotation (Charmaz, 2006). Texts with similar information illustrate the connection of each response within the categories, and are referred to as coded narratives. The following table demonstrates how coded narratives are placed in appropriate categories.

### **3.3.7 Further analysis: Situating maintenance and the relationship on the perception of safety**

As this study aims to explore the relationship of landscape maintenance and sense of personal safety, two further analyses were carried out. Firstly, the analysis of the relationship between three categories were carried out. Secondly, a cross-analysis between three site studies, i.e., Taman Tasik Seri

Serdang, Taman Tasik Puchong Perdana, and Taman Wawasan Recreational Park was also performed.

***a) Perception of park design and characters, perception of maintenance and sense of personal safety.***

The purpose of this detailed analysis was to explore the effect of park design and typologies, and maintenance, on sense of personal safety. Therefore, taken from the findings of factor analysis on quantitative results, three themes were generated. These three themes represent the sense of personal safety, and are herein referred to as safety themes.

In this analysis, the coded narratives with similar information that illustrate a connection with the safety themes are further categorised into each related theme. These new codes, referred to as situated codes, are the codes that 'mapped together based on similar relationships between nodes and themes' (Paramita, 2019).

Situated codes are visually represented in the form of the detailed drawings. These drawings consist of a generated enlargement plan with nodes, photographs (by participants), and other supported illustrations created by the researcher. The enlargement plan consists of nodes that visually illustrate the prone areas where the sense of personal safety is perceived high or less, and the feeling of comfort. The detailed drawings will further illustrate the other factors that are influenced by park design and typology, as well as the maintenance.

***b) Cross-analysis between three neighbourhood parks***

This final analysis of focus group results is the key to answering research question no. 3 - What are the physical cues resulting from maintenance that impact on users' perceptions of personal safety?

From the first further analysis above, the findings of each analysis will then be used to cross-compare between the three neighbourhood parks. The purpose of this cross-comparison is to explore the additional details and richness of explanation on the effect of maintenance on sense of personal safety in different park typologies. The park typologies of these three

neighbourhood parks have both similarities and differences. These typological characteristics have a significant influence on both maintenance and sense of personal safety. The typological attributes used for the cross-comparison between these three neighbourhood parks is shown below.

Table 3.12 Typological attributes and context to compare the findings for the three case study areas

<b>Typologies and context order</b>	
1	Vegetation and planting types
2	Spatial arrangement and routes (in park)
3	Topography
4	Water feature
5	Activities and spaces
6	Neighbourhood types and context
7	Access
8	Type of users

### **3.3.8 Organising findings: The effect of maintenance of different park typologies and design on sense of personal safety**

This section illustrates the organisation of the focus group findings. The organisation of the findings started by translating the knowledge into future recommendations for managing maintenance based on park typologies. In assembling this, the findings were divided based on a similar relationship between themes. Each theme will then list the mechanism of maintenance based on the typologies and the context order. Then, it will highlight suitable resources and mechanism of maintenance.

## **3.4 Summary: Reflections on the Case Study Methodology**

This chapter describes the methodology designed to address the research aim. This includes an explanation of the techniques and procedures adopted to achieve the research aim, and answer the main and three sub-questions of the research. A mixed-methods (quantitative and qualitative) approach is taken to examine three neighbourhood parks in an urban setting which are managed by Subang Jaya Municipal Council (MBSJ). A total of 206 respondents took part based on the location and proximity to their local neighbourhood parks.

The research techniques used for data collection comprise a survey questionnaire, and an in-situ focus group workshop. For the survey questionnaire, a range of twelve (12) attributes were established to measure

the three subjects related to this research: on maintenance practices, landscape preferences, and perceived safety. These twelve measures fall under four categories of variables, namely types of planting and viewing distances, planting structure, facilities and maintenance, cleanliness and waste. Meanwhile, the results for in-situ focus group workshop are presented using three media: colour dot mapping, photographs collages, and narratives. The combination of techniques and tools have produced a significant amount of data, followed by a series of analyses that include statistical tests, node mapping, inductive coding of narratives, and analysis of situated codes (compounding the photographs with codes and nodes from the mapping and narratives).

Despite this significant amount of data and analyses, there are limitations which persist for case study research. As stressed by Francis (1999), it is important to acknowledge that this study does not employ comparative analysis – which is multiple case study sites. However, the way it is employed here is evidence of this method being a significant approach to providing comprehensive evidence on specific cases, to offer concrete data in what can often be generalised about spaces and processes, especially in landscape architectural study (Francis, 1999). Hence, the case study analysis approach adopted here is used to collect the explicit and expressive characteristics of a real situation, studied in depth, to a sufficiently robust level so as to understand the wider context of the particular study area (Francis, 1999; Yin, 2009). The selection of techniques is, therefore, important to achieve the aims and answer the research questions in the single case study, and to bridge the gap in knowledge concerning perception of safety and maintenance.

## CASE STUDY OF NEIGHBOURHOOD PARKS UNDER SUBANG JAYA CITY COUNCIL

### **4 Introduction**

Chapter 4 provides an overview of the case study, the Subang Jaya City Council (known henceforth as *Majlis Perbandaran Subang Jaya*), and three selected sites under their supervision. This chapter discusses the overall organisation, the work description, and the maintenance practices including procedures and processes. This research was conducted in three neighbourhood parks as the case study areas, as explained in Chapter Three: Taman Tasik Seri Serdang as case study area one, Taman Tasik Puchong Perdana as case study area two, and Taman Wawasan Recreational Park as case study area three.

#### **4.1 Neighbourhood Park as a place of study**

Normally, the responsibility for park management and maintenance lies with the local authority (Dempsey & Burton, 2012; Nath, Zhe Han, Lechner, et al., 2018). Similarly, in Malaysian green spaces and parks the maintenance is monitored by the local authority. The maintenance process involves a team comprising management and stakeholders (Dempsey & Burton, 2012), including interdepartmental cooperation between a local authority, councillors, non-governmental organisations (NGOs), as well as the local community. Every party has its own responsibility and functions for the space maintenance to ensure its success. For public parks such as the neighbourhood park, the local authority acts as the manager, to pre-arrange, manage, and monitor maintenance. The design team includes urban planners, geographers, engineers, and many departmental managers, as well as the contractor, who are involved in the preplanning of maintenance until the task execution. The

councillor, a politically-related representative, acts as a bridge between the community and local authority. Besides management and stakeholders, the community also plays an important role during the process. The community responsibilities started while using the public park facilities from ensuring they used the park properly and avoiding creating an unclean and untidy environment, such as through carelessly throwing away rubbish. Besides, the community initiatives through programmes and events that engage with the stakeholders could lead to a positive outcome of good maintenance practice of a place.

To understand the character of a park and its maintenance, this study needed to focus on one type of park. This is because every type of park has different characteristics and management teams, and so the requirement for and level of the maintenance itself will vary.

The first consideration with regard to the selection of parks for the case study is based on the open space and recreational area planning guidelines issued by the Department of Urban and Regional Planning Malaysia (also known as *Jabatan Perancangan Bandar dan Desa Malaysia*, henceforth PLANMalaysia). The classification in this hierarchy is determined by three factors: the area, size of population, and functions. Neighbourhood parks in Malaysia cover about 0.1 hectares to 2 hectares of green areas with a population scale up to twelve thousand (12,000) people in an area. According to PLANMalaysia's (2013) definition, a neighbourhood park in Malaysia is a recreational area in a neighbourhood that provides recreational, sports, and social activities for local people. It may consist of an open space, plaza, pocket space, or courtyard; depending on the size of the area and the local population. This guideline has allowed open spaces to be classified according to eight (8) categories, as per Figure 4.1.

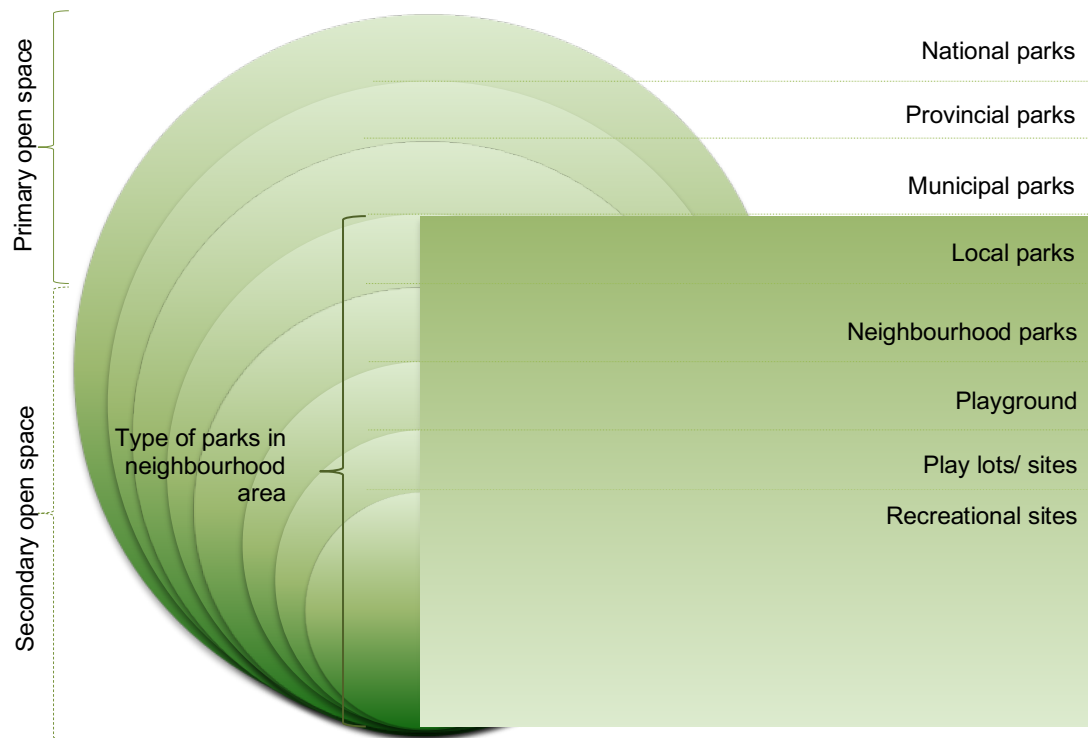


Figure 4.1 Malaysian's open space hierarchy  
 (Source: Drawn by researcher based on classification by PLANMalaysia, 2013)

## 4.2 Case Study Descriptions: The Local Authority and Three Case Study Areas

Chapter 3 described the purpose of the case study was to investigate the ways in which the physical cues that arose as a result of landscape maintenance, combined with the design of the parks, affects users' perceptions of personal safety. For this reason, Majlis Bandaraya Subang Jaya Primary open is selected as the case study looking at the maintenance practices, including the procedure and processes and its organisational work description. Hence, this city council was selected because they are responsible for managing one of the built-up areas in Selangor, Malaysia.

Selangor is part of the Klang Valley, the adjoining suburban areas and towns, located adjacent to Kuala Lumpur. Subang Jaya is one of the suburban areas in Klang Valley that started experiencing rapid growth, especially in residential areas, to fulfil the housing demand of the urban dwellers who work in Kuala Lumpur (Ooi, 2009). Subang Jaya started to develop from a palm oil plantation area into a vibrant city.



Figure 4.2 A map of Malaysia. The land mass on the left is Peninsular Malaysia, whilst Sabah and Sarawak are on the right.

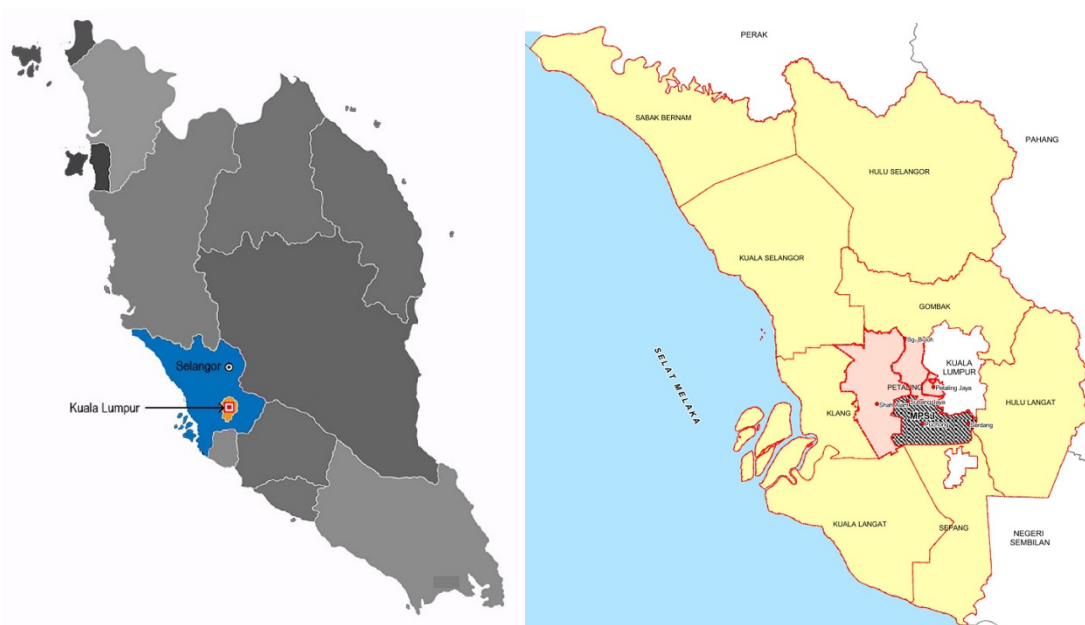


Figure 4.3 Kuala Lumpur and Selangor's locations in the Peninsular Malaysia

In the Federal Constitution of Malaysia, there are three levels of governance in the hierarchical model which operate in the Peninsula (KPKT, 2017) under the jurisdiction of the Ministry of Housing and Local Government of Malaysia (known as *Kementerian Kesejahteraan Bandar, Perumahan dan Kerajaan Tempatan*, henceforth KPKT). The first is the federal government, followed by the state government, both of which are constituted through election adopted since the British colonisation in Malaya. The third is the local



authority, which has been appointed directly by the states themselves under the jurisdiction of the KPKT since 1970. Thus, the management and maintenance of open spaces in Peninsular Malaysia is divided between these three levels. The responsible authority depends on the size of the parks, the size of the population they cater for, and the functions they provide (PLANMalaysia, 2013).

In the Local Government Act 1976 (Act 171) of Peninsular Malaysia, a local authority is '*any city council, municipal council or district council*' appointed by the state government that has the authority to administer the areas under their territories (Mohd Yusof, 2012; Nor Akmar, 2012a, 2012b). This includes the provision of park management and maintenance of open spaces (PLANMalaysia, 2013; PLANMalaysia Selangor, 2010).

As different levels of government have different roles and policies, the character of and provision for park management and maintenance differ based on the types of park (see Figure 3.3, Section 3.3.1). Parks in Malaysia are divided into two categories: primary and secondary open spaces. The provision of primary open space falls under the jurisdiction of the federal authority, i.e., the National Landscape Department (known as, *Jabatan Landskap Negara*, henceforth JLN), and under the state and city councils, e.g., Kuala Lumpur City Council and Putrajaya City Council. Primary open space is usually large open spaces, and the accommodated population is defined as non-specific users. Secondary open spaces include parks between 0.2 hectares and 1.2 hectares in size, which fall under the jurisdiction of the local authorities, i.e., municipal and rural district councils (PLANMalaysia Selangor, 2010).

#### **4.2.1 MBSJ and area of administration**

##### ***4.2.1.1 The background and population***

The rapid industrial and commercial development of Kuala Lumpur turned the city into a concrete jungle, demanding a supply of land for residential as well as green areas. The lack of land and its high market price in Kuala Lumpur influenced the creation of new development areas and townships in the

adjoining areas. This has also affected areas under supervision in the Klang Valley, where a mixture of villages and new townships can now be seen. The areas under jurisdiction cover 161.8 square kilometres, consisting of two sub-districts, namely Damansara and Petaling.

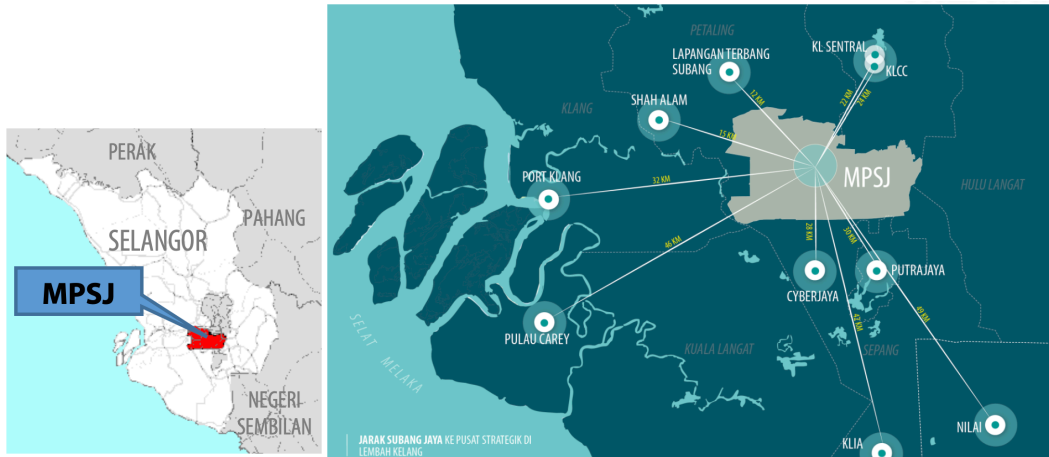


Figure 4.4 The key plan of MBSJ (left) and the distance of Subang Jaya to Strategic Center of Klang Valley (Source: MBSJ Draft of Local Plan 2035, (MBSJ, 2020))

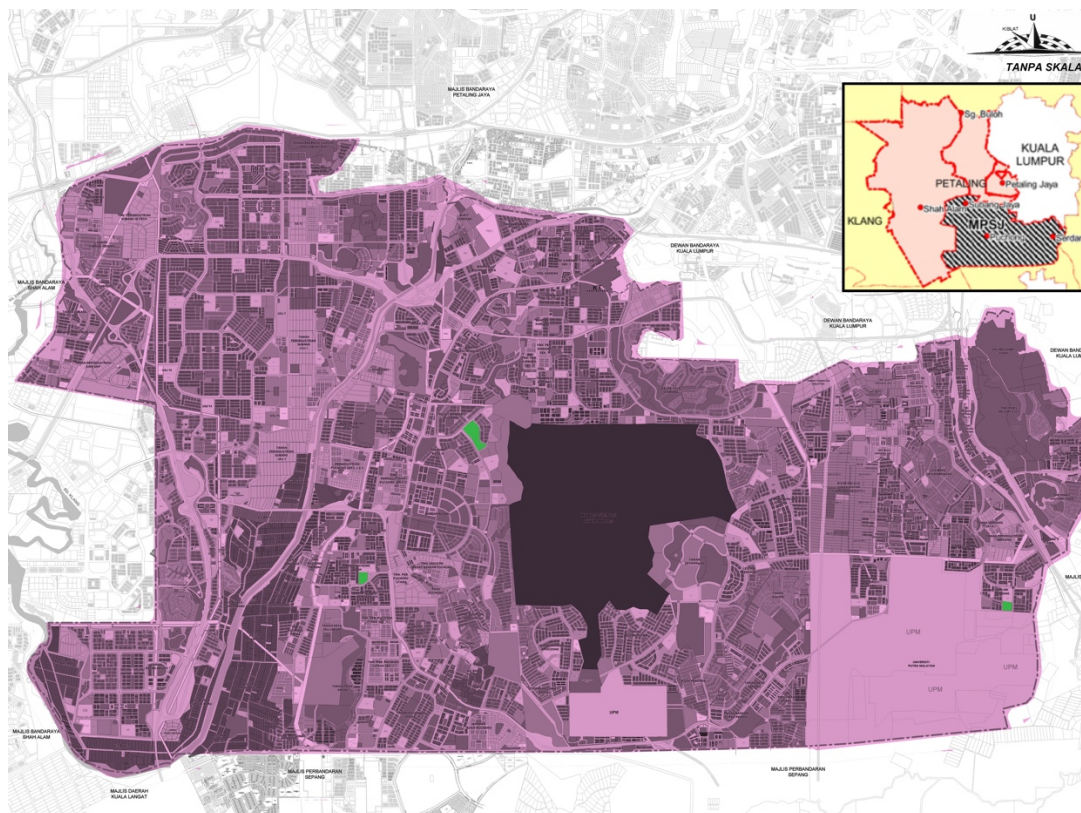


Figure 4.5 Territories under MBSJ supervision. The selected sites are coloured in green. Adapted from Subang Jaya Local Planning 2020 (Source: MBSJ 2010)

The roles of MBSJ evolves as it upgraded from Petaling District Council (until 1994) to Majlis Perbandaran Subang Jaya (MPSJ until 2020), and was then elevate its status to become a city Council in October 2020. MBSJ reorganized its administration in order to keep pace with ‘physical, social, economic and environmental conservation developments’ (PLANMalaysia Selangor, 2010). As one out of four local authority in Selangor, MBSJ governs the populated southern parts of their seven planning blocks (see Table 4.6). Planning blocks (BP) are territories formed to provide a more systematic approach to planning and monitoring land use. Systematic planning is very important in providing more coordinated landscape maintenance for the benefit of both public and environment (MPSJ, 2010).

With the theme of ‘The Vibrant City’, MBSJ aimed to uphold an international standard of Local Authority, with a mission of making ‘a peaceful, smart and dynamic municipality by 2020’.

Table 4.1 The Seven Planning Blocks based on MBSJ Local Plan 2020

<b>PB</b>	<b>Planning block</b>	<b>Area (hectares)</b>	<b>Percent (%)</b>
PB1	Subang Jaya-USJ	2536.58	15.68
PB2	Subang Hi-Tech	807.66	4.99
PB3	Putra Height	1324.00	8.18
PB4	Kinrara	963.92	12.14
PB5	Puchong	2958.02	18.28
PB6	Bandar Putra Permai	4585.00	28.34
PB7	Seri Kembangan	2004.82	12.39
<i>Total</i>		<i>16180.00 Hectares</i>	<i>100%</i>

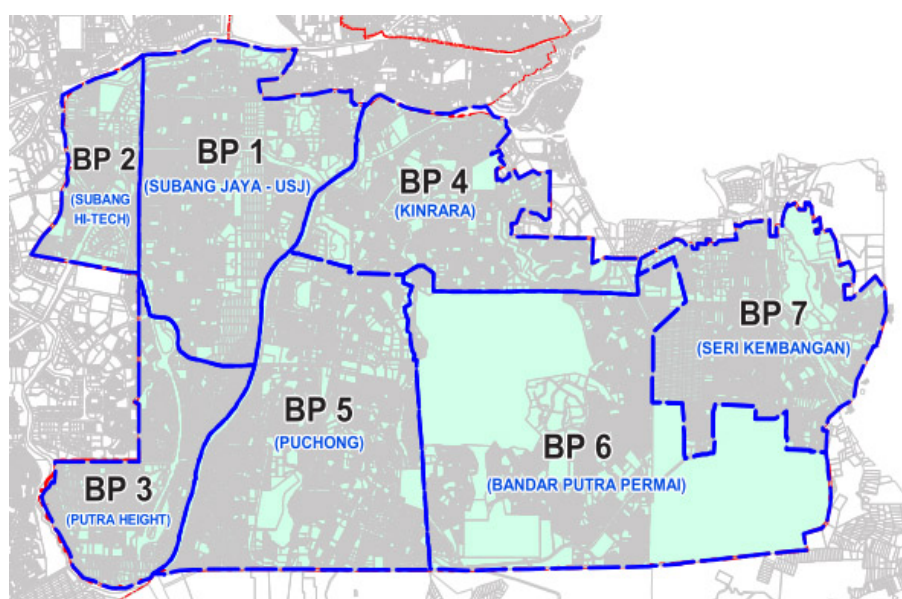


Figure 4.6 The Seven Planning Blocks (BPs) in MBSJ (Source: MBSJ 2010)

## **Population**

As the biggest district in Selangor, Petaling also has the highest population. In 2000, Petaling recorded an increase of about 30% in its population as a consequence of the migration trend from Kuala Lumpur. The average annual population growth rate of the Petaling District is 7.9%. 32% of the total area of the Petaling District is under the jurisdiction of MBSJ. The population growth of the area under MBSJ's jurisdiction is about 19.8% (about 12,400 in number) each year, which contributes to the significant growth in the Petaling District's inhabitants. In 2015, the total population of MBSJ grew to 642,100, and in 2020, the population under MBSJ is 968, 930.

Table 4.2 Population distribution according to BPs

<b>PB</b>	<b>Planning block</b>	<b>Area (hectares)</b>	<b>Total population</b>	<b>Percent (9%)</b>	<b>Density (person/hectares)</b>
PB1	Subang Jaya-USJ	2536.58	168608	36.18	66.4
PB2	Subang Hi-Tech	807.66	5747	1.23	7.1
PB3	Putra Height	1324.00	12390	2.66	9.4
PB4	Kinrara	963.92	77628	16.66	39.5
PB5	Puchong	2958.02	90207	19.36	0.5
PB6	Bandar Putra Permai	4585.00	12463	2.67	2.7
PB7	Seri Kembangan	2004.82	98972	21.24	49.4
	Total	16180.00 Hectares	466015	100%	28.8

### **4.3 Contextual Description Of The Three Case study areas**

#### **4.3.1 The background context of the three neighbourhood parks**

The three case study areas are located in Selangor, Malaysia. Brief information about Malaysia is reported by the Malaysia Department of Information (2016). This information gives a background overview of Malaysia's microclimate, as well as the approximate day/time that may be associated with the parks' usage. Malaysia is located in the Southeast Asia region and is characterised by a tropical monsoon climate that results in high temperatures and humidity for the whole year. The average temperature across Malaysia is between 21°C to 32°C. Malaysia records between 2000 mm to 2500 mm of rainfall every year. The average length of the day in Malaysia is twelve (12) hours eleven (11)

minutes, which illustrates that Malaysia has a quite similar time for day and night (Malaysia Department of Information, 2016).

According to the head of the development unit, Landscape Department, MBSJ, there is no park under MBSJ supervision that is larger in size that could still be considered a local park. There are four large-scale neighbourhood parks, all containing a lake, though each with a different intended function. The number of areas under their supervision is about three hundred (300) open spaces including municipal parks, playground, and allotment.

These three neighbourhood parks for case study areas are amongst the four large-scale neighbourhood parks managed by MBSJ. The selection is informed by the discussion with the head of the development unit, Landscape Department, MBSJ about the main criteria for selection – according to location: located in urban areas, while the one that was not included in this research located in a remote area, that is, a rural context.

Table 4.3 Site description table for the three neighbourhood parks

	<b>Taman Tasik Seri Serdang</b>	<b>Taman Tasik Puchong Perdana</b>	<b>Taman Wawasan Recreational Park</b>
<b>Site description</b>			
<b>Planning block</b>	7	5	5
<b>Zones</b>	20	13	16
<b>Sizes</b>	4.07 hectare	5.5 hectare	10.2 hectare
<b>Opening year</b>			
<b>Site context</b>	Higher institution centre, residential and student accommodation, school, and shop lot	Residential, school, and institutional (religious centre)	Mixed residential area of gated and guarded housing, high-rise, and terraced housing
<b>On site amenities</b>	Restaurant, multipurpose courts recreational area, Rental remote vehicles for children	Restaurant, mosque, large open spaces for events (square)	Community centre, recycling hub, recreational, lake, multipurpose courts
<b>Lake origin</b>	Water catchment	Former mining lake	Natural lake

Fieldwork was conducted in three neighbourhood parks: Taman Tasik Seri Serdang (TSS), Taman Tasik Puchong Perdana (TPP), and Taman Wawasan Recreational Parks (TTW). Taman Tasik Seri Serdang is located in major national growth conurbation area (MBSJ, 2020) under PB7- Seri Kembangan, while the other two parks are located in the state growth conurbation area PB5 – Puchong (MBSJ, 2020; MPSJ, 2010) (refer Figure 4.7). One of the common characteristics of these three neighbourhood parks

is their function as central neighbourhood parks for the local communities and the fact that each one has a lake. However, those lakes have different origins. The lake in Taman Tasik Seri Serdang was originally built as a water catchment for the surrounding housing areas as well as for the university. Taman Tasik Puchong Perdana includes a former mining lake and the lake in Taman Wawasan Recreational Park is a naturally occurring feature.





**Figure 1.0 : URBAN HIERARCHY OF PENINSULAR MALAYSIA, 2006-2020**



Figure 4.7 Urban Hierarchy in Malaysia based on Second National Urbanization Policy (Source: PLANMalaysia, 2016)

a) **Neighbourhood Park 1: Taman Tasik Seri Serdang**



Figure 4.8 Masterplan for Neighbourhood Park 1, Taman Seri Serdang

Taman Tasik Seri Serdang is strategically located in a central mixed development area of the Malaysian public higher institutions, known as *Universiti Putra Malaysia* (UPM), as well as residential and commercial areas. The university's area itself consists of academic buildings, faculties, student accommodation, university staff residences, and huge university farms. The university was formally known as the Malaysian Agriculture University (or *Universiti Pertanian Malaysia*) and was the first university to offer a variety of agriculture-based studies. The nearby shops and houses were to cater for the basic needs of the local community as well as for the students. Hence the local residential areas are partly occupied by students and university staff.

This case study area is the smallest site compared to the two other sites and only has three (3) designated entrances, which include one from the bus stop, one entrance facing the university gate, and another that is close to the residential area. Half of the area is the lake, and the green area is covered around the lake. Unlike other parks, this park is less visible to outsiders. This



is because it is closely located to the residential area, and far from the main road. This park provides a graffiti wall, a feature that is not seen at other parks.

**b) Neighbourhood Park 2: Taman Tasik Puchong Perdana**



Figure 4.9 Masterplan for Neighbourhood Park 2, Taman Tasik Puchong Perdana

Taman Tasik Puchong Perdana serves its local community in the residential areas. The location of Taman Tasik Puchong Perdana is unique as it is in an open area where there is a large mosque serving the Muslim community and the primary surrounding roads connect the sub-district of Puchong Perdana with other main cities in Petaling, as well as Selangor generally. This park is strategically located close to one of the Selangor Light Rail Transit System (LRT) stops, and to the state arterial highway, making it very visible to many types of users. This area is surrounded with significant land uses and facilities, including residential, food court, and mosque compound. The distribution mapping did show a great deal of exercise and play equipment provided in this area, including playground equipment, outdoor gyms, seating and gazebos, as well as the large open timber decking area facing the lake.

Taman Tasik Puchong Perdana has quite a number of entrances from each side of the nearby neighbourhood with five entrances, two with a designated car park area from the east and southwest sides of the park, and one from the mosque - the Muslim community religious centre. This southern area is accessible from the main road, and the nearby overhead LRT station. Also, the designated car park for park visitors, the food court, and a row of terraced houses to the immediate left of the space are at this location.

This case study area caters not only for the community of the area, but sometimes also outside visitors and passers-by since there are public transport stations, as well as the mosque. This park is mainly flat in surface. The design can be seen to be divided into three areas. The one to the north has more empty open spaces with squares, and minimal facilities. The second area to the east facing the residential area is very linear and the pathway facing direct to the lake, while the third area is located at the lower west area near the mosque, food court, and faces the main road. There are distinct planting characters in each of the areas which show the different functions of the spaces.

### ***c) Neighbourhood Park 3: Taman Wawasan Recreational Park***

Similar to Taman Tasik Puchong Perdana, Taman Wawasan Recreational Park is located in the heart of a number of mixed residential areas. The housing in Taman Wawasan Recreational Park is a mixture of high-rise and terraced housing, gated and guarded housing, as well as low-cost housing. These different types of housing closely reflect the financial status of the community. For instance, guarded and gated housing is usually populated by people with medium-high incomes.

Uniquely, unlike the other two parks, this neighbourhood park has different topographical levels, designed in response to its undulating form that serves the users with settings for different kinds of activities and facilities, with different ambiances. Taman Wawasan Recreational Park is also located very close to one of the forest reserves of Kuala Lumpur, known as Ayer Hitam Forest Reserve. One of the entrances of this reserve forest is located very close to this park near the high-rise housing. This park is accessible through

six entrances: two dedicated to the adjacent residential areas, two entrances provided alongside the designated car park area, and two others located near the public transport stops, i.e., the bus stops.

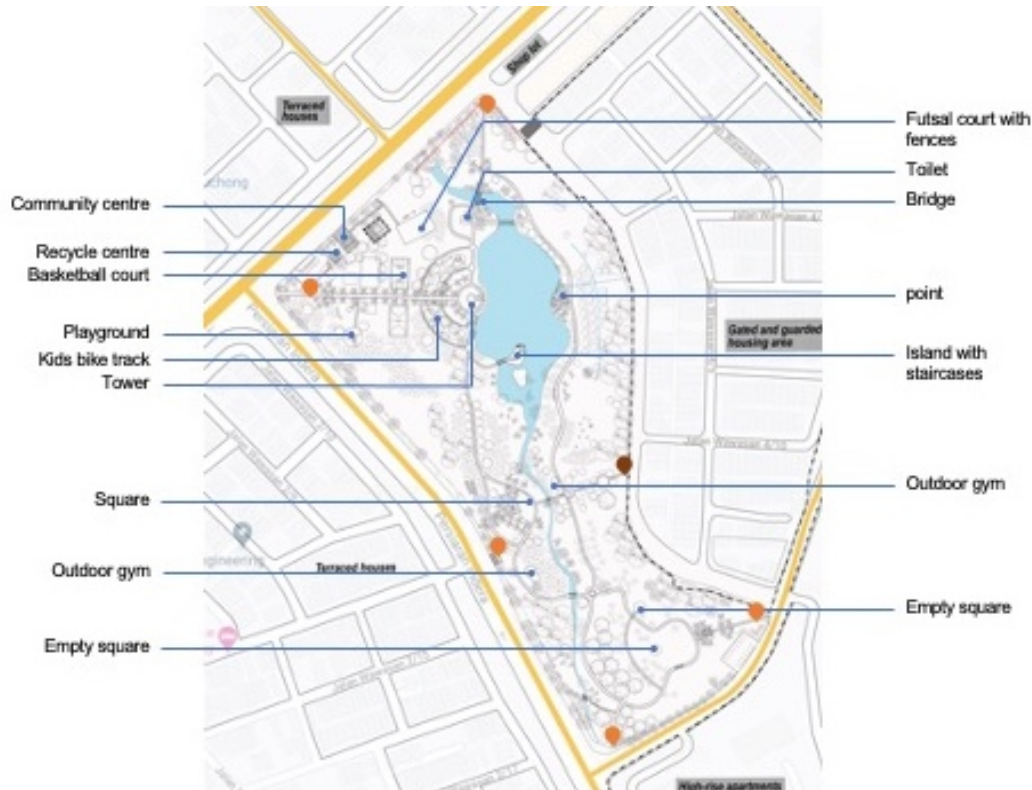


Figure 4.10 Masterplan for Neighbourhood Park 3, Taman Wawasan Recreational Park

This park also consists of various types of water features. One that is dominant is the large lake with a linear and small stream leading towards the southern part of the park. The water feature is strategically located in the middle of the park, dividing it into two main areas: the west and the east. The west side of the park offers various facilities for light exercise and community sports. This area has a flat surface, allowing for more facilities to be provided and making it more active and vibrant at times. The east side of the park is more undulating in form and includes its highest point. Due to the varied landform, fewer facilities are provided in this area, yet it allows people to experience the naturalistic planting and ambience. This passive area is designed with beautiful natural planting along the jogging track, providing various resting points with beautiful views towards the lake and to the natural landscape of the park.

### **4.3.2 Population and demographic explained: The background study from the data collection**

This first section discusses the descriptive results from the survey questionnaires of the background demographics of the three neighbourhood parks and their communities. It reports the findings from the common yet important demographic questions about gender, age, ethnic origin, household composition, home-ownership status, length of residence, occupational status, and education level. This background information was used later on when analysing the relationship of these demographic variables with preference, perceived maintenance, and perception of safety.

The initial findings from the descriptive analysis illustrate the similarities and differences between the background and character of each demographic grouping in relation to each of the three neighbourhood parks. Further tests using chi-squared ( $\chi^2$ ) analysis was run to “established the probability of a relationship between two variables”, in this case the demographic variables and the three sites (Aldrin, 1999) with a 5% significance level. The results illustrate that three out of the eight background variables tested differ significantly between the three neighbourhood parks.

The demographic background of the sample was also compared to the 2015 census projection of the population from the Population Distribution by Local Authority Areas and Mukims 2010 (Department of Statistics Malaysia (DOSM), 2011a), to establish the extent to which it was representative of the local population.

#### ***4.3.2.1 Significant different background variables between three case study area***

##### ***a) Ethnic background***

The results suggest that the ethnic origin of the sample was significantly different within the three neighbourhood parks ( $p < 0.001$ ). All three showed a higher proportion of respondents with a Malay ethnic background, but over half of the respondents from Taman Tasik Seri Serdang (55.9%) and Taman Tasik Puchong Perdana (69.4%) were Malay. Whilst Taman Wawasan Recreational

Park also has a higher proportion of Malay respondents, they represented only one-third of the respondents from this area, with Chinese and Indian communities making up 29.5% and 13.1%, respectively, the remainder being represented by the Bumiputera group. Bumiputera are among the indigenous people, who are the native population known as *Orang Asli* in Peninsular Malaysia and other ethnic groups of Sabah (32 ethnic groups) and Sarawak (27 ethnic groups) (Department of Information, 2016) (6.6%). There are at least 42 Bumiputera groups in Malaysia including Bumiputera at Sabah and Sarawak. These figures are comparable with the Vital Statistics (Department of Statistics Malaysia (DOSM), 2015), which indicates the Petaling district has a Malay population majority (51.3%), making Bumiputera<sup>1</sup> as a whole ethnic group, equal to 51.4%.

Table 4.4 Ethnic background by three neighbourhood parks

	Taman Tasik Seri Serdang	Taman Tasik Puchong Perdana	Taman Wawasan Recreational Park
Malay	55.9%	69.4%	34.4%
Chinese	10.2%	11.3%	29.5%
Indian	25.4%	16.1%	13.1%
Bumiputera	3.4%	1.6%	6.6%
Others	5.1%	1.6%	16.4%
Total	(59) 100%	(62) 100.0%	(61) 100.0%

Table 4.5 Comparison of ethnic group distribution in MBSJ (and the sample)

	Bumiputera		Chinese	Indians	Non-Malaysian
	Malay	Other Bumiputera			
Under MBSJ	37.3	1.3	40.8	11.8	8.8
Sample	53.3	3.8	17.0	18.1	7.7

### **b) Household composition**

The results presented in Table 1.2 suggest that the difference in household composition in the three neighbourhood parks is significant ( $p < 0.001$ ). Households with children made up more than one-third of the entire survey population for Taman Tasik Seri Serdang and Taman Wawasan Recreational Park, at 44.1% and 39.3%, respectively, compared with two-thirds for Taman Tasik Puchong Perdana, at 67.7%. With a mean of 5.6 and a median of 5

<sup>1</sup> *Bumiputera* is a group of communities with a Malay ethnic background and/or one of other 46 Bumiputera backgrounds, including the indigenous people from Sabah and Sarawak

people per house, this was slightly different from the Review Report of RSN Selangor 2035 (Town and Country Planning Selangor, 2016), which projected a mean of 3.9 for the total number of people in the household composition based on the Census of 2010 (Department of Statistics Malaysia (DOSM), 2011b).

Table 4.6 Household composition by three neighbourhood parks

	Taman Tasik Seri Serdang	Taman Tasik Puchong Perdana	Taman Wawasan Recreational Park
Single	18.6%	4.8%	8.2%
With friends	35.6%	9.7%	37.7%
Family without children	1.7%	16.1%	14.8%
Family with children	44.1%	67.7%	39.3%
Total	(59) 100%	(61) 98.6%	(61) 100.0%

### **c) Level of education**

The information on respondents' educational status was organised into seven categories, a decision based on the Education Act 1996 that classes the system into five levels: preschool, primary, secondary, post-secondary, and tertiary education. The survey found that there was a significant relationship between the respondents' levels of education in the three neighbourhood parks ( $p < 0.05$ ). Table 1.3 suggests that most of the respondents have at least a background in secondary education. This is in line with the government's goals as per the Education Malaysia Blueprint 2013-2025 (Ministry of Education Malaysia, 2013) to have full enrolment of all children from preschool to upper secondary school by 2020. Seeing that the proportion of respondents were equally distributed among the categories in Taman Tasik Seri Serdang, as well as having the highest proportion of those in tertiary education, i.e., diploma, degree, Masters, and Ph.D., it is worth noting that this neighbourhood park is located in one of the first university towns in Malaysia, and nearby residents are mostly university staff and students.

Table 4.7 Level of education by three neighbourhood parks

	Taman Tasik Seri Serdang	Taman Tasik Puchong Perdana	Taman Wawasan Recreational Park
Primary leaver	3.4%	3.2%	11.5%
Secondary school leaver	22.0%	53.2%	34.6%
Certificate holder or equivalent	10.2%	9.7%	9.6%

Diploma holder or equivalent	23.7%	22.6%	17.3%
Graduate with degree or equivalent	33.9%	8.1%	25.0%
Graduate with Masters or equivalent	5.1%	3.2%	1.9%
Graduate with PhD or equivalent	1.7%	0.0%	0.0%
Total	(59)100.0%	(62)100.0%	(52)100.0%

#### 4.3.2.2 Non-significant differences in background variables between three case study area

##### a) Gender of Respondents

Though the analysis shows that there are no significant differences in these three neighbourhood parks, the frequencies analyses suggest an unequal distribution in population for both male and female respondents. Taman Tasik Seri Serdang has 52.5% male and 47.5% female, Taman Tasik Puchong Perdana has 39.3% male and 60.7% female, and Taman Wawasan Recreational Park has 60.7% male and 39.3% female. However, the total proportion of respondents for this survey is 50.8% male and 49.2% female.

Table 4.8 Comparison of gender distribution between MBSJ and the sample

	Male	Female
Under MBSJ	52.3	47.7
Sample	50.8	49.2

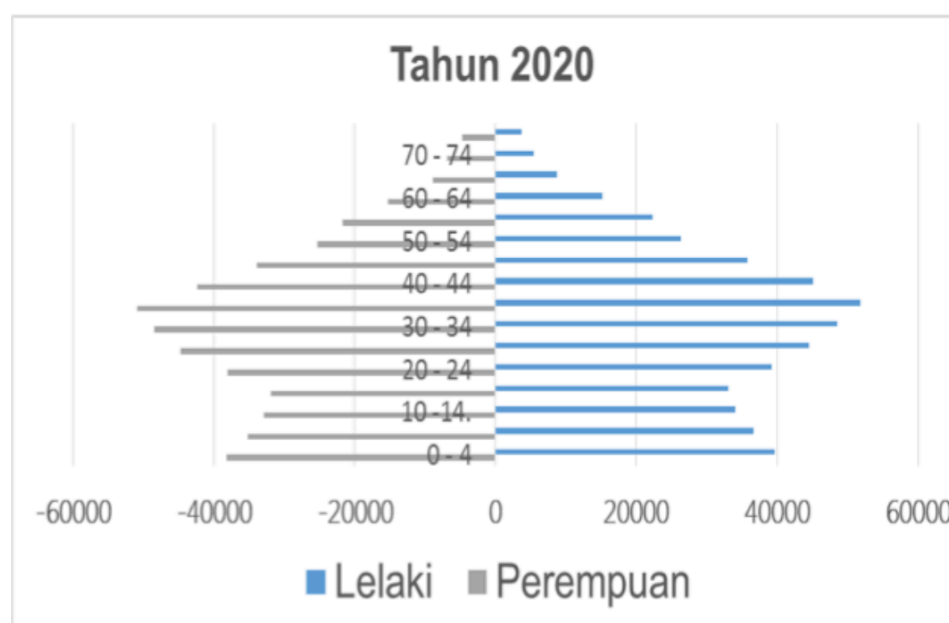


Figure 4.11 Population by gender in 2020  
(Source: Subang Jaya Draft Local Plan 2035, MBSJ, 2020)

### **b) Age of Respondents**

In this early analysis, the ages of the respondents did not show any significant differences between the three neighbourhood parks. At first, the ages were categorised into eleven groups, each with intervals of five years, starting with 18 years old and ending at 70 and above. However, as the number of groups was excessive given the overall sample size and to facilitate later analysis the data was recoded into six groups with intervals of 10 years. Table 1.4 shows that the majority of respondents were aged between 18 to 49 years old. A majority of 41.4% of respondents in Taman Tasik Seri Serdang were 30 to 39 years old, while in Taman Tasik Puchong Perdana the majority were 18 to 29 years old (46.8%). In Taman Wawasan Recreational Park, the greatest proportion of respondents (29.5%) were between 40 to 49 years old. Few respondents were aged 70 and above in all three neighbourhood parks, even fewer than in the whole population of Subang Jaya, Selangor. The reason for this is that there were fewer old people in the park during the times at which the questionnaire was distributed; and at home, the younger adults in the family often took responsibility for answering the questions. Both these reasons could contribute to the small number of older respondents in this sample.

Table 4.9 Age of respondents by three neighbourhood parks from the data collection

	Taman Tasik Seri Serdang	Taman Tasik Puchong Perdana	Taman Wawasan Recreational Park
18-29 yo	32.8%	46.8%	27.9%
30-39 yo	41.4%	22.6%	26.2%
40-49 yo	17.2%	12.9%	29.5%
50-59 yo	6.9%	11.3%	4.9%
60-69 yo	1.7%	4.8%	9.8%
70 and above	0.0%	1.6%	1.6%
Total	(58)100%	(62)100%	(61)100%

Table 4.10 Comparison of age distribution under MBSJ (and the sample)

	Under MBSJ	Sample
18-24		35.7
25-29	13.6	17.6
30-34	10.9	121.1
35-39	8.8	14.8
40-44	6.6	4.9
45-49	5.4	2.2
50-54	4.3	5.5
55-59	3.0	3.8
60-64	2.3	1.6



65-69	1.2	1.1
70 and above	2.0	0.5

**c) Homeownership status of current dwelling**

The study shows that there are no significant differences in home-ownership status between the three neighbourhood parks. The numbers of house owners and tenants are nearly equal for all sites except in Taman Tasik Puchong Perdana, in which two-thirds (63.2%) of the respondents are house owners and only 35.1% are tenants.

**d) Length of residence**

In order to present detailed information, the length of residence was organised into twelve categories based on multiples of 1 year. However, as the number of cases in the original categories were insufficient for a chi-squared test analysis, the data were then transformed into five categories of length based on multiples of 5 years (see Table 1.4). The survey shows a small difference between the three neighbourhood parks ( $p = 0.053$ ). Nevertheless, Table 1.4 broadly suggests that half of the respondents had lived in their current properties for between one to ten years. The exception to this is Taman Tasik Puchong Perdana, in which a quarter (21.1%) of the responding population had lived in their current properties for between fifteen to twenty years. Table 1.11 shows that in all three neighbourhood parks the sample included respondents that have lived in their current property for more than twenty-one years, which reflects the fact that those neighbourhoods have existed for more than two decades, Subang Jaya housing area being one of the oldest urban residential areas in Selangor, and indeed Malaysia.

Table 4.11 Length of residence

	Taman Tasik Seri Serdang	Taman Tasik Puchong Perdana	Taman Wawasan Recreational Park
less than a year to 5 years	48.1%	29.8%	46.7%
6 to 10 years	20.4%	22.8%	35.0%
11 to 15 years	5.6%	14.0%	5.0%
15 to 20 years	13.0%	21.1%	10.0%
21 years or more	13.0%	12.3%	3.3%
Total	(54)100.0%	(57)100.0%	(60)100.0%

### e) Occupation of respondents

The study suggests that there were no significant differences ( $p > 0.05$ ) between the status of respondents in the three neighbourhood parks. There is a noticeable majority of respondents with the status of full-time employment in Taman Tasik Seri Serdang, Taman Tasik Puchong Perdana, and Taman Wawasan Recreational Parks, with proportions of 42.4%, 41.9%, and 50%, respectively. This is followed by the second-highest proportion of respondents holding a status of full-time student in all three neighbourhood parks. Meanwhile “32.3% of the working age population (15-64 years) were outside of the labour force - those were housewives, students, retired, and disabled persons” (*ibid*, 2017).

Table 4.12 Status of respondents

	<b>Taman Tasik Seri Serdang</b>	<b>Taman Tasik Puchong Perdana</b>	<b>Taman Wawasan Recreational Park</b>
Part-time student	3.4%	0%	0%
Full-time student	27.1%	27.4%	21.7%
Self-employed	10.2%	3.2%	10.0%
Part-time employed	8.5%	4.8%	8.3%
Full-time employed	42.4%	41.9%	50.0%
Retired	6.8%	11.3%	8.3%
Unemployed	1.7%	11.3%	1.7%
Total	(59)100.0%	(62)100.0%	(60)100.0%

## 4.4 Exploring maintenance in practices and procedures

Since the procedure and administration comes from the same provision, i.e., MBSJ, the research for the three neighbourhood parks was based on two key factors as follows:

- i. First, based on the understanding that typology has influence on both maintenance and perception of safety, it has been used as the key element for the multifaceted investigation. The typological character includes the park size, site context, topography, landscape design elements (soft-landscape and hard-landscape), space and spatial organisation, and activities.
- ii. Secondly, discovering that maintenance for neighbourhood parks is divided into three and one is based on the report, it is therefore necessary to investigate the pattern of users and landscape provided

in the area with high and low reported issues of maintenance. It is to identify what really matters in maintenance, whether low maintenance affects the utilisation of the park (Austin et al., 2002; Schroeder & Anderson, 1984), and does it have impact on the perception of safety (Carmona et al., 2010; Dempsey, 2008). For the purposes of planning and monitoring, the land is used in a systematic manner; the administrative areas are divided into seven Planning Blocks. Both Taman Tasik Puchong Perdana and Taman Wawasan Recreational Parks are in the BP5 development block, whilst Taman Tasik Seri Serdang is located in BP7.

Early study explores the current processes and procedures documented by local authorities and appraises maintenance standards. Osman et al. (2006) and Reeves (2000) stress the point that to achieve a high quality and high standards of maintenance, one should have a good management system and maintenance procedure to achieve high-quality landscape areas. The researcher will also perform informal background interviews to gain a further understanding of the organisational structures, the processes and implementations, and the internal issues faced by the authorities.

The researcher also obtained related documents and archival records (see Table 4.13) that illustrate the organisational structures and work procedures, maintenance processes, and examples of maintenance reports from previous work. A 'proper documentation of the maintenance system is useful' especially in employees' succession (Hussein, 2014). The documents help to understand the current processes and procedures documented by local authorities.

Table 4.13 List of documents assembled as a background study on the responsible local council

Source	No.	Documents	Documents description
Planning department	1)	Subang Jaya Local Plan 2020	
	2)	Safe City Programme report for Subang Jaya	Safe City Programme report of implementation and future planning for MBSJ
	3)	Crime index of Subang Jaya	Crime statistics based on areas
Department of Landscape	4)	Organisational structure of Landscape Department	Cover the overall structure for the department of landscape, and for the maintenance work

	5)	Neighbourhood inventory park	A yearly survey report of items at neighbourhood parks such as soft-landscape (trees, shrubs and groundcovers), hard-landscape structure and ornamental elements
	6)	Manual of Work Procedure (MPK)	Was given to all staff explaining their work description, and roles
	7)	'Kebun Komuniti' Programmes Report	Community garden is a program under MBSJ with the community who are willing to participate located within the neighbourhood parks compound
	8)	Statistics of maintenance report (online <i>i-responz</i> website) for soft landscape, lake and hard-landscape	<i>i-responz</i> is a system for making reports on any issues within the MBSJ areas of supervision that is open to the public/community. It is a statistical for reports made through online, or at the report counter in the MBSJ building
	9)	Example of periodic maintenance report by contractors	A periodical maintenance report prepared by the appointed contractor, consists of the conditions of the site before, during and after the work procedure.
Department of Engineering (Maintenance Unit)	10)	Manual of Work Procedure (MPK)	MPK for the maintenance unit, the department of engineering
	11)	Statistics of maintenance report (online <i>i-rezponz</i> website) for courts and sewerage	
MBSJ Official website	12)	MBSJ Annual Report 2014	A report of MBSJ programmes, successful projects and future projection
	13)	'The Vibrant City' visions and missions of MBSJ	

The background study on the maintenance programme and related parties discovered that there are three departments involved in different aspects of the required work, as follows:

- i. Landscape department - responsible for waste maintenance in the lake, maintenance of playground equipment, trees and soft landscape
- ii. Solid waste management department - waste management in neighbourhood parks except for lake and grass trimmings
- iii. Engineering department - maintenance of soil and other infrastructure including courts, pavements and walkways

Every department has a different working manual procedure (known as MPK) that consists of the scope of the job. However, the maintenance process are basically similar for each department. There are three types of procedure

relating to maintenance, i.e., monthly work instruction, periodic schedule, and maintenance on work report. There are three practices of maintenance: maintenance of park facilities and play equipment, periodic tree maintenance, and maintenance relating to complaint resolution. The maintenance of park facilities and play equipment is based on the monthly open space inventory. This inventory identifies the types of landscape elements, play equipment, and structured building facilities, as well as park furniture. The purpose of inventory is to monitor the quality of these hard landscape elements and their adequacy. Meanwhile, the maintenance relating to work report responds to complaints (complaint resolution) made by park users and the community in two ways, 1) an online report made through the i-responz website (see Table 4.13), and 2) report at the counter of the MBSJ One Stop Centre. The complaint resolution is based on the Client's Charter Number 9. The work procedure requires three (3) working days for investigation, and a total of ten (10) working days from the day of the report to issue resolution. The following diagram shows the maintenance procedure for complaint resolution.

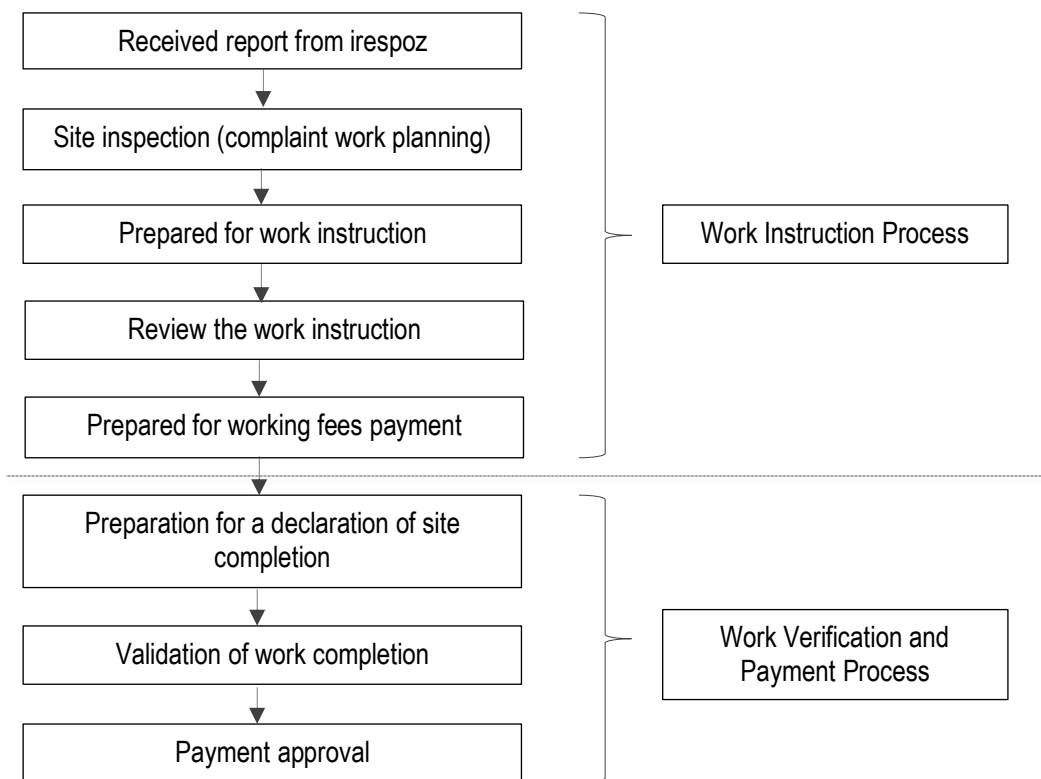


Figure 4.12 Maintenance procedure for complaint resolution  
 (Source: Department of Landscape, MBSJ maintenance report)

#### **4.5 Summary**

This chapter provided preliminary data of the case study area, MBSJ, and its administrative area. It briefly discusses characteristics such as its proximity to various strategic areas in Klang Valley, socio-demographic patterns, and administrative structure, especially with regard to management and maintenance. For the purposes of this research, three neighbourhood parks within the urban context were selected, namely Taman Tasik Seri Serdang (TSS), Taman Tasik Puchong Perdana (TPP), and Taman Wawasan Recreational Park (TTW). The settlements under MBSJ are located in three hierarchies of settlement areas based on DPN2, a major national growth conurbation area, (Puchong and Seri Kembangan), and a state growth conurbation area (Subang Jaya) (MBSJ, 2020). One of the parks located in major national growth conurbation area, and another two parks, are located in state growth conurbation area (MBSJ, 2020; MPSJ, 2010). The research observes the MBSJ maintenance policy and standard procedures for neighbourhood parks through several documents that were obtained as mentioned in Table 4.13, and initial interviews with the management staff, as explained in this chapter.

## QUESTIONNAIRE RESULTS AND ANALYSIS

### 5 Introduction

This chapter sets out the results, analysis and summary of findings for the secondary data collection: the survey questionnaire. This chapter answers the third research question (RQ3) that explore the traces of maintenance that affect on the perception of personal safety. The statistical analysis were conducted to address these two research questions.

The main focus in this chapter are the results on twelve measures that measures the preferences and impact to perception of personal safety. These twelves measures were evaluated through questions in Part C of the questionnaires, entitled 'Perceived Physical Environment and Personal Safety'. These twelve measures are divided into three categories namely 'planting and vegetation', 'facilities, play equipment maintenance', and 'cleanliness and waste management'.

The three neighbourhood parks are referred with its identification names which are, Taman Tasik Seri Serdang henceforth referred to as Neighbourhood Park 1 and TSS, Taman Puchong Perdana henceforth referred to as Neighbourhood Park 2 and TPP, and Taman Wawasan Recreational Park henceforth referred to as Neighbourhood Park 3 and TTW. The results and analysis are divided into two sections;

- a. The main attributes on factors effecting preferences and perception of personal safety (addressing RQ3)
  - i. Acceptance and preferences on the planting design, views and landscape maintenance
  - ii. Perception of personal safety and impact of physical appearances

## **5.1 Acceptance of The Physical Environment: Planting Design, Views and Landscape Maintenance**

### **5.1.1 Are respondents aware of their surrounding environment?**

This questions evaluates the awareness of their surrounding park landscape. This includes the evaluation on the park design and features, and the current condition as well as the issues in maintenance. Based on the mean scores (>6.0), only four physical environment and two maintenance issues were noticed by majority of respondents (refer Figure 5.1). These are single layer of trees with long distance view, naturalistic planting, multi-layer planting with wide view, multi-layer planting and overlaid with closed visibility/ limited, defective and faulty equipment, and trees and plants maintenance.

Four landscape characteristics and views are noticeable with the two highly scored on single layer of trees with long distance views and naturalistic planting, with total means of 7.22 and 7.15 respectively (refer Table 5.2). This research comes with two assumptions. Firstly, the three neighbourhood parks characteristics were created, or designed with two characteristics in mind: they have a natural setting, with an open view. The second assumption is that people are more acutely aware of the things they prefer most and dislike most when in a setting such as a park.

In this way, an organised and structured planting was the least noticeable by respondents (m=5.66). The maintenance variables also illustrated a very lower scores and left only two variables that somehow noticeable, i.e. the defective and faulty equipment (m=6.41) and trees and plants maintenance (m=6.09).



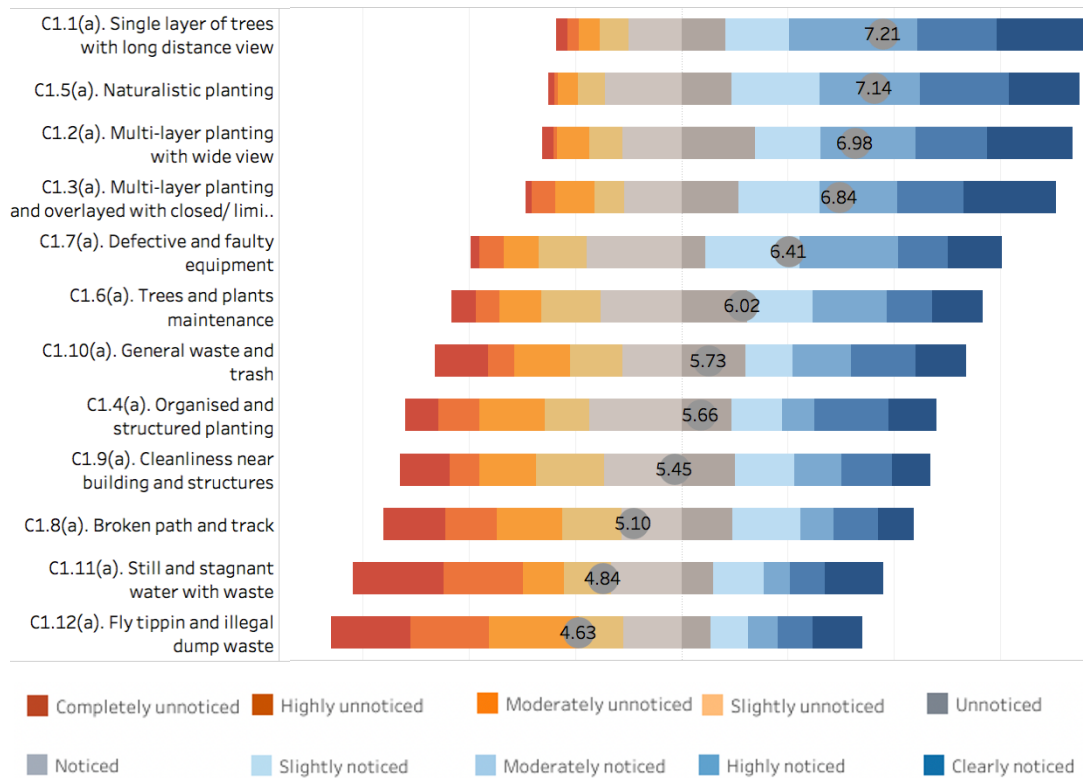


Figure 5.1 Total means graph on 'I noticed this in the park'

Further analysis of repeated measures ANOVA was conducted to test the relationship between twelve attributes with the demographic factors only shows that the variables varied significantly according to their neighbourhood park, sex and ethnic group (Table 5.3). It was found strong differences between the three neighbourhood parks for the awareness on the types of planting design and views offers in the park ( $F(8,688)=3.8, p<.001^{**}$ ). The statistical results in Table 5.3 indicated that most of the respondents in Neighbourhood Park 1 are moderately noticed almost all five different planting design and views in their park. Meanwhile, Neighbourhood Park 2 ( $M=4.85$ ) and Neighbourhood Park 3 ( $M=5.22$ ) where the respondents were not noticed only on the presence of organised and structured planting in their parks.

There was tendency for male respondents to be more aware with their neighbourhood parks especially in relation to landscape maintenance, as compared to the female respondents. However, both of them noticed mostly on three issues of maintenance in their neighbourhood parks, i.e. trees and plants maintenance ( $M=6.09$ ), defective and faulty equipment ( $M=6.50$ ), and general waste and trash ( $M=5.77$ ). In addition, respondents in Neighbourhood Park 1 have a slight concerned on the cleanliness near the building (an open

restaurant) (M=6.59). Hence, there is a higher score from the Indian respondents (M=6.12) on the maintenance issues. Both results will be further discussed in the next subchapter 5, on qualitative findings and discussion where there are explanations behind the results.

Table 5.1 Mean of awareness rating between ethnic background

Ethnicity background	Mean
Malay	5.35
Chinese	5.41
Indian	6.12
Bumiputera	4.88
Others	5.61

Table 5.2 Responses on respondents noticed on 12 practices related to Planting Design and Views, and Maintenance

Dependent Variable	Total			Neighbourhood Park 1		Neighbourhood Park 2		Neighbourhood Park 3		Result between subjects	Significant with demographic background		
	N	Mean	SD	Mean	SD	Mean	SD	Mean	SD		Neighbourhood parks	Sex	Ethnic group
<b>12 AWARENESS ON PRACTICES</b>										<b><math>F(11, 163)=18.1, p&lt;.001</math></b>	<b><math>F(22,1881)=2.1, p=.002</math></b>	<b><math>F(11,1881)=2.9, p=.001</math></b>	<b><math>F(44, 1859)= 2.3, p&lt;.001</math></b>
<b>1) Planting design &amp; views</b>										<b><math>F(1,174)=1975, p&lt;.001^{**}</math></b>	<b><math>F(8,688)=3.8, p&lt;.001^{**}</math></b>	<i>n/s</i>	<i>n/s</i>
1 Single layer of trees with long distance view	181	7.22	2.32	7.91	2.01	6.29	2.55	7.51	2.05				
2 Multi-layer planting with wide view	179	6.98	2.31	7.78	2.06	6.32	2.26	6.88	2.39				
3 Multi-layer planting and overlaid with closed/ limited visibility	177	6.88	2.48	8.04	2.15	5.84	2.46	6.86	2.35				
4 Organised and structured planting	180	5.71	2.75	7.12	2.59	4.85	2.65	5.22	2.50				
5 Naturalistic planting	179	7.15	2.10	7.79	1.91	6.65	2.11	7.08	2.12				
<b>2) Maintenance variables</b>										<b><math>F(6,1050)=25.4, p&lt;.001</math></b>	<i>n/s</i>	<b><math>F(6,1038)=2.4, p=.03</math></b>	<b><math>F(24,1026)=2.8, p&lt;.001</math></b>
6 Trees and plants maintenance	178	6.09	2.50	7.26	2.22	5.05	2.49	6.03	2.30				
7 Defective and faulty equipment	179	6.50	2.37	7.42	2.19	5.66	2.19	6.48	2.43				
8 Broken path and track	178	5.17	2.80	6.49	2.49	4.49	2.87	4.60	2.59				
9 Cleanliness near building and structures	179	5.51	2.69	6.59	2.62	4.56	2.71	5.45	2.40				
10 General waste and trash	180	5.77	2.80	7.07	2.25	4.58	2.89	5.73	2.66				
11 Still and stagnant water with waste	180	4.89	3.06	6.35	2.83	4.03	3.06	4.41	2.83				
12 Fly tippin and illegal dump waste	180	4.67	2.93	6.07	3.02	3.76	2.69	4.30	2.60				
<b>Neighbourhood parks</b>										<b><math>F(2,171)=18.3, p&lt;.001</math></b>			

The results taken the Greenhouse-Geisser correction for the significant results

\*there are significant differences between subject,  $p < .005$

*n/s* for not significant

### 5.1.2 Do the respondents prefer the landscape design/ accept the maintenance of the park?

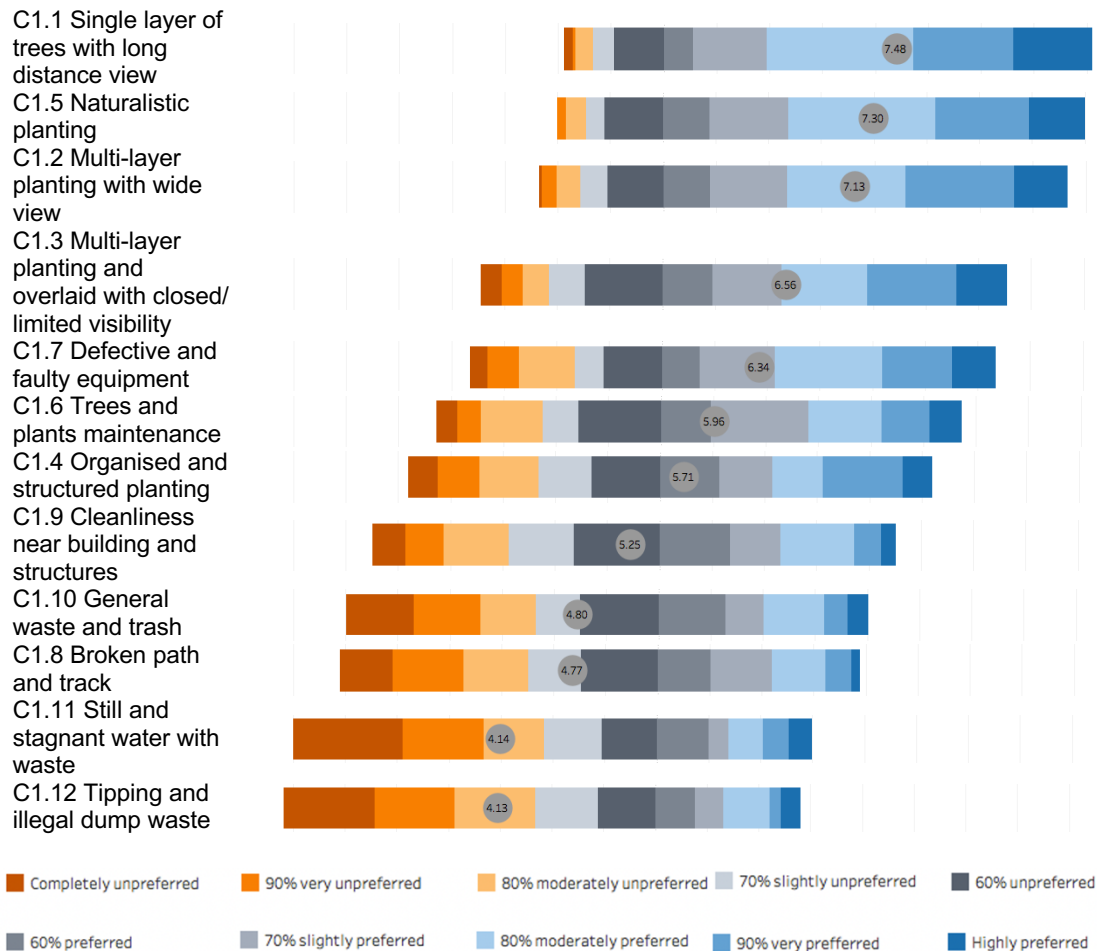


Figure 5.2 Total means graph on 'I like the design and landscape appearance in the park'

Overall evaluation on respondents' acceptance on the twelve practices of planting design, views and maintenance illustrated that majority respondents were mostly favoured long distance and wide views not least the single layer (m=7.45) or multi-layer planting (m=7.14). Respondents were least keen with the design that offers limited visibility to their eyesight (m=6.56). The significant differences in acceptances on planting design and views illustrated among male and females, and between ethnic background. The mean rating among the Indian respondents lay between 8 (moderately preferred) and 9 (very preferred), except for multi-layer planting with closed visibility and organised and structured planting that rated lower than 7 (slightly preferred). Chinese and

other ethnic background rated differently on both multi-layer planting design (refer Figure 5.2). This research assumed that this is because the planting design was not really a concerned of respondents, but the views are very important to them. In this regards, the acceptance of enclosed spaces was low.

On the other hand, naturalistic planting was most likely among respondents ( $m=7.28$ ) as compare to an organised and structured planting in all three neighbourhood parks (refer Table 5.4).

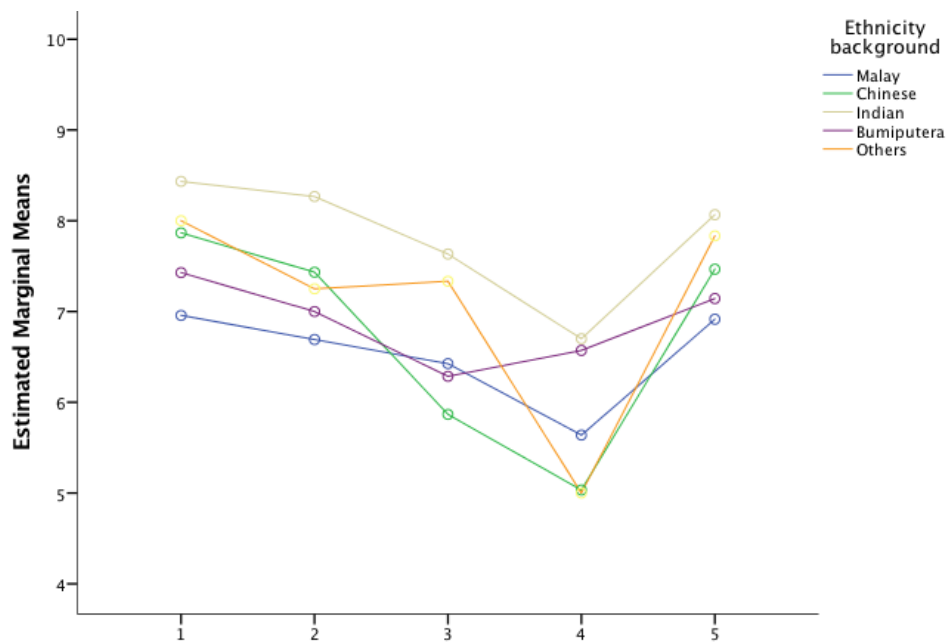


Figure 5.3 Preference scores between ethnic background

Meanwhile, the results for maintenance variables illustrated that the issues of maintenance perceived through the appearance were highly unacceptable. Two of the maintenance issues that were concerned by respondents are. the still and stagnant water with waste ( $m=4.08$ ), and fly-tipping and illegal dump waste ( $m=4.06$ ), especially in Neighbourhood Park 2 ( $m=3.66$ ). These results suggested that most of the respondents cannot accept with the park appearances that caught their visual attention. However, most of them are moderately okay with the defective and faulty equipment ( $m=6.37$ ).

The fact that all three neighbourhood parks consist of a lake and located very close to residential lot (houses facing the park) contributes to such maintenance issues and becoming a major concerned by the community, especially the fly-tipping of a dump waste by the residents.

Table 5.3 Responses on acceptance to 12 practices related to Planting Design and Views, and Maintenance

Dependent Variable	Total			Neighbourhood Park 1		Neighbourhood Park 2		Neighbourhood Park 3		Result between subjects	Results Within subject		
	N	Mean	SD	Mean	SD	Mean	SD	Mean	SD		Neighbourhood parks	Sex	Ethnic group
<b>12 ACCEPTANCE/PREFERENCES</b>										$F(11, 1881)=76.8, p<.001$	$F(22,1859)=1.7, p=.01$	$F(11,1859)=2.5, p=.004$	$F(44,1837)=1.8, p=.001$
<b>1) Planting design &amp; views</b>										$F(4,688)=35.7, p<.001$	<i>n/r</i>	$F(4,680)=2.51, p=.04$	$F(16,672)=1.93, p=.02$
1	Single layer of trees with long distance view	172	7.45	2.06	7.96	1.58	6.85	2.32	7.64	2.08			
2	Multi-layer planting with wide view	172	7.14	2.14	7.78	1.85	6.43	2.17	7.19	2.19			
3	Multi-layer planting and overlaid with closed/ limited visibility	172	6.58	2.48	7.79	1.72	5.90	2.50	6.09	2.77			
4	Organised and structured planting	172	5.7	2.68	6.75	2.58	5.08	2.60	5.36	2.58			
5	Naturalistic planting	172	7.28	1.91	7.72	1.76	6.64	2.07	7.53	1.86			
<b>2) Maintenance variables</b>										$F(6,1044)=43.8, p<.001$	$F(12,1032)=2.05, p=.02$	<i>n/r</i>	$F(24,1020)=2.1, p=.001$
6	Trees and plants maintenance	172	5.97	2.37	6.96	1.97	5.05	2.52	6.03	2.35			
7	Defective and faulty equipment	172	6.37	2.54	7.34	2.26	5.72	2.40	6.20	2.77			
8	Broken path and track	172	4.77	2.53	5.65	2.33	4.72	2.63	4.05	2.37			
9	Cleanliness near building and structures	172	5.29	2.42	6.16	2.02	4.62	2.45	5.16	2.47			
10	General waste and trash	172	4.79	2.65	5.26	2.51	4.20	2.54	5.00	2.78			
11	Still and stagnant water with waste	172	4.08	2.71	4.74	2.63	3.82	2.82	3.92	2.71			
12	Tipping and illegal dump waste	172	4.06	2.50	4.54	2.49	3.66	2.51	4.15	2.59			
<b>Neighbourhood parks</b>										$F(11,1859)=77.6, p<.001$			

The results taken the Greenhouse-Geisser correction for the significant results

\*there are significant differences between subject,  $p < .005$

\*\*there is significance relationship within subject for  $p < .05$

*n/r* for no relationship

Besides measuring preference and acceptance through the twelve attributes, section B questions 1 also required respondents to rank their landscape design preferences in general. The descriptive results in Table 5.4 illustrated that, overall, highest preferences were shown for planting arrangement that offers a long distance view (m=7.89). In addition, the preference on enclosure scenery and spaces (Question B1.f) was the lowest in mean (6.69). These two results clearly suggested that people appreciated an openness in the park as compare to enclosure. Furthermore, one of the factors that contribute to enclosure (dense vegetation) was also recorded as least preferred (m=6.70).

The high preferences was also recorded in two questions (m=7.88) for the scenery (Question B1.g) and atmosphere at the park (B1.b). These findings suggested that the park users are very keen on a natural setting in the park where there are big trees. It is not only because they give shade but because they also contribute to the aesthetic quality of the park. The aesthetic quality was also contributes by the scenery of the lakes that also recorded high (m=7.88).

Table 5.4 Descriptive results on landscape design preferences (Question in Section B1)

	Means			
	NP1	NP2	NP3	Overall
<b>B1 Landscape design preferences</b>				
a) I am satisfied with the facilities and recreational resources provided in this park	7.58	6.52	7.34	7.13
b) I love the overall atmosphere in this park with big trees that shades the area and variety of ornamental plantings	8.15	7.38	8.12	7.88
c) I prefer simple planting design and not layered	7.95	6.97	7.40	7.44
d) I prefer planting arrangement that offers a long distance view	8.25	7.55	7.86	7.89
e) I prefer dense vegetation	7.67	6.25	6.19	6.70
f) I prefer there is an enclosure scenery/ spaces in the park	8.05	6.33	5.64	6.69
g) I enjoy the good scenery of the lake	8.03	8.18	7.39	7.88

### 5.1.3 Acceptance and Perception of the planting design, views and landscape maintenance, and contributing factors

A simple regression analysis was conducted to predict the level of strength ( $\beta$  coefficient) of acceptance from respondents' awareness of the park's physical environment. The overall results presented in Table 5.5 indicated positive relationship that explained the influence of awareness of the surrounding environment which affected respondents' acceptance of that environment.

The  $\beta$  coefficient in Table 5.4 revealed that awareness of maintenance issues are the strongest factors affecting people's acceptance of the physical environment. Acceptance of levels of cleanliness near buildings and structures recorded the highest  $\beta$  coefficient, 0.886, followed by trees and plants maintenance, 0.884. As much as the respondents noticed the issues of maintenance at their neighbourhood park, their level acceptance decreased on that particular issue. Nevertheless, there were very small differences in  $\beta$  coefficient for each of the variables.

The smallest number of significant regression among the twelve measures is on general waste and trash ( $F(1,174) = 122.817, p < 0.05$ ) with  $R^2$  of 0.414. The analysis suggested that an increase of awareness on waste and trash corresponded, on average, to an increase of acceptance score of .643 points only.

The purpose of this analysis was to understand whether users' awareness of their surrounding environment and physical condition contributes to the degree of acceptance of maintenance levels.



Table 5.5 Simple Regression between Acceptance and Awareness Analysis Summary

#	Variables	B	$\beta$	t	R <sup>2</sup>	p
9	DV: Acceptance on Cleanliness near building and structures Predictor: Awareness on Cleanliness near building and structures	0.795	0.886	25.190	0.786	< 0.05, sig
6	DV: Acceptance on Trees and plants maintenance Predictor: Awareness on Trees and plants maintenance	0.855	0.884	24.982	0.782	< 0.05, sig
2	DV: Preference on Multi-layer planting with wide view Predictor: Awareness on Multi-layer planting with wide view	0.814	0.869	23.219	0.756	< 0.05, sig
4	DV: Preference on Organised and structured planting Predictor: Awareness on Organised and structured planting	0.864	0.869	23.116	0.754	< 0.05, sig
3	DV: Preference on Multi-layer planting and overlaid with closed/ limited visibility Predictor: Awareness on Multi-layer planting and overlaid with closed/ limited visibility	0.869	0.859	22.050	0.738	< 0.05, sig
5	DV: Preference on Naturalistic planting Predictor: Awareness on Naturalistic planting	0.799	0.856	21.842	0.733	< 0.05, sig
7	DV: Acceptance on Defective and faulty equipment Predictor: Awareness of Comfortable on Defective and faulty equipment	0.912	0.844	20.784	0.712	< 0.05, sig
8	DV: Acceptance on Broken path and track Predictor: Awareness of Comfortable on Broken path and track	0.717	0.800	17.543	0.640	< 0.05, sig
1	DV: Acceptance on Single layer of trees with long distance view Predictor: Awareness on Single layer of trees with long distance view	0.704	0.787	16.873	0.619	< 0.05, sig
11	DV: Acceptance on Still and stagnant water with waste Predictor: Awareness on Still and stagnant water with waste	0.642	0.719	12.680	0.517	< 0.05, sig
12	DV: Acceptance on Fly tippin and illegal dump waste Predictor: Awareness on Fly tippin and illegal dump waste	0.590	0.681	12.299	0.464	< 0.05, sig
10	DV: Acceptance on General waste and trash Predictor: Awareness on General waste and trash	0.608	0.643	11.082	0.414	< 0.05, sig

*B = unstandardized coefficient,  $\beta$  = standardized coefficient*

*Predictor: Awareness*

*Dependent Variable: Acceptance*

## **5.2 Factors Affecting Perception of Personal Safety**

In the survey questions (Appendix 1: Question B1 and Part C), respondents were asked to rank their preferences and acceptance, specifically on fifteen (15) measures related to physical landscape environment and maintenance.

This section explored the answers to RQ3 about the factors from maintenance that affect perceptions of personal safety. Firstly, a descriptive analysis was carried out to assess the levels of perceived safety in general. Besides, to evaluate any intervening factors that may affect perceived safety in general. As used in previous and existing research, one-way ANOVA tests were carried out among other statistical tests. Next, the findings were examined further through a linear regression test that aimed to identify the nature of the relationship between preference and acceptance, and perception of personal safety.

In addition to the initial findings of RQ3, an Exploratory Factor Analysis (EFA) was carried out to establish physical factors influencing respondents' perception of personal safety, taking into account demographic variables and other intervening factors. These physical factors were then examined for the three neighbourhood parks to identify the pattern of answers in relation to each. Finally, these physical factors were then tested alongside other intervening indicators such as demographic information, familiarity with the park, visiting the park alone or accompanied, proximity factors and personal experience of crime.

### **5.2.1 Perceived safety in general**

The descriptive results of feeling of safety identifies that there are three that are perceived as highly safe. These three measures are 'single layer of trees with long distance view' (m=7.51), 'multi layer planting with wide view' (m=7.42) and 'naturalistic planting' (m=7.42). These three safest measures were under the planting and vegetation categories. Two measures were identified mostly as not safe, which are 'still and stagnant water' perceived by many users as very unsafe, while 'fly-tipping and illegal dump waste' were perceived in average moderately unsafe (m=4.54). Looking at the pattern on feeling safe on twelve

measures, all the maintenance issues were perceived unsafe, except for 'defective and faulty equipment' that was perceived as somehow safe, (m=6.53). To understand the pattern of this descriptive results, further analysis of correlation were conducted and found significant differences between the twelve measures with two demographic factors: which are, sex and ethnic group. These differences also found between three neighbourhood parks (refer Table 5.6).

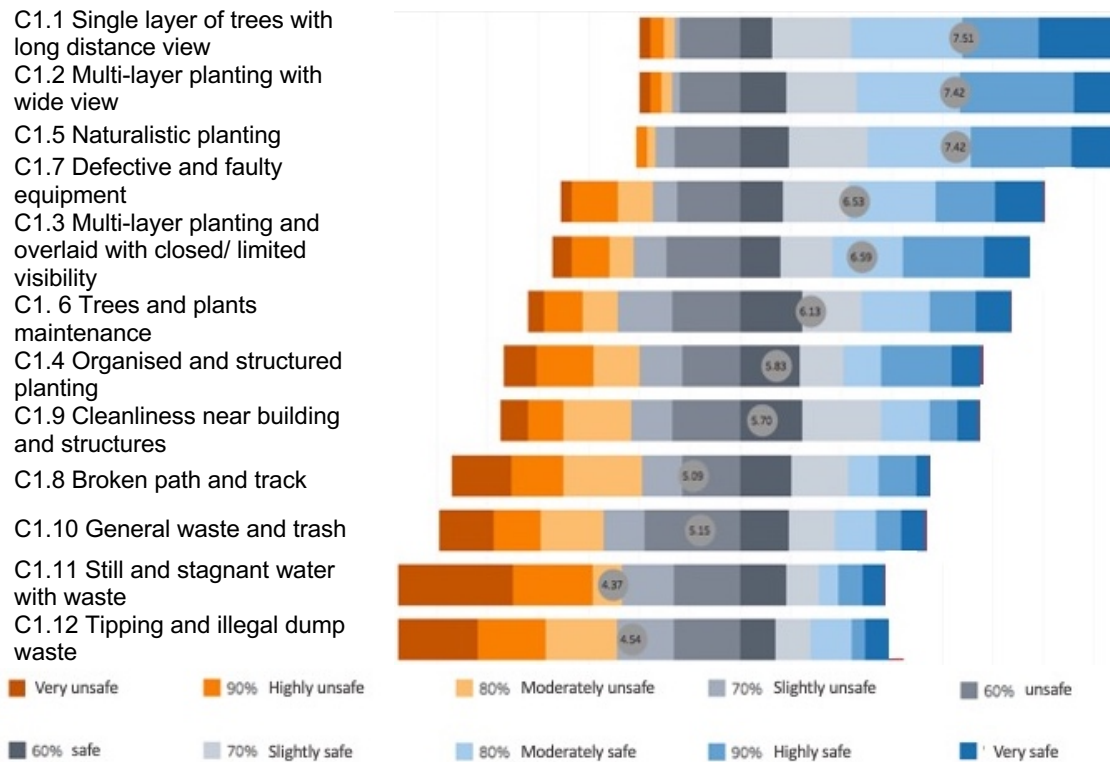


Figure 5.4 Total means graph for perceived safe

The results indicated that sex of respondents are statistically significant with preference in overall physical and maintenance factors  $F(22,1859)=1.7$ ,  $p=.01$ . However, detail analysis based on two categories found that the sex only significantly associate with planting design and view. These consist of five out twelve measures which are, single layer of trees with long distance view, multi-layer planting with wide view, multi-layer planting and overlaid with closed/ limited visibility, organised and structured planting and naturalistic planting.

Table 5.6 Perceived safe on twelves planting design and views, and maintenance variables in three neighbourhood parks

Dependent Variable	Total		NP1		NP2		NP3		Result between subjects	Results Within subject			
	N	Mean	SD	Mean	SD	Mean	SD	Mean		SD	NPs	Sex	Ethnic group
<b>12 PERCEIVED SAFE</b>										$F(11,1870)=44.98,$ $p<.001$	$p=.14, n/s$	$p=.42, n/s$	$p=.97, n/s$
<b>1) Planting design &amp; views</b>										$F(4,684)=39.8,$ $p<.001$	$F(8,676)=3.97,$ $p<.001$	$p=.11, n/s$	$p=.17, n/s$
1	Single layer of trees with long distance view	171	7.80	1.995	6.25	2.75	7.29	2.61	7.09	2.56			
2	Multi-layer planting with wide view	171	7.83	1.817	6.25	2.45	7.03	2.46	7.03	2.36			
3	Multi-layer planting and overlaid with closed/ limited visibility	171	7.89	2.447	6.15	2.31	5.96	2.80	6.66	2.65			
4	Organised and structured planting	171	6.62	2.707	5.33	2.61	5.12	2.68	5.67	2.73			
5	Naturalistic planting	171	7.76	1.825	6.34	2.19	6.93	2.43	6.99	2.24			
<b>2) Maintenance variables</b>										$F(6,1038)=39.42,$ $p<.001$	$P=.09, n/s$	$P=.25, n/s$	$F(24,1014)=1.62,$ $p=.03$
6	Trees and plants maintenance	171	6.86	2.302	5.43	2.64	5.95	2.44	6.07	2.52			
7	Defective and faulty equipment	171	7.18	2.158	5.75	2.48	6.51	2.58	6.46	2.48			
8	Broken path and track	171	5.70	2.556	5.02	2.79	4.91	2.54	5.21	2.64			
9	Cleanliness near building and structures	171	6.11	2.254	4.93	2.41	5.74	2.38	5.58	2.39			
10	General waste and trash	171	5.29	2.613	4.26	2.46	4.72	2.69	4.74	2.61			
11	Still and stagnant water with waste	171	4.79	2.932	4.23	2.87	4.46	2.83	4.49	2.87			
12	Fly-tippin and illegal dump waste	171	4.79	2.644	4.33	2.74	4.54	2.67	4.55	2.68			
NPs										$F(2,169)=10.2,$ $p<.001$			
Sex										$n/r$			
Ethnic group										$n/r$			

The results taken the Greenhouse-Geisser correction for the significant results  
\*there are significant differences between subject,  $p < .005$

$n/r$  for no relationship

Besides the twelve measures explored above, Section C in the questionnaires also evaluates the general feelings and preferences in five questions. Three questions covered general feelings: 'C3. Did you feel comfortable when you are in this neighbourhood park?', C4. Did you consider yourself safe when in this park alone?', C5. Did you find it safer if you are with your friends/ family in this park?', and two questions around the perception of the overall park which are, 'C2. How did you find the design of this park?' and 'C6. Did you feel that this neighbourhood park is well-cared?'. The findings were observed further through one-way ANOVA tests to examine the relationship between demographic characteristics, experienced of crime and general preference on park design and maintenance (Table 5.7).

Based on the  $p$  values presented in Table 5.7, it was found that only sex and age had a statistically significant relationship with all five general feelings and perceptions of the overall park. The findings indicated that male users are tend to feel safer as compared to female users at their neighbourhood park. Female users feel more safe when accompanied by other people in parks. The analysis also showed a significant relationship between age and the five general feelings and perceptions of the overall park ( $p < .001$ ). These descriptive analyses suggested that as the age of park users increase, their feelings also increase positively. One exception to this was in relation to C3. Feeling comfortable and C4. Feeling safe to be alone for older respondents. These respondents (aged 70 and above) were more likely to answer that feeling less comfortable ( $m=1$ ) as compared to other age groups. Answers about feeling safe when alone in the park significantly declined for respondents in the age group between 45 to 50, however, the feeling of safe when alone started to increase for older respondents, aged 50 onwards.

The research findings therefore challenged previous research that one's experience of crime, either being a victim or as witness of crime affected one's perception of safety . The results of the analysis showed negative relationships neither for experience of crime either within neighbourhood area, nor in the park, demonstrating no relationship between these two factors.

Table 5.8 illustrated the relationship between park design attributes from Question B1, and two maintenance attributes from Question B2, regarding general feelings and perception (Question C2 to C5). The results indicated a

very significant relationship ( $p < .001$ ) between park design and general feelings. The preference of vegetation characteristic such as the big trees that create natural atmosphere, single planting with fewer layers and dense vegetation, has an effect on visual perceptions of enclosure and openness, and consequently contributes to feeling comfortable, safe when alone and also in company. Only the dense vegetation indicator was found to have no significant contribution to the overall satisfaction with the overall park design (C2). In addition, the analysis also found that park users enjoyed very much the scenic views from the lake in each neighbourhood park and this contributed to all five general feelings and preferences towards their neighbourhood park. This finding supported findings by Kaplan and Kaplan (1989) that water is an important element that fulfil recreation requirements and is highly preferred by park users.

Further analysis also shows significant relationship between seeing a surveillance program such as police patrol/ guard and feeling safe when alone in the park and feeling safe when with one's family in the park. There is also a significant contribution of the presence of patrols/ guards towards the perception that this park is well-cared for. The presence of police patrol/ guards in neighbourhood parks was perceived positively and contributed to feelings of safety and the idea that people are taking good care of the park. In this way, the absence of responsible people in park could give the idea to users that the park is being neglected.

The results from a general question asked about respondents' experience of reporting maintenance issues however showed no relationship with any of the general feelings and perceptions of the neighbourhood park.

Table 5.7 Results of one-way ANOVA to test relationship between demographic with general feeling

		C2. Like the design of park		C3. Feeling comfortable		C4. Feeling safe to be alone in the park		C5. Feeling safe to be with friends/ family		C6. Park is well-cared	
		Mean	p value	Mean	p value	Mean	p value	Mean	p value	Mean	p value
<b>Between park</b>	<b>p value</b>		.001		.041		.007		X		X
<b>NP1</b>	<b>Mean</b>	6.76		7.23		6.98		7.29		6.66	
	<b>SD</b>	2.31		2.67		2.82		2.39		2.78	
<b>NP2</b>	<b>Mean</b>	5.62		6.45		5.58		6.87		5.81	
	<b>SD</b>	2.20		2.34		2.74		2.27		2.50	
<b>NP3</b>	<b>Mean</b>	6.98		7.41		5.51		7.28		6.67	
	<b>SD</b>	1.63		1.52		2.81		1.90		2.55	
<b>Overall</b>	<b>Mean</b>	6.44		7.02		5.99		7.14		6.37	
	<b>SD</b>	2.14		2.24		2.84		2.19		2.62	
<b>Sex</b>	<b>Male</b>	6.94	.001	7.54	.002	6.62	.003	7.61	.003	7.02	.001
	<b>Female</b>	5.89		6.48		5.34		6.65		5.69	
<b>Ethnic</b>	<b>Malay</b>	6.22		6.35		5.27		6.56		5.74	
	<b>Chinese</b>	6.10		7.45		5.55		7.26		6.42	
	<b>Indian</b>	6.73		8.48		8.03		8.45		7.64	
	<b>Bumiputera</b>	7.43		6.57		6.00		6.86		6.86	
	<b>Others</b>	7.50		7.50		7.33		8.00		7.50	
<b>Age categories</b>	<b>18-29</b>	5.69	.006	6.17	<.001	4.71	<.001	6.35	<.001	5.15	<.001
	<b>30-39</b>	6.81		7.02		6.33		7.12		6.80	
	<b>40-49</b>	7.11		7.53		6.67		7.57		6.89	
	<b>50-59</b>	6.15		8.86		8.43		8.93		8.14	
	<b>60-69</b>	7.10		8.20		6.50		8.40		7.40	
	<b>&gt; 70</b>	8.50		10.00		10.00		10.00		9.50	
<b>Experience of crime</b>	<b>Never</b>	6.30	X	7.02	X	6.07	X	7.12	X	6.31	X
	<b>Never, but I witness a crime</b>	6.60		7.20		5.40		7.40		6.90	
	<b>Almost</b>	6.80		6.60		5.80		6.40		6.60	
	<b>Yes</b>	6.50		7.00		5.20		7.00		5.80	

<b>Experience with crime in park</b>	<b>Never</b>	6.25	X	6.97	X	5.96	X	7.10	X	6.19	X
	<b>Never, but I witness a crime</b>	6.44		7.22		4.67		7.33		6.33	
	<b>Almost Yes</b>	7.50 4.67		7.67 7.00		5.33 6.67		7.00 6.33		7.00 7.00	

Table 5.8 Testing relationship between general preference on park design and maintenance and feeling safety and perception

	<b>C2. Like the design of park</b>	<b>C3. Feeling comfortable</b>	<b>C4. Feeling safe to be alone in the park</b>	<b>C5. Feeling safe to be with friends/ family</b>	<b>C6. Park is well-cared</b>
<b>Vs. PARK DESIGN AND MAINTENANCE</b>					
B1.a) Satisfy with the facilities and recreational resources provided in the park	<.001	<.001	<.001	<.001	<.001
B1.b) Love overall atmosphere in the park with big trees that shades the area and variety of ornamental planting	<.001	<.001	<.001	<.001	<.001
B1.c) Preference on simple planting design not layered	.017	<.001	<.001	<.001	.003
B1.d) Preference planting arrangement that offers a long distance view	.010	<.001	.007	<.001	.001
B1.e) Preference on dense vegetation	X	<.001	<.001	<.001	<.001
B1.f) Preference with an enclosure scenery/ spaces in the park	.005	<.001	<.001	<.001	<.001
B1.g) Enjoy the good scenic view of the lake	.010	<.001	<.001	<.001	<.001
B2.1.) Ever seen any presence of patrol in the park	X	X	.045	.039	.038
B2.2) Have made a report regarding on landscape maintenance	X	X	X	X	X



## **5.2.2 Main attributes of cues for maintenance : physical factors affecting preference and perception**

Following with the analysis on general feeling and perception of the overall park, the findings were examined further through a simple regression to predict the level (how strong) of feeling safe affecting by the preferences and acceptance on specific twelve measures related to physical environment and maintenance issues (Part C1). The overall results of linear regression illustrated a significance/ positive relationship between twelve measures for preference and feeling safety. From this findings, this research assumed that participants feeling of safe did influence by their preference on the surrounding environment (refer Table 5.9).

The largest Beta ( $\beta$ ) coefficient is 0.944, which is still and stagnant water with waste. This means that this factor makes the strongest contribution in explaining the feeling of safe when the variance explained by all other variables in the model is controlled for. The increase favours in still and stagnant water, increase the feeling safe score of .944 points. The following factors are general waste and trash (0.922), and trees and plant maintenance (0.907). The closes Beta value revealing that the preference on these three factors made quite similar contribution to the feeling of safety. The highly significant differences indicates that the higher preference of the measures in the neighbourhood park, the safer people feels with/in that particular measures. Figure 5.7 is the example of diagram that explained the model summary of the association observed.

A significant equation regression was found and was the least between twelve variables, are feeling of safe on single layers of tres with long distance view ( $F(1,173) = 229.436$ ,  $p < 0.05$ ) with  $R^2$  of 0.568. It indicates that an increase in preferences corresponded, on average, to an increase in feeling safe score of .755 points.

The purpose of this analysis was to identify the cues for feeling of personal safety in neighbourhood park based on preference in order to provide an empirical evidence that can confirmed the qualitative findings in the next chapter. This empirical evidence could provide design and maintenance

recommendation for the place keeping of the neighbourhood park specifically in Malaysian setting. It was found that all twelve cues have a positive and strong relationship between preference and perception of personal safety.

Table 5.9 Simple Regression Analysis Summary

#	Variables	B	95% CI	$\beta$	t	R <sup>2</sup>	p
11	DV: Feeling of Safe on Still and stagnant water with waste Predictor: Preference on Still and stagnant water with waste	0.953	[0.903, 1.003]	0.944	37.374	0.890	< 0.05, sig
10	DV: Feeling of Safe on General waste and trash Predictor: Preference of Comfortable on General waste and trash	0.903	[0.846, 0.960]	0.922	31.272	0.85	< 0.05, sig
6	DV: Feeling of Safe on Trees and plants maintenance Predictor: Feeling of Comfortable on Trees and plants maintenance	0.934	[0.869, 1.000]	0.907	28.246	0.822	< 0.05, sig
9	DV: Feeling of Safe on Cleanliness near building and structures Predictor: Preference on Cleanliness near building and structures	0.915	[0.843, 0.987]	0.888	25.222	0.788	< 0.05, sig
8	DV: Feeling of Safe on Broken path and track Predictor: Preference of Comfortable on Broken path and track	0.932	[0.858, 1.006]	0.885	24.825	0.783	< 0.05, sig
12	DV: Feeling of Safe on Fly tippin and illegal dump waste Predictor: Preference on Fly tippin and illegal dump waste	0.901	[0.830, 0.972]	0.884	24.891	0.779	< 0.05, sig
5	DV: Feeling of Safe on Naturalistic planting Predictor: Preference on Naturalistic planting	0.881	[0.810, 0.953]	0.881	14.125	0.774	< 0.05, sig
2	DV: Feeling of Safe on Multi-layer planting with wide view Predictor: Preference on Multi-layer planting with wide view	0.867	[0.792, 0.942]	0.868	22.885	0.751	< 0.05, sig
3	DV: Feeling of Safe on Multi-layer planting and overlayed with closed/ limited visibility Predictor: Preference on Multi-layer planting and overlayed with closed/ limited visibility	0.911	[0.830, 0.993]	0.86	21.995	0.738	< 0.05, sig
7	DV: Feeling of Safe on Defective and faulty equipment Predictor: Preference of Comfortable on Defective and faulty equipment	0.851	[0.771, 0.932]	0.847	20.857	0.715	< 0.05, sig
4	DV: Feeling of Safe on Organised and structured planting Predictor: Preference on Organised and structured planting	0.782	[0.694, 0.870]	0.802	17.536	0.641	< 0.05, sig
1	DV: Feeling of Safe on Single layer of trees with long distance view Predictor: Preference on Single layer of trees with long distance view	0.81	[0.704, 0.915]	0.755	10.227	0.568	< 0.05, sig

B = unstandardized coefficient,  $\beta$  = standardized coefficient

Predictor: Perception

Dependent Variable: Feeling Safe

### **5.3 The use of Exploratory Factor Analysis (EFA) for the development of physical factors that effects the perception of personal safety**

Due to the unsatisfactory with the analysis results that shows negative correlation between variables (Table 5.6), an exploratory factor analysis (EFA) was conducted to see how the items weighed down into factors. Hence, EFA has been used in the past to classify factors in smaller set especially for large set of variables by testing it in different context (Hur & Nasar, 2014). Principal component analysis (PCA) is use and in terms of rotation, assuming that the factors are correlated (Brown, 2009), Oblimin with Kaiser Normalization were used. Ideally for EFA, the sample size for this study is 187 (N=187).

Besides, this further analysis aims to develop the new physical factors to perception of personal safety. Factor analysis with oblimin rotation (Jennrich, 2006; Wan Ismail, 2019) was particularly used to define the underlying dimension of perception of personal safety and for interpretability. Hence, it also identifies relationship pattern between dimensions of perception of safety and independent variables of the study. Hence, EFA has been used in the past to classify factors in smaller set especially for large set of variables by testing it in different context (Hur & Nasar, 2014). Principal component analysis (PCA) is use and in terms of rotation, assuming that the factors are correlated (Brown, 2009), Oblimin with Kaiser Normalization were used. Ideally for EFA, the sample size for this study is 187 (N=187).

The Kaiser-Meyer-Measure of Sampling Adequacy (KMO) and Bartlett's Test of Sphericity (Bartlett's) were used both to confirm the model has patterned of relationships and to verify the data set is suitable for EFA (Fabrigar et al., 1999; Ruengtam, 2017). The KMO value should be .6 (>.6)(Pallant, 2013; Yong & Pearce, 2013) or above and the significant value for Bartlett's is .05 or smaller ( $p < .05$ ) to make it suitable for EFA to take place.

Table 5.6 shows the results of the test ran for this research. The KMO value was .877 that exceeding the recommended value of .6 indicated that the sampling is adequate for factor analysis and the Bartlett's test reached the statistical significant at .000 ( $\chi^2(105) = 1775.165, p < .05$ ), supporting the factorability of correlation matrix. The PCM revealed the presence of three

components with eigenvalues exceeding 1, explaining 44.7%, 15.7% and 11.2% of the variance respectively. The two component solution explained a total of 71.6% of the variance, with Component 1 contributing 44.7%, Component 2 contributing 15.7% and 11.2% contribute by Component 3. Oblimin rotation was performed to aid in the interpretation of the three components.

Table 5.10 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.877
Bartlett's Test of Sphericity	Approx. Chi-Square
	1774.165
	df
	105
	Sig.
	.000

Inspection of correlation matrix revealed the presence of many coefficients of .3 and above. Therefore, the communalities had all items with extraction values above .3 confirming that each item shared some common variance with other items, without have to remove any of the items. With all these positive results of this particular test become indicators that the factor analysis considered to be suitable with all 15 items. As a results, three factors are loaded explaining 72% of variance. The pattern matrix of the final solution is shown in Table 5.7.

Table 5.11 Development of Physical Indictors of perception of safety

<b>New Physical Factors</b>	<b>Item</b>	<b>Factor loading</b>	<b>E</b>	<b>%</b>
<b>Maintenance and appearance</b>	Still and stagnant water with waste trapped	.883	6.701	44.67
	Tipping and illegal dump waste	.832		
	Cleanliness near building and structures	.734		
	General waste and trash	.727		
	Trees and plants maintenance	.726		
	Broken path and track	.592		
	Organised and structured planting	.543		
	<b>Planting design and organisation</b>	Multi-layer planting with wide view	-.939	2.356
Naturalistic planting		-.850		
Single layer of trees with long distance view		-.802		
Defective and faulty equipment		-.534		
Multi-layer planting and overlaid planting with closed visibility		-.500		
<b>Environmental satisfaction</b>	Feeling safe to have company (friends/ family) in the park	.991	1.684	11.23

Feeling safe to be alone in the park	.892
Feeling comfortable in the park	.881

The underlying factors produced in the pattern matrix table extracted and clustered according to the factor loading. From the factor loading, three factors were revealed (refer Table 5.7) as the physical factors to perception of personal safety. These three clustered were named as 'maintenance and appearances', 'planting design and organisation', and 'environmental satisfaction'.

The first significant factor contributed 44.67% of total variance, making it the most important factor that contributed to perceptions of personal safety. All the measures fell under it related to physical maintenance and landscape appearances. The loading range from the highest value for stagnant water problem (.883), cleanliness (.832), broken path (.727), trees and plants maintenance (.726), general waste and trash (.727), broken track (.592) and organised and structural planting (.543). The positive loading suggested that these issues of maintenance presented at the neighbourhood park have a greater impact on the perception of personal safety.

The second factor explaining 15.71% of total variance was described as 'planting design and organisation'. It consisted of the respondents' responses on visual factors such as multi-layer planting with wide view (-.939), naturalistic planting (-.850), single layer tree with distance view (-.802), defective and faulty furniture (-.534), and an overlaid planting with closed visibility (-.500). All the measures in this second factor shown to have values of negative loadings, suggesting that they were affected in the opposite direction with the perception of personal safety, since the four questions did not represent any positive or negative emotions. Besides, negative loading does not represent the strength of the measures to the factor (Asnawi et al., 2012). It is therefore, this research suggested that these components are less present in the park, but the preference and acceptance of the wide and distance view, and naturalistic (refer subtopic 5.1.2, table 5.3) were the highest. In other words, the more these measures are available in the neighbourhood park, the more users are likely to report feeling safe.

The third factor explaining the rest of variance (11.23%) was named 'environmental satisfaction' and explained the general feelings that respondents had towards their outdoor environment such as feeling safe when accompanied in the park (.991), feeling safe when alone in the park (.892), and feeling comfortable in the park (.891). Even though the variance was small compared with the other two factors, it is noteworthy that these general feelings contributed significantly to respondents' perception of personal safety in the neighbourhood park.

As these physical factors are developed and described, the next section presents further details of the relationship between demographic factors, familiarity and preferences. Beforehand, one-way ANOVA tests were conducted to analyse differences in response based on these new physical indicators in relation to perceptions of personal safety in the three neighbourhood parks (table 5.12).

Table 5.12 The relationship of physical factors with neighbourhood park

<b>Physical factors from EFA</b>		<b>df</b>	<b>F</b>	<b>Sig.</b>
<b>Environmental Satisfaction</b>	Between Groups	2	2.315	<b>0.102</b>
	Within Groups	176		
	Total	178		
<b>Planting design and organisation</b>	Between Groups	2	9.868	<b>0.000</b>
	Within Groups	175		
	Total	177		
<b>Maintenance and appearances</b>	Between Groups	2	3.277	<b>0.04</b>
	Within Groups	174		
	Total	176		
<b>Overall safety score</b>	Between Groups	2	7.241	<b>0.001</b>
	Within Groups	179		
	Total	181		

Table 5.12 revealed that there are different responses in three out of four factors, which are planting design and organisation, maintenance and appearances, and the overall safety score. Only environmental satisfaction shown no differences or no relationship between neighbourhood. This means that there are no differences in feeling of safe when alone or in company, and feeling comfortable between the scores of respondents in the three different parks. To understand the underlying factors of these results, the findings were

examined through simple descriptive analysis to see the median and inter-quartile range (IQR) of each of the twelve measures in the three neighbourhood parks.

Table 5.13 shows that respondents from Neighbourhood Park 2 ranked their perception of safety on all twelve measures as very low (lowest mdn=3, and highest mdn=7) compared to other neighbourhood parks. For maintenance and appearance, seven measures were ranked very low compare to other three factors. This assumed that maintenance and appearance indicator perceived as the most potentially threatening (mdn=3, 4 and 5) to personal safety, and can impart a very negative perception to personal safety in Neighbourhood Park 2 and Neighbourhood Park 3. Trees and planting maintenance was perceived as relatively safe (mdn=6) by the respondents in Neighbourhood Park 3.

In contrary, responses for Neighbourhood park 1 showed that respondents feel unsafe near the still and stagnant water (mdn=4), fly-tipping and illegal dump waste (mdn=5), and general waste and trash (mdn=5), and were seen as a major and negative effect, contributing to low perceptions of safety. The four measures for planting design and organisation indicator shown a good ranked (mdn=8) except on multi-layered planting with closed or limited visibility (mdn=6) found in Neighbourhood Park 2 and Neighbourhood Park 3. These findings suggested that the planting design and organisation can have a significant and positive impact on feeling safe at neighbourhood park.

The results on median (mdn) for environmental satisfaction indicated that when it was ranked low, so too were feelings of safety when alone in the park at Neighbourhood Park 2 and Neighbourhood Park 3 (mdn=5, IQR=5). This is different with Neighbourhood Park 1 where most of the respondents feel safe either when alone or in company (mdn=8). The two contrasting answers indicate that there are other underlying factors contributing to different perceptions of safety in the three neighbourhood parks.



Table 5.13 The results between neighbourhood parks for twelve measures for perception of personal safety

Case study areas	NP1 Seri Serdang					NP2 Tasik Puchong Perdana					NP3 Tasik Wawasan				
	N	Median	Percentiles			N	Median	Percentiles			N	Median	Percentiles		
			25	50	75			25	50	75			25	50	75
<b>Maintenance and appearances</b>															
C1.11(c). Still and stagnant water with waste	57	4	2	4	7	61	4	1.5	4	7	59	4	2	4	7
C1.12(c). Fly tippin and illegal dump waste	57	5	2	5	7	61	3	2	3	7	59	5	2	5	7
C1.9(c). Cleanliness near building and structures	56	6	4	6	8	60	5	3	5	7	58	5.5	4	5.5	7.25
C1.10(c). General waste and trash	56	5	4	5	7	61	4	2	4	6	58	5	2.75	5	6
C1.6(c). Trees and plants maintenance	57	7	5	7	9	60	5.5	3	5.5	7.75	59	6	4	6	8
C1.8(c). Broken path and track	57	6	4	6	8	60	5	2.25	5	7.75	58	5	3	5	6
C1.4(c). Organised and structured planting	56	7	5	7	9	61	5	3	5	7.5	58	5	3	5	7
<b>Planting design and organisation</b>															
C1.2(c). Multi-layer planting with wide view	58	8	7	8	9	60	7	5	7	8	58	8	5.75	8	9
C1.5(c). Naturalistic planting	55	8	7	8	9	61	6	5	6	8	59	8	5	8	9
C1.1(c). Single layer of trees with long distance view	56	8	7	8	9	61	6	4	6	9	59	8	6	8	9
C1.7(c). Defective and faulty equipment	56	8	5.25	8	9	61	6	4	6	8	59	7	5	7	8
C1.3(c). Multi-layer planting and overlaid with closed/ limited visibility	57	8	6	8	9	61	6	5	6	8	57	6	4	6	8
<b>Environmental satisfaction</b>															
Feeling safe to be in the neighbourhood park alone	56	8	5	8	10	62	5	3.75	5	8	61	5	3	5	8
Feeling safer to be with friends/family with company in the neighbourhood park	55	8	5	8	10	62	7	5	7	9	61	7	6	7	8.5
The neighbourhood park is well-cared	56	7	5	7	9	62	5	4	5	8	61	7	5	7	8.5

### 5.3.1 Intervening factors affecting perception of personal safety

Analyses of one-way ANOVA were undertaken to explore relationships between several factors affecting perception of personal safety. In previous studies, a connection has been found between demographic factors, familiarity and experience of crime as an intervening factors affected the perception of personal safety. For instance, gender and age group are strong factors associated with perceptions of personal safety (CABE, 2004; Mak & Jim, 2018; Siti Rasidah & Aldrin, 2012a; Sreetheran, 2017; Sreetheran & van den Bosch, 2014). Women and older people are more likely to experience high levels of fear, women with children will avoid certain areas if there are signs of incivilities ((CABE Space, 2005): (CABE Space, 2007), and minority groups from certain ethnic backgrounds can tend to feel more insecure and vulnerable (CABE Space, 2007). Besides the demographic factors, experience of crime was also found to have an impact on perceptions of safety (Mak & Jim, 2018). Above all, these intervening factors were regularly found in previous research as reliable variables to measure perceptions of personal safety. It is, therefore, a hypothesis in this research that those measures would also affect perceptions of personal safety to some degree. To test this with the new physical factors found to be significant for perceptions of personal safety, further findings through one-way ANOVA test were conducted with demographic factors, familiarity with the park (through measures 'frequency of visit'), and experience of crime.

Table 5.14 shows that the important indicator, C1: maintenance and appearances is less likely to be affected by the three measures: demographic factors, familiarity with the park, and experience of crime. The only relationship found were with age ( $p=.006$ ), and satisfaction with the facilities and recreational resources provided ( $p<.001$ ), preference on overall atmosphere with big trees and shades ( $p=.022$ ). Further analysis of the age indicator suggested that respondents aged between 60 to 69 years old are more likely to report dissatisfaction with the environment condition and maintenance.

The third indicator of environmental satisfaction was found to be affected by most of the measures. This suggested that perceptions of

environmental satisfaction described by people feeling safe when alone or in company and feeling comfortable are varied based on intervening factors. The socio-demographic background seems to have a strong association with perception of personal safety, where further review of findings show that male, Indian and other ethnic group score higher on feeling safe when alone in the park, and feeling comfortable in the park, compared to other groups. The Indian community also seems to feel safer in relation to planting design and organisation in the park, while the minority ethnic group, Bumiputera, report feeling much less safe in relation to planting design and organisation. Background status and level of education also affect perceptions of personal safety.

Table 5.14 Analysis of ANOVA between intervening factors and physical factors of perception of personal safety

	Environmental Satisfaction	Planting design and organisation	Maintenance and appearances	Overall safety score
<b>Demographic factors</b>				
Sex	P= .001	X	X	P= .034
Age	P< .001	P= .003	P= .006	P< .001
Ethnic background	P< .001	P= .003	X	P= .013
Homeownership status	X	X	X	X
Household composition	P= .025	X	X	X
Periods of dwelling	X	X	X	X
Length of residency	X	X	X	X
Working background	P< .001	P= .044	X	P= .009
Level of education	P= .002	X	X	X
Frequency of visit to the park	P< .001	P= .006	X	P= .002
Accompany during the visits to the park	P= .024	X	X	P= .016
Location of the park from home	P= .036	X	X	X
Satisfy with the facilities provides and recreational resources	P < .001	P < .001	P < .001	P < .001
Like the overall atmosphere with big trees and shades	P < .001	P < .001	P= .022	P < .001
Enjoying the good scenery of the lake	P < .001	P < .001	X	P < .001
Aware on any presence of patrol (park staff, police, guards)	P= .037	P= .036	X	X
Experience of crime anywhere/ or witness a crime	X	X	X	X
Experience of crime/ or witness a crime in the neighbourhood park	X	P= .019	X	X

#### **5.4 Summary: The main attributes of factors affecting preferences and perception of personal safety**

The main research findings revealed three main factors that contribute to the perception of personal safety. These factors are 'maintenance and appearances', 'planting design and organisation' and 'environmental satisfaction'. These factors result from the constructed dimensions examined in Exploratory Factor Analysis (EFA) using the principle component methods. The most influential factors consist of several maintenance issues that were perceived from environmental conditions such as still and stagnant water, fly-tipping and illegal dump waste, cleanliness around buildings and structures, general waste and trash, planting maintenance, broken pathway and track, and organised planting. The feeling of safety were found to decrease significantly in an area with maintenance problems. Park users do not report liking areas or designs that could harm and threaten their physical security, and hence adversely affecting the attractiveness of the park. However this perception differs between respondents at the different neighbourhood parks. The underlying factors that cannot be explained here were further discussed in the next qualitative discussion.

The planting design and organisation factors include single-layer of planting, multi-layer planting with or without overlay/ understorey and presence/ extent of naturalistic planting. These factors contribute about 15% of the variance meaning that they affect perceptions of personal safety. The planting design and organisation can provide visual accessibility such as openness, closed or limited visibility and also enclosure of spaces. The visual accessibility is a significant indicator affecting perceptions of personal safety. It was found the preference for openness is higher than preference for enclosure which suggests that the concept of openness makes people comfortable and feel safe in the outdoor environment, regardless of the planting design (single or multi-layered).

The findings on environmental satisfaction shows associations with perception of personal safety, especially in Neighbourhood Park 2 and Neighbourhood Park 3. The findings for these two parks indicated that most of the park users feel less safe when they are alone in their neighbourhood park.

Besides the main findings, the findings on the intervening factors such as demographic characteristics, familiarity with the park, and experience of crime help to understand the important factors affecting park utilisation, and indirectly affecting people's preferences in the park landscape. It was found that sex and age are two intervening variables that influence preferences, yet there are no significant differences in acceptance on maintenance issues for these two intervening variables. Both men and women indicate dissatisfaction with the maintenance and appearance, especially strong for older park users. However, the minority ethnic groups (including Bumiputera) were found to have lower scores for environmental satisfaction, also reporting that they tend to feel less safer when alone in the park, and feel less comfortable in the park than other groups. The research findings on respondents' experience of crime show no association with their feeling of safety in the park, or on any factors and measures.

The findings suggest that most users are aware of the park's physical characteristics and maintenance issues when asked about their neighbourhood park. This indicates that most of the respondents are familiar with the park and indicate an appreciation/ understanding of their surroundings while doing the activities.

Above all, the quantitative findings confirmed that maintenance and the park appearance constitute major factors affecting perceptions of personal safety, compared to perceptions of planting design and organisation, and environmental satisfaction.

## FOCUS GROUP WORKSHOP RESULTS AND ANALYSES

### 6 Introduction

This chapter presents the analyses of the main data collection, that is, the qualitative results gathered from on-site focus group workshops. In the workshops, each participant was required to provide responses to four study descriptors (see table 6.1) using the three methods that were combined in the workshops; the adhesive colour dot mapping, autophotography, and group discussions at the end of each workshop (explained in Chapter 3). The results from each are presented in three forms: 1) dot distribution mapping, 2) codes from narrative, and 3) photo-collage

The analyses of these data firstly explore the preferences with regard to park design and characteristics that answered the first research question (*What are the factors affecting users' preferences with regard to their neighbourhood park landscape?*).

The exploration of the preferences is important to understand the relationship between users' preferences and the utilisation of spaces and facilities. This relationship then leads to the identification of whether the representation of the visual and physical appearances of the design and characteristics were perceived to be one of the maintenance issues. These are referred to as maintenance cues on the perception of personal safety, which answer the second research question: *What are the issues of maintenance that people perceive with the current park design and site conditions?*

The discussion of the first and second research questions leads to the final exploration of the thesis, which comprehensively discusses how these traces of maintenance become cues to the perception of personal safety.

## 6.1 Methods Overview and Analysis Explained

This focus group workshop's results and analysis chapter examined the responses to four descriptors from 26 park users from different backgrounds in three neighbourhood parks: Taman Tasik Seri Serdang as Neighbourhood Park 1, Taman Tasik Puchong Perdana as Neighbourhood Park 2, and Taman Wawasan Recreational Park as Neighbourhood Park 3, using a workshop approach.

Table 6.1 Four descriptors and the methods

Research subject	Descriptors	Colour code	Methods
Park typologies and design	1) Preferred Park design and character	Green	Adhesive colour dots maps, auto-photography, discussions
	2) Less preferred park design and character	Yellow	
Maintenance	3) Landscape elements, vegetation, and spaces that were seen as less maintained	Orange	
Sense of personal safety	4) Physical conditions and environment that makes the respondents feel unsafe	Red	



Four descriptors (Table 6.1) were designed to explore the research subjects in more detail. The first two descriptors aim to examine users' perceptions of design and characteristics with specific reference to their neighbourhood parks. The use of preferences distribution mapping was intended to establish the location of participants preferred (green dots) and less preferred landscapes (yellow dots). Next, the investigation continued with the third descriptor, by asking the participants to locate places where they felt maintenance issues were apparent in the park. The associated results can help to identify the less regularly maintained spaces, landscape elements, and park equipment by positioning orange dots on the maps. The last descriptor four used red dots to identifies specific locations at which participants felt their sense of personal safety to be compromised. The results illustrate insecurity-prone areas; areas in which the participants feel unsafe, as well as where they identified landscape elements or equipment with security issues.

Based on the four descriptors, the participants carried out tasks using three methods over the course of the workshop. The three methods are adhesive colour dot mapping, photography, and discussion during or later in each small group workshop.

The adhesive colour dot mapping was the first task given to the participants: they were asked to stick adhesive dots onto a map of their local park at the specific locations where they thought the descriptors were applicable. This task was organised to elicit spatial information on the three research subjects (see Table 6.1). The workshop took place in participants' neighbourhood parks so that they could identify the locations and issues precisely. The results for the colour dots were digitally transferred to a series of summarising maps showing the accumulated dots positioned by all the participants in each neighbourhood park. There are four series of summarised maps or known as distribution mapping later. The distribution mappings are overall distribution mapping, preference distribution mapping, maintenance distribution mapping, and sense of personal safety distribution mapping.

The first analysis of these four distribution mappings started with the visual analyses. The visual analysis was derived from the identification of two results on the distribution mapping, which are points and co-located points referred to as **nodes**. The point is a result of where dots overlaid each other. Meanwhile the co-located points are a result of a number of dots that were not necessarily overlapped but positioned sufficiently close together to form a cluster.

Table 6.2 Two results for the distribution mapping that formed nodes

Type of distribution dots	Examples
1 Point location <i>(Results of overlapping dots)</i>	
2 Co-located point <i>(Dots located near to each other suggesting an area with similar characteristics)</i>	

Whilst the nodes enabled the relevant locations to be identified precisely, they do not explain the reason(s) for the responses in any real depth: what exactly they applied to, and why and how they applied. Therefore, the participants were also asked to take photographs, as a second method of the



locations, elements, and equipment to which the dots applied. This helped to remove any ambiguity as to what the dots signified and were being used to illustrate, clarifying the participants' responses during the discussion and, subsequently, in this thesis.

The third method is the small group discussion. There were two small group discussions for each neighbourhood park, one discussion per group, which were conducted under two sets of conditions, which are during the mapping and photography around the park, and at the end of the workshop (explained in Chapter 3). The group discussions were analysed to extract narratives that further explained the reasoning behind each response. These are referred to as **codes** in this thesis.

## 6.2 Overall Results of the Distribution Mapping and Narratives Analyses in Three Neighbourhood Parks

This subtopic discusses the initial results of all four descriptors, and which are presented in one distribution mapping for each of the three case study areas. Green-colour dots represent the preferred areas or settings, and yellow-colour dots represent the less preferred areas or settings. The three case study areas are Neighbourhood Park 1 (Taman Tasik Seri Serdang), Neighbourhood Park 2 (Taman Tasik Puchong Perdana), and Neighbourhood Park 3 (Taman Wawasan Recreational Park). There are total of twenty-six (26) participants, for an overall six workshops for three neighbourhood parks (see Table 6.3).

Table 6.3 Three neighbourhood parks and participants

No.	Three neighbourhood parks	Small Group (SG)	Participants (n)
1	Taman Tasik Seri Serdang	SG1	3
		SG2	6
		<i>Total</i>	9
2	Taman Tasik Puchong Perdana	SG1	3
		SG2	5
		<i>Total</i>	8
3	Taman Wawasan Recreational Park	SG1	4
		SG2	5
		<i>Total</i>	9
		<b>Grand total</b>	<b>N = 26</b>

Figure 6.1 presents the first distribution mapping for Neighbourhood Park 1. The mapping illustrated a fairly distributed set of dots for each of the

descriptors, which demonstrated that the all descriptors had been answered equitably by the participants.

Detailed analysis identified six areas that showed a high density of responses for each descriptor. Five of the areas were marked in solid black lines marked the most with red dots. These demonstrated that these five areas are the areas of most concern that have impact on sense of personal safety. Four in this area are the drains for inlet and outlet. Meanwhile, one area in the solid black line was marked in the main entrance near the parking lot where the mobile stalls are. It was also showed along with the red dots, and the five areas also marked with several orange dots. The orange dots are the third descriptor, which is an area that was perceived to have maintenance issues. The presence of these two colour dots in five areas suggested that there is a strong relationship between maintenance and perceived sense of personal safety. The thorough analysis of this relationship will be discussed in the following subtopic for Descriptors 3 and 4.

Meanwhile, the terrain at the lake edges on the bottom left side of the park was frequently marked with green-colour dots (black dashed lines in Figure 6.1). Green dots represent the first descriptor, preferred landscape design and characteristics of the park. These results demonstrated that the topography characteristic in this park, which is the terrain, was preferred by most participants. Further discussion of this terrain can be found in the following subtopic on descriptor 1 and 2, preference of park design and characteristics.

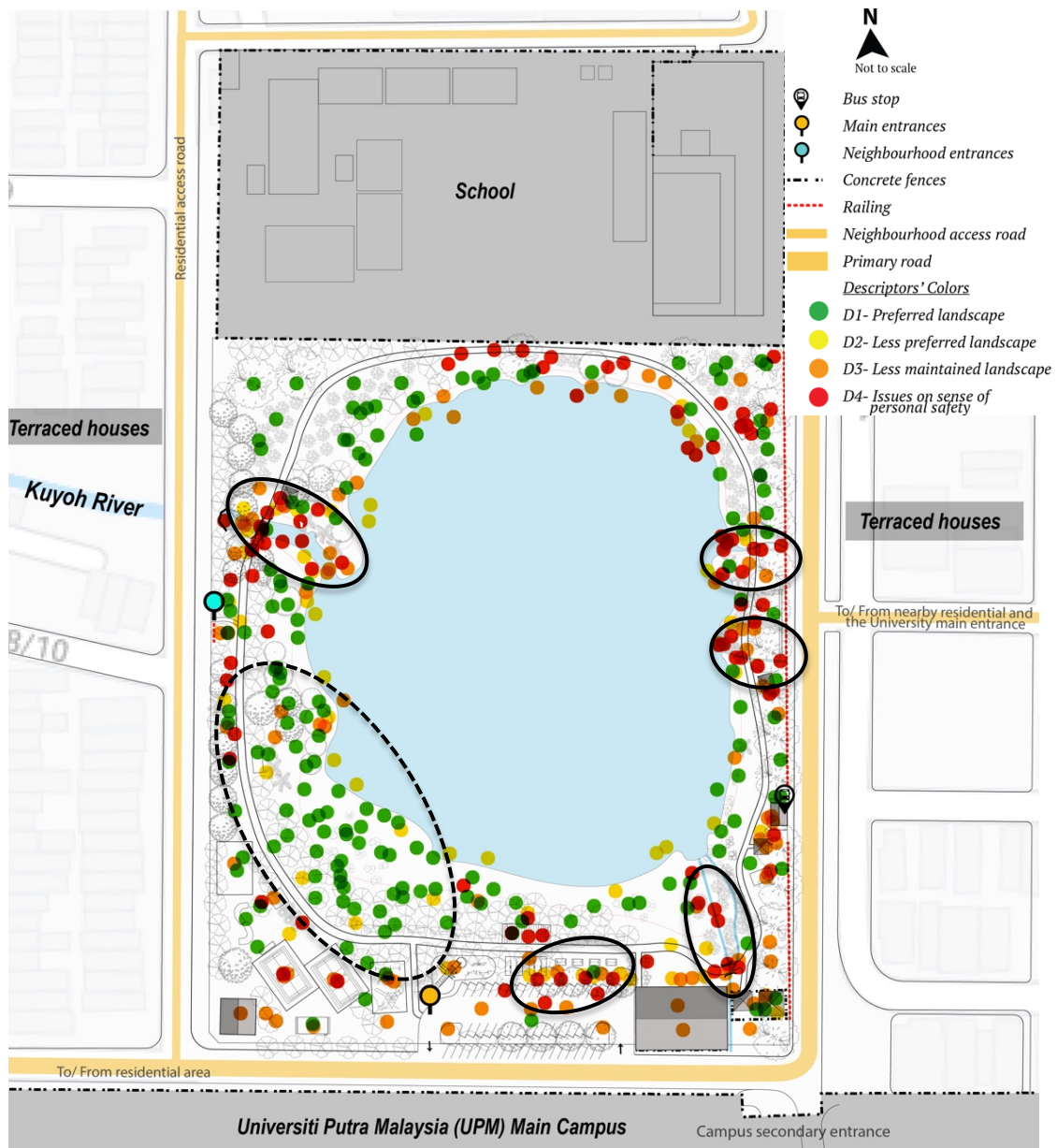


Figure 6.1 Neighbourhood Park 1, Taman Tasik Seri Serdang overall results distribution mapping

Figure 6.2 presents a summary of the results for the four descriptors obtained from eight participants in two small group workshops in Neighbourhood Park 2. The distribution mapping illustrated low responses for the four descriptors. However, it is quite apparent from the distribution that the red dots were applied more frequently than the other colours. These formed a series of cluster nodes concentrated along the lake edges at the top side of the park (solid black line). Firstly, this suggested a serious concern with regard to sense of personal safety about the lake edges, as perceived by the participants. By contrast, the bottom side of the park was notably marked by

many green dots (black dashed line) that suggested this area are preferred by many participants.

Meanwhile, the top right side of this park illustrated low responses, especially with regard to the preference categories (green- and yellow-colour dots). This showed that there are reasons that explain the low responses as to why this area was preferred nor less preferred, the discussion of which is given in detail in the next subtopic on the preferences regarding park design and characteristics, and offered explanations for the low responses.

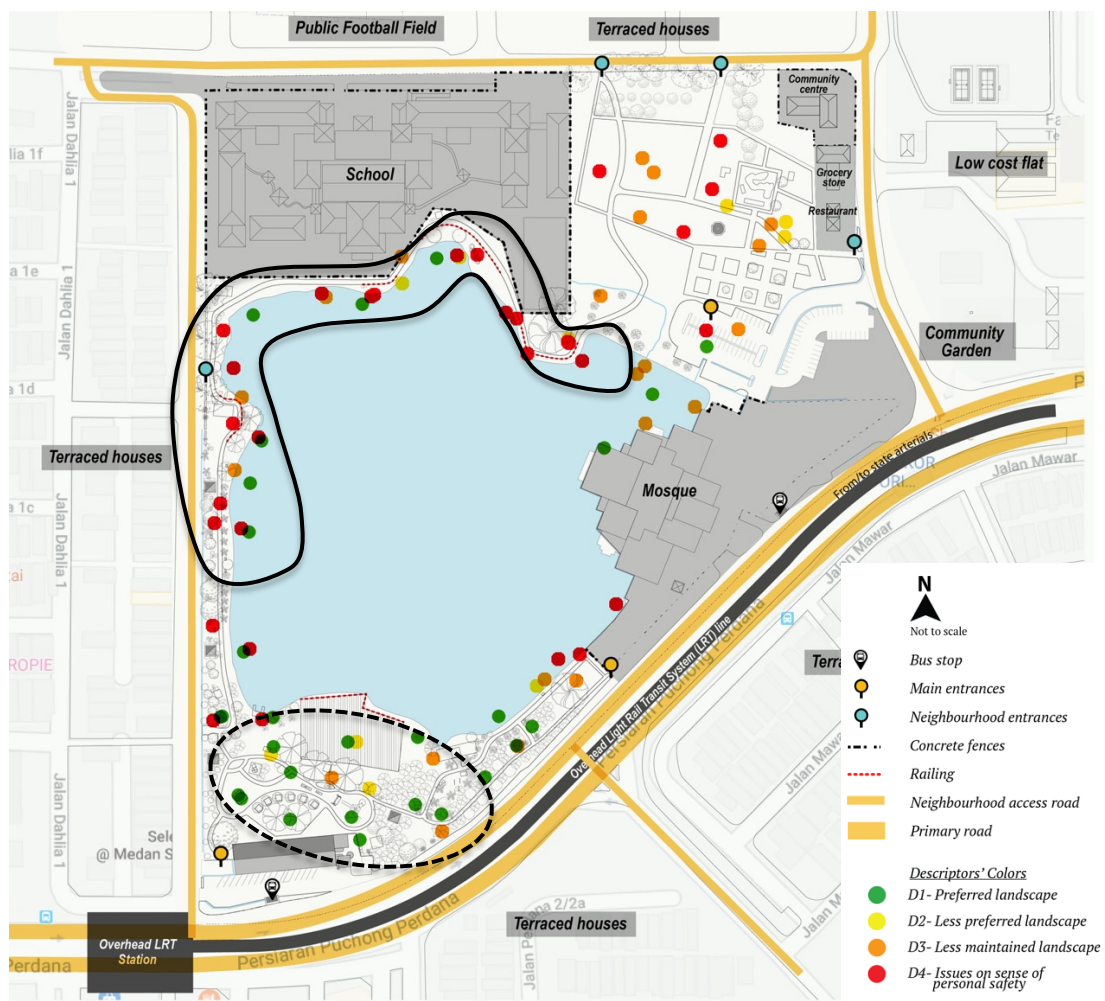


Figure 6.2 Neighbourhood Park 2, Taman Tasik Puchong Perdana overall distribution mapping

Figure 6.3 presents the overall results for the distribution mapping for Neighbourhood Park 3, Taman Wawasan Recreational Park, as obtained from nine participants, with two small group workshops. The overall results for the four descriptors show that the responses were quite evenly distributed around



the park. Early studies illustrated three areas that were highly marked with distribution dots. The two areas in black dashed lines were marked with green-colour dots that suggested these areas as preferred by many participants, while another area in the solid black line was marked mostly with orange responses regarding maintenance, and red-colour dots referred to a sense of personal safety. Similar to Neighbourhood Park 1, these suggested that maintenance of an area does have an effect on users' sense of personal safety.

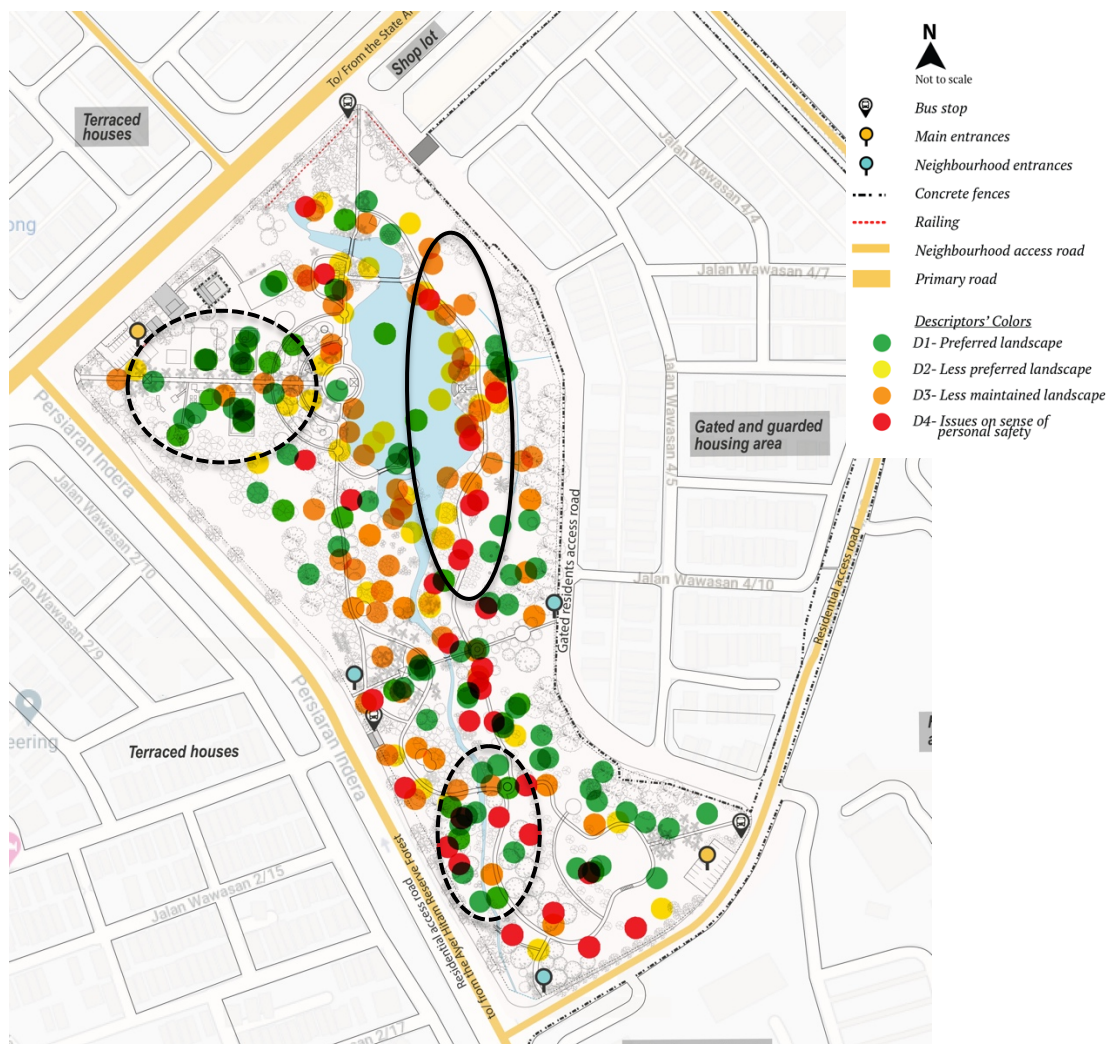


Figure 6.3 Neighbourhood Park 3, Taman Wawasan Recreational Park overall distribution mapping

The distribution mapping for all three neighbourhood parks gave initial results for the four descriptors. Each of the case study areas showed areas that were preferred by many users, as well as there being notable areas that

were recognised to have impact on sense of personal safety. These areas also presented encouraging responses regarding perceived maintenance issues. This early analysis suggested a relationship between perceived maintenance with the perception of personal safety.

As the researcher was aware that the overall distribution mapping was not sufficient to explain the nodes, the next subtopic discusses each of the four descriptors in depth, with further support from the narratives, as well as photographic images. The narratives were analysed via thematic analysis methods that further categorised the results into codes. These codes were extracted to fourteen key thematic codes, which were further divided into three study categories as discussed in Chapter 3, Methodology (see Table 6.4).

Besides, sixteen (16) narrative nodes were also obtained, where participants mentioned certain locations in their responses with the four descriptors. These were recorded in the narratives. These narrative nodes helped to add further detail about the exact points and areas of the nodes from the dot distribution mapping's preliminary analysis.

Table 6.4 Key findings derived from the narratives

<b>Study Category</b>	<b>Thematic codes</b>	<b>Narrative nodes</b>
Park design and characteristic	1. Activities, activities area and peak hour 2. Spatial arrangement, facilities and amenities 3. Planting character and vegetation 4. Landform and island	1. Active area 2. Inactive and less utilised area 3. Open space and gazebo 4. Playground 5. Sports courts
Perception of maintenance	5. Waste management 6. Plant and vegetation cared and maintenance 7. Broken, faulty and missing equipment and facility 8. Waterlogging	6. Exercise point/ outdoor gym 7. Food court 8. Transitional area 9. Entrance 10. Park edges
Sense of personal safety	9. General satisfaction 10. Active and passive area, and presence of other users 11. Night-time and lighting 12. Visual aesthetic 13. Fear of wild animals 14. Sense of security	11. Lake and water edges 12. Island 13. Pathway/ walkways 14. Toilet and other building facilities 15. Waste collection point 16. Landform and change of level

These three analysis procedures for this study provide a holistic and integrated understanding of people's perceptions of the site with a combination

of the three aspects of spatial, perceptual, and experiential qualities. The relationship between preferences on park landscape, and perceived maintenance, with the sense of personal safety are explored further to evaluate their collective impact on users' perceptions of personal safety. The following subtopics started the comprehensive results and analysis on the three procedures according to three categories for the four descriptors: i) preference of park design and characteristics (Descriptors 1 and 2), ii) Perceived park maintenance (Descriptor 3), and iii) Sense of personal safety (Descriptor 4).

### **6.3 Preference of Park Design and Characteristics: Results and Analyses of Descriptors 1 and 2**

The discussion of this subtopic explores the results and analysis of Descriptor 1 and Descriptor 2's results for the three neighbourhood parks. The results first visually illustrate users' preference for design and characteristics in a distribution mapping. The formation of nodes was analysed based on the pattern of the distribution. Similar to the thematic communalities of narratives codes, the nodes are grouped into commonalities in pattern or scenes. According to Kaiser and Rice (1974) the "analysis based on pattern provides insight on how common scenes and preferences are grouped" (pp.20). These are the initial results that guide the discussion on the participants' evaluation of each node in the parks.

Further exploration of the values of each node are learned from the photographic images taken by participants and supported by quotes from the narratives. These helps to explain details of the factors as well of the effects of users' preferences on space utilisation, and how the space appearances are perceived with regard to the maintenance side. These thorough studies are further evaluated in the last subtopic on Descriptor 4 to identify the impact on users' sense of personal safety.

In this chapter, both the original photographs and photographic collages made from the original photographs were produced to present the image analysis. The analysis of the image locates a human figure in the collage to indicate the estimated point and angle of view of each node. Furthermore, the quotes extracted from the group discussions help to gain further details about

the exact points of location, otherwise referred to as narrative nodes, as well as explain the perceptions in detail. An abbreviation was applied to elaborate the backgrounds of the participants for each quote that follow this sequence: (participant's ID, gender, ethnicity, age).

Thereafter, the discussion about the results continues with the exploration of the narrative results and analyses of the two descriptors. The narratives are explored based on the thematic codes produced from their analyses.

### **6.3.1 Preferred nodes and less preferred nodes in the Neighbourhood Parks**

This subtopic discusses the overall results and analysis of the two descriptors that used the distribution mappings as the key references. The key results referred to as nodes are explored based on its distribution patterns. These patterns could be a location or any of the factors that grouped the nodes based on their similar characteristics. The following, Figure 6.4, presents three preference distribution mappings for the three case study areas.



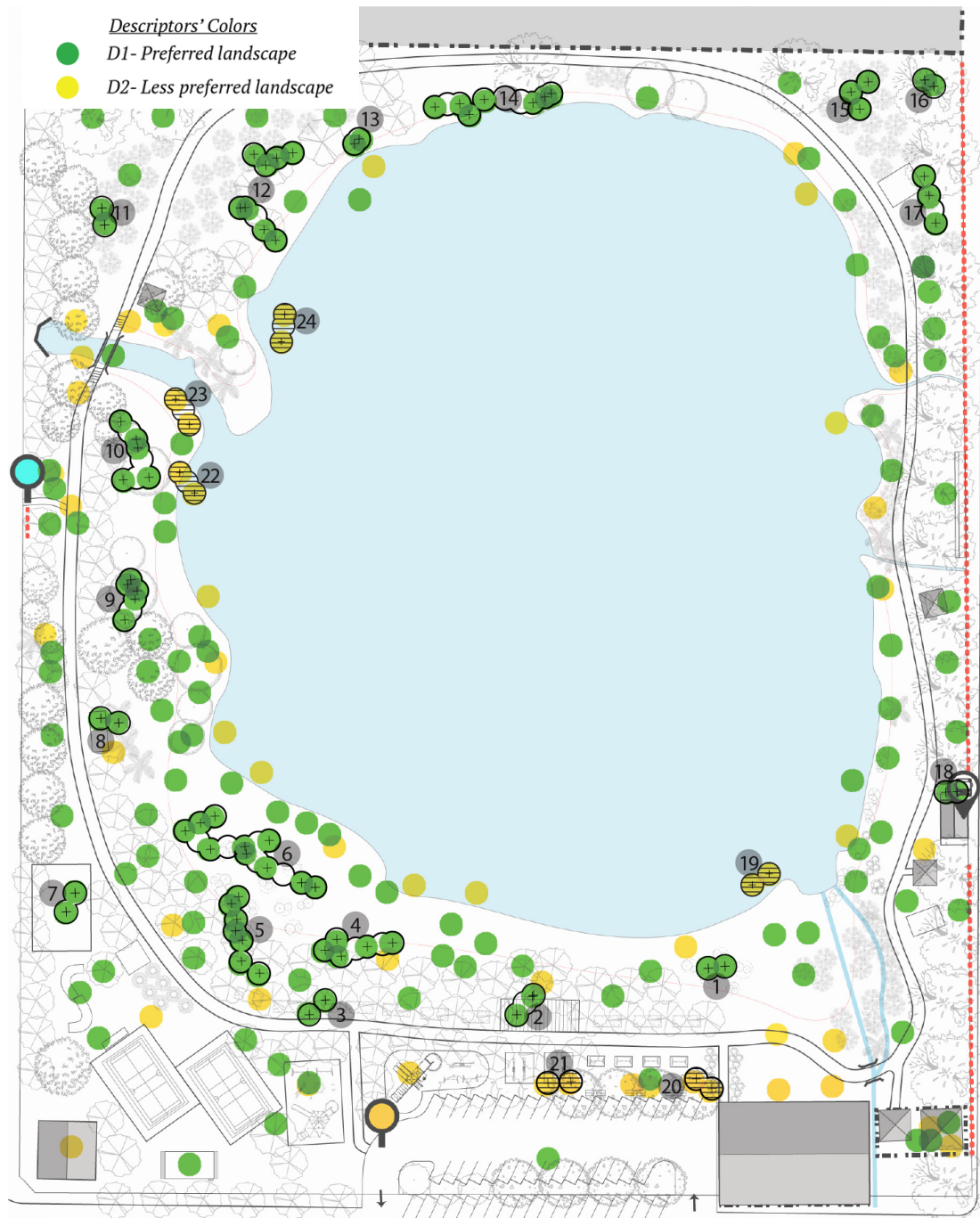


Figure 6.4 The preference distribution mapping for Neighbourhood Park 1, Taman Tasik Seri Serdang

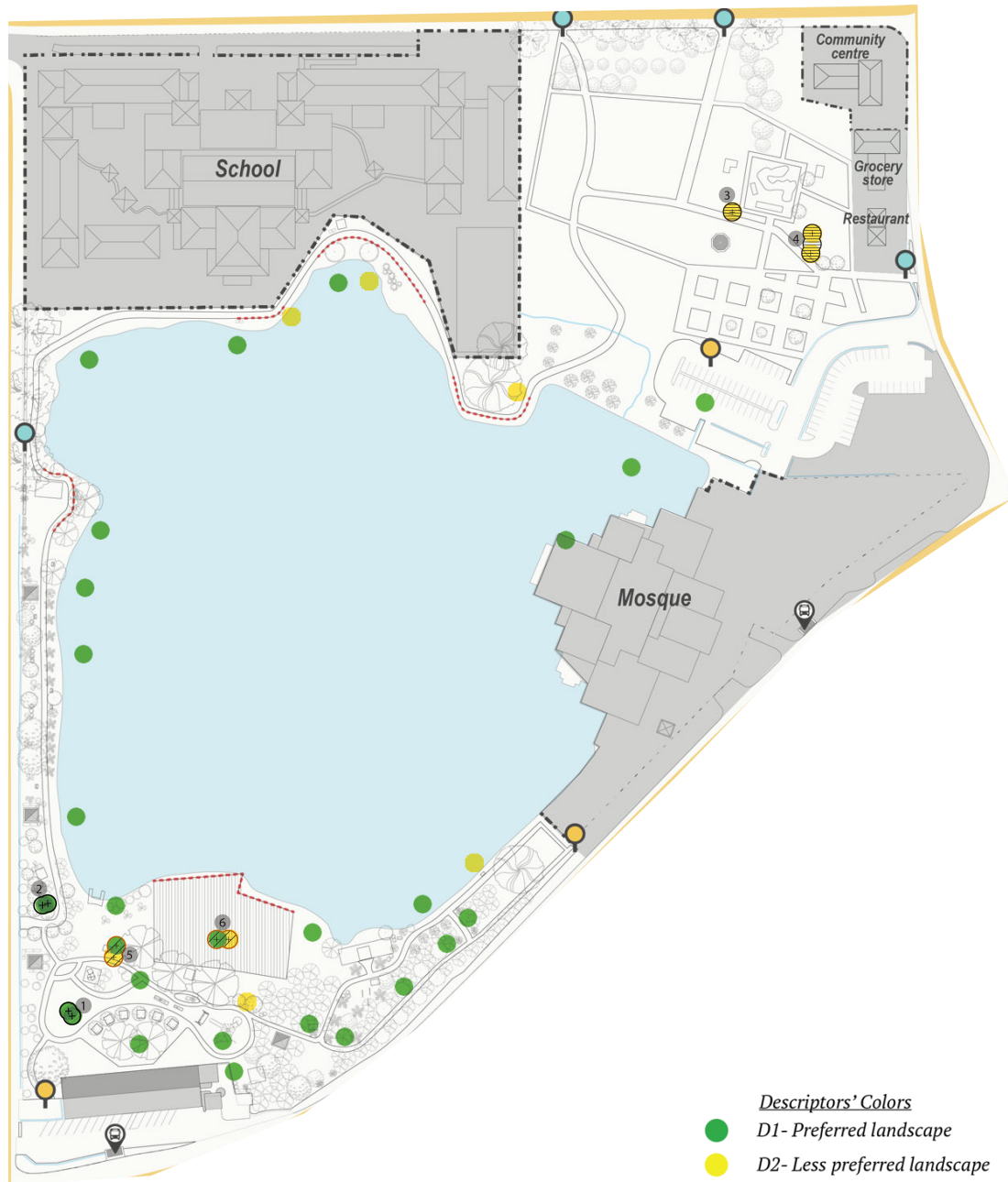


Figure 6.5 The preference distribution mapping for Neighbourhood Park 2, Taman Tasik Puchong Perdana

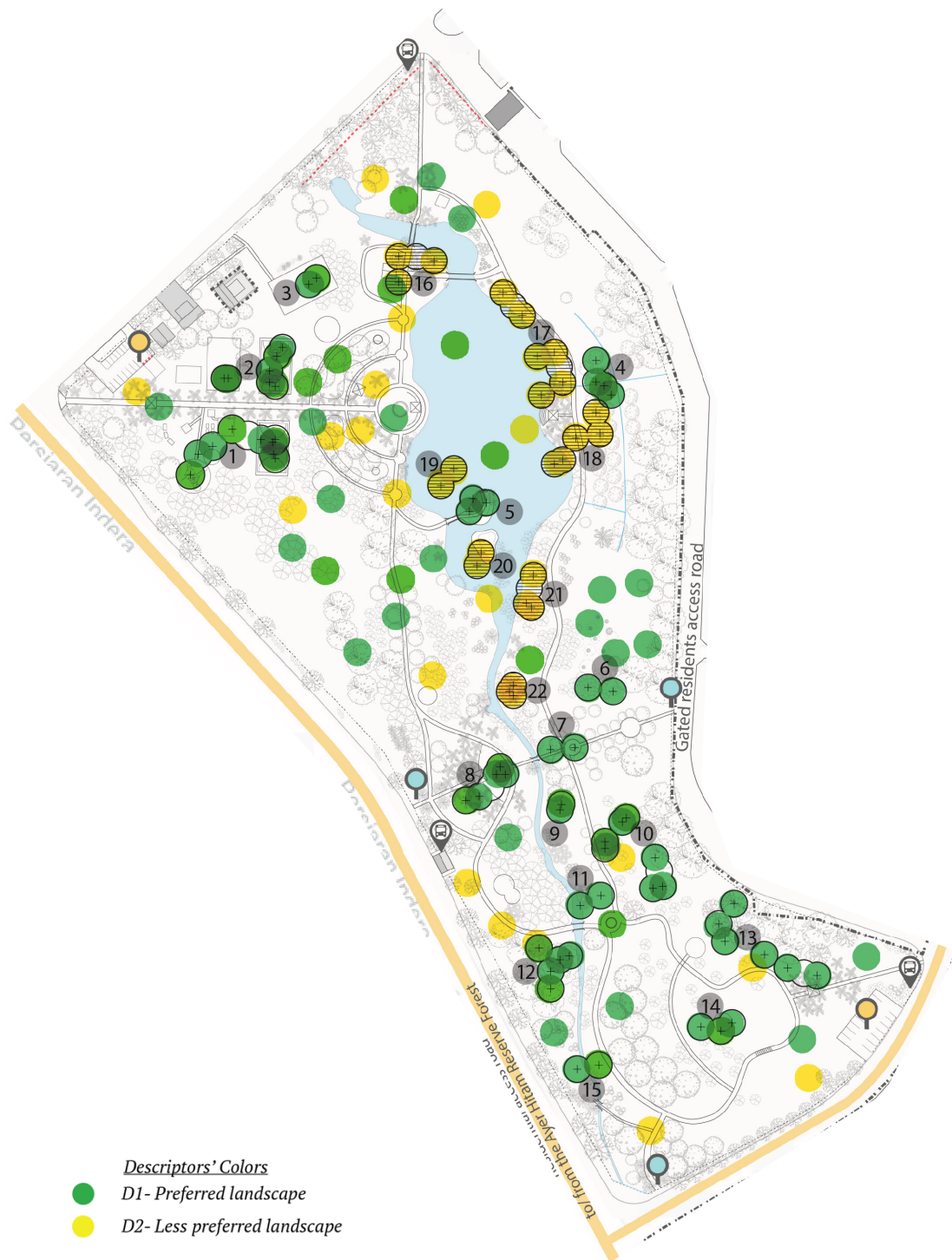


Figure 6.6 The preference distribution mapping for Neighbourhood Park 3, Taman Wawasan Recreational Park

The first preference distribution mapping demonstrated 18 nodes at Neighbourhood Park 1 (Figure 6.4), 4 nodes at Neighbourhood Park 2 (Figure 6.5), and 22 nodes at Neighbourhood Park 3 (Figure 6.6). Though Neighbourhood Park 2 has a lower number of nodes compared to other two parks, this does not explain the overall findings regarding the responses. There are more explanations gathered from the narratives and which are explained in the following subtopic on thematic codes of narrative.

Early analysis of results from the three preference distribution mappings suggested five patterns of node distribution (see Table 6.5). The narratives and photographic images suggested that some of the nodes were not only related to only one pattern, but more that contributes as factors in their preference and value to the landscape.

Table 6.5 Patterns of node distribution for Descriptor 1 and Descriptor 2

	<b>Patterns</b>
Patterns of distribution for Descriptor 1 (Preferred) and Descriptor 2 (Less preferred)	1) Planting and vegetation 2) Recreational facilities and equipment 3) Building amenities 4) Topography effect 5) Lake edges, drains, inlet and outlet

The first pattern of preference was formed as a response to planting and vegetation. The analysis of this pattern discovered three explanations for participants' perceptions of planting and vegetation, such as characteristics of planting, planting design, and the location.

The first indication of characteristics of planting that received a positive response from the participants was the diversity of planting in the parks. For instance, a participant in Neighbourhood Park 1 identified the diversity of planting at the park as the factor of attraction of the park (NP1001, F, O, 20). The 'diversity' found in the narratives was perceived through the different types of planting and the associated species, as well as the variety of planting design.

These were mentioned by one of the participants in Neighbourhood Park 1, as follows:



“... the trees are planted with variation of tall, and small yet shaded trees. This is one of the factors why I like some of the areas. Hence, the cleanliness and beautiful trees arrangements.” (NP1002, F, M, 21)

The quote describes the variations in the characteristics of the vegetation, for example, tall and small trees (see TSS1). These two characteristics were representative of the participant’s preference regarding the most notable physical characteristics of planting around the park. In addition, the participant also describes these trees as being “beautifully” arranged in the park. The words “beautiful” from the narrative proposed that the planting design at the park was valued aesthetically and became one of encouraging factors for the preferences.

Likewise, it was also found that there was another ‘meaning’ of diversity from the distribution of nodes in Neighbourhood Park 1. TSS12 and TSS15 (see Figure 6.7) illustrated two different plants characteristics found blended together in these two areas. The organisation of naturalistic *Samanea saman* (Rain Tree), and formal plants, the *Schizolobium parahyba* (Brazilian Fern Tree), as well as the well-cut lawn were valued as well blended in those areas that could translate to being perceived as ‘beautifully arranged’. One of the participants pronounced TSS12 to be ‘garden-like’ as a factor of attraction of this area.

“The landscape setting is ‘garden-like’ (node 7). I enjoy the view, feels fresh, cosy, and comfortable” (NP1001, F, O, 20)



Figure 6.7 Photographic collage TSS12 (left) and TSS15 (right) presents the low concealment provided by the combination of structural trees, which are *Schizolobium parahyba*, and the natural setting of the *Samanea saman*

A thorough study on planting characteristics found preferences for both formal and planting in natural settings. There are nodes that demonstrated a preference for the formal planting. The photographic images of these first three

preferred nodes (node 3 in Figure 6.8, 5 and 9 in Figure 6.7) in Neighbourhood Park 1 demonstrated the value of planting characteristic, which is structural planting at a regular interval. Similarly, this planting species and design characteristic were also found in Neighbourhood Park 3 for four nodes (TTW4, TTW6, TTW7, and TTW10 in Figure 6.10).

TSS5 and TSS9 depicted the single layer planting design, using *Bucida buceras* (Black Olive Tree), while TSS3 illustrated the double layers planting design that combines two structural plantings, which are *Bucida buceras* and the *Acalypha siamensis* (Wild tea) as hedges.

These two planting characteristics and design forms a formal design scheme, hence provides various points for lookout, and frames the view of the lake. This explained the values of the park that were perceived as 'beautiful' in the eyes of the participants.

The previous literature on planting design and characteristics indicates that the density of vegetation, as determined by the layers, sizes, and shapes of plants created different levels of concealment. Both TSS5 and TSS9 in Neighbourhood Park 1 demonstrated low concealment that provides physically and visually open areas. The design of both areas informed users that there is physical access to the terrain towards the lake edges. Besides, the effect of planting with the crown-shaped medium trees was to offer shade for visual access with different proximity towards each lookout point (see Figure 6.8).

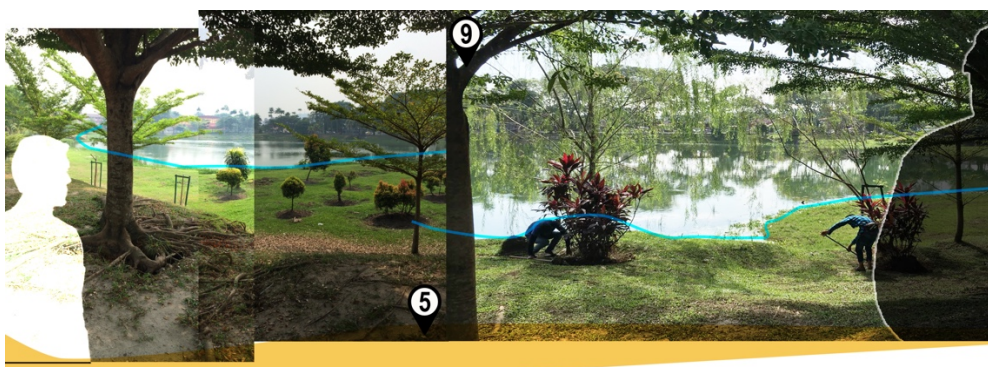


Figure 6.8 Photographic collage of TSS5 (left) and TSS9 (right) illustrated the framing views of the lake with low concealment that allowed physical access to the lake shores

Meanwhile, the used of small trees that have a crown shapes and shrubs at TSS3 created a medium level of concealment that suggested a physical enclosure between the public areas and the lake (see Figure 6.9). The

design of the shrubs in the form of hedges informed as to the territoriality of the spaces and offered limited physical access to the lake shores.

TSS3 provides recreational facilities such as playground equipment and multipurpose courts whose users include children and adults, hence the design acted as part of the space's security consideration.

Figure 6.9 TSS3 suggests a medium to low level of concealment, where a combination of small trees and shrubs was used to reflect the idea of the area being an active space for children with facilities for the parents to sit and relax while observing their children



However, there is slight difference in the topographical characteristics between Neighbourhood Park 3 and Neighbourhood Park 1, hence created different landscape setting at TTW4, TTW6, and TTW10 (Figure 6.10). The single layer planting of the *Bucida molineti* (Dwarf olive tree) at regular intervals that was mirrored on the other side followed the pathways. Nevertheless, the combination of the planting design with topographical features of high terrain on the right side and lower terrain towards the lake created a partially enclosed setting. This resulted in a medium level of concealment, where some parts of the high terrain were physically closed to access except for the residential access via stairs. The nodes indicated that the participants at Neighbourhood Park 3 still preferred this partially enclosed setting and the observation during the workshop found that this area was mostly used for passive activities such as jogging.



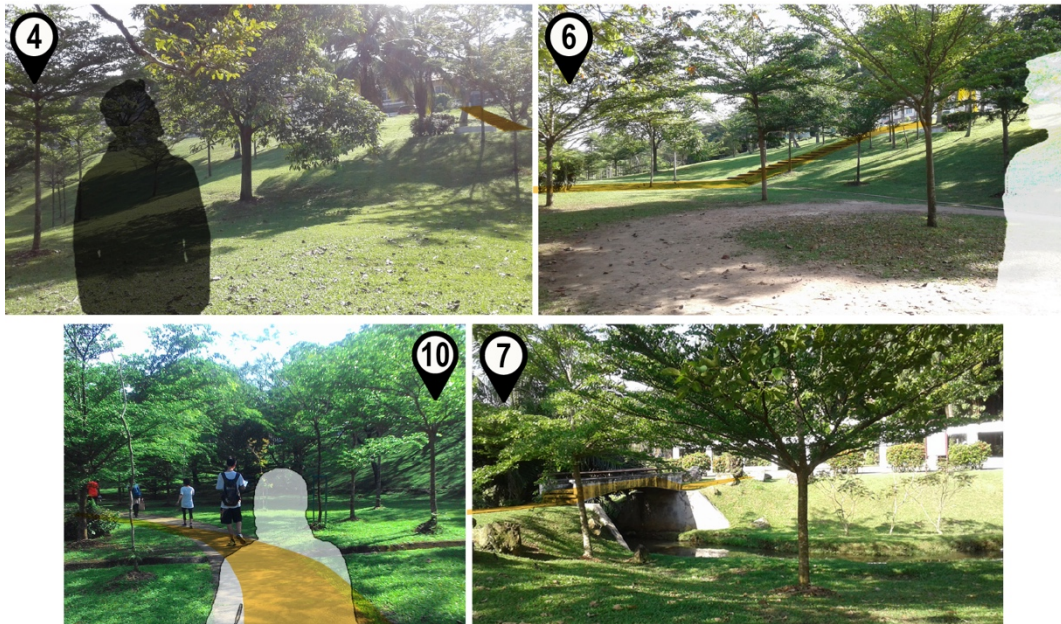


Figure 6.10 Photographic collages for TTW4, TTW6, TTW7, and TTW10 illustrating the similar planting design of two *Bucida* species

On the other hand, the formal planting was also valued because of the impact of its physical appearance. Participants in Neighbourhood Park 3 mentioned the structural planting gives a sense of welcome to the park.

The rows of *Elaeis guineensis* (Palm oil tree) were aesthetically valued due to the orderly arrangement of these structural trees. Figure 6.11 suggests that the structure, namely rows, creates a strong visual image that offers a sense of direction from the entrance to the centre of activity and the park landmark (which is the tower). These gave the impression that the planting selection and its design also imposes a certain mood and controls the users' movements within the park.



Figure 6.11 Photographic collage of the framing view created by the planting design at the main entrance



The formal planting also scores for the maintenance conditions when the participants at Neighbourhood Park 1 mentioned the ‘cleanliness’ (NP1002, F, M, 21). Identically, participants at Neighbourhood Park 3 appraised the formal planting as ‘neat and tidy’ (NP3003, F, M, 33). These perceptions of maintenance, as perceived from the planting design and characteristics, are further discussed in the next subtopic of Descriptor 3: Perception of maintenance.

The exploration of planting design and characteristics continues with the effect of naturalistic planting on participants’ preferences. A study found that besides formal planting, there are also positive preferences for naturalistic planting. One of most pronounced factors found in all three results of nodes, photographic images, and quotes are shaded trees.

The investigation of nodes formed with regard to shaded trees on the distribution mapping and photographic images discovered two nodes in Neighbourhood Park 2, while there were three nodes in Neighbourhood Park 3. The photographic images of TSS17 and TSS19 (Figure 6.11) and TTW12, TTW13, and TTW15 (Figure 6.12) indicated one particular type of tree, which is the *Samanea saman* (rain trees). The photographic images suggested that its big canopy trees were valued because of their aesthetic quality. For instance, as the two photographs in Figure 6.12 show, the participants focused on the excessive surface roots of the Rain Tree, while Figure 6.12 shows the overall tree’s body and the canopy that gives shade over quite a large area.



Figure 6.12 Two nodes (TSS17 and TSS19) that show participants’ interest with *Samanea saman* at Neighbourhood Park 1

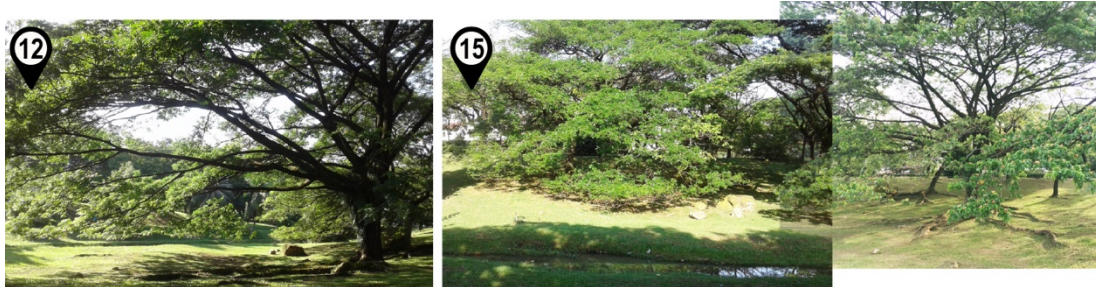


Figure 6.13 Photographs of two preferred nodes, TTW12 and TTW15, planted with *Samanea saman*

Hence, one of the participants in Neighbourhood Park 2 described how the setting enhances the values of a space in a park that attract users to the space.

*“Shady trees by the lake, with seating provides shelter while fishing, or just sit while enjoying the beautiful view of the lake and the background.”  
(NP204, F, M, 25)*

A participant at Neighbourhood Park 3 also comprehended the mood provided by these settings:

*“It is quite an exclusive corner, where we can find Rain Trees [the Samanea Saman]. It is very serene. I was surprised that I saw a wedding couple come here for their outdoor wedding photoshoot. So, it is quite a spot here.”  
(NP300, M, C, 51)*

The above quote portrayed the value of the space setting in that it was perceived as “serene” and “exclusive”. These words demonstrated the users’ perception of the aesthetic values of the space. This aesthetic quality turns this space into a “favourite spot”, hence the photography and leisure activities such as picnicking (NP3002, M, C, 51).



Figure 6.14 One of the participants at Neighbourhood Park 3 captured a family picnicking under one of the Rain Trees near the stream

In contrast, the study also found a reduced preference for certain other planting characteristics and their settings. One of the most common characters found in the nodes and in the narratives is the perception of ‘bushes’. A study on both distribution mapping and photographic images shows that Neighbourhood Park 3 formed three nodes on the lake margin from top right to the centre right of the lake edges that identifies the problem with planting that was perceived as ‘bushes’.



Figure 6.15 The photographs of nodes TTW7 (left) and TTW8 (right) located at the lake edges illustrates the concerns participants had regarding wild aquatic plants and weeds in the lake

The photographic images of two nodes, TTW17 and TTW18, represented the first images of the ‘bushes’. The two photographic images (see Figure 6.15) illustrated the excessive appearance of overgrown and wild planting on the lake edges. This suggested that the wild aquatic planting that growth wild blocking the view overlooking the lake, especially from the gazebo at TTW18.



Besides the issues with the overgrown planting, the other factor related to the image of 'bushes' is plant characteristics such as tree density. There are two nodes that demonstrated this problem, which are nodes 18 and 21. Two photographic images illustrated the use of high-density tree leaves, i.e., the *Dillenia suffruticosa* (Shrubby dillenia tree) at TTW18 and the *Elaeis guenensis* (Palm oil trees), and clumps of Bamboo Trees at TTW21. These three plantings located near the water feature, which is near the lake and stream, constituted what participants perceived as "untrimmed", and looks invasive and slightly uncomfortable, resulting in the space being less preferred, as clearly explained in the following quote.

*"There is certain vegetation that looks like bushes such as the Bamboo Trees, untrimmed Palm Oil and planting at the lake edges that I don't know the name of. It is a bit uncomfortable to look at..." (NP3002, F, I, 25)*



Figure 6.16 Photographic images of clumps of trees found in the park. Node 18 (TTW18) is the *Dillenia* tree and Node 21 (TTW21) is a clump of Bamboo trees, where both were perceived to be so-called 'bushes'

The perceptions of overgrown and wild planting also suggested that it was also perceived as receiving little maintenance, and being neglected. There is also one narrative that suggested the overgrown planting was perceived at a space that had received an excessive amount of formal planting. This suggested that the large amount of formal vegetation also effected the perceived visual quality of space in the sense of being 'overcrowded', as explained below.

*"... a huge number of trees in an area provided an overcrowded image to the space." (NP204, F, M, 25).*

These issues regarding overgrown and wild aquatic planting are further discussed in a subtopic of Descriptor 3 on perceived maintenance, and subtopic 4 on the impact on the sense of personal safety.

The second pattern of preference node distributions were pronounced around the recreational facilities and equipment. These patterns were observed in all three neighbourhood parks. Neighbourhood Park 1 recorded three preferred nodes formed at its three outdoor gym stations, which are node 7, 8, and 18 (see Figure 6.6).

Photographic collage TSS18 clearly shows the signs of lack of maintenance, yet it was suggested that users' preferences were not affected by this appearance (see Figure 6.17). In short, even though there is traces of poor maintenance such as broken and damage, however it did not causes avoidance, as long as it is still can be use and could serve its purposes.



Figure 6.17 Photographic collage of TSS18 show the condition of the outdoor gym station

Though the photographs show some damage on the rubber mats and there are signs of use, the main equipment is still in exceptional condition and serves its intended purposes. This indicated that functionality comes as the main factor of preference. However, this does not mean that maintenance contributes the least to preference. Participants at Neighbourhood Park 3 mentioned maintenance and seemed satisfied with the available recreational facilities and equipment and valued the park as being well maintained (NP3002, F, I, 25).

Besides the functionality and maintenance, the location of the facilities and equipment also contributes to users' preferences. The preference for the facilities in an active area was shown by many participants.

*"I like this area because there are more facilities, and active (with more people there) compared to other areas of the park." (NP204, F, M, 25)*

The quote above described the reasoning behind the participant's preferences. The location of node 1 (TPP1 in Figure 6.18) that consists of the outdoor gym stations and other recreational facilities near to active spaces suggested the space arrangement encourages good perception and utilisation. In addition, the term "active area" in this narrative means an area with more people based on this phrase: "use of the area as a passageway", which demonstrated that the presence of people increases the preference for spaces in neighbourhood parks.



Figure 6.18 Photographic collage of preferred node 1 (TPP1) at Taman Tasik Puchong Perdana

Figure 6.18 of TPP1 also suggested that the spatial design of the playground equipment, gym equipment, and seating indicated the division of uses by age group. The selection of low density planting such *Plumeria alba* (White Frangipani Tree) and *Syzygium myrtifolium* (Eugenia Tree) were designed in accordance with space function that needs free movement physically and visually to enable parents to keep an eye to their children while they perform their own activities. These spatial designs, which facilitate use by all types of users, single, groups, or families, and all ages in one area, were notably valued by the participants.

Similar to Neighbourhood Park 3, the preference distribution mapping of this park identified five nodes located at the "active area", which are nodes 1, 2, 3, 8, and 14 (see Figure 6.5 dot distribution mapping). It was described as the most active and liveable area in the park.



*“This area is really for people of all ages. There are three basketball courts here and it is very active. You can find kids at the playground playing, and the parents accompany them playing on the swings and slides there. In the morning, there are young people playing basketball. Sometimes there are competitions. There are also a group of elder people doing Tai Chi and Qigong at one of the courts. It is usually very happening around there. There was a time where I noticed that there is a nursery graduation day at the court. So, I found that this area is very functional.” (NP3002, M, C, 51)*

The participant explained the setting and ambience of the areas that includes types of users, and activities that made the area “active”. Hence, he valued the spaces for its facilities as they catered to all ages, including families with children (see Figures 6.19 and 6.20).



Figure 6.19 Node 1 is an area provided with a playground, basketball, and multipurpose courts



Figure 6.20 Nodes 2 and 3 of Neighbourhood Park 3 are the basketball and futsal courts

Similarly, yet with a different setting, preferred node 8 (TTW8a and TTW8b) is just another centre of activity that consists of a square and an outdoor gym station. Photograph TTW8 illustrates the enclosure of the space due to the planting design and hard landscape (see Figure 6.21). The effect of enclosure invites more passive activities and light exercises that could benefit certain users of the park. For instance, according to participant NP3002 (M, C,

51), node 8 was commonly used for group yoga and Qigong, two meditation exercises that are popular among the Chinese community.



Figure 6.21 Photographic collage of node 8 from two different angles. (Left) A view taken of the open space from the residential entrance (TTW8b), (right) a view of the open space (TTW8b)

Besides recreational facilities, there are other facilities marked as preferred nodes. Participants in Neighbourhood Park 1 marked the bus stop (TSS21), whilst participants in Neighbourhood Park 2 (TPP2) marked the bicycle parking facilities. The similarity of these two facilities is the location. Both nodes are located at one of the entrances to the neighbourhood parks. As compared to other entrances in each neighbourhood parks, only these two were marked, hence both with the facility. The presence of these facilities which are for buses and bicycles, two modes of transportation had explained that it is necessary for a neighbourhood park. However, the reason for these two points of entry being preferred are only explained in a vague way, even in the narratives. Yet it could be assumed that the two facilities located near to point of entry attracted two different types of users, hence offering accessibility to the park. For instance, the bus stop may attract unplanned visitors. Besides, the accessibility offered was a point of gesture that invites people to explore the park.



Figure 6.22 Preferred nodes associated with the facilities at node 18 (TSS18), the bus stop at Neighbourhood Park



Figure 6.23 Preferred node 2 of Neighbourhood Park 2 marking the bicycle parking lot located at the southwest entrance of the park

Meanwhile, however, the narrative suggested an issue of huge concern, namely a lack of facilities. This issue was a serious concern at Neighbourhood Park 2, and explained on the very few response on Descriptor 1 and 2, which regarding on preferences. There are two less preferred nodes at this particular area, which are nodes 3 and 4 (see Figure 6.24). Because there are no photographic images that could allow for further explanation about these two nodes, these factors are discussed in the next subtopic on the narrative results and analysis.

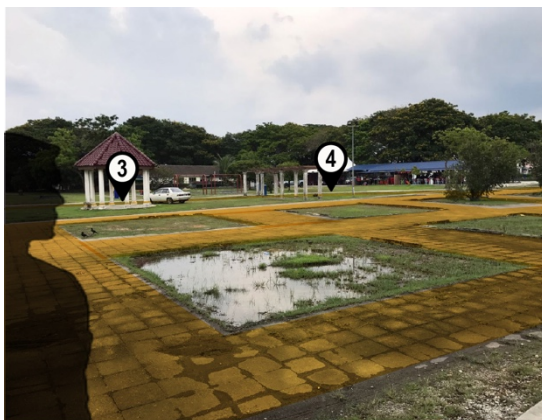


Figure 6.24 TPP3 and TPP4 are two less preferred nodes in Neighbourhood Park 2

The third pattern of preference distribution shows a different perception of the functions of buildings and amenities. The first is the function of the food court and the mobile stall at Neighbourhood Park 1. These two areas, located side by side, were marked frequently and formed a less preferred node (node 24). The narratives reveal that the reasons for this lack of preference are associated with maintenance, the discussion of which will be given in detail in the next subtopic for Descriptor 3, perceived maintenance.

From another perspective, pattern number four of preferences nodes linked to topographical characteristic of the neighbourhood parks. There are quite a number of preferred nodes discovered on the terrains of Neighbourhood Park 1 and Neighbourhood Park 3. Nine preferred nodes were found on the terrain of the lake edges around Neighbourhood Park 1, and five nodes in Neighbourhood Park 3.

To be exact, the preferred nodes in Neighbourhood Park 1 were located on the terrain of the lake edges. Photographic collages of TSS5 and TSS9 (see Figure 6.8) illustrate the lookout point from the pathway, with similar views discovered at three other nodes, which are nodes 3, 4, and 5. The photographs suggested the effect of the terrain was to provide clear visual access of the lake from the pathways around the park. Hence, it offers various angles and scenery provided by the design.

Likewise, the five preferred nodes found on the terrain at Neighbourhood Park 3 were located further from the lake edges. As described in the Case Study chapter, this park's topographical character shows the most undulating landforms with different ground levels. It could be said that because of the topography, the park is effectively segregated into different spaces, with a clearer demarcation between space divides through these changes of level.

The bottom right side of the park is the most sloping terrain, and so the design is formed to follow the functions in providing a more passive environment with more greenery than facilities. One of the participants in Neighbourhood Park 3 described the attractiveness of this park was one because of the "contour and steps".

*"I like the contour and steps used which shows that there is different landform in the park. I like it, unlike the flat surfaces that are boring." (NP3001, F, I, 25)*

The above quote from the narrative suggested that these different landforms offer various characters in the environment setting that encourage users to explore further in the park, hence the photographic images TTW4 and TTW6 illustrating these settings (see Figure 6.25). Besides, the images also suggested that the impact of change of level sometimes provides enclosure for visual permeability, yet the application of low and medium density vegetation along these areas allows both physical and visual access within spaces, hence promoting a comfortable and secure environment. The impact of the overall settings provided by the topographical character and planting design is discussed further in the next subtopic on Descriptor 4, sense of personal safety.



Figure 6.25 Photographic images of nodes 4 (TTW4) and 6 (TTW6) demonstrated the setting provided by the terrain and selection of variety vegetation

By contrast, however, the narrative found in Neighbourhood Park 1 suggested different preferences regarding the change of level.

*“This area is not comfortable as the stairs makes you stop jogged and need to climb.” (NP1001, F, O, 20)*

The narrative suggested different concerns by participant at Neighbourhood Park 1. The participants in Neighbourhood Park 3’s concern is related to the impact on personal safety, while the participants in Neighbourhood Park 1 were concerned about the impact on their activities. The participants perceived the steps to be an obstacle to their jogging activities as a result of an unpreferable design with the steps.

Besides the sloping terrain and steps, the other type of landform that was found to be a preferred node was the island. An island was only present

in Neighbourhood Park 3. TTW5 illustrated the design of the island in the middle of the lake with access to the water mouth (see Figure 6.26). The photograph suggested that users value the design that can bring them near to the water. Though it appeared in only one park, the presence of the island makes an interesting variation in the topography one can explore in a park (NP3001, F, I, 25). Hence, it shows that the water resources were valued as one of the additional attractions of the parks.



Figure 6.26 Node 5 (TTW5) is the island marked as one of the points of attraction in the park, with access onto the island provided

In contrast, however, there are also less preferred nodes around the water resources, especially the edges near the drains for inlet and outlet. Four nodes presented at two parks, which are Neighbourhood Park 1 and Neighbourhood Park 3. Though Neighbourhood Park 2 does not have any nodes near the edges, this area was also marked as less preferred by some participants.

The photographic images in Figures 6.27 and 6.28 are located at Neighbourhood Park 1. TSS22 and TSS23 is the stream that flows out from the lake to the river. Though there is no specific mention related to this area that could explain narratively why this area was less preferred, photograph TSS22 suggested that this may relate to perceived maintenance. This assumption is based on the appearance of wild aquatic planting and the poor waste management of the inlet and outlet that can be seen visually from the photographs. The above is based on the results from Descriptor 3, perceived maintenance, and Descriptor 4, on sense of personal safety. Further discussion can be found in the following subtopics on these two descriptors.





Figure 6.27 Photographic collage for Nodes 22 (TSS22) and 23 (TSS23). The outlet was marked as less preferred by many participants

Figure 6.28 Photograph of the inlet with iron water trap. This is inlet is from the nearby residential area



### 6.3.2 Results and analysis of codes of preferences from the narratives

This subtopic further explores the nodes of preferences that might not be illustrated in the distribution mapping. These nodes, which were mentioned in the discussion, were extracted in the form of the study's codes. The analysis began with coding the narrative, dividing the codes into themes and, finally, locating the codes in overarching narrative nodes.

Table 6.6 Five key themes generated by combining codes of similar meaning or intention

1	Theme 1: Activities, active area, and peak hour
2	Theme 2: Spatial arrangement, facilities, and amenities
3	Theme 3: Planting and vegetation
4	Theme 4: Topography characteristic

The early analysis of results has allowed the codes to be drawn into four key themes (see Table 6.6). This subsection of results for preferences

(Descriptors 1 and 2) discusses the analysis according to the four key themes without identifying the level of preference or degree of importance of the themes. The discussion is derived from the narratives gathered from the participants who are among the park users that offered their personal experiences, as well as observational experiences, while at the park.

The first themes revolve around the activities in the park. The activities that were asked about were personal activities, or common activities that they noticed while at the park. The narratives found that while describing activities, many participants like to associate with the term 'active area'. Active area in the narratives coded the association to various recreational facilities (NP203, M, M, 26).

Table 6.7 The narrative codes that mentioned the 'active area'

Active area	<p>"This area has <u>many facilities</u> and is more active..."</p> <p>"This is an active area with a <u>lot of activities</u>. It is <u>suitable for all ages</u>."</p>
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These were mentioned by one of the participants for Neighbourhood Park 2 that compared the liveliness at areas with more facilities with one that provides fewer facilities (NP204, F, M, 25). Hence, the participant for Neighbourhood Park 3 emphasised that more facilities implies more activities, and creates an 'active area' (NP3002, M, C, 51).

The nodes of these 'active areas' were found to provide physical activities such as sports, which are basketball and futsal in Neighbourhood Park 3, as well as the jogging and light physical exercises mentioned by the participants for all three neighbourhood parks, and the meditational exercises available in Neighbourhood Park 3, as discussed in the previous subsection on preference distribution mapping results for the nodes. These activities have been established because the necessary facilities have been provided in each instance. The variety of facilities in each park also allows for the variation in activities that are described as "suitable for all ages" (participant NP3002, M, C, 51).

Besides the physical activities, leisure activities have also been highlighted. For instance, relaxing, group gatherings, and picnics. One of the

participants shared the other activity she participates in in the park besides physical activity, which is just to relax.

*“I spend a lot of time in the park jogging, and sometimes just relaxing, in the evening.” (NP1001, F, O, 20)*

Besides personal experiences in the park, some participants also shared their observational experiences at the park.

*“Usually in the evening, there are residents gathered here having a chitchat over coffee. I think their ages are between 50 to 60 years old.” (NP204, F, M, 25)*

This participant at Neighbourhood Park 2 shared a routine activity that she found at the same spot at the park. Meanwhile, one participant at Neighbourhood Park 3 also shared a routine activity that he was aware of that happen weekly at a space used for a meditational exercise known as *Qigong* by a Chinese community group (NP3002, M, C, 51). These two narratives at two parks described the routine activities taking place at the same spots suggested the existence of a sense of attachment among certain users, individually or as a group.

In the meantime, other leisure activities highlighted the lake scenery as factors in people’s preferences. There was also extensive feedback that values the scenic quality of the lake at each three neighbourhood parks, i.e., the lake. The narrative code suggested that the presence of a water element in a park is preferred by many users.

Table 6.8 The narrative codes that described the leisure activities taking place at neighbourhood parks

Leisure activities described	<p>“... and sometimes just relaxing, in the evening.”</p> <p>“... there are residents gathered here having a chitchat over coffee.”</p> <p><i>“Enjoying the panoramic view towards lake.”</i></p>
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Meanwhile, the narratives also revealed the space design alterations that happen on occasion at the parks resulted in changes to the usual activities of an area. The changes, however, differ on a case-by-case basis. For instance, in Neighbourhood Park 3, there was a change in the landscape

design of a particular space from a sandy open space to a green space with rows of trees. Unusually, the changes in Neighbourhood Park 2 did not involve landscape design. There is legal enforcement at this park regarding illegal sellers. On the other hand, the narratives also highlighted the impact of wild aquatic planting. These three changes have very similar effects in terms of making the spaces more passive, or ‘quieter’, than before. The quotes below explain these changes in activities.

*“African students [residents of the private apartment] used to play football here, but now not anymore when they [the local authority] planted the trees. I don’t know where they play football now.” (NP3002, M, C, 51)*

*“Previously, there are a lot of kids playing around here during the evening because there are people selling [garden toys] here. Now there are less...” [less children because there are no people selling anymore due to the enforcement actions by the local authorities] (NP204, F, M, 25)*

*“... previously, people used to do kayaking, hence there are also ducks here. But now not anymore because of the wild weeds.” (NP204, F, M, 25)*

The consequence of the landscape changes resulted in the abandonment of water-based activity, as well as the loss of wildlife. For some reason, the previous landscape seems more inviting to users and activities that increase the utilisation of the spaces. The changes have not only altered the nature of the activities but also the functions.

Table 6.9 Theme 2 and the codes generated from the narrative

<i>Theme 2: Spatial arrangement, facilities, and amenities</i>	<ul style="list-style-type: none"> <li>Site amenities and recreational facilities</li> <li>Association between facilities and livelihood of spaces</li> <li>Suitability for all age groups</li> <li>Unique feature</li> <li>Spatial arrangement informed the use of an area</li> <li>Transitional area</li> <li>Unnecessary facilities, unsuitable location affects the use of an area</li> <li>Design weaknesses become a constraint</li> <li>Mismatch in space orientation</li> </ul>
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Meanwhile, theme two is closely associated with theme one, in which the more facilities provided the more active the spaces, whilst inappropriate design and spatial arrangement causes the spaces to be underutilised. According to NP1001 (F, O, 20), building amenities and facilities such as the food court and playground together at an area in Neighbourhood Park 1 make the area ‘very liveable’, similarly as described by one of the participants at



Neighbourhood Park 2 (NP204, F, M, 25). Further, she also highlighted the space location that became a transitional point between two building amenities, which are the mosque and the food court, inviting more users to utilise the facilities (*ibid*). One of the participants in Neighbourhood Park 3 also described the presence of many facilities that see mixed use by all ages, which create more liveable spaces (NP3002, M, C, 51). These relationships and impacts of such facilities have been discussed in previous subtopics on the results of nodes from the preference distribution mapping.

In addition, the presence of unique features in the parks were discovered as an additional attraction. This was mentioned by one of participants at Neighbourhood Park 1 in reference to the graffiti wall as unique and promoting a “cultural value” (NP1001, F, O, 20). The presence of the graffiti wall in the park compound was perceived positively by the participants, besides being one of the alternative means to reduce the illegal graffiti that defaced other parts of or equipment in the park.

Nevertheless, there are also several issues highlighted regarding the hard landscape features and facilities. First is the issue of lack of facilities, which was mentioned by many participants at Neighbourhood Park 2 and as illustrated in many of the photographic images taken by the participants (see Figure 6.23 and Figure 6.24).

This huge open space located at the top right of the park was a concern for many. The narrative revealed these concerns, where participants pronounced this huge open space “empty”.

*“This is a big open space, but there is nothing much. It is empty.” (NP2002, F, M,66)*

*“It is good that this area is spacious but left empty.” (NP204, F, M, 25)*

The effect of “emptiness” and the lack of facilities provided have resulted in this area become underutilised. Certainly, this was another concern that was voiced by participant as the following quote.

*“There are simply no events here as far as I know. Only people parking for prayer, especially for Friday sermon, and the restaurant customers who park here.” (NP204, F, M, 25)*

The negative perception was prevalent for various reasons, including the lack of facilities provided, but also due to there being very little vegetation, hence probably inculcating the thought that this area has been neglected for some reason. This argument is based on the opposite results in Neighbourhood Park 3 regarding the difference between neglected open space and manicured open space.

Despite having fewer facilities and more greenery, the right side of Neighbourhood Park 3 was still perceived positively. The landscape design and appearance of this side of the park was indicative of more passive activity as its intended functions. This side of the park had a variation in ambiance to provide for jogging and light exercise, as well as for group meditational exercise (NP3002, M, C, 51). These results illustrates that the positive preference in design was not restricted to an active or passive space but also affected by intervening factors such as acceptance of the space design for different types of activities. This is clear difference with the perception of empty and bare spaces.

There is also an issue about unfitting landscape design that appears to represent an obstruction to recreational activities. The first issue was with regard to the food court that was perceived as an obstruction to the park’s recreational purposes (NP1001, F, O, 20). The other design constraint mentioned in Neighbourhood Park 1 was the stairs, which are not favoured as they are perceived to be an obstacle to jogging activities. This issue was discussed previously in the subtopic on the results of nodes from the preference distribution mapping. Meanwhile, the discussion regarding the impact of maintenance was explored in the subtopic 6.4 on perceived maintenance.

Table 6.10 Theme 3 and the codes generated from the narrative

<i>Theme 3: Planting and vegetation</i>	<ul style="list-style-type: none"> <li>Association between formal and organised planting with clean and tidy layout</li> <li>The effect of planting on giving a sense of welcome</li> <li>Planting creates a natural setting</li> <li>Big and shaded trees</li> <li>Diversity on the vegetation and planting design</li> <li>Big and shaded trees are messy</li> <li>Overcrowding caused by overgrown planting</li> <li>Messy environment</li> <li>Landscape setting created by unsuitable planting for some activities</li> </ul>
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Planting design and vegetation creates a different milieu in each space in the park and allows for different sceneries in each space. One of the participants at Neighbourhood Park 3 highlighted the planting design at the main entrance as another factor as to why this area was preferred, besides the facilities provided.

*“I like the rows of Palm Oil Trees at the main pathway, it gives a sense of welcome.” (NP3003, F, M, 33)*

The selection of plants, such as the use structured planting which is the *Elaeis guineensis* (Palm Oil Tree) in a row that mirror the main pathway, was perceived as a welcoming design for the park. The effect of the tree canopy and elevated trunks along the pathway is to frame the view towards the tower, which is the main landmark of Neighbourhood Park 3. The design of planting in rows is perceived as formal planting that looks tidy and well cared for (Neighbourhood Park 1; Neighbourhood Park 2; Neighbourhood Park 3), regardless of the planting density.

*“I like an area with a lot of trees, but in orderly arrangements...” NP204, F, M, 25*

*“Pokok doa (Bucida Tree)] in this park were planted in a grid. It looks tidy and well cared for.” (NP3003, F, M, 33)*

Besides the formal planting, the presence of planting in natural settings was also perceived positively by users. For instance, participant NP3002 (M, C, 48) described the “exclusiveness” of the bottom left side of the park that was planted with large shaded *Samanea saman*. The discussion about these elaborated on the previous results for preference distribution nodes.

The positive preferences for the two different planting designs mentioned above suggested that the selection of trees is important as a visual attraction in a park. Hence, the diversity in planting design, such as the use of formal planting and planting in natural settings, and variety in character, such as small and big trees, were perceived as being more ‘alive’ (NP3001, F, I, 21) and giving a “*garden-like environment to be enjoy with a variety of views that is cosy and comfortable*” (NP1001, F, O, 20). Hence, participant NP3001 added it was “*fun and not boring*” (NP3001, F, I, 21).

When discussing users' preferences of planting design, this is often categorised based on the planting character of the space in question. Beside the positive perception of planting, there are also negative perceptions regarding certain planting types and designs. The study on narratives found that there are reasons for this negative perception and less preference for certain plants and planting.

One of the negative effects of planting provided by the visual assessment by the participants was the perception of certain planting being 'messy'. This was almost certainly associated with natural settings, untrimmed planting, and high-density trees. These factors have been discussed in a previous subtopic and could be seen in the pattern of nodes related to planting characteristics and design. Nevertheless, there are also narratives that suggested that the use of an excessive amount of formal planting also had a negative effect on the perceived visual quality of a given space. The argument among two participants shows the associated differences in perception, where one of the participants emphasised that a huge number of trees in an area resulted in the perception of an overcrowded space.

It could be said through the discussion above that the perception of messy planting can be explained by two factors: the high-density planting was perceived as overcrowded, and the perception that the wild planting gave the impression of being neglected in terms of maintenance or was otherwise overgrown.

Table 6.11 Theme 4 and the codes generated from the narrative

<i>Theme 4: Topography characteristic</i>	Undulating landform and flat surface Man-made island
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The final theme regarding preferences highlighted the importance of the surfaces and landform in creating different settings within a park. The preferences determined from the narratives found that majority of participants in the Neighbourhood Park 3 enjoyed the undulating landform and terrain at the park. Hence, this park's surfaces represented the overall neighbourhood and adjacent area that were beautifully curated by its natural landform.

Besides, the other unique feature that was appreciated by many at Neighbourhood Park 3 is the presence of the islands. Besides the uniqueness

of the spaces, the islands also bring the users closer to the middle of lake while being able to enjoy a 360-degree view of the park. However, the presence of one of the islands was redundant, and its clear neglect negatively impacted the view.

The exploration of this theme was discussed in a previous subtopic on the results of preference nodes related to the topographical characteristics of a park.

#### **6.4 Perceived of park maintenance: Results and analysis of Descriptor 3**

Figure 6.29 illustrates the distribution mapping of the perception of park maintenance, which reveals nineteen nodes in Neighbourhood Park 1. A thorough study of the nodes indicates two distinctive patterns. The first and most obvious pattern is that most of the nodes were formed around each facility in the park. Hence, it can be seen that each facility was marked at least once with orange dots by participants. This implies an early interpretation that many users are not satisfied with the overall maintenance of the facilities in the parks.

The first pattern of nodes at the facilities marked four spots at the recreational facilities, such as the playground (node 1), multipurpose courts (nodes 2 and 3), and outdoor gym station (node 15). The study of the photographs submitted by the participants explains the aspect of maintenance that was perceived as a lack of maintenance of these facilities. The playground, courts, and outdoor gym station show poor surface conditions. For instance, nodes 2 and 3 in Figure 6.30 show improper and rough concrete surfaces as a sign that falls from the equipment may be dangerous and may cause injuries. Node 2 is a playground and node 15 an outdoor gym, which use a similar material, interlocking rubber mats, that show some sign of use and a degree of surface damage. There is also the presence of mould in some spots on the surfaces that have not been properly cleaned. These issues probably reduce the slip resistance and cause users to slip or have accident, especially amongst children who always plays freely and without caution in such areas. Hence, Figure 6.31 suggests that the outdoor gym (node 15) has

broken equipment that reduces its function. These problems appeared in all facilities as there are orange-colour dots at all the recreational and sport facilities around the park.

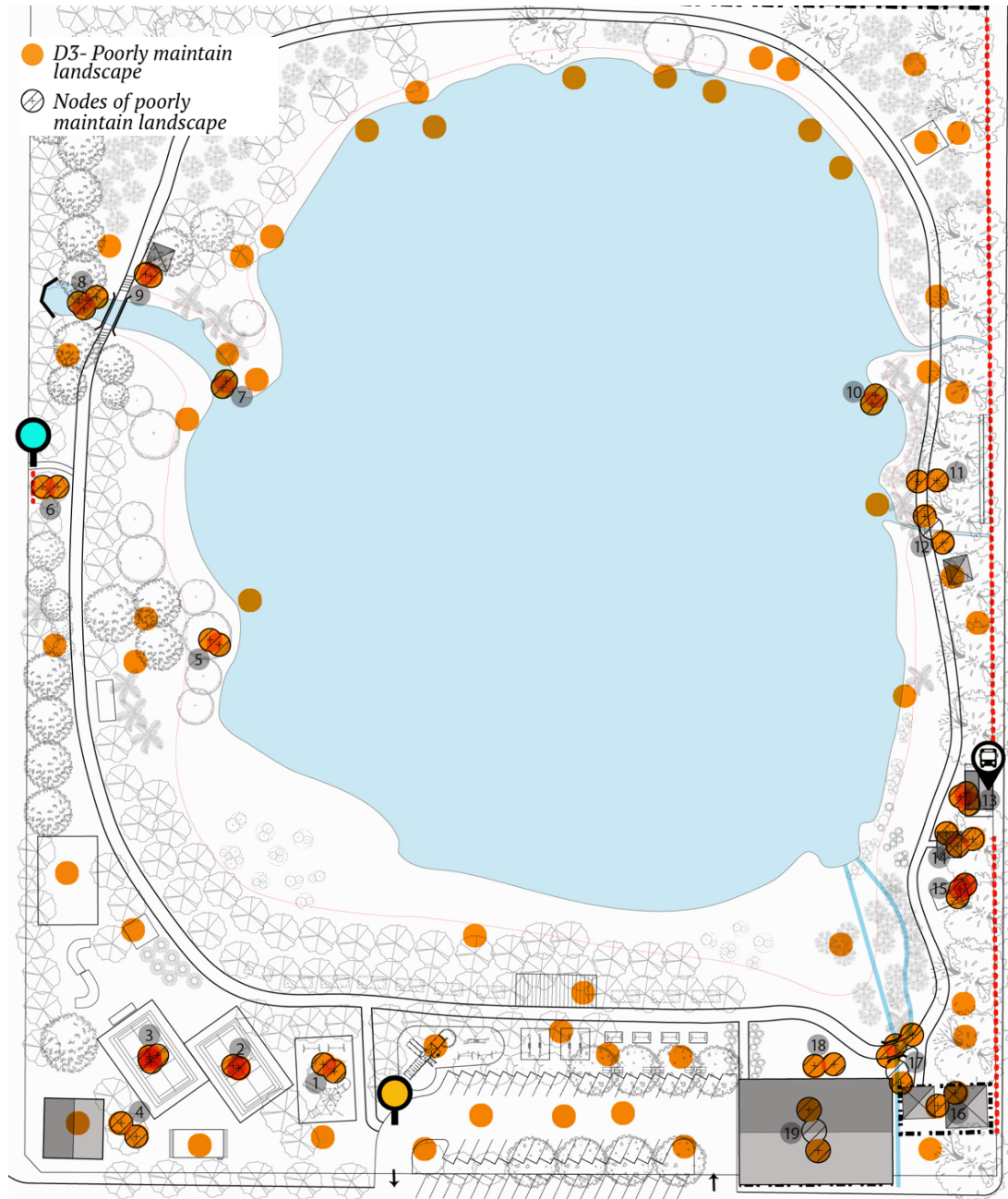


Figure 6.29 The distribution mapping for the less maintained landscape and the nodes



Figure 6.30 Nodes 1, 2 and 3 were the recreational facilities, which are the multipurpose courts and playground



Figure 6.31 Photographic image of outdoor gym station, node 15, that shows the poor condition of the equipment and some damage to the interlocking rubber mats

Three other nodes were observed at the park furniture and building amenities such as benches (node 11), gazebos (nodes 9 and 14), and public toilet and prayer room (node 16). The photographs in Figure 6.32 clearly demonstrate the maintenance issues with regard to damage to park furniture, where the broken furniture was not repaired or replaced, and hence some broken pieces could still be found near the facilities.

Further, Figure 6.33 shows the two building amenities that were perceived as receiving little maintenance, which are the toilet and food court. This photograph of node 16 illustrates the poor condition of the outer building, such as the broken slabs, and uneven surfaces of the pathways and floors. Overall, the poor presentation of the furniture and building reduces the visual quality of the spaces and affected the users' perceptions, and as a



consequence decreases the utilisation of the facilities and spaces. The use of the building amenities, such as the toilet and prayer room, however, seemed to be unaffected by this and were still used by many, most likely because of their particular functions.



Figure 6.32 Nodes 11 and 14 are the two facilities that showed broken furniture



Figure 6.33 Photograph of node 16 illustrates the condition of a public toilet and prayer room that was perceived as poorly maintained

Meanwhile, there are various maintenance issues with the food court and mobile stalls. All three forms of evidence, the distribution mapping, photographs by participants, and narratives, clearly illustrate these problems. The photographic collages in Figure 6.33 illustrate two main issues that causes discomfort among park users. The topmost photographs evidently illustrate the misuse of public spaces for storing the vendors property, such as the foldable table and chairs, as well the food storage and containers. These participants argue that the food court and mobile stalls were not suitable in this location and perceived them as uncomfortable and an interruption to the recreational activities. The following narratives explain respondents' thoughts and reasoning as to why park users did not favour these two building amenities. The following quotes taken from the narratives described the negative impacts of these two amenities.



*“I don’t like the shop (refer to mobile stalls), food court, the toilet ... it is smelly and polluted, and I am not comfortable with it.” (NP1002, F, M, 21)*

*“I don’t like the food court and shop (refer to mobile stalls), it is very dirty and smells bad. It also interrupts my chance to fully enjoy my recreational activity here.” (NP1001, F, O, 20)*

Another obvious problem is the open disposal area near the public spaces. The bottommost photographs in Figure 6.33 show two areas of disposal, the large quantity being the food waste and the small quantity being the food containers and debris from the mobile stall customers.

One of the factor that form the temporary open disposal area by vendors is because there are no waste collection points provided in the park. This was one of the design features that was clearly overlooked by the local authority, especially considering that there are food amenities provided within park. The use of the park dustbin for the food waste disposal and the use of plastic bin bags were actually acts of carelessness on part of the vendors themselves. Though these two issues are caused by the vendors, the users still think that both mobile stalls and food courts are not suitable for their park, and constituted an “interference to their recreational activity” (NP1001, F, O, 20). The narratives of the participants arguments about this subject were discussed in a previous subchapter on park preference.

In addition, the improper waste disposal results in a number of side issues, including the associated negative visual quality, which users perceived as “dirty spaces” (NP1001, F, O, 20 and NP1006, M, I, 52), distinctive odours from the waste and debris, as well as attracting wild animals and birds such as crows. Hence, the improper uses of public spaces results in damage to the park property.

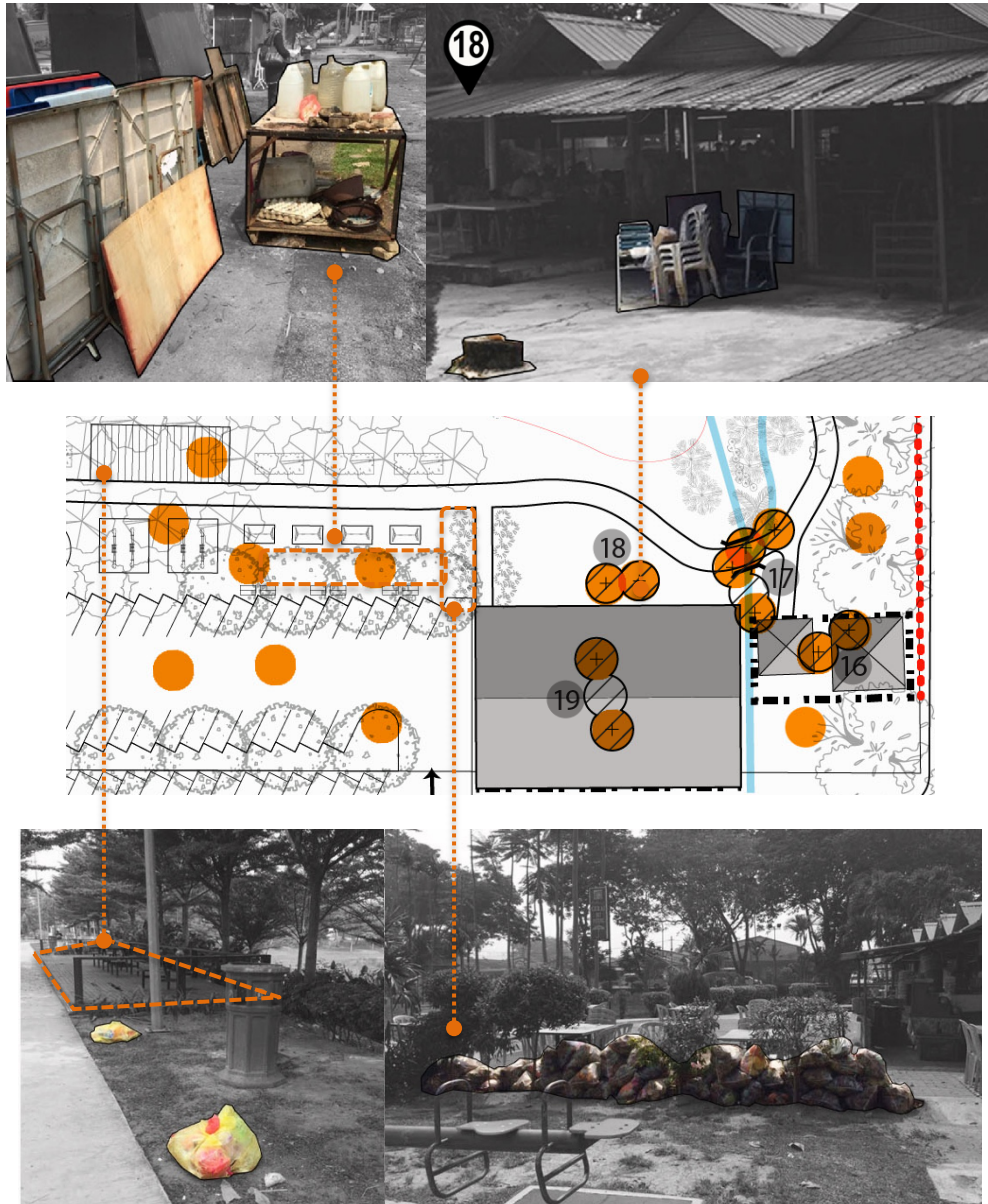


Figure 6.34 The maintenance conditions at the food court (nodes 18 and 19) and mobile stalls

The photographic collage in Figure 6.34 also illustrates another issue with regard to the misuse of the public domain, the disorganisation of the building furniture, and the poor waste management. The photographs show some of the building furniture occupying the public domain near the playground and timber decking; it also shows that there is large quantity of rubbish from the food waste and production left at these areas.

*“This is actually public space; they should not put their things there (for carts properties). They put their chairs and many things there. This area (the timber decking) used to be a yoga area for a group of people, but the mobile stalls owner put their chairs there.” (NP1006, M, I, 52)*

The disorganisation of the furniture and misallocation of rubbish in the public domain was perceived as an “interruption” to the intended activities in the spaces. Consequently, this results in a negative appearance in each of the spaces, as well as causing other problems such as unpleasant odours.

However, a local politician, or the councillor, who was one of the participants, perhaps not surprisingly defended the food court and mobile stalls, saying they are good for people. However, it was agreed that this was an issue of maintenance, and shows signs of negligence.

*“The restaurant (food court) is convenient for the people. The shops (refer to mobile stall) ... is fine, it just needs to be maintained. But sadly, they never maintained at all. Sometimes, they just leave it their rubbish like that.” (NP1005, M, I, 57).*

He added that:

*“Previously, there are so many illegal stalls selling food. We came to the idea of providing mobile stalls and many people applied for a license.’*

His argument emphasises that the food court and mobile stalls provide for the good of the community, despite the drawbacks in appearances. It offers a business opportunity, especially to the previously illegal vendors. This argument suggested that there is a different perception of this issue between users and managers.

The second pattern of poorly maintained nodes was formed around the drains, inlet, and outlet. There are three inlets and an outlet. The outlet flow is for the excess water from the lake to the river. The main issues at the outlet are caused by the wild *Eichhornia crassipes* (*Water hyacinth*). Though on the positive side the wild aquatic plants trapped rubbish from the lake, in the long term this could cause blockages. However, of greater immediate concern is the visual quality of the uncollected rubbish that make the edges look “dirty”.



Figure 6.35 The outlet that allows excess water to flow from the lake to the river faces issues with wild aquatic plants and trapped rubbish

This concern also became apparent at each of the three inlets. These inlets allow water to flow to the lake body from the nearby residential area (node 12) (in Figure 6.36) and the food court (node 17). Two of the inlets were marked as poorly maintained, especially node 17. Figure 6.36 is a photographic collage of two inlets that allow water to flow in from the nearby neighbourhood to the lake. The first, on the right, is node 12, while the collage on the left is the other inlet. The photographs illustrated two different problems regarding on maintenance of these inlets - the trapped rubbish and the broken iron rubbish trap. These result in two different perceptions of maintenance, which are negligence with regard to the broken equipment, and a negative image of the environment. However, these have similar impacts in terms of offensive odours. The polluted lake, due to the unfiltered rubbish, contributes to “a foul smell up to the residential area especially during rain” (NP1005, M, I, 52).



Figure 6.36 Photographic collages of two inlets that allow water to flow from the neighbourhood. The one on the right is node 12



However, there is no clear photographic image that could explain the issues of maintenance in node 17. Nevertheless, there is some evidence from narratives that highlighted the distinctive odours from the area near this inlet, which come from the public toilet and prayer room.

*“I don’t like the toilet, and the area nearby, the water is polluted and smelly. I am not comfortable with it.” (NP1001, F, O, 20)*

The narratives highlighted the toilet and nearby area as being “polluted” and “smelly”. The fact that there are inlet drains that flush water and smelly debris from the food court and toilet sumps cause the lake to have strong odours.

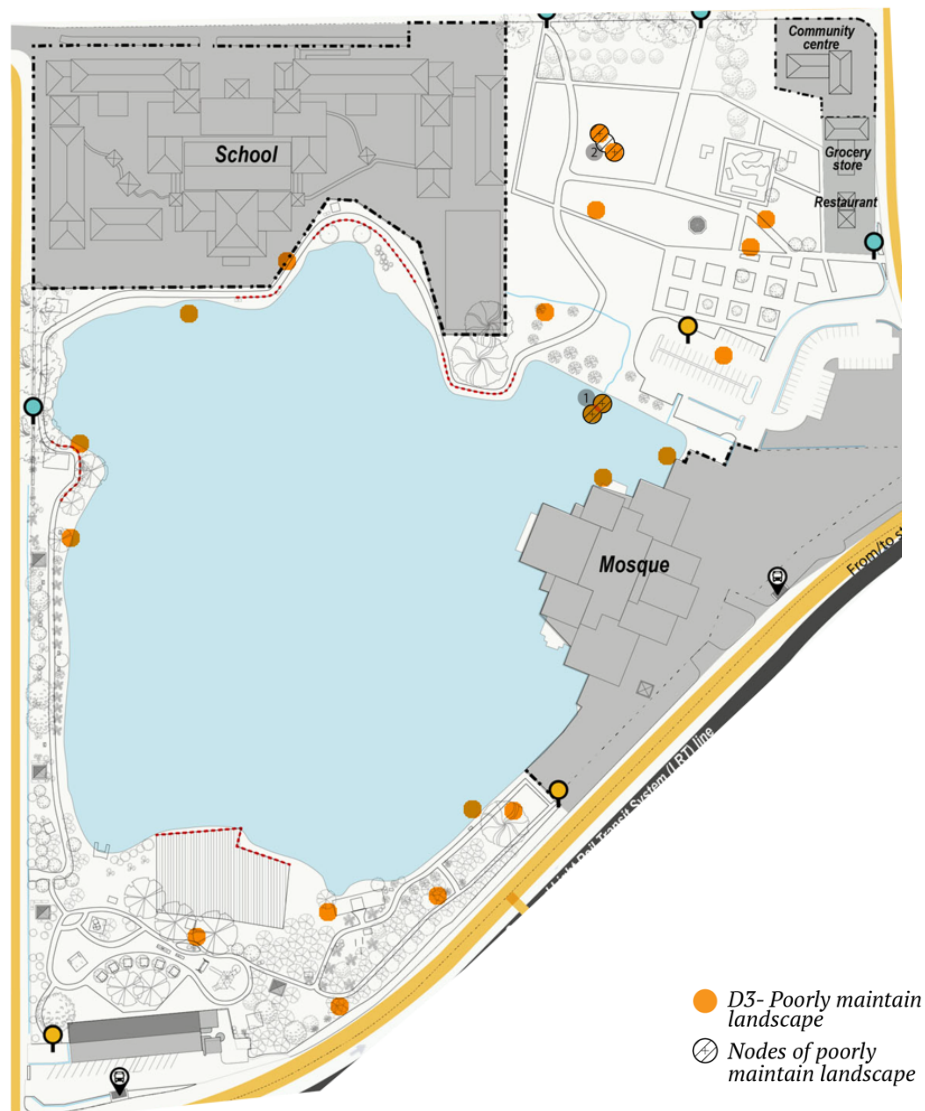


Figure 6.37 The Neighbourhood Park 2 distribution mapping for poorly maintained landscape and spaces

The distribution mapping for poorly maintained landscape and spaces for Neighbourhood Park 2 shows very few nodes (Figure 6.37); indeed, there are only two, yet this does not explain the overall maintenance condition of the park. Though there are no photographs that suggest the condition of node 1, this can be predicted based on its function, in that it allows water to flow from the school canteen and may thus face similar problems of trapped rubbish and food debris as in other neighbourhood parks that have food courts and stalls.

One participant did mention this issue:

*“This area is smelly because of the trapped rubbish. I am not sure where is this water comes in and out from.” (NP202, F, M,23)*

Figure 6.38 illustrated two conditions at the huge open space. The obvious issue was the waterlogging along the pathways, and indeed at other spots within the open space. This problem was mentioned by the participants during the discussion.

*“There [is considerable] waterlogging here, and that may be the cause of the bare spots.” (NP204, F, M, 25)*



Figure 6.38 Original of node 2 portrays the issues of waterlogging that exist at so many spots within this open space

The waterlogging in turn threatens the grass and damages the green surface, hence the bare spots. The large number of maintenance issue nodes suggested that there are serious concerns about these water sources, especially the inlet and outlet, and hence there are also issues related to water edges and drains that prompted this lack of favour. The existence of these issues in this open space shows that this space was perceived as neglected with regard to maintenance. Though the distribution mapping did not

sufficiently indicate maintenance issues, this illustrates briefly that the users are probably satisfied with the park conditions, yet the narratives and photographs addressed various issues relating to the maintenance of this park. These will be further discussed in the following subtopic.

Finally, the distribution mapping for the poorly maintained landscape and spaces in Neighbourhood Park 3 reveals thirteen nodes (Figure 6.39). The overall distribution of orange-colour dots suggests that the nodes are centred around the lake edges and the spaces near these edges. Further study indicates three distinct patterns of nodes as suggested through the mapping. The three patterns are the nodes at the lake edges, nodes at the planting and vegetation, and nodes along the pathways and building amenities.



Figure 6.39 Neighbourhood Park 3 distribution mapping for poorly maintained landscape and spaces



There are four nodes established around the water edges, which are nodes 1, 2, 7, and 8 (Figure 6.39). The photographs taken by the participants in Neighbourhood Park 3 illustrated similar issues for all three lakes, namely that they are under threat from rapidly growing non-native invasive aquatic plants, as well as waterweeds (node 1) (in Figure 6.40). These four photographic images demonstrate different types of invasive aquatic plants that grow wild and, in some cases, create considerable concealment and block off the view of the lake (node 7). Hence, these non-native aquatic plants grow densely around the lake margins and form carpets (node 8). One of the participants highlighted her concerns in this regard, in which the users may mistakenly believe the plants were the banks.

*“The water lettuce and grasses (at the edges) were unmaintained. It could be dangerous of you mistakenly trampled and fall in the lake.” (NP3002, M, I, 25)*

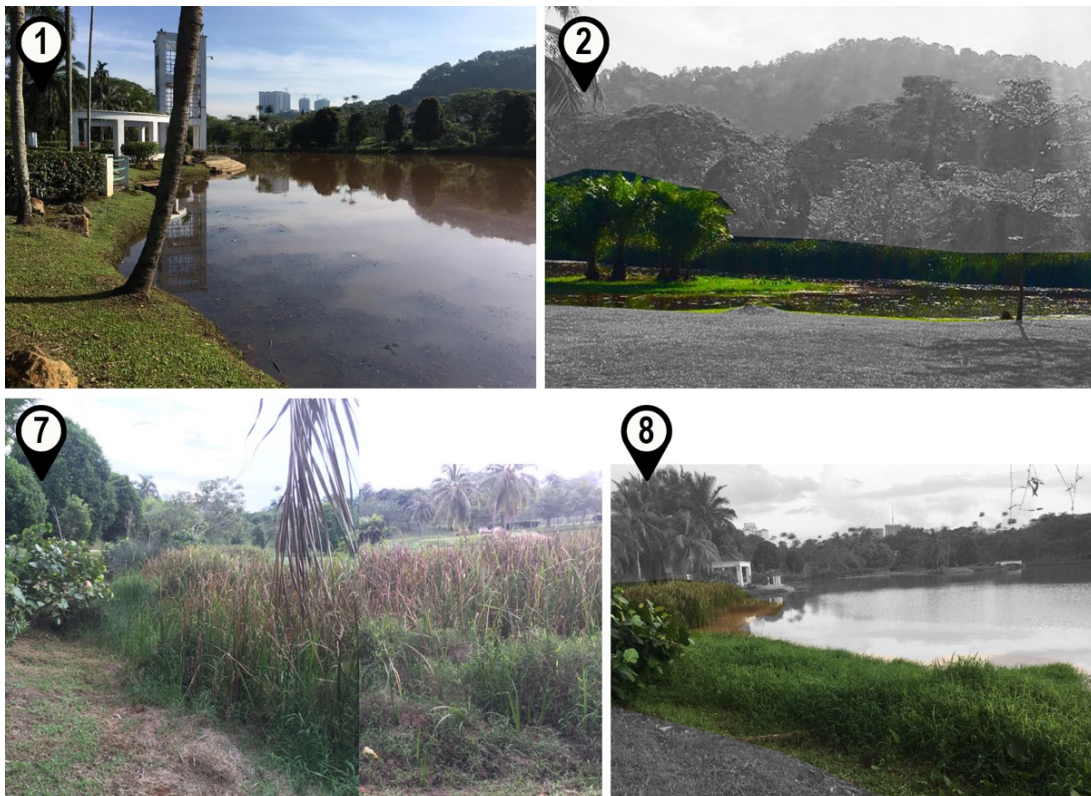


Figure 6.40 The photographs of nodes 1, 2, 7, and 8 located at the lake edges illustrate the concerns of participants regarding the wild aquatic plants and weeds in the lake

These aquatic plantings can also be grouped together with the second pattern of nodes, which are nodes related to planting and vegetation. These aquatic plantings that see rapid wild growth are perceived as “messy



environments” that are poorly maintained. Similarly, three other nodes, which are nodes 4, 6, and 10, were formed at planting areas and may be related to the planting and space conditions. Nodes 4 and 10 were both planted with the same tree species, *Bucida molineti*. However, there is no photographic image that could explain the issues relating to tree maintenance, hence that are related to node 4. However, Figure 6.41 demonstrated two issues with the ground maintenance, that is, untrimmed grasses and polluted drains, and waterlogging.

The first left-hand photographs of node 6 suggest that the participants are concerned with the untrimmed grasses that appear to be left wild. Meanwhile, the photograph of node 10 indicates a problem with waterlogging under the trees (Figure 6.41). These two ground maintenance issues make the seating provided difficult to access, and hence uncomfortable to use because of the poor condition and image of those spaces. Though there is no evidence regarding node 4 from the narrative or photographs, it is nevertheless assumed that there are similar issues to node 10.



Figure 6.41 Photographs of node 6 (left) and node 10 (right) illustrate two maintenance issues, the untrimmed grass with polluted drain, and waterlogging

The final pattern of nodes regarding maintenance was discovered around pathways and park facilities. Nodes 3, 9, and 13 were most likely formed at the pathways. There is further explanation found in the narratives. The maintenance issues that were discussed included the condition of the pathways. Hence, the themes generated from the narrative codes for maintenance refer to the poor condition of the pathways. The discussion on this subject will be given in the next subtopic.

Figure 6.42 illustrates two maintenance issues with the pathways that were found around the parks. First was the broken path that was considered potentially hazardous for joggers, as well as for children, who love to run freely in the park. This broken path, as per the photograph on the right-hand side of Figure 6.42, are caused by surface roots from trees. Second are the photographs of waterlogging issues that appear around the park, especially on porous surfaces such as the pathway edges, open spaces, and under trees, and which commonly form when it rains. Hence, the photograph shows that this specific pathway suffered from oily waterlogging.



Figure 6.42 Two issues on the pathways that were highlighted in both narratives and photographs

Meanwhile, other facilities that appear to have maintenance issues include the outdoor gym equipment at node 5 and seating at node 9. One of participants was very concerned about the disappearance of the outdoor gym's instruction signboards (see Figure 6.43 (a)). Indeed, the instruction signboard at other outdoor gym station was also found to be missing.

*“The signage is all gone. There is no instruction signage on how to use this equipment.” (NP3002, M, C, 51)*

The missing signboard is also another sign of the incivilities that cause discomfort/unease among participants. The discomfort with spaces may cause them to be underutilised; park visitors will avoid using the facilities.

Besides the signs of incivilities being present, the poor condition of the equipment also results in people avoiding the use of the facilities; for instance, the old and rusted pull-up bar and ring, as illustrated in Figure 6.43 (b). The



poor condition, and broken and damaged equipment cannot be fully utilised and in its current condition could result in accidents and injuries to users.



Figure 6.43 The condition of the outdoor gym equipment and signboard at node 5

Examination of the maintenance nodes also indicated two nodes near the public toilet, node 11 and node 12 (Figure 6.44). The photograph for node 11 in the following figure suggested that the issue of fallen leaves on the pathways and the verge not being properly maintained led to participants perception of the area as a “messy environment”.

However, further study of the photographs taken by the participants indicated that there is a temporary issue of maintenance because of an ongoing upgrade project that users were aware of. The photographs of node 12 in Figure 6.44 were originally taken by the participants show that the users and community at this park were aware of what happens within it, yet still perceived it to be messy. This shows the site conditions during construction were not well managed and could have an impact on people’s perception.

There was one participant at Neighbourhood Park 3 who voiced her concerns that most maintenance issues appeared to be worse at an inactive area.

*“There are certain spaces such as playground, gazebos, and open spaces that located far from active area were neglected. Hence there are cracked roofs [gazebo], park equipment was removed, and even there are creepers on the building and facilities.” (NP3003, F, M, 33)*



Figure 6.44 Photographic image of node 11 and node 12, located at the public toilet

#### 6.4.1 Analysis of codes of perception of park maintenance from the narratives

Earlier in the discussion, various participants expressed their satisfaction with the condition of the parks, and their maintenance in general. However, further investigation of particular aspects of the park suggested a number of issues, and the results and analysis of the narrative allowed these issues to be categorised according to four key themes.

Table 6.12 Four key themes of poorly maintained landscape and spaces generated from combined codes from the narratives

1	Theme 1: Waste management
2	Theme 2: Plant and vegetation care and maintenance
3	Theme 3: Broken, faulty, and missing equipment and facility
4	Theme 4: Waterlogging

The discussion about maintenance first revolves around the issues of waste management, and this includes waste from the trees and their maintenance, domestic waste from dustbins and waste collection points, waste from the food court and stalls, as well as the illegal waste dumping and fly tipping by local residents.

The first concern with waste management in the park is with the dustbin and the waste collection points. There are two main problems noted about the

dustbins provided in the parks. One that was highlighted, especially for Neighbourhood Park 2, is that of the “overflow dustbin” (NP204, F, M, 25). Although there is a schedule for rubbish collection from the bin, the problem of it overflowing remains. This brought to question the adequacy of the frequencies of collection, especially during the weekend where there are more visitors than on other days. The overflow problem also invites other problems such as ‘unpleasant odours’ (in Neighbourhood Park 2) and attracting wild animals, as was highlighted by one of the participants at Neighbourhood Park 1.

*“There are always crows at the full and uncollected dustbin, near the rubbish.... The crows bring noise.” (NP1001, F, O,20)*

The other problem related to bins is the inappropriate rubbish that was also thrown into it. This includes the food waste from the nearby food court or stalls. This problem exists at Neighbourhood Park 1 and Neighbourhood Park 3 because there are no waste disposal points provided; because there are no waste disposal points, Neighbourhood Park 1 facing another problem where the stalls and food court sellers left their waste near the public spaces as a temporary waste disposal point.

Table 6.13 Theme 1 on waste maintenance, and the codes generated from the narrative

<i>Theme management</i>	<i>1:</i>	<i>Waste</i>	Dustbin and waste collection point Inlet and outlet rubbish trapped Food court and other building waste Fly-tipping and illegal waste
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Another issue that was mentioned many times by the participants was that of trapped rubbish at the drain (see Table 6.14 below). This rubbish was usually found trapped at the inlet and outlet, and channel drain near the food court at Neighbourhood Park 1 and Neighbourhood Park 2. However, this issue was mentioned less for Neighbourhood Park 3, except for one area that found the waste trapped at the stream under a small bridge. The trapped rubbish causes clogging, strong odours, and the negative visual quality of the spaces. Worse still, one participant at Neighbourhood Park 1, who lived in very close proximity to the park, noted that the “strong odour worsens during rainy

days [such] that it could be smelt in the residential area” inside their house (NP1006, M, I, 52).

Table 6.14 Quotes from the narratives that mentioned the problem related to trapped waste in waterways such as channel drains, inlets, and outlets

The condition of the drain, inlet and outlet	<p>“the drainage system into the lake is inefficient”</p> <p>“there is trapped waste at the inlet and left uncollected.”</p> <p>“the waste trapped is less maintained and some is broken”</p> <p>“drains filled with rubbish and non-disposable waste”</p> <p>“This area is smelly because of the trapped rubbish. I am not sure where is this water comes in and out from.”</p>
Effects of trapped waste/rubbish as mentioned in the narratives	<p>“this area has a bad odour because of the trapped waste”</p> <p>“there is a lot of rubbish (trapped in the drains) and looks dirty.”</p> <p>“there are waste from the food courts, looks dirty.”</p> <p>“I don’t like the building [food court] setback, the drain has a strong odour”</p> <p>“there is area under the small bridge over stream that have trapped rubbish”</p>

That final code in these themes is that of fly tipping and illegal waste dumping. This problem appeared in two parks, Neighbourhood Park 1 and Neighbourhood Park 2. These two parks are similar in their locations in that they are very close to residential areas. Nevertheless, the narratives indicated that this was only mentioned once by participant (NP203, M, 26). According to her, there is sometimes “illegal waste dumped in a dustbin that is not suitable” and the bin gets packed with rubbish. Hence, these issues, as also illustrated previously in the distribution mapping and the participants photographic collection, showed further evidence of fly tipping and illegal waste dumping from the residents’ collection.

Table 6.15 Theme 2 on plant and vegetation care and maintenance, and the codes generated from the narrative

Theme 2: Plant and vegetation cared and maintenance	<p>Overgrown planting and bushes</p> <p>Wild and dead plants</p> <p>Excessive surface roots</p> <p>Wild aquatic plants and weeds</p> <p>Wild planting at the stream and lake edges</p>
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The second theme revolves around the care and maintenance of the soft landscape element at the park, including the planting and vegetation, the

wild aquatic plants, and the plants along the stream and lake edges. The results suggested that there are different interpretations of the maintenance of the soft landscape. either less cared for and negligent planting and vegetation, whilst some actually perceived natural landscape settings and planting characteristics.

Some participants perceived naturally planted areas with layers of planting, from groundcovers, shrubs and trees, to constitute a messy environment. This high level of concealment (layers of planting) is defined as 'wild bushes' and was perceived as undermaintained and poorly cared for. There are also participants who did not prefer to see vegetation growing tall, perceiving it as poorly maintained. However, this thesis does not argue that the visual representation of this 'wild planting' somehow brings a negative visual quality to the park. This is similar to the wild aquatic planting that is appreciated by some but perceived negatively by others. However, again the excessive growth of the aquatic planting as in Neighbourhood Park 3, and which covers almost the entirety of the lake surface, gave a negative view of the park, as did the issue of the weeds in Neighbourhood Park 2. The excessive growth of the weeds become one a maintenance concern with the local authority, MBSJ, that needed a specific schedule to allow for treatment for the lakes.

Other concerns regarding the maintenance aspect of planting that were highlighted were the removal, or replanting, of dead plants and stumps, fallen leaves that were not cleaned out and formed debris, and wild plants creeping on park equipment surfaces, such as gazebos and pathways. The issues on the pathways and jogging tract are not only about the wild planting, but also the excessive surface roots of large trees. Their intrusion has caused park furniture, includes seating, and commonly the pathway and jogging tracks, to break.

Theme three highlighted the maintenance codes pertaining to the broken, faulty, and missing equipment and facilities. The first codes to appear were with regard to the broken and uneven pathways and jogging tracks in all three neighbourhood parks.

Table 6.16 Theme 3 on broken, faulty, and missing equipment and facilities, and theme 4 on waterlogging, and the codes this generated from the narrative

Theme 3: Broken, faulty and missing equipment and facility	Broken and uneven walkways Broken and defective equipment is left unmaintained or replace Poorly maintained facilities and exercise equipment Sign of vandalism and incivilities
Theme 4: Waterlogging	Seasonally waterlogging Inhibit the grass growth Bare spots and permanent waterlogging

Table 6.17 Quotes from the narratives that illustrate the issues pertaining to undulating and uneven pathways

Quotes from commentary on the pathways	<p>“the pathway is undulating and uneven, not comfortable”</p> <p>“there is part where the pathway is broken, unsafe [insecure] to the users”</p> <p>“the broken walkways are not suitable, especially for children that love to run [freely at park].”</p> <p>“Some of the slabs [the pathway materials] are not even. You have to be very careful when running [jogging]”</p> <p>“the uneven surface is dangerous”</p>
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The average participant voiced their concerns about the uneven surface of the pathways and jogging tracks. These were perceived as uncomfortable, dangerous, and insecure for use, especially by children and while jogging. One of the effects of these uneven surfaces are that they produce waterlogging, especially during and after rain.

Meanwhile, there are also issues regarding maintenance of other hardscape, park equipment, and furniture. This includes the broken facilities that were not removed or repaired, facilities that are poorly maintained, especially the playground equipment, gazebo and decking, and outdoor gym station, and the reflexology point, especially in the inactive area. The poorly maintained equipment and facilities were not only poorly perceived in a visual sense, but also made users feel insecure. One of the participants from Neighbourhood Park 3 mentioned the missing of instruction boards at all the outdoor gym stations around the park. This is actually a sign of vandalism, the incivilities committed by someone in the park. The other sign of vandalism are the broken and displaced playground equipment, as documented in the photographs by the participants in Neighbourhood Park 3. These signs of vandalism contributed to the feeling of being unsafe amongst the park users if left unmaintained and unreplaced.



Issues regarding the maintenance of the facilities also include buildings and other amenities. These were mentioned in Neighbourhood Park 1 and Neighbourhood Park 2 for the same buildings, which were the toilets and the food courts. The poor maintenance of these two buildings and surrounding space at both parks produces distinctive odours that are perceived as uncomfortable by many participants.

Table 6.18 Quotes related to waterlogging issues

Quotes on the waterlogging	<p>“There is [considerable] waterlogging here, and that may be the cause of bare spots.”</p> <p>“There is a big waterlogging, and I am not comfortable with it.”</p> <p>“There are traces of oil and waterlogging, most probably because of the heavy rain and the porous ground surface”</p>
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The last theme also associated with the site conditions caused by the weather was the waterlogging. Besides the waterlogging of the uneven pathways, there are various areas that can become waterlogged in Neighbourhood Park 2 and Neighbourhood Park 3 that became a concern of many participants. What was worse was that there was extensive waterlogging between the edge of park and the school at Neighbourhood Park 2, as has been discussed in the previous subtopic with photographic images. This huge puddle has been there in a long time according to participants and does not seem to recede, and would seem to need some form of construction or surface treatment to deal with it. It is one of the more dangerous points at the park, with some appearing to be oily and that cannot necessarily be assumed to be shallow.

### 6.5 Sense of personal safety: Results and analysis of Descriptor 4

The results of the distribution mapping for sense of personal safety at the three neighbourhood parks was represented by a very small number of nodes, except in Neighbourhood Park 1 (in Figure 6.45). Neighbourhood Park 1 had twelve nodes for sense of personal safety, and further analysis found two suggested patterns of node distributions.

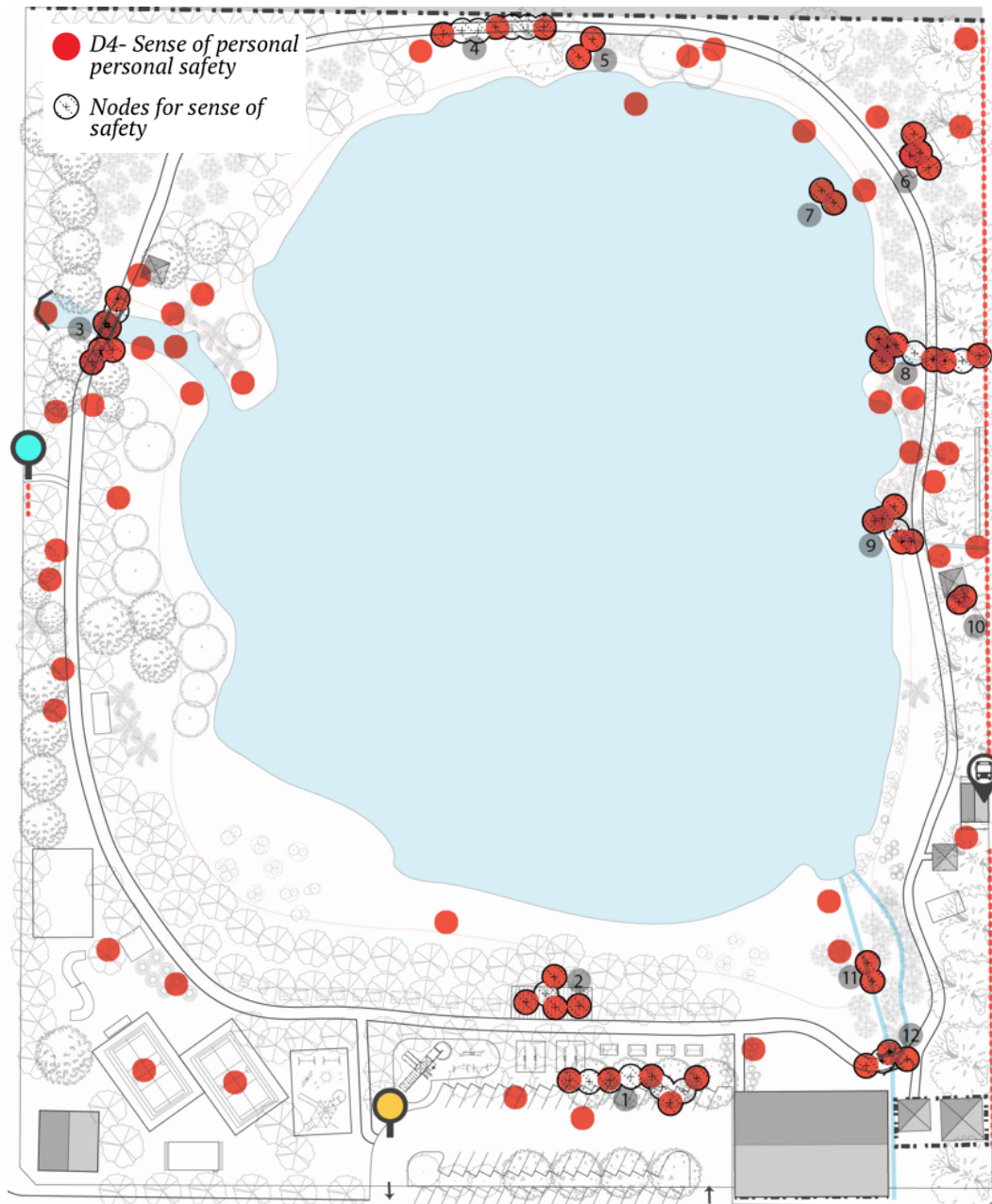


Figure 6.45 The distribution mapping for the landscape and spaces in which the participants feel unsafe in Neighbourhood Park 1

The first theme for sense of personal safety resolves around the water resources and drainage. There are six nodes indicated in these areas, which are nodes 3, 7, 8, 9, 11, and 12. The study of the photographic collages (a) and (b) for node 8 on the water inlet (in Figure 6.46) showed the deep ground holes and broken drainage walls that revealed the poor condition of the drain, and which are not being repaired nor replaced. The study suggested two factors that may have affected sense of personal safety. Firstly, the issues regarding unrepaired damage and equipment in disrepair (such as in Figure

6.46a) could impart a feeling of being unsafe with regard to physical security, especially for children. Meanwhile, photograph (b) suggested that untrimmed vegetation was perceived as messy, trapping waste at the outlet drain. Such messy environments were always perceived by the participants as uncomfortable; the “bushes” affected the feeling of being unsafe, provoking the thought of not seeing threats or incidences of crime that might be committed against them.



Figure 6.46 Photographic collages node 8 of the open drain that shows the deep ground holes (a) and untrimmed tree at the drain edges

Meanwhile, the following photographs (Figure 6.47) illustrated the outlet (node 3), the inlet from the nearby residential area (node 9), and from the food courts and public toilet (node 11). Though the photographs cannot really explain the factors that affected sense of personal safety, there are narratives that may explain what people perceived of the drainage at the park.

*“The small footbridge is not suitable for and dangerous to children.” (NP1003, F, M, 23)*

This explanation of the concern is similar to that for node 3, where the participants mentioned that:

*“The steps are not suitable for jogging.” (NP1001, F, O, 20)*

The three nodes illustrated the “dangerous” nature of certain designs within the neighbourhood park. The underlined words, which are the small footbridge and steps that were mentioned by participants in the park that were

perceived as being unsafe for recreational activities, especially for younger users such as children.



Figure 6.47 Three nodes formed at three different areas, namely the outlet and inlets, have the ability to impact sense of persons safety

The next pattern of nodes on sense of personal safety are related to public facilities and park equipment. The photographic image of node 4 in Figure 6.48 showed the graffiti at the wall that separated the park from the adjacent school. Graffiti is a clear sign of incivilities being committed. Even though there is a “creative wall” provided by the local authority specially for creating graffiti, there are still “strangers” that still like to deface this concrete wall. Such activities usually happen at night such that the neighbourhood community will remain unaware of such.

The other issues with public facilities and park equipment are the broken and damaged facilities and equipment. The broken and damage facilities are not safe to be used, and the prolonged, unrepaired damage leads to underutilisation of the equipment and spaces. The photographs shows that this occurs at three nodes, which are nodes 2, 6, and 10 (Figure 6.49). Node 6 illustrated the broken outdoor gym equipment and the rubber mats, whilst node 10 illustrates the broken seating at the gazebo.

However, node 2 was always an issue of concern amongst participants, similar to the nearby mobile stalls (node 1). Node 2, which is timber decking, was reportedly misused by the vendors to store their removable cart furniture, such as tables and chairs, and hence its very poor condition. The timber



decking has become broken because of storing such inappropriate items. These also restricted the use of these facilities by park visitors.

*“This area (the timber decking) used to be a yoga area for a group of people, but the mobile stalls owner put their chairs there.” (NP1006, M, I, 52)*

The conflict of space was portrayed in node 1, the playground near the mobile cart area (see Figure 6.50). The public spaces were misused by vendors to store their store furniture as well as to get rid of their food waste and debris, in addition to the cluttered items making the area around the mobile stalls looks messy and dirty. These issues arose due to the irresponsibility of the mobile cart vendors concerned many of the participants. Hence, these “messy” and “dirty” environments promote feelings of discomfort among the park users, and ultimately obstruct their recreational activities.



Figure 6.48 The graffiti along the school concrete fences is one of the signs of incivilities being committed in the park



Figure 6.49 The broken and damaged facilities and equipment in the park are perceived to be 'dangerous' to the users and hinderances to the utilisation of these spaces

Figure 6.50 The conflict of space due to misuse by vendors when storing their store furniture as well as when disposing of their food waste and associated debris



Meanwhile, the following dot distribution map illustrated only three nodes on sense of personal safety for Neighbourhood Park 2 (Figure 6.51). However, this did not portray the overall sense of personal safety of the park users. The discussion of the results on sense of personal safety from the narratives are discussed in the following subchapter.

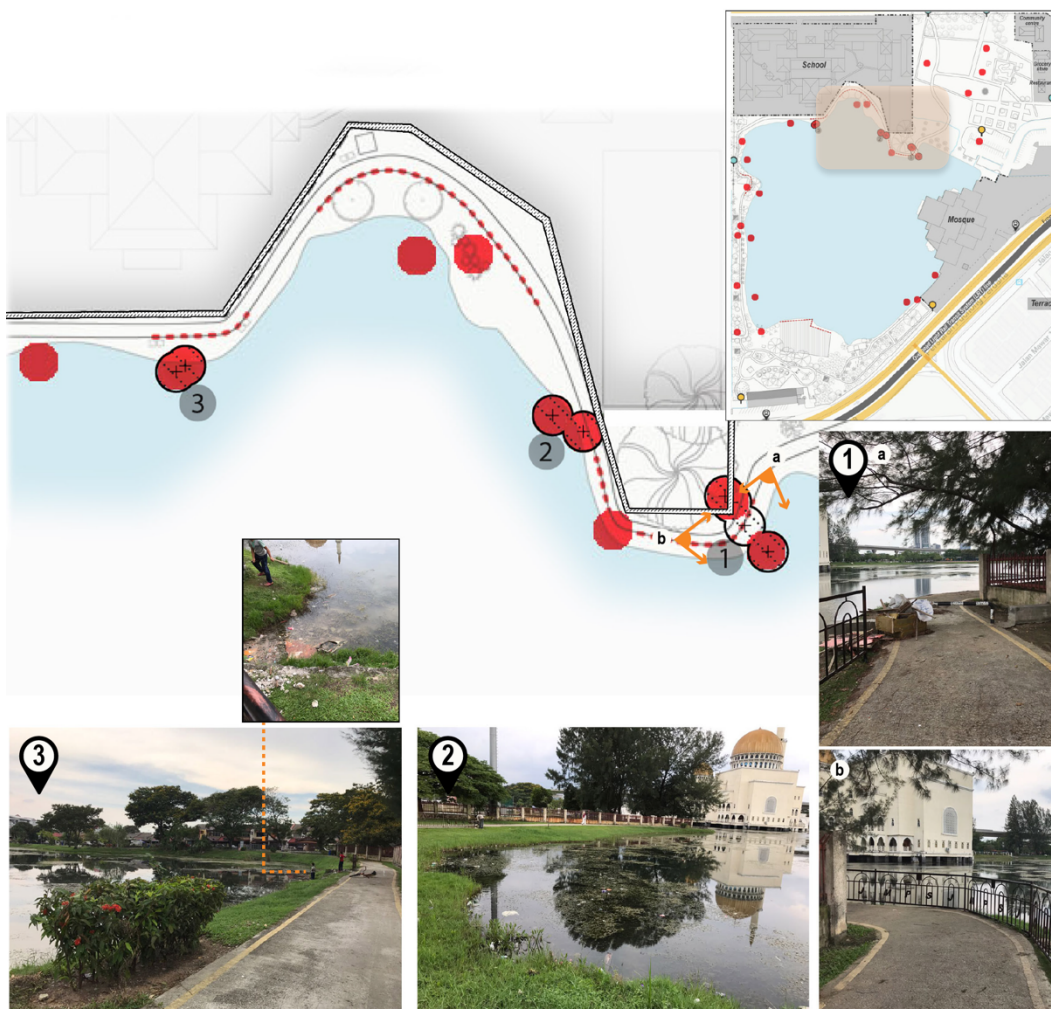


Figure 6.51 Three nodes on sense of personal safety at Neighbourhood Park 2

The photograph of node 1 demonstrated the participants' concerns regarding the corners in the park (Figure 6.51). The corners blocked the view forward and invoked a certain fear amongst users, as mentioned by participant NP2002.

*"I will not be walking here at night. This area is hidden ... because of the corner." (NP2002, F, M, 66)*

Meanwhile, nodes 2 and 3 indicated the issues provoked by the appearance of the soft landscape elements that affected the sense of personal safety. The photograph of node 2 illustrated the problem of the invasive waterweeds that had appeared at lake margins. This problem was also highlighted in Neighbourhood Park 3.

Node 3, however, shows the hedges that were planted at the lake edges, and the activity taking place at the park. The photographs suggest that the slanted edges are that very close to the water are dangerous, especially for younger users such as children. The function of hedges is actually part of the design to prevent users from going near the water, but the amount of them is insufficient. On the other hand, the photograph also highlights the inlet that allow water to flow from the school. This spot was poorly maintained as there is trapped waste from food waste and debris that not only cause clogging but also offensive odours, thus causing discomfort to park users.

The distribution nodes for sense of personal safety for Neighbourhood Park 3 show that there are concerns regarding safety around the pathways that circle the park (see Figure 6.52). However, only four nodes were formed from the mapping, with three located at the pathways, namely nodes 1, 2, and 3. There are several narratives that explained the "setting" at the pathways, especially in the passive area in nodes 1, 2, and 3. These explained that the "setting" did impart fear, and feelings of vulnerability to victimisation, especially at certain times of day.

*"... in the morning when you come, this area is spooky. I am just worried about safety, not about ghosts."*

*"you know a mugger would come in..."*

*"I will not use the area especially at night because it is concealed (with planting),"*



*“the passive area at the back of this park is very quiet and did not have enough lighting. It is dangerous and I will not go there.”*

The narratives explained that the design of the area imparted fear for their safety. The design includes an enclosure of the spaces, because of planting such as bushes. Besides, the factor of time, such as night-time, provokes fear because of the poor lighting.



Figure 6.52 The distribution mapping for the sense of personal safety for Neighbourhood Park 3





Figure 6.53 Two nodes on sense of personal safety, node 1 and 4, that show the pathway environment and the stream

There are very few photographs that might suggest the real perception of those nodes; however, there are narratives that might explain the participants' sense of personal safety at this park. The narratives are discussed in the following subtopic.

### 6.5.1 Analysis of codes on sense of personal safety from the narratives

The analysis of codes for sense of personal safety generated six key themes. These include general satisfaction, active and passive area and the presence of people, night and lighting, visual and aesthetic, afraid of wild animals, and sense of security (see Table 6.19).

Table 6.19 Key themes for sense of personal safety from the narratives

1	Theme 1: General satisfaction
2	Theme 2: The active and passive area, and the presence of people
3	Theme 3: Night and lighting
4	Theme 4: Visual and aesthetic
5	Theme 5: Afraid of wild animals
6	Theme 6: Sense of security

The first key theme on general satisfaction explained on the functionality of the spaces and facilities provided in the three neighbourhood parks. From the narratives, it is found that, overall, most of the users are satisfied with the condition of their neighbourhood park. The feedback on the overall condition of the park allowed the discovery of several keywords that explained users' overall satisfaction with their park, such as "*love being in the park, like this park, quite okay*" (refer Table 6.20). There are keywords of

explanation for this satisfaction with the overall condition at parks such as “functional, beautiful, comfortable, suitable for all ages, good condition” (see Table 6.21).

These perceptions of the general condition of the park explained the factor of why the users still come to their neighbourhood park in apparent disregard for their sense of personal safety, whether regularly or occasionally.

Table 6.20 Theme 1 on narratives that describe the general satisfaction

General satisfaction	<p>“I <u>love being at the park</u> for its landscape, enjoy the view, cosy and comfortable.”</p> <p>“overall, I do <u>like this park</u>...”</p> <p>“the maintenance <u>quite okay</u>...”</p> <p>“This park is really <u>for all ages</u>.”</p> <p>“the design is simple, but <u>very functional</u>.”</p> <p>“Overall, this park is in <u>good condition</u> ...”</p>
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Table 6.21 Theme 2 and theme 3, with the generated codes from narrative

2	Theme 2: Presence of people and feels of being alone	<p>Active spaces with the presence of other users</p> <p>Inactive spaces with less people and underutilised</p> <p>Afraid of being alone at the inactive/ less people</p> <p>Presence of strangers</p> <p>Sign of incivilities</p>
3	Theme 3: Visual and physical concealment, and fear of being a victim of crime	<p>Hidden spot near the road</p> <p>Hidden corners blocking the view</p> <p>Bushes and overgrown planting blocking the view</p> <p>Less cared and wild planting</p>

Further analysis of the sense of personal safety allowed for the establishment of codes of active and passive areas. Passive areas in the context of this subtopic are based on responses from participants that portrays as presences of few park users, not on the activities and functionality of the space. This study found that there is a huge impact on the presence of other people on the users and the utilisation of the spaces. Participants’ descriptions of active spaces were often associated with the presence of large numbers of people at a given time. Most of the participants choose to spend time in the active space when in the presence of other people, especially near the building amenities, for example, the food court and mosque as these promote greater feelings of safety.

*“This area is OK, maybe I feel safe because of the food court, which I know there is a lot of people there.” (NP2002, F, M, 66)*

Meanwhile, the “low occupancy” spaces were perceived as inactive spaces and “underutilised”, hence causing a “quiet” environment.

*“... usually because of this area is low occupancy, I am not sure if it is safe. Actually, in the morning it is a bit spooky. But I do not worry much on ghost, just worry about my safety. You know, probably mugger would come in.” (NP3002, M, C, 51)*

The narrative above suggested that these inactive spaces with less people impart feelings of fear among users. The fear of being alone in some area may vary as based on the time of use; for example, as portrayed by participant NP3002 (M, C, 51), early morning and night (NP204, F, M, 25) were the two timeframes that were always associated with a certain fear of being in the park alone. Besides, the narrative also suggests that this fear of being alone is also due to the fear of being a victim of crime, as portrayed from the above narrative, ‘*probably a mugger would come in*’.

The fear of being victimised also appears to be affected by the design of a space.

Table 6.22 Description of the concealment of spaces because of design that invokes the fear of being a victim of crime

<p>Concealment of space description and causes of fear</p>	<p><i>“I don’t like to seat at this bench. <u>There is a big tree at the back [of the seating], hence it is close to the main road. It is not safe</u>”. (NP204, F, M, 25)</i></p> <p><i>“I will not be walking here at night. This area is <u>hidden ... because of the corner</u>.” (NP2002, F, M, 66)</i></p> <p><i>“The <u>trees grow wild and tall</u>. I can’t barely see what is in front and its scary.”</i></p> <p><i>“I don’t feel safe because of the <u>bushes</u>.”</i></p>
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Table 6.22 describes perceived concealment, which invokes fear and feelings of vulnerability of being a victim of crime. The ‘*big tree at the back of the seating*’ and ‘*area is hidden because of the corner*’ are explanations as to why spaces that are visually enclosed, and where the view forward (seen) is blocked and reduces the probability of being seen if anything happens. Besides the space design, the low visibility because of the medium-high and

high concealment also causes by the condition of the vegetation. The two condition that mentioned several times are 'wild and tall' trees, and bushes.

For instance, large trees were also perceived negatively by some users. One of the respondents in Neighbourhood Park 3 added that the unsuitable location of big trees increases the sense of insecurity or anxiety amongst some users, especially when the surrounding environment also seems to be negative/threatening to them.

*“... but here it doesn't seem okay to sit. There is a big tree, and very close to the main road. It is not safe for me.”*

Table 6.23 Theme 3 on night and lighting and the codes generated from the narrative

3	Theme 3: Night and lighting	Incivilities at night Feeling vulnerable at night Enclosure and hidden space increase the probability of being unseen Poor and insufficient lighting
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The presence of strangers was reported during night (theme 3), especially at night in these inactive spaces. These are responsible for causing the fear of using the park or being alone in the park at night-time. Hence, the design that creates enclosure and hidden spots were particularly feared by the people, hence the dark increases the probability of remaining unseen at night.

Several participants in Neighbourhood Park 2 mentioned the presence of strangers among young couples, and illegal young racers at one of the concerned nodes. One of the participants voiced their concern about these young people loitering, especially at night.

*“There is one problem with this area where it become a spot for young couples, and mat rempit at night.” (NP203, M, M, 26).*

*Mat rempit* refers to a group of young motorcyclists involved in illegal street racing and motorcycle stunts. This group of young people usually choose this quiet, open, and accessible space as a spot for gathering late at night, either before or after their illegal street racing. They have frequently been reported for making noise late at night and doing things that cause members of the public discomfort, especially residents. What is more serious, however, is that some of them are involved in street fighting.

The issues regarding the presence of strangers are commonly associated with incivilities and antisocial behaviour. There are also signs of incivilities such as damage to public facilities and park furniture (in all three neighbourhood parks), and also graffiti (in Neighbourhood Park 1). These signs of incivilities and the presence of strangers both invoke feelings of vulnerability to these strangers and to crime.

Besides the presence of strangers, enclosures, and hidden spots, another factor that contributes to people feeling unsafe at night is the poor lighting. Participants from all three park have voiced their concerns about the quality and insufficiency of the lighting at their neighbourhood parks.

*“I am feeling unsafe while jogging here because the light is glare, it is quite dark here.” (NP101, K, F, 22)*

*“The pathway here is not safe especially at night as there is no lighting.” (NP204, F, M, 25)*

*“the inactive area at the end of the park is quiet and [there is] no lighting. It is very dangerous, and I will not walk there, especially at night.” (NP3002, M, C, 51)*

Table 6.24 Theme 4 on being afraid of wild animals and the codes generated from the narrative

4	Theme 4: Afraid of wild animal	Rubbish attracts wild animals such as crows Overgrown, wild planting and bushes might attract wild animals such as snakes Extensive waterlogging and piles of fallen leaves may hide wild animals
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Theme four (Table 6.24) reveals that fear of wild animals was highlighted in all three neighbourhood parks. There are two conditions explained by participants that are caused by wild animals (table 6.25). Firstly, some of the wild animals were encountered near the “dirty” environment, such as the overflowing dustbin and the temporary disposal area. The crows, as mentioned by participants in Neighbourhood Park 1, were reportedly making enough noise to distract the park users. These crows were irritating to the participant, hence affecting their visual image of the space. Crows may not invoke fear in users in general, but the feelings of discomfort because of them may have driven users away from using the park facilities.

Meanwhile, there was also the presence of wild animals that invoked fear among participants. The wild animals that users were afraid are normally

those that could possibly cause physical harm, such as snakes. Many participants, especially those at Neighbourhood Park 3, mentioned their concerns about the lake edge planting that looked like bushes. This planting invoked the fear of the possibility of the presence of snakes (see Table 6.25).

Table 6.25 The quotes that explained unpleasant environment and fear of wild animals

The unpleasant environment caused by the crows	<p>“... the crows (at the rubbish) bring noise.”</p> <p>“there are crows near the drain and it is unpleasant.”</p> <p>“there are spaces and gazebo encountered quite a number of crows that I am not comfortable to use.”</p>
Feeling unsafe due to wild animals	<p>“the bushes at the lake edges were not safe, I am afraid that may probably a snake over there.”</p>

Finally, the analysis of the narrative on sense of personal safety found the final theme, theme five, on sense of security. The discussion about the sense of security revolves around the planting and design, as well as the space conditions that the participants perceived to be insecure or dangerous when using them, and to younger users such as children at the park (see Table 6.26).

Table 6.26 Theme 5 on the sense of security and the codes generated from the narrative

5 Theme 5: Sense of security	<p>Poor pathway conditions and broken park equipment promotes discomfort, and is perceived as dangerous and insecure to use</p> <p>Small footbridge</p> <p>Uncovered water drainage</p> <p>Wild aquatic plants perceived as insecure</p>
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The most common problem with park conditions that were found in every data in this study, either from narratives, distribution mapping, or photographic images emphasises the poor condition of the pathways and equipment. Table 6.27 demonstrates how the reorganised narratives generated the coded narrative. The underlined words are the collective words that influenced the coding process regarding pathway conditions. The poor condition of and the damage to pathways were concerns among joggers that were perceived as invasive and interferences to their jogging activity. Besides, there are users with children who were concerned about their children’s security while using the park. The same concerns were also apparent regarding the broken and damaged playground equipment, as well as the outdoor gym equipment.

Table 6.27 The coded narratives for poor pathway conditions that were perceived as dangerous and insecure to users

Coded narratives	Reorganised narrative
<p>Poor pathway conditions and damage promotes discomfort, and perceived as dangerous and insecure to use</p>	<p>“the pathway is <u>undulating and uneven</u>, it is not safe to use.”</p> <p>“some parts of the slabs <u>are not even</u>; it is <u>unsafe</u>, and you need to <u>be careful</u> when running.”</p> <p>“The <u>uneven surface</u> is uncomfortable and dangerous.”</p> <p>“The <u>broken walkway</u> is dangerous for users.”</p> <p>“It is uncomfortable to use the broken walkway, it is even <u>dangerous for kids</u> to run.”</p> <p>“The slippery surfaces, especially on the steps, are unsafe. Many people, including my wife, have fallen because of slippery [surfaces].”</p>

Besides the poorly maintained pathways and park equipment, certain designs in the park were also being noted as being dangerous to the park users, in particular children, especially at night.

*“The small footbridge is not suitable and dangerous to the children.” (NP1003, F, M,23)*

*“The open drain is harmful, especially to children, and at night.” (NP1006, M, I, 52)*

*“The steps are not suitable for jogging.” (NP1001, F, O, 20)*

Besides this perceived insecurity, several participants also mentioned their lack of preference for large trees that have excessive surface roots that can cause damage to park elements such as seating or pathways. The narratives above, as well as in Table 6.27, are coded by concluding that the improper design and poor pathway conditions and broken park equipment promotes insecurities and are perceived as dangerous to the users.

Meanwhile, the narrative for theme five also reveals the codes revolve around the type of planting, which affects the sense of security felt by the participants. One of the codes was on overgrown planting and bushes (refer Table 6.27), as well as the wild aquatic plants that invoke fear about concealed wild animals, such as snakes. This feeling of fear of wild animals causes insecurity among the park users to use the space, or to be close to the space.

## 6.6 Summary of the focus group findings

This chapter has provided a comprehensive discussion of the focus group findings in relation to the influence of the existing maintenance on users' perceptions of safety in utilising neighbourhood parks. The discussion of the findings for the qualitative results and analysis indicates that the factors affecting users' preferences regarding their neighbourhood park (RQ1), perceived maintenance issues (RQ2), and finally revealed the cues from the physical environment and park conditions that trigger or affect perceptions of personal safety (RQ3).

The focus group findings indicated that the potential factors (RQ1), physical cues from maintenance (RQ2), and the impact on personal safety (RQ3) were regulated by two outcomes of the maintenance. These are the visual apprehension of park visitors, and perceived functionality. The first on visual apprehension was perceived through the aesthetic quality contributed by the park typological characteristics such as diversity of plants, topographical form, and views. Visual apprehension in this research findings refers to attention and responses apprehended from the surrounding environment. Nevertheless, the research findings suggested that the visual apprehension can be negatively associated with perceptions of safety, as well as displays a sign of threat apprehended from cues of incivilities such as poor landscape conditions and damage of park elements.

Meanwhile, the second outcome on functionality indicates that it is very important when organising the maintenance of a neighbourhood park to maintain the spaces that ensure that functionality continues in a long run. Conflicts can arise from maintenance, and from improper planning of spaces that contributes to potential conflicts of usage, and this subsequently may cause abandonment and deutilisation.

The qualitative analysis reported in this chapter of the potential factors (RQ1), and physical cues from maintenance (RQ2) indicate their huge impact on personal safety (RQ3). The findings on preferences indicate the strong potential to deliver natural landscape settings in a neighbourhood park in Selangor, and Malaysia in general. The concerns often associated with this natural landscape approach frequently make it seem unsuitable in urban



context, therefore, there needs to be adequate maintenance and suitable treatment programmes to avoid the cues from maintenance that have been identified from the study. This includes the adverse impact caused by unkempt and messy appearances (finding of RQ2) from the vegetation as well as from unrepaired damage and equipment left in disrepair. In addition, the research found the need to organise spaces in neighbourhood parks so that the appropriate maintenance programme for each space can be implemented accordingly to its typological characteristics and needs. The discussion of the findings for each research questions are further discussed in the final chapter, followed by the study's conclusion and a set of recommendations.

## DISCUSSION OF THE MAIN RESEARCH FINDINGS, CONCLUSION AND RECOMMENDATIONS

### **7 Introduction**

This final chapter starts with a discussion of the overall findings that commenced to answer three research questions, and draws conclusions from those findings. This chapter consists of four main sections: 1) the discussion of the overall research findings regarding the three research questions, 2) conclusions, 3) implications of research, and 4) recommendations for future research/summary. The final section briefly considers the theoretical and practical implications of the research findings, while the potential for further research is briefly discussed.

#### **7.1 Comparative Discussion of Research Findings**

This research initially set out to explore the effect of maintenance on perceptions of personal safety in neighbourhood parks in Subang Jaya, Selangor, Malaysia.

The three sub-questions are:

RQ1: What are the factors affecting users' preferences with regard to their neighbourhood park landscape?

RQ2: What are the maintenance issues that people perceive with the existing park design and site conditions?

RQ3: How do traces of maintenance issues become cues that affect people's perception of personal safety?

This first section discusses how the questions can be answered based on the findings and is divided into three sub-sections according to the relevant research question. The comparative discussion assembles all the findings from the questionnaire surveys and focus group workshop across the case study areas. The first sub-section discusses the factors affecting users' preferences regarding their neighbourhood parks in general. This first discussion further responds to previous research that argues that preferences for parks evoke memories and experiences (Alves et al., 2008; R. Kaplan, 1985; Lis et al., 2019; Sreetheran, 2017; Wright Wendel et al., 2012), consequently encouraging their utilisation (Bacon, 1976; Banchiero et al., 2020; Hussein, 2014; Schroeder & Green, 1985), or conversely their underutilised and subsequent abandonment (Moulay et al., 2017; Nam & Dempsey, 2019a; Newman, 1972b). The second discussion further explores the issues emerging from the factors of preferences, that associated to maintenance. This discussion addresses the physical cues of maintenance as perceived according to three factors, namely aesthetic quality, concealment from tree density and hard landscape elements, and signs of disorder and disamenity. The final discussion of the research findings focuses on the central question of the study: how do the cues from maintenance affect sense of personal safety?

### **7.1.1 RQ1: What are the factors affecting users' preferences with regard to their neighbourhood park landscape?**

Studies of users' perceptions of outdoor green spaces are often connected with preferences regarding certain environments. This is because perception is built over time as people experience their environments (R. Kaplan & Kaplan, 1989; Knox & Marston, 2016), and learn to be selective based on their desires or preferences (R. Kaplan & Kaplan, 1989). The findings synthesise the landscape preferences into two different groups of affecting factors, indicating how they challenge and extend the assumptions of previous research, as outlined in the problem statement and literature chapter. The two factors are: i) physical factors as the main contributory factor, and 2) the intervening factors contributing to preferences.

### **Physical factors as the main contributory factor**

The findings from the statistical analysis indicate that the overall satisfaction with the design of the neighbourhood park appeared to be fair ( $m = 6.44$ ,  $std = 2.141$ ). It was revealed that Neighbourhood Park 2's users had markedly lower preferences for their park, where respondents neither liked nor disliked their park design ( $m = 5.62$ ). Further explorations revealed that the main reasons for the above could be attributed to three physical factors, namely park typological characteristics, physical attributes such as facilities, amenities, and buildings, and the quality of the park landscape, elements, and equipment.

The typological characteristics of the park that were repeatedly mentioned are divided into the types of planting and vegetation, spatial arrangements, topography, water features, as well as activities and functions. The study found the respondents had higher preferences for a diversity of planting design. 'Diversity' refers here to types of planting form (such as variation of tall, small, and shade from trees, as mentioned by participants in Neighbourhood Park 1). Besides the types of planting form, diversity was also described through the coherence of naturalistic and organised forms of plant structure. Though these two characteristics create different ambience in a park, the associated diversity was enjoyed by the majority of the participants. These offer a variety of ambiances to park users to explore in one big neighbourhood park. Additionally, the statistical findings found a slightly higher preference for naturalistic planting ( $m = 7.28$ ) compared to organised planting ( $m = 5.72$ ). These findings confirmed the latest findings by Sarah (2020) and previously by Roziya (2016) that naturalistic and more ecological design approaches are generally preferred, especially in the research cases in Kuala Lumpur and Selangor.

In the meantime, this diversity and difference in ambience also appeared to be linked with the cleanliness and tidiness of the associated spaces. Variables such as 'cleanliness and beautiful arrangement for naturalistic planting', as well as the perception of being 'neat and tidy' from the organised planting were mentioned during the explanation of the preferences towards diversity in the design, especially in Neighbourhood Park 1 and Neighbourhood Park 3. It would be interesting to understand how these two responses explained the differences in preferences for the two design

characters. Earlier in the literature review, the contrasting preferences of naturalistic planting as linked with two factors were explored: as aesthetically pleasing, and unpleasant appearances. Similarly, in these research findings, the natural settings in Neighbourhood Park 3 were illustrated to be aesthetically pleasing in what users described as 'serene' and 'exclusive', and in Neighbourhood Park 1 were portrayed as 'beautiful'. In contrast, previous studies argue that natural settings are often perceived as 'untidy' (Filibeck et al., 2016; Page, 2016), or messy (Nassauer, 2013; Nassauer, 1995). Further exploration of these research findings indicated that the perceived mess found in this research's case studies is associated with the appearance of 'bushes' and 'overgrown planting' caused by the lack of maintenance. These unpleasant appearances can contribute to a contradictory reaction to naturalistic landscapes, hence the apparent lack of preference for such. This particular finding leads to the first answer to research question 2- on what was perceived as maintenance issues. It is, therefore, clear that these findings challenge previous arguments regarding the ambivalent attitudes towards naturalistic planting that can be rendered more positive through providing an orderly appearance. It can therefore be said that **the perceived aesthetic quality of natural settings in the neighbourhood parks from either organised or naturalistic plants do not necessarily affect people's preferences regarding the planting design, but the perception of the neat and orderly appearance of such spaces does.**

The research findings on planting characteristics were also linked to the potential effect on visual accessibility. The planting arrangement, based on its height, crown, and density offers different types of visual accessibility for the park users. The statistical findings demonstrate higher preferences for high permeability, which can be gained through the use of single layer ( $m = 7.22$ ) and multilayer planting without understory ( $m = 7.13$ ) permitting a wide view in front of the user. Increases in planting density was also discussed as factor that has certain implications for preferences (Roziya et al., 2020). This was found in Neighbourhood Park 3, in that the overgrown bamboo trees and untrimmed palm oil trees give the effect of bushes and was perceived as uncomfortable. This indicated that the high vegetation density resulting from the untrimmed and overgrown trees creates low permeability, obstructed views

and was not preferred by the participants. These was also found from the mapping nodes in Neighbourhood Parks 1 and 2. Participants in all three neighbourhood parks chose wide and long views compared to limited or closed visibility when they were in the parks. These findings indicate that the factors relating to permeability for visual accessibility as affected by planting design and arrangement have an impact on people's preferences regarding their neighbourhood parks.

Besides planting and vegetation, one of the contributing typological characters to preferences was the site's topography, including terrain and level changes. The site topography in Neighbourhood Park 3 is significantly more undulating than in the other two parks, and was mentioned as an additional interesting feature of the park that was enjoyed by many participants. This was different to the two other parks that were much flatter. The presence of a lake in each of the three neighbourhood parks offers a variety of landforms. The findings also confirmed that these lakes are important and preferred elements that provide beautiful scenery (as argued by Ydira et al., 2010), and fulfil certain recreational requirements (R. Kaplan & Kaplan, 1989). However, results for Neighbourhood Park 1 and Neighbourhood Park 2, show inconsistent reactions. Most participants in Neighbourhood Park 1 appreciated the lake compared to participants in Neighbourhood Park 2, who mentioned many negative feelings about it. Further explorations concluded that the unanticipated implications come from the huge open space in Neighbourhood Park 2, which gave the impression of being extremely 'empty' with a lot of problems, including water puddles, few facilities, and being flat and bare. These exemplified the dysfunctionality of the space as a result of various contributing factors, and illustrates a general failure in design.

One of the reasons revealed from the narrative codes and nodes is that of fewer facilities in the huge spaces. The research findings on facilities and amenities are linked to space functions and activities. Participants in all three neighbourhood parks agreed that an adequate number of facilities and amenities are associated with the liveliness of spaces through the large numbers of park users using the facilities (Bedimo-Rung et al., 2005; Lachowycz & Jones, 2013). Whilst this result was barely statistically significant, the narratives and mapping confirmed that spaces with more

facilities were always found to be more 'active' and contained 'more people' by participants. An active area with many people appeared to mediate participants' positive attitudes towards the park. As this demonstrates, the large open spaces in neighbourhood park 2 were considered to be significantly less preferable to many participants. These research findings support the arguments by Bedimo-Rung et al., (2005), and Lachowycz and Jones (2013) that presence of other people doing exercise and higher level of physical activities (Jansson et al., 2013) are two other indications perceived of high quality and well-cared of parks. Nevertheless, during the qualitative discussion, it became apparent that the nature of perceived 'emptiness' was different from the nature of a simple design with fewer hard landscape elements. Further investigation findings by this research suggests that even with minimum facilities, good design and spatial organisation should be able to inform the specific function of a given space, such as for more passive activities, and the participants were more likely to prefer such spaces, as indicated in Neighbourhood Park 3.

Whilst many participants complained about the functionality of spaces in Neighbourhood Park 2, Neighbourhood Park 1 participants were concerned with conflicts of use. The location of the restaurant and stall carts in near proximity to the jogging track and playground was felt to cause a conflict of use between users of each of the spaces. Participants mentioned how recreational activities were obstructed because of the restaurant, whilst some of the participants revealed that irresponsible vendors put out their stall equipment, such as foldable table and chairs, on the deck that people use for yoga, and immense amounts of food waste and rubbish were placed very near to the playground and seating. These findings emphasised the influence of territoriality in relation to spatial design and space organisation for human behaviour and how this might create conflict and problems for park users. Besides, the issues that created hazards for joggers because of the improper design of the stairs were also mentioned with regard to Neighbourhood Park 1. It is noteworthy that these conflicts in use and function of the spaces were considered unacceptable, and out of order. Therefore, the research suggests that there should be a clear demarcation between two different functions of the spaces, such as in the above case having public facilities, an amenity building

(in which the restaurant is located), and transition to semi-public and more private spaces (such as a recreational area for a family or individual uses).

As predicted from the earlier findings, there are very significant contributions that the quality of the landscape, elements, and equipment make on users' preferences towards the parks (Bedimo-Rung et al., 2005; Graham & Thrift, 2007; Hur & Nasar, 2014; Lachowycz & Jones, 2013; Li & Nassauer, 2020; J. I. Nassauer, 1995; Paramita, 2019). There are seven maintenance variables that were analysed in the statistical analysis based on previous literature, namely 'tree and plant maintenance', 'defective and faulty equipment', 'broken path and track', 'cleanliness near building and structures', 'general waste and rubbish', 'still and stagnant water', and 'tipping and illegal dumping of waste'. The statistical findings on the seven maintenance variables found the most unacceptable issues pertaining to maintenance appeared to be on tipping and illegal dumping of waste, where the total mean is 4.06, and Neighbourhood Park 2 was revealed as having lowest mean of 3.66, followed by Neighbourhood Park 1 (M = 4.06) and Neighbourhood Park 3 (M = 4.15). This statistical evidence support the findings by Joo and Kwon (2015) where the act of fly-tipping is highly unacceptable, and was perceived as one of anti-social behaviour and the most contributing factors to perception of personal safety. The findings indicated that these issues are clearly presented in Neighbourhood Parks 1 and 2, and suggests that the proximity of the parks and housing area as the factor. The typological characteristics of Neighbourhood Park 3 such as being hilly and surrounded with high-rise and gated housing, marked the neighbourhood park with a clear demarcation (such as a wide road system, drains, and gates between the park and housing area). Nevertheless, the participants still did not favour (M = 4.15) the appearance of maintenance issues in their park.

On the other hands, the narrative findings from Neighbourhood Park 2 explained that the 'illegal' household furniture was dumped within the greened site facing their house (Hunter et. al., 2019) as their favourite spots for their daily evening social activities, thus extends the argument by Zero Waste Scotland (2017) that there is acceptance of fly-tipping in a particular context, and in this study suggest the particular context that relates to sense of belonging and attachment to the particular space in park. The findings from



the narratives further explained that the close proximity to the park have somehow invited a sense of belonging amongst the residents, as shown by the appearance of many personal belongings such as chairs, benches, and even sofas under the park gazebo.

Interestingly, these research findings confirmed and extend the explanation for the contrasting perception towards fly-tipping as argued in CABA Space (2005) report. Whilst the residents have a sense of belonging in a particular area in the park (because of a very close proximity), there were various respondents who are also park users who were not keen on this to the extent that they perceived it to be fly-tipping and illegal dumping of waste issues. **These research findings therefore argue that a clear demarcation and proximity between the park and other land uses contribute to the fly-tipping issues and effected to low preference to the neighbourhood park.**

The statistical findings revealed certain issues of maintenance are generally considered highly unacceptable ( $m < 4$ ), which are still and stagnant water ( $m = 4.06$ ), broken paths and jogging tracks ( $m = 4.77$ ), and general waste and rubbish ( $m = 4.79$ ). These three issues were found in all three case study areas. In contrast, the narrative findings revealed that even though defective and faulty equipment was perceived as one of the concerning issues of maintenance, the preference for such facilities was not affected by their condition. The qualitative findings for the three case study areas indicated that outdoor gyms were still one of the preferred nodes in the parks despite facing defect. This research finding challenge the argument by Zuriatunfadzliah et al. (2013) that damage facilities does affect preferences, in contrary this research suggests that as the functionality of the facilities was not greatly deteriorated and good to be used, the preferences for such were also unaffected. The findings regarding maintenance are further discussed in the following subtopic: on issues of maintenance.

This subtopic on research findings of people's preferences in neighbourhood parks concluded **two main factors contributes to preferences. The maintenance factors were found to have the highest effect on maintenance as the associated means are all lower than 6. Meanwhile, the factors pertaining to planting design and views also affected people's preferences regarding the park** (with the associated

means varying between 5 to 8). It can be said that the research findings confirmed that maintenance has a considerable impact on people's preferences, and therefore on their perceptions of their neighbourhood parks.

### **Intervening factors regarding preferences in neighbourhood park**

According to Hur & Nasar (2014), people who notice something of their physical environment are led by their experiences with that particular environment, and because they are aware of the environment's appearance and condition, it can influence their perception on maintenance in ways different to someone who has not noticed their surrounding environment. The findings in this research found similar associations between people's awareness of their surrounding environment and their associated preferences for it. The descriptive findings on awareness of the surrounding environment in the parks illustrated that, overall, respondents did notice the design and elements in the park most ( $m > 6$ ). The statistical findings suggest that as people acknowledge the types of planting design and views offered at their local park, their preferences for it also increase accordingly. These findings support Lachowycz and Jones (2013) that the residents that familiar with the views are more attracted to the neighbourhood park. Hence, the research findings supports Lis et al. (2019) that an open views are more preferred among users in urban park context.

Surprisingly, early findings of awareness of maintenance issues suggested that most of the respondents did not really notice many of the maintenance issues highlighted in the questionnaires. However, further findings suggested that even though the respondents were less aware of maintenance issues, their acceptance of such was very low. Two highest correlations found were on cleanliness near buildings and structures, and tree and plant maintenance. It was concluded that when these two issues appear in the parks, the preferences for the park decrease significantly amongst its users. These findings refute the argument that users' perception and preferences is encourage by their experience in surrounding landscape that indicates their familiarity and users' knowledge of maintenance aspect of the park (Khachatryan et al., 2020). It suggest that even though people were aware of and noticed features in the park that uld increase their preference and

choices of design and spaces at the park, but when the quality is decreased, respondents' preferences significantly affected and causes unfavourable to the neighbourhood parks.

### **7.1.2 RQ2: The issues of maintenance that people perceive in current park design and site conditions**

'Maintenance' is the main subject of this research. It is the case, therefore, that the answers to the two research questions, RQ2 and RQ3, are the most important parts of the findings. The exploration of research findings for RQ2 were gathered on-site from the focus group workshop to offer a rigorous explanation of in what way and how users perceived maintenance in the neighbourhood park. The research findings about issues of maintenance concluded that there were two factors that users perceived from the physical and surrounding environment of the neighbourhood parks: perceived aesthetic quality, and perceived disorder and dis-amenities.

The research findings revealed factors of visual apprehension due to the planting types and vegetation. It was found earlier that there is interesting finding on naturalistic and natural settings in all three neighbourhood parks. This kind of setting was found in various spaces in all three neighbourhood parks. Previous literature has highlighted the idea of natural setting in parks in the urban context of Malaysia (Farbod et al., 2014; Nielsen et al., 2014; Roziya, 2016; Sarah, 2020). Most parks in the urban context limit the wilderness, especially with regard to the application of understory, and not necessarily using the native Malaysian planting, unlike the Western context (Hitchmough & Dunnett, 2004; Sarah, 2020). These research findings supported that the acceptance of natural settings in the three neighbourhood parks illustrated these ideas, and the application of understory planting was minimal. The application of small numbers of shrubs and groundcovers in all three neighbourhood parks are usually will be manicured and trimmed as what a common practice in Malaysian urban parks.

Though the understorey is usually manicured and trimmed, yet the research still found that there were cases in which this naturalistic planting and natural setting were perceived to have maintenance issues. The research

findings revealed that 'naturalistic planting' was most likely to be perceived as 'bushes', and therefore messy. These findings assured the claimed by J. I. Nassauer (1995). In addition, many participants especially in Neighbourhood Park 3 which presents more 'naturally setting' than the other two parks accused the local authority of not taking appropriate action to prevent the wild aquatic plants and weeds from overgrowing along the lake edges. These perceptions of inappropriate attention to care, or negligence was a result of the physical appearance of excessive, untrimmed, and wild vegetation that impacted the aesthetic values of the vegetation. These finding contested the claim by Hoyle et al. (2017) and Jorgensen et al. (2002) that the impact of aesthetical value of the vegetation perceived from spatial arrangement.

Similarly, there was also a concern to many participants especially in Neighbourhood Park 3 on formal and organised planting. These types of planting were perceived to be aesthetically neat, yet there are findings indicated opposite. The nodes and narratives findings indicated that a clump of planted bamboo trees was also perceived as poorly maintained 'bushes'. The findings from collective photographic images indicated that this was due to perceived untrimmed understory and lawns. Meanwhile, participants in Neighbourhood Park 2 were concerned about formal trees arranged in multiple rows, which were perceived to be too 'dense' and 'overcrowded'.

The findings regarding the visual appearance of planting and vegetation suggested that in all three parks, there were perceptions of dense and messy vegetation were closely related to descriptions of untrimmed, overgrown, and overcrowded. Therefore, despite of types of planting, either natural setting of vegetation to a more formal and orderly planting, these apprehensions of untidy and messy ecosystems demonstrated a distortion of the aesthetic value, which was alleged to constitute poor maintenance, corroborating previous research by Filibeck et al. (2016), and Nassauer (1995).

Besides planting and vegetation, the research findings revealed that one of the most concerning physical issues in all three neighbourhood parks such as rubbish, litter, and waste. These three issues revealed the weaknesses in waste management at the neighbourhood parks, supported the claim by (CABE Space, 2005; Wilson & Kelling, 1982). The findings revealed a first issue of uncollected rubbish in bins around the park. Many participants

from Neighbourhood Park 1 were concerned about the rubbish overflowing from bins that also attracted groups of crows. Besides bins, most of the participants were concerned about the excessive food waste from the restaurant and stalls that were placed near the public recreational area, such as the playground, and that a significant amount of time was required before it was noticed and collected by the park workers. Besides bins, issues of clogged drainage in the park because of rubbish and waste were also amongst the concerns of the participants from Neighbourhood Parks 1 and 2. The clogged areas were usually found around inlets and outlets and were perceived as 'dirty' by the participants, and was worse in Neighbourhood Park 1. The participants reportedly said that there were strong and disgusting odours reaching their houses from the park, especially during heavy rain. These two issues of perceived dirty and disgusting odours influenced participants to think that 'no one cares', supported the discussion of previous research by Bedimo-Rung et al. (2005), PPS (2008b) and Wilson & Kelling (1982). This research also found an influence of park size that can mean odours reach the housing area, as compared to Neighbourhood Park 3 which is the largest park of the three case study areas, an issue that was not really emphasised by participants.

Whilst participants in Neighbourhood Park 1 and 2 talked about waste and rubbish, participants in Neighbourhood Park 3 expressed their main concern to be signs of poor maintenance, ranging from broken property to damaged facilities. Many participants agreed that the most problematic issues of maintenance involved the hard landscape, such as park equipment and facilities, corroborates the argument by Lestari (2010), and later by Zuriatunfadzliyah et al. (2013) that these visible sign causes uncomfortable and dissatisfaction.

The findings revealed that the condition of pathways was one of the most concerning issues in all case study areas. Pathway such as walkways and jogging tracks are important elements of park design, providing connectivity between spaces in a park as well as functioning as the main recreational facilities for walking and jogging. Therefore, it is assumed from the beginning that every park user is familiar with the conditions of the pathways. The findings confirmed the assumption by Khachatryan et al. (2020) and

revealed that the more familiar the participants were with something, the user's knowledge of maintenance aspects were increased, especially with regard to that particular element. The narrative findings revealed attributes such as 'undulating', 'uneven surface', and 'broken' to portray the condition of the pathways that leave the traces of inadequate maintenance.

Besides pathway, the inadequacy of facility maintenance was also found from the damage of recreational facilities, especially playgrounds and outdoor gyms, in all three neighbourhood parks, as well as the reflexology path, gazebo, and also the seating. Besides inadequacy of maintenance, the damage and displacement in playgrounds and outdoor gyms, such as broken exercise equipment and missing signage, increased the perception of the presence of dis-amenities, especially among participants in Neighbourhood Park 3. These signs perceived visually by participants deteriorates the images of spaces and impart discomfort supported the argument by Zuriatunfadzliah et al. (2013), and affect perception among users (Hedayati Marzbali et al., 2016). The consequences of the above are discussed in the following subtopic, cues for perception of personal safety.

Meanwhile, Neighbourhood Park 1 revealed an additional attribute that was a sign of being disorderly, namely the presence of graffiti. Surprisingly, this is the only one park of the three case study areas where the local authority has provided a specific wall for graffiti. Yet, the issue still occurs throughout that park. Similar to damage of equipment, graffiti portrayed the inadequacy of the regular maintenance and was also perceived as a sign of dis-amenities in park maintenance.

One of the issues related to weather yet still indicated the inadequacy of maintenance and negligence is the issue of waterlogging. The narrative findings indicated that two parks, Neighbourhood Parks 2 and 3, faced this issue. The waterlogging in Neighbourhood Park 2 was extensive, hence the considerable concern expressed by many of the participants. One of the participants mentioned that the extensive waterlogging has been there 'for quite some times', indicating that no action has been taken, or at least no active action, to counter the problem. This lack of fast and active action suggests the perception of the area being neglected by the local authorities.

The research findings on disorder and dis-amenities explained above indicates how signs of negligence, signs of 'no one cares', and inadequacy of maintenance, were perceived visually as maintenance issues in the neighbourhood parks, as argued by Bedimo-Rung et al. (2005), and reported by CAFE Space (2007). On the other hands, the presences of unrepaired damage of facilities and equipment suggests an inadequacy of maintenance of these three neighbourhood parks as claimed by Paramita (2019) and Nicola Dempsey and Burton (2012). The rigorous explanation from the research findings supported the argument from several previous studies on perceived disorder and dis-amenities in parks as one of the concerns about maintenance (CAFE Space, 2005, 2007; Chen & Jim, 2010).

### **7.1.3 RQ3: How do traces of maintenance issues become cues that affect people's sense of personal safety?**

This subtopic offers some further discussion of the attributes in the previous findings on maintenance issues, providing evidence that these maintenance issues affected the perception of personal safety. The research findings on cues concluded that there are two potential impacts perceived from the maintenance issues: firstly, on perceived safety and fear of being a victim of crime, and secondly perceived physical safety and security.

Initially, the statistical findings suggested three main factors that affected perception of safety, which are (i) maintenance and appearance, (ii) planting design and organisation, and (iii) environmental satisfaction. The findings revealed that the strongest factors contributing to perception of personal safety are the maintenance and appearances, and challenged the research argument that incidents of crime, and experience of crime, affected the perception of personal safety (Khairiah, 2008; Rangajeewa, 2017) (Khairiah, 2008). These six issues of maintenance that were found to be highly associated with sense safety, except for defective and faulty equipment. These findings confirmed the previous research arguments (Aldrin et al., 2015; Efobi & Campus, 2016; Othman El Sayed, 2019), and earlier by Graham & Thrift (2007) and Khairiah (2008), and explored rigorously how and why these cues

from maintenance affected the perception of personal safety through the qualitative findings.

### *Perceived safety and fear of being a victim of crime*

The quantitative findings revealed that the most impactful factors on perception of personal safety are perceived safety and fear of being a victim of crime. The research suggested perceived safety is an emotional response that is contributed by three factors, (i) perceived enclosure and openness, (ii) presence of physical incivilities, and (iii) signs of disorder and dis-amenities. Despite appreciation to aesthetic quality of planting and vegetation, the research found more plausible factors where emotional responses might elicit more consistent association between 'perceived safety' and the visual access from the soft landscape design. This is aligned with the study findings by Mak and Jim (2018). For instance, the 'bushes' creates visual concealment, designating enclosed or partially enclosed spaces. Similarly, the quantitative findings suggested an elevated concern with spaces with low visual permeability. For instances, the statistical findings revealed a certain preference for 'long distance views' ( $m = 7.89$ ) compared to a dense area with limited visibility ( $m = 6.69$ ), and enclosed scenery ( $m = 6.69$ ). Characteristics such as gender and ethnic minorities had a surprisingly small impact on the views: females and Indians were more like to prefer an open space with long-distance views. The findings related to these perceived enclosure revealed four attributes contributes to concealment that were perceived to be unsafe and ignited concern such as 'wild and tall trees', 'bushes', 'a very big trees near the road', and 'wild aquatic plants that blocked scenery'.

Whilst many participants complained about vegetation that created concealment, some participants were also concerned with 'hidden spots' created by hard landscape elements such as walls, and spatial arrangements that may pose difficulties in determining what is in front.

The two findings regarding visual accessibility suggested a strong relationship between feelings of fear and being a victim of crime. The narratives explained that the negative emotional responses were grounds due to the feeling of being unable to see into their environment, hence the location that made the being vulnerable. Thus, this confirmed the theory of prospect-



refuge by Appleton (1975) that a 'prospect' perceives users' ability to see potential threats and offenders could strengthen the sense of safety. Besides, these support to similar findings by Mak and Jim (2018) that unsafe feeling may pose from the difficulties to identifies what is around and to determine an escape route or 'refuge' space when in danger.

Besides prospect, these findings also revealed that participants preferred being able to see other park users, therefore the high preferences to a high occupancy area in all three neighbourhood parks. Therefore, the finding indicated a high preference for area such as the food court and an active sports area. These findings suggest that the presence of other park users increase a sense of safety in a park, similar to the idea of seeing and being seen described by Clarke (1995). For instance, people feel safer in a vibrant area, where any incidences of crime would be noticed by others. Nevertheless, these research findings argued that there is a contrasting perception between passive and active areas, as well as enclosed and open spaces. The preference on passive area may poses from the need of a 'refuge' area to stay invisible to potential offenders while there are no other park users present, that is support to the prospect-refuge theory. Meanwhile, the findings indicated the increase in feeling safe in high occupancy open, that enable people to see and be seen by other people, that supported Jansson et al. (2013) suggested as allowing one 'to be alone without being isolated' (P.130).

Furthermore, nighttime and lighting were mentioned by some participants as having an impact on their feelings of fear, especially in areas with high concealment. For instances, the participants linked their feelings of fear rising because of the presence of strangers at night that is aligned with Jorgensen et al. (2013) investigation on social-threatening users. The narrative findings discovered the presence of young people was the main concern, whom the participants associated with anti-social behaviour such as 'illegal motorcycle street racing', 'involved in street fighting' and 'making noise causing residents discomfort'. These three narratives revealed the public nuisance from antisocial behaviour that were perceived as incivilities that increase participants' feelings of vulnerability and decreased the feeling of safety among participants. This is similar to what Mak and Jim (2018) mentioned as one of visitor-related concerned.

Besides the presence of strangers and antisocial behaviour, feelings of fear of being a victim of crime at night was also linked with adequate lighting, similarly what was found in park design and management issues by Mak and Jim (2008). Participants from the three neighbourhood parks revealed their feelings of being unsafe when in an area where 'the light is glaring', 'no lighting' and 'spooky ambiance' and discouraged night-time activity. The narrative findings specifically revealed that the thought of there is a potential offender in the park encourages the feeling of vulnerable and fear of being a victim of crime, consequently resulting in avoidance of using the park at those particular times, which in this study are during nighttime and early morning before sunrise.

The research findings also revealed the perception of 'no one cares' as emphasized by (Bedimo-Rung et al., 2005; CABE Space, 2007), resulting from the visual apprehension of two maintenance issues, which are the waste management and litter, and broken facilities and damage to park equipment. These two maintenance issues left physical traces of incivilities because of the poor appearances. The previous subchapter on issues of maintenance exposed the traces of waste management from rubbish, litter, and waste around the three neighbourhood parks. One of many perceptions of the traces of poor maintenances perceived as dirty. Initially, there are two consequences of trash, litter and waste, which are disgusting odours and presents of wild animals such as crows. These findings supported the argument by CABE (2004) and CABE Space (2005) that these traces are a sign of incivilities that create an uninvited ambiance and cause people to leave the space. Whilst it is interesting to speculate on the underlying reason, this study provides less explanation as to how these two consequences directly affected the perception of personal safety, except it does affect their feelings of discomfort. These feelings of discomfort cause avoidance of the space where the wild animals used to be seen.

#### *Perceived physical safety and security*

Further findings revealed one intervening factor that linked the traces of poor waste management and rubbish with the perception of personal safety. For instances, participants were concerned with the presence of wild animals near

the uncollected litters and waste such as crows that indirectly gave the feeling of being unsafe when near a particular space or bin. The fear of wild animals was perceived from the feeling of anxiety of being exposed to danger. This particular finding supported arguments made in two local studies by Roziya (2016) and Farbod et al. (2014) that there is fear of being harmed by wild animals that can affect people in neighbourhood park, and were found near the uncollected waste and overflow bin.

Whilst some of the participants were concerned about wild animals, many participants were concerned with the broken and damaged recreational equipment and facilities. Although earlier findings on preferences indicated high preference nodes at the active areas with many facilities and at the outdoor gym stations and confirmed that damage did not deter usage, but merely limit the activities as argue by Hamilton (2011), nevertheless the findings on perception of personal safety revealed a significant reduction in perception of personal safety. The research findings revealed firstly that damage and displacement in playgrounds and outdoor gyms, such as broken exercise equipment and missing signage, give the perception of incivilities occurring. Participants were likely to associates the antisocial behaviour and vandalism with the damage to such equipment. Similarly to what were found earlier by Jansson et al. (2013) and Zuriatunfadziah et al. (2013).

The research findings proved the previous argument that the poor-quality presentation from the broken and damaged elements are the sign of incivilities that develop as a visual cue that could increase fears on crime as argues by Foster and Giles-Corti (2008). However, the contrasting findings from this research revealed that broken and damaged equipment were more likely associated with perception on physical safety and security, and agree with (Hamilton, 2011) that it only may limit the activities but not causes avoidance because of any fear towards crime. For instance, the concerns on physical safety and security were mentioned such as 'it is not safe to use', 'unsafe for run', 'need to be careful while running', and 'dangerous. Interestingly, it revealed the most frequently mentioned issues concerned on the deterioration of the qualities of those facilities that amplify the perception of physical harm and insecurity. This anxiety of potential physical harm increased among parents with children.

## 7.2 Research Conclusion

The research initially set out to investigate the influence of maintenance on users' perceptions of safety when utilising neighbourhood parks by providing critical discussions on the key issues of physical conditions and visual appearance, and specific implications concerning the perception of personal safety among neighbourhood park users.

Beforehand, the overall findings on perceived maintenance at neighbourhood parks concluded two sub-division of issues, which are, issues on general cleaning and waste, and issues on repair and restore of park materials and elements. These findings revealed the inadequacy of 'maintain' and 'repair' components in the maintenance processes as outlined by Paramita (2019), as well as the maintenance of physical elements as mentioned by Dempsey and Burton (2012) has strong effect on perception of personal safety.

Firstly, issues on general cleaning and waste basically inviting the emotional responses to the park users for instances the overflowed dustbin invited crows to have made park users feeling uncomfortable, similarly as what was found in earlier studies of urban parks in Kuala Lumpur (Farbod et al., 2014). Meanwhile, this research also exhibits 'the cycle of crime' (in Newman's 'broken window' theory) in urban neighbourhood park such as the littering and waste invited other inappropriate behaviour (CABE Space, 2005, 2007), similarly to what were found in earlier study in campus environment (Sas et al., 2021).

Furthermore, the research findings confirmed that maintenance has a considerable impact on the perception of personal safety in neighbourhood park. This research concluded two potential impacts of maintenance, namely feelings of safety and fear, as well as perceived physical safety and security, Feelings of safety and fear of being a victim of crime found in this research findings is actually an emotional response to visual apprehension of inadequate maintenance of both vegetation and hard landscape features that are perceived as messy, hidden, and the perception of the presence of potential offenders. These three perceptions confirmed several arguments such as 'untidy ecosystem' by (Filibeck et al., 2016; J. I. Nassauer, 1995),

hidden corner represented enclosure that so much affected likelihood of space (Norouzian-Maleki et al., 2018), and on hiding space for potential offenders in the theory of prospect-refuge (Appleton, 1988; Ramanujam, 2006).

Meanwhile, the physical traces of poor maintenance from hard landscape elements and facilities are perceived as potentially leading to physical harm. These findings add to the built environment research evidence base showing the factors effecting physical safety (as found by Farbod et al., 2014), yet it was found not deter the usage but limiting the physical activity level as what argues earlier by Hamilton (2011). These associates to the second maintenance issues on repair and restore of broken park materials and elements that confirmed to have a distinct effect on the deterioration on functions of the space or the elements itself as revealed in the conflict of restaurant, mobile stalls, and decking at Neighbourhood Park 1 and some of the outdoor gym areas in Neighbourhood Park 2. These findings further provide evidence on how poor conditions of an area or equipment led to underutilisation of spaces as argued by Al Zelinka and Brennan (2001) or misused. Besides, this second issues hold up evidence of people concern on physical security such as afraid on physical injury as described by (Bratman et al., 2012; Roziya, 2016), and the fear towards being the next victim of crime (Bedimo-Rung et al., 2005; PPS, 2008a).

Besides, this research argues that cues from maintenance linked to many factors including improper landscape and spatial design, poor maintenance, low occupancy and lack of activity, and uninvited antisocial behaviour. This research supported the broken-window theory where the 'circle of crime' may occur because of inadequate action of maintenance (Wilson & Kelling, 1982). Maintenance issues that are left unresolved impart discomfort and fear, and consequently encourage park users to withdraw from the park, that confirm similar studies as reported by CABA Space (2005).

In conclusion, the research suggested two outcomes of maintenance that should be taken into consideration while planning a development of a new neighbourhood park, and for the place-keeping processes of existing neighbourhood parks as emphasised by Dempsey and Burton (2012) and in previous research (Dempsey, 2008, 2012b; Dempsey et al., 2014; Nam & Dempsey, 2019a). **These two outcomes are visual imprint, and**

**functionality of spaces.** As one of the importance of place-keeping is to ensure good quality of a space (Dempsey, 2012b), the collective findings from this research suggested that the visual imprint from maintenance contributes much to the good quality of park by providing an aesthetical quality of the neighbourhood park landscape, through the needs of openness and enclosure based on the relevant space functions and activities. These consideration of these two design characteristics (openness and enclosure) could commence earlier during the preplanning of design and development as emphasized by Dempsey & Burton (2012), as well as during the control processes of existing neighbourhood park as mentioned by Henke (2007). In contrast, it is importance to take considerable care with the visual concealment factors offered by the space design and organisation as this research found least preferences on enclosed spaces despite studies by Norouzian-Maleki et al. (2018) argues that enclosure could contribute to liveliness of spaces for similar hotter climate country resembling in her case study in Iran and Estonia.

Alternatively, this research suggested to have variation in planting characteristics (organised and natural setting) in a neighbourhood park based on the spatiality, such as active, semi-active, and passive areas. Nevertheless, despite being the most preferred area, this research concurs with two other research in Malaysia (Roziya, 2016; Sarah, 2020) that natural settings must be at the focus of maintenance strategies, especially with regard to the understorey layer of the park which usually imparts different kinds of visual apprehension amongst neighbourhood park users. The maintenance of the understorey should be considered for long-term management and control in place-keeping strategies, to provide a good tangible product continuously in a long span of time (Dempsey et al., 2014).

Besides aesthetical quality, the traces of maintenance also contribute to indications of threat to neighbourhood park users. The collective findings confirm the sign of threats was typically perceived as related to the quality of each soft and hard landscape element in a neighbourhood park. In the meantime, the sign of threat perceived from the sign of incivilities especially from physical traces such as broken property from vandalism, and graffiti had proved the argument by earlier researchers (Hur & Nasar, 2014; J. I. Nassauer, 2011) that these are cues that affected feeling of safety. Besides its potential

impact on feelings of safety and fear, the poor maintenance was likely to affect the perception of danger and harm to physical security. Therefore, an adequate and prompt solution to is suggested for any reports regarding degradation of spaces, especially recreational facilities, as outlined in one of 'repair and maintain' process in place maintenance (Paramita, 2019).

Recreational equipment and facilities are two important items that are linked with the functionality of a park. The contrasting findings indicate a high preference towards the facilities but low perception of physical safety because its poor maintenance suggested that the functionality was the main concern for the utilisation of the recreational facilities and equipment. These findings is similar to earlier study by Hamilton (2011) in Canada that found the deterioration of equipment quality have limiting the physical activity in certain degree, yet did not deter the usage of the recreational facilities. Nevertheless, the issues of functionality revealed in this research should be taken into consideration for re-planning a place-keeping, through reorganise the maintenance and management of these three neighbourhood parks in particular, as well as other parks in the urban neighbourhood context in Malaysia in general. This research concurs to Dempsey and Burton, (2012) that maintenance as product that presents tangible outcomes of a good and bad of spaces. There are three issues that are noteworthy found in this research, including activities between spaces, conflict in use, and underutilisation and avoidance of certain spaces at certain times.

On the other hands, the research finds the need for **various strategies of maintenance and management for parks based on the typological characteristics**. The evidence from the literature and from previous discussion and conclusion of research findings argues that there are no one-size-fits-all in maintaining landscape areas, especially for different ty pologies in parks under different local authorities. For instance, the contrasting perception derived from natural setting in park with the higher preferences for the same natural setting. Hence, these typological characteristics were found to have an impact on the perception of personal safety, and determined the utilisation or abandonment of spaces. This is similar to suggestion by Mak and Jim (2018) for the park managers to identify the right

policing strategies and maintenance for the specific parks in order to deter crime and encourage perception of personal safety.

Therefore, the research suggested two typologies of parks that should be consider for the maintenance strategies. **Firstly, the typology based on the park classification, for instance urban park, neighbourhood park, playground and many more.** These different types of park classification were made according to the park characteristics such as park size, park location, the adjoining residential landuse or commercial as well as the responsible municipalities. These characteristics itself are tell the different kind of users, proximities, that have interrelation with different perception, perceived and usage towards the park. **The second typology to be determined are the elements in the park** such as natural setting or organised landscape, presence of natural elements such as lake, streams, the park surface whether merely flat or undulating, the change of level, additional land use such as restaurant or cafes that may give impact on perception, or behavioural of users in parks. These two typological characteristics of parks are noteworthy found in this research, that have a huge impact to the utilisation of the park, includes social and physical activities, as well as impact to the perception of personal safety in which discourage or encourage good perception, sometimes causes conflict in perception, that may lead to the avoidances and underutilisation.

### **7.3 Implications of The Research**

This second section assesses the implications of the research findings for neighbourhood park maintenance, and maintenance management in terms of landscape design and characteristics, and maintenance procedures. There are two issues of significance from the research; on theory and practical to aid for the design knowledge and development needs of neighbourhood parks maintenance and management within the context of current local government, in Selangor in particular and Malaysia in general.



### **7.3.1 Practical implications for landscape architecture design and management**

The study on the impact of maintenance (mainly) and park design and characteristics has certain implications for practice and policy, particularly for maintenance processes and the requirement to improve the perception of personal safety, as well as preplanning knowledge for both maintenance and security aspects for the design and management process in neighbourhood parks. This knowledge may help the design community such as architects, landscape architects, urban geographers, and stakeholders such as local authorities, businesses, and developers to be aware of establishing the design indicators that tackle both maintenance considerations and personal safety in order to meet residents' expectations.

#### **a) Current landscape maintenance operational procedures**

The Manual Work Procedure (MPK) is set out specifically for maintenance units in the two departments in MBSJ, the Department of Landscape and the Department of Engineering, giving job descriptions for all maintenance staff. Nevertheless, the research discovered that there are no specific maintenance operational procedures set out for MBSJ, nor do they target the different types of green spaces or landscapes, or neighbourhood parks. In contrast, the evidence from the literature and the research findings argues that there are no one-size-fits-all in maintaining landscape areas, especially for different typologies in parks under different local authorities. Based on the research findings, the following recommendations are outlined according to the issues discovered.

- **Proper documentation for maintenance operational procedures**

Earlier during the secondary data collection, through several meetings and initial interviews with a number of personnel that provided background learning of the case studies and the Selangor context, it was found that both local government departments (the Department of Landscape and the Department of Engineering) did not have a good maintenance manual that outlined appropriate maintenance procedures

and gave appropriate maintenance work descriptions. This is not to say that there are no standard procedures for their maintenance work at these three neighbourhood parks. Both departments, however, have two separate reports for maintenance that outline the workflow chart, a yearly survey report on neighbourhood park inventory, and statistics relating to maintenance reports online for complaint resolution. Nevertheless, these reports did not offer thorough explanations of work procedures, or a systematic examination of previous maintenance work and amendments based on the outcome of previous works and reports. Therefore, it is noteworthy to improve for good practices by starting with proper documentation of maintenance in a form of report. A good documentation according to Francis (1999) that explains the maintenance processes and the outcomes of previous maintenance projects is important in that it offers systematic examination and decision making for future improvements to practice, policy, theory, and/or education.

- **Improvement in maintenance procedures based on typological characteristics**

As there is no one-size-fits-all for maintenance works, this research suggests that maintenance is a consideration based on the typological characteristics of a park. These typological characteristics were found to have an impact on the perception of personal safety, and determined the utilisation or abandonment of spaces. Therefore, the following considerations are suggested based on the typological characteristics of parks.

*Water resource as a distinct character of park*

One of the larger differences in character found between neighbourhood parks and other parks under the MBSJ's supervision is the lakes. This distinct feature was also highlighted by the head of the maintenance unit from Department of Landscape, namely that the lake size affects the overall size of a neighbourhood park, as well as its operational costs. Besides, there are issues regarding excessive wild

aquatic planting at the edges of such lakes and excessive volumes of weed that were subjects of concern regarding on the users' security, and which require frequent maintenance and attention on the part of the local authority. Nevertheless, the maintenance work that takes place was not mentioned in the maintenance procedures but was rather considered part of complaint resolution. The research suggests that because of it is one of the characteristics of the park that increases their aesthetic quality and invites additional recreational activity such as fishing, it is therefore important to include maintenance work in the operational procedures, especially when considering the cost of the maintenance for the improvement of place-keeping of the neighbourhood park in the future.

*Aesthetic quality and reassessment of natural settings in urban neighbourhood parks*

The research findings suggested a high preference for natural settings, and which at the same time has a significant impact on feelings of being unsafe and fear, indicating that there are a number of underlying factors experienced by park users that contribute to the contrast in perception. Nevertheless, the literature explored differences in understanding the natural setting, naturalistic planting, and naturalness of an ecologically designed landscape in the Malaysian urban context. The research findings described the types of natural setting in neighbourhood parks in the urban context with the understanding that trees that receive less human intervention, yet with low density understorey. This type of design is believed to increase the perception of personal safety while the park users experience the aesthetic quality of such natural settings when in parks, and which complies with the theory of 'cues to care' by Nassauer (1995). Nevertheless, the research finds that it is very important in every research effort to establish the clear understanding of natural settings, naturalistic planting, and the naturalness of an ecologically designed landscape for the context of the study, because the reassessment of these types of planting later for the improvement of maintenance policies and procedures.

Interesting findings indicated the high preference by respondents for natural settings in parks, and a variation in planting character due to its instant visual impact from its considerable aesthetic quality. This is consistent with the research findings of Roziya (2016) and Sarah (2020). Nevertheless, the research findings suggested that besides the aesthetic quality, there are intervening factors that should be considered because of their impact on preferences, as well as feelings of safety and fear among users. These confirmed the suggestion by previous studies by Roziya (2016) and Sarah (2020) that there is a necessity to consider several factors such as the cleanliness and tidiness in the natural setting, especially the understorey, such as lawn and groundcovers. A clean and tidy neighbourhood park contributes to an aesthetically pleasing setting (R. Kaplan, 1985) and increases the perception of personal safety (Nassauer, 1988).

Another factor that is necessary to improve public perceptions of personal safety in natural settings are a low concealment landscape that allows for high visual accessibility. The research findings indicated that high concealment as perceived from a wild appearance in natural settings imparts feelings of being unsafe and an anxiety about potential threats such as from wild animals and/or crime (Hitchmough & Dunnett, 2004; Jorgensen, 2003a), and potential physical harm through a perceived increased risk of having an accident in such settings (Farbod et al., 2014; Keeler et al., 2019). Besides adequate maintenance for the planting and vegetation, especially for aquatic plants near lake edges, and trimmed lawn, the research also suggested that more single layers of planting, multilayered planting without understory, or manicured understory be applied more to create clear and less visually obstructive landscapes (Jorgensen et al., 2002; Roziya, 2016).

#### *Additions to the neighbourhood park inventory*

One of the better initiatives enacted by the MBSJ to monitor the issues in maintenance was through the yearly neighbourhood park inventory of the soft landscape (trees, shrubs, and groundcover) and hard landscape elements (structure and ornamental elements). As the

research findings revealed that issues of maintenance contribute greatly to perceptions of safety compared to the other factors discussed above, especially with regard to damaged and broken facilities, it is therefore suggested that the annual inventory should be increased in frequency, for instance to have a quarterly inventory. The increase in frequency of the survey would help to better understand site issues related to the vandalism and incivilities that cause the public to avoid certain areas, and encourage prompt action to be taken before the spaces in question deteriorate and are abandoned. Although the findings prove that the functionality of the public facilities is of greater concern to participants, their feelings cannot be taken for granted as this results the user avoiding in the parks during certain periods, such as at night.

#### *Spatial arrangement and functionality*

The research findings also revealed the conflict of use because the spatiality causes three main problems in the neighbourhood parks, which are issues relating to obstruction of the main function, excessive waste, and misuse of spaces. The knowledge from these findings could potentially help to improve spatial demarcation between spaces with two different functions and types of users. This view has been confirmed in the previous literature on the importance of clear demarcation between public and private spaces (Aldrin, 1999; Jacobs, 1961), and could increase the functionality of each space and help to minimise or even avoid conflict. Besides, space function and activities are amongst the themes applied in CPTED programmes (Bursik & Grasmick, 2008).

#### ***b) CPTED and Safe City Program***

With the aim of encouraging the perception of personal safety in parks, every local authority is encouraged to follow the Safe City guidelines aims towards having a clean, comfortable, and safe environment (PLANMalaysia, 2004). Nevertheless, up until the final data collection in 2017, the research indicated that the Department of Landscape was not directly involved in the implementation of Safe City guidelines. The monitoring of the Safe City Programme for the MBSJ is undertaken by the Planning Department. One of

the setbacks that the research revealed is reduced implementation of CPTED measures, and less concern about evaluating the perception of safety in any park management programme by the Department of Landscape.

The indication in CPTED strategies regarding environmental design initiatives is emphasised in tackling perceptions of safety and in reducing crime through the physical environment (Siti Rasidah & Aldrin, 2012a). These require active participation on the part of the park management team, which is managed by the Department of Landscape.

These research findings correspond to some of the issues highlighted in the Safe City initiatives, such as cleanliness and tidiness of concealed and unkempt areas (Initiative 8), lighting issues (Initiative 11), view obstruction from walkways (Initiative 12), and improved design to encourage activities in vulnerable areas (Initiative 14). In addition, the issues of damage to property and the effect of natural settings in parks support the two main aims of the Safe City concept in Malaysia (Shuhana & Natasha, 2013).

Therefore, the research suggests active participation by the Department of Landscape through improvements to maintenance procedures and environmental design in future park development to directly monitor the application of the underlined CPTED strategies and prevention steps, while educating the public regarding awareness of crime, as well as the responsibility to monitor the park together with the local authority. Besides, active participation by the Department of Landscape and the involvement of the local community would encourage the perception that the parks are under good care by the local authority.

**c) Improve knowledge of low maintenance and self-sustained planting**

The knowledge delivered in this research can also be used as a guideline for management to identify low maintenance, self-sustained planting that ensures any development not only considers the development cost but also the long-term cost of maintenance. The goal of this research to study the relationship between maintenance with perception of safety is also to provide knowledge regarding cues for personal safety, to create a safer park environment that is self-sustained or low maintenance in the long run. This threefold knowledge

contributes to the sustainability and liveability of a community. The comprehensive findings of this research facilitate the solutions and strategies that can be extracted to guide the development of neighbourhood parks in particular, as well as any other public parks in general. This strategy would help to improve not only the design, but also the management of public parks.

### **7.3.2 Theoretical implications**

This thesis expands the theories on maintenance, crime, and socio-ecological factors contributing to the fear of being a victim of crime. The expansion of these theories contributes to the landscape architecturally, and urban studies knowledge specifically, through the understanding of maintenance issues that are perceived to be unsafe by participants.

This research expands the knowledge on fear of being a victim of crime by focusing on physical landscape attributes related to design and maintenance. The knowledge contributes to the specific approaches on how to induce feelings of safety through park landscape attributes as well as to long-term preplanning and place-keeping. The extension to the theoretical knowledge of maintenance studies related to the perception of personal safety are reframed and concluded in Figure 7.1.

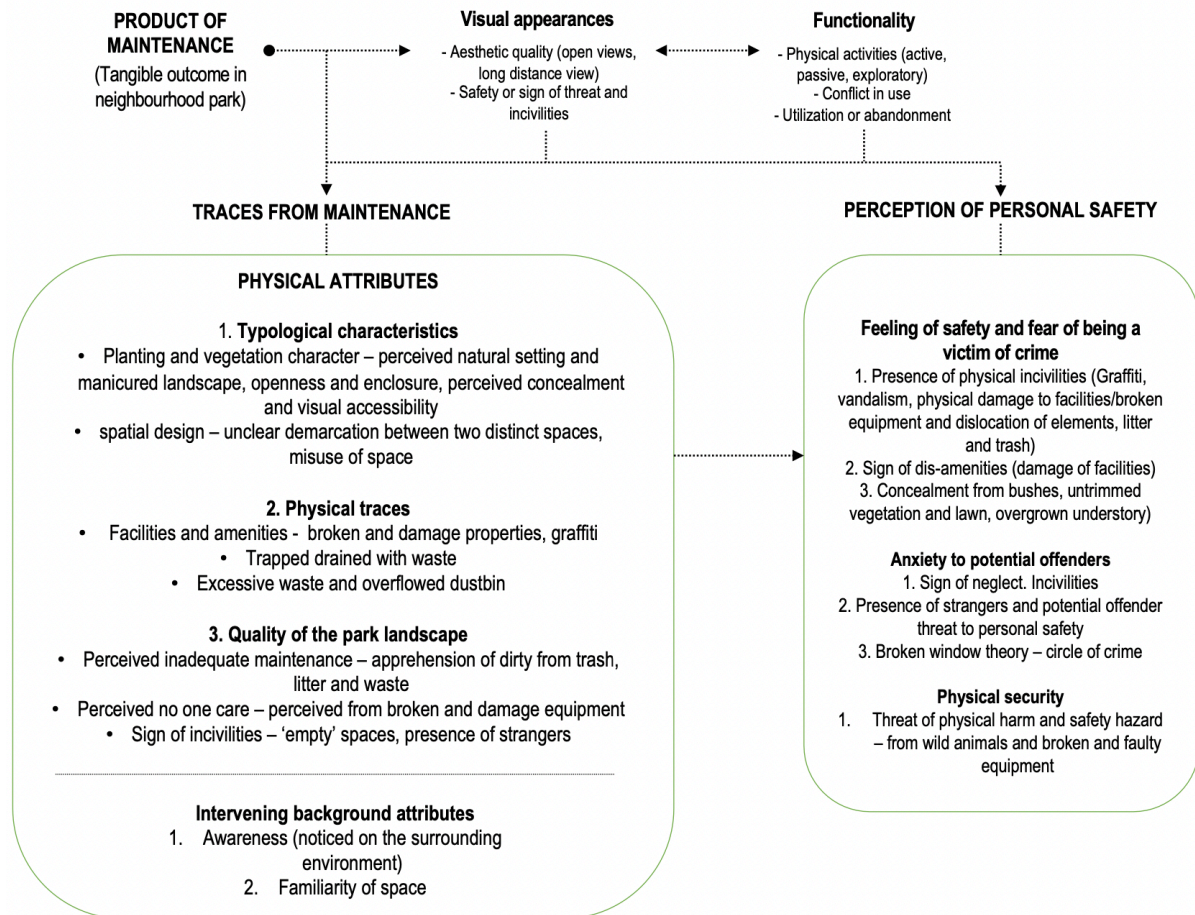


Figure 7.1 The research’s theoretical framework for knowledge of maintenance and perceptions of personal safety

### 7.3.3 Innovative methodology of focus group workshop for future research

One of the contributions of this PhD to landscape architectural research is through its innovative methodology as a tool for data collection. Through this innovative methodology, the focus of the research was explored in a more comprehensive manner, offering an in-depth exploration of the reasons and the factors that significantly affect perceptions of safety. Unlike common focus group workshops, this innovative methodology combined three tools during actual site evaluation, and provided three types of data regarding responses. These three tools are: 1) adhesive colour dot maps (adapted from needle methods for practicality during walking observation), ii) photography (individual mobile photographs), and iii) short discussions after or during the walking evaluation.



The results based on this innovative methodology, as explained in Chapter 6, illustrate threefold interactive results, which comprehensively describe the scenarios and answers in a form of distribution mapping as well as actual site photography gained solely from the participants in each small group workshop. Due to certain limitations identified during the pilot testing, the data collection process was run in six small group workshops, especially considering the ability of the main researcher to control the actual workshop on site.

The innovative methodology was a successful approach that shows the dynamic of the research, demonstrating it to be a creative way of collecting data as well as in engaging with prospective respondents, especially the end users of green facilities such as the neighbourhood parks.

#### **7.4 Recommendations for future research**

This research identified several potential limitations that are worthwhile considering for future research. One of the narrative findings identifies the different feelings of safety and fear being a victim of crime that are linked to night and lighting in neighbourhood parks. This research finding serves as a foundation for the statements and new research questions, such as: **‘How do the traces of maintenance worsen during night and how does the lighting impact perceptions of personal safety?’**. Detailed exploration of the impact of night and lighting in an area where the traces of poor maintenances would seem important. **The specific focus on different usage at night-time in relation to perceived maintenance and safety may lead to better understanding of the barriers to using urban parks.**

Future studies on maintenance in relation to perceptions of safety need to pay attention to the shortcomings listed in the previous section. **Widening the context of public parks or green spaces may be beneficial to expanding the investigation of specific factors of maintenance on perceptions of safety.** The extension of this research to different public parks could provide comparative findings on different maintenance issues and strategies to enact solutions based on different types of parks in the urban context in Malaysia.

The literature studies and research findings also indicated that there are different impacts due to different maintenance issues that can be expended to gain new research focuses, such as the visual apprehension resulting from maintenance, facilities, and equipment maintenance, or further exploration of the effects of poor waste management and traces of rubbish and litter on the perception of personal safety.

**Future research could also consider studying landscape maintenance and safety using other creative methods such as spatiality and research by design**, which this research has found to be particularly interesting. This would offer a rigorous explanation of the cues relating to maintenance on perception of personal safety, and could further establish design recommendations and solutions for specific maintenance issues.

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