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**UNDERSTANDING INTERSECTIONS OF SENSE OF PLACE AND OTHER  
INFLUENCING FACTORS IN DECISIONS TO UTILISE URBAN GREEN SPACES  
WITHIN HATFIELD AND SURROUNDING AREAS**

by

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## DECLARATION

I, Christiaan Lourens Struwig, declare that the dissertation, which I hereby submit for the partial fulfilment for the degree Master of Arts in Geography at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

SIGNATURE: 

DATE: 05/08/2023

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## ABSTRACT

Urban areas are characterised by various aspects, predominantly consisting of the built environment. Urban green spaces provide some contrast with their naturalness for those within these urbanised areas, such as parks, and are essential for recreation and well-being. However, these spaces are often neglected and under-maintained, affecting their appearance. This research project aimed to identify relationships between factors of urban green spaces and their use. The research objectives were to identify key policy and regulatory directives, to capture and assess the nature of influencing factors in decision-making to utilise parks, to evaluate the nature of intersections between cultural ecosystem services, green space attributes, and sense of place, and to provide recommendations based on the findings to inform more inclusive urban green space utilisation and planning. Hatfield and its immediate surrounding area within the City of Tshwane was the case study area. A mixed method approach involving quantitative and qualitative tools was applied, underpinned by critical realism and a systems approach. The results show that some cultural ecosystem services, most urban green space attributes, and the two sense of place components intersect with park visit frequency. However, the results further show that cultural ecosystem services, urban green space attributes, and sense of place share much more relationships, especially when between cultural ecosystem services and sense of place. What the results mean for practice, is that safety, cleanliness, recreation value service, aesthetic value service and social relations value service facilitation should be focussed on to improve the park use experience for current and non-users of parks. In formulating UGS policy and planning, a systems approach should be considered as it may enable the identification of areas that can be addressed simultaneously, ensuring a more efficient budget allocation. The research project shows just how complex and interconnected the intersections between influencing factors and park use are, but also how interconnected the influencing factors are between themselves. Despite that the systems approach greatly assisted in shaping an understanding of how influencing factors intersect with one another and with park use, reductionism was almost unavoidable in discussing some of the intersections between park use and the influencing factors, but also between the influencing factors themselves. Future research should consider combining sense of place theory and other factors, such as cultural ecosystem services or physical attributes of a place, whilst noting that a systems approach, even though complex, can have reductionistic outcomes. Longitudinal studies, capturing park dynamics and perceptions of parks, should enable a more detailed understanding of how changes in the environment relate to changes in perception and behaviour.

# TABLE OF CONTENTS

DECLARATION.....	2
ACKNOWLEDGEMENTS.....	3
ABSTRACT.....	4
<b>1 CHAPTER ONE: INTRODUCTION.....</b>	<b>13</b>
<b>1.1 Introduction.....</b>	<b>13</b>
1.1.1 Urban Sustainability and Three Pillars of Sustainable Development.....	14
1.1.2 (Urban) Ecosystem Services.....	14
1.1.3 Urban Green Spaces.....	16
<b>1.2 The Research Question and Objectives.....</b>	<b>18</b>
1.2.1 Research Aim and Objectives.....	18
1.2.2 Research Methodology.....	18
1.2.3 Context of sub-Saharan Africa.....	19
1.2.4 Parks Within the City of Tshwane.....	20
<b>1.3 Case Study Area and Parks.....</b>	<b>21</b>
1.3.1 South Africa.....	21
1.3.2 Gauteng.....	22
1.3.3 City of Tshwane.....	23
1.3.4 Case Study Parks.....	25
1.3.5 Magnolia Dell Park.....	26
1.3.6 Venning Park.....	28
1.3.7 Springbok Park.....	29
<b>1.4 The Influencing Factors.....</b>	<b>30</b>
1.4.1 Sense of Place.....	30
1.4.2 Cultural Ecosystem Services.....	30
1.4.3 Urban Green Space Attributes.....	31
<b>1.5 Rationale for the Study.....</b>	<b>31</b>
1.5.1 Structure of the Research Report.....	32
<b>1.6 Summary.....</b>	<b>33</b>
<b>2 CHAPTER TWO: LITERATURE REVIEW.....</b>	<b>34</b>
<b>2.1 Introduction.....</b>	<b>34</b>
<b>2.2 Defining Urban Green Spaces.....</b>	<b>34</b>
2.2.1 Academic Literature Definition(s).....	34
2.2.2 Policy Definition.....	35
2.2.3 Discussion and Summary.....	36
<b>2.3 Urban Green Space Attributes.....</b>	<b>36</b>
2.3.1 Natural Infrastructure.....	36

2.3.2	Humanmade Infrastructure and Safety.....	37
2.3.3	Cleanliness .....	39
2.3.4	Size .....	39
2.3.5	Park Access.....	40
2.3.6	Discussion and Summary .....	42
2.3.7	Categorisation.....	43
<b>2.4</b>	<b>Demographic Factors .....</b>	<b>45</b>
2.4.1	Age, Gender, and Level of Education .....	45
2.4.2	Discussion and Summary .....	46
2.4.3	Categorisation.....	47
<b>2.5</b>	<b>Cultural Ecosystem Services.....</b>	<b>48</b>
2.5.1	Recreation Value .....	49
2.5.2	Aesthetic Value.....	49
2.5.3	Educational Value.....	50
2.5.4	Cultural Heritage Value.....	50
2.5.5	Spiritual or Religious Value .....	51
2.5.6	Social Relations Value .....	52
2.5.7	Discussion and Summary .....	52
2.5.8	Categorisation.....	53
<b>2.6</b>	<b>Sense of Place .....</b>	<b>55</b>
2.6.1	Defining Sense of Place.....	56
2.6.2	Place Meaning.....	57
2.6.3	Place Attachment.....	57
2.6.4	Place Identity .....	58
2.6.5	Place Dependence .....	58
2.6.6	The Physical Environment Context .....	59
2.6.7	The Cultural Ecosystem Service Context .....	60
2.6.8	Measuring Sense of Place .....	61
2.6.9	Discussion and Summary .....	64
2.6.10	Categorisation.....	65
<b>2.7</b>	<b>Discussion and Summary .....</b>	<b>66</b>
<b>3</b>	<b>CHAPTER THREE: RESEARCH METHODOLOGY.....</b>	<b>69</b>
<b>3.1</b>	<b>Introduction.....</b>	<b>69</b>
<b>3.2</b>	<b>Theoretical Framework.....</b>	<b>69</b>
3.2.1	Critical Realism.....	69
3.2.2	Systems Approach.....	71
<b>3.3</b>	<b>Research Design.....</b>	<b>73</b>

3.3.1	Policy and Regulatory Directives.....	73
3.3.2	Case Study Parks .....	74
3.3.3	Literature Review .....	74
3.3.4	Online Reviews.....	74
3.3.5	Fieldwork .....	74
3.3.6	Checklist .....	75
3.3.7	Research Questionnaire .....	75
3.3.8	Google Maps Data .....	77
3.3.9	Data Cleaning and Formatting .....	77
3.3.10	Sample Selection.....	78
3.3.11	Closed- and Open-ended Question Responses .....	78
3.3.12	Statistical Analyses .....	78
3.3.13	Discussion and Recommendations .....	79
<b>3.4</b>	<b>The Conceptual Framework .....</b>	<b>79</b>
<b>3.4</b>	<b>Ethical Considerations .....</b>	<b>81</b>
<b>3.5</b>	<b>Research Challenges and Limitations.....</b>	<b>81</b>
3.5.1	Participation.....	81
3.5.2	Likert Scale.....	81
3.5.3	Privacy.....	81
3.5.4	Bias .....	82
3.5.5	Google Maps and Popular Times Data .....	82
3.5.6	Reflection.....	83
<b>3.6</b>	<b>Summary .....</b>	<b>83</b>
<b>4</b>	<b>CHAPTER FOUR: RESULTS.....</b>	<b>85</b>
<b>4.1</b>	<b>Introduction.....</b>	<b>85</b>
<b>4.2</b>	<b>Tshwane Open Space Framework of 2005 .....</b>	<b>85</b>
4.2.1	Aim and Objectives.....	85
4.2.2	Classifications.....	85
4.2.3	Management.....	88
4.2.4	Operational Maintenance.....	90
4.2.5	Discussion and Summary .....	91
<b>4.3</b>	<b>Additional Key Policy and Regulatory Directives .....</b>	<b>92</b>
4.3.1	Discussion and Summary .....	95
<b>4.4</b>	<b>Online Reviews .....</b>	<b>95</b>
4.4.1	Magnolia Dell Park.....	95
4.4.2	Venning Park .....	96
4.4.3	Springbok Park .....	97

<b>4.5</b>	<b>Google Review Ratings</b> .....	97
4.5.1	Magnolia Dell Park.....	97
4.5.2	Venning Park .....	98
4.5.3	Springbok Park .....	99
<b>4.6</b>	<b>Popular Times Data</b> .....	99
4.6.1	Magnolia Dell Park.....	99
4.6.2	Venning Park .....	100
4.6.3	Springbok Park .....	102
<b>4.7</b>	<b>Fieldwork – Site Visits</b> .....	103
4.7.1	Magnolia Dell Park.....	103
4.7.2	Venning Park .....	103
4.7.3	Springbok Park .....	103
<b>4.8</b>	<b>Respondent Profile</b> .....	104
<b>4.9</b>	<b>Respondents’ Park Use</b> .....	105
4.9.1	Park Visit Frequency.....	105
4.9.2	Sex Assigned at Birth.....	106
4.9.3	Level of Education .....	106
4.9.4	Generation Cohort .....	107
4.9.5	Employment Status.....	107
4.9.6	Overview.....	108
<b>4.10</b>	<b>Park Cleanliness</b> .....	108
4.10.1	Perceived Maintenance Sentiment.....	108
<b>4.11</b>	<b>Closed-ended Question Responses</b> .....	109
4.11.1	Reasons for Park Use.....	109
4.11.2	Reasons against Park Use.....	110
<b>4.12</b>	<b>Open-ended Question Responses</b> .....	110
4.12.1	Thematic Analysis of Responses .....	110
<b>4.13</b>	<b>Statistical Analyses</b> .....	113
4.13.1	Park Use and Influencing Factors .....	113
4.13.2	Park Maintenance and Urban Green Space Attributes:.....	114
4.13.3	Sense of Place and Urban Green Space Attributes .....	115
4.13.4	Urban Green Space Attributes and Cultural Ecosystem Services .....	116
4.13.5	Cultural Ecosystem Services and Sense of Place.....	117
<b>4.14</b>	<b>Summary</b> .....	118
4.14.1	Case Study Park Context.....	119
4.14.2	Google Review Ratings .....	119
4.14.3	Popular Times Data .....	120

4.14.4	Fieldwork – Site Visits.....	122
4.14.5	Respondent Profile .....	122
4.14.6	Park Use and Cleanliness.....	122
4.14.7	Closed-ended Question Responses.....	122
4.14.8	Open-ended Question Responses’ Thematic Analysis.....	123
4.14.9	Statistical Analyses .....	123
4.14.10	Conclusion .....	123
<b>5</b>	<b>CHAPTER FIVE: DISCUSSION .....</b>	<b>125</b>
<b>5.1</b>	<b>Park Use Context .....</b>	<b>125</b>
<b>5.2</b>	<b>The Nature of Intersections Between Influencing Factors and Park Use .....</b>	<b>125</b>
5.2.1	Urban Green Space Attributes .....	125
5.2.2	Cultural Ecosystem Services .....	129
5.2.3	Sense of Place.....	131
5.2.4	Summary .....	132
<b>5.3</b>	<b>The Nature of Intersections Between the Influencing Factors .....</b>	<b>133</b>
5.3.1	Sense of Place and Urban Green Space Attributes .....	133
5.3.2	Urban Green Space Attributes and Cultural Ecosystem Services .....	136
5.3.3	Cultural Ecosystem Services and Sense of Place.....	142
5.3.4	Summary .....	144
<b>5.4</b>	<b>Implications and Recommendations .....</b>	<b>147</b>
5.4.1	Park Use.....	147
5.4.2	UGS Planning.....	149
<b>6</b>	<b>CHAPTER SIX: CONCLUSION.....</b>	<b>151</b>
<b>6.1</b>	<b>Introduction.....</b>	<b>151</b>
<b>6.2</b>	<b>Influencing Factors.....</b>	<b>151</b>
<b>6.3</b>	<b>Research Methodology.....</b>	<b>153</b>
<b>6.4</b>	<b>Objectives and Findings.....</b>	<b>154</b>
6.4.1	Policy and Regulatory Directives.....	154
6.4.2	Park Use and Influencing Factors .....	156
6.4.3	Between Influencing Factors.....	156
<b>6.5</b>	<b>Implications.....</b>	<b>157</b>
6.5.1	Park Use.....	157
6.5.2	UGS Planning.....	158
6.5.3	The Complexity of Intersections.....	158
<b>6.6</b>	<b>Research Critique .....</b>	<b>159</b>
6.6.1	Data Collection and Sampling.....	159
6.6.2	Influencing Factors .....	159

6.6.3	Questionnaire Questions .....	159
<b>6.7</b>	<b>Further Research Recommendations.....</b>	<b>160</b>
	<b>BIBLIOGRAPHY .....</b>	<b>161</b>
	<b>APPENDIX I – SITE VISIT IMAGES.....</b>	<b>169</b>
	<b>APPENDIX II - CHECKLIST .....</b>	<b>179</b>
	<b>APPENDIX III – RESEARCH QUESTIONNAIRE .....</b>	<b>183</b>
	<b>APPENDIX IV – TABLE OF SPSS VARIABLE AND QUESTIONNAIRE ITEMS .....</b>	<b>189</b>
	<b>APPENDIX V – CALCULATIONS FOR % COMPARISON.....</b>	<b>191</b>
	<b>APPENDIX VI – RESULTS OF SPSS CORRELATION TESTS .....</b>	<b>192</b>
<b>1.</b>	<b>Between Park Use and Influencing Factors.....</b>	<b>192</b>
1.1	Urban Green Space Attributes.....	192
1.2	Cultural Ecosystem Services.....	192
1.3	Sense of Place .....	192
<b>2.</b>	<b>Park Maintenance and Urban Green Space Attributes: .....</b>	<b>193</b>
<b>3.</b>	<b>Between The Influencing Factors: .....</b>	<b>193</b>
3.1	Sense of Place and Urban Green Space Attributes .....	193
3.2	Urban Green Space Attributes and Cultural Ecosystem Services.....	193
3.3	Cultural Ecosystem Services and Sense of Place .....	194
	<b>APPENDIX VII – DATA CONVERSION AND CHANGES.....</b>	<b>195</b>
	<b>APPENDIX VIII – ETHICAL CLEARANCE.....</b>	<b>196</b>

## LIST OF FIGURES

Figure 1.1 Map illustrating the Parks from Landman (2015) .....	20
Figure 1.2 Gauteng's Municipal Demarcation .....	23
Figure 1.3 City of Tshwane Regions .....	24
Figure 1.4 Pretoria and Case Study Park-Related Areas .....	25
Figure 1.5 Case Study Area .....	26
Figure 1.6 Magnolia Dell Park Aerial View .....	27
Figure 1.7 Venning Park Aerial View .....	28
Figure 1.8 Springbok Park Aerial View .....	29
Figure 2.1 Urban Green Space Attributes Categorisation .....	44
Figure 2.2 Demographic Factors Categorisation .....	47
Figure 2.3 Cultural Ecosystem Services Categorisation .....	54
Figure 2.4 Sense of Place Categorisation .....	65
Figure 3.1 Systems Approach Framework .....	72
Figure 3.2 Research Design .....	73
Figure 3.3 Conceptual Framework .....	80
Figure 4.1 Number of 1-5 Star Ratings - Magnolia Dell Park .....	98
Figure 4.2 Number of 1-5 Star Ratings - Venning Park .....	98
Figure 4.3 Number of 1-5 Star Ratings - Springbok Park .....	99
Figure 4.4 Sex Assigned at Birth Profile .....	104
Figure 4.5 Level of Education Profile .....	104
Figure 4.6 Generation Cohort Profile .....	104
Figure 4.7 Employment Status Profile .....	104
Figure 4.8 Park Use Choice .....	105
Figure 4.9 Park Visit Frequency .....	105
Figure 4.10 Park Use and Sex Assigned at Birth .....	106
Figure 4.11 Park Use and Level of Education .....	106
Figure 4.12 Park Use and Generation Cohort .....	107
Figure 4.13 Park Use and Employment Status .....	107
Figure 4.14 Park Use Tree Diagram .....	108
Figure 4.15 Perceived Maintenance Sentiment .....	108
Figure 4.16 Reasons for Park Use Count .....	109
Figure 4.17 Reasons against Park Use Count .....	110
Figure 4.18 1-5 Star Ratings of Reviews Percentage Comparison .....	120
Figure 5.1 Intersections between Influencing Factors and Park Use .....	132
Figure 5.2 Intersections between Influencing Factors .....	145

## LIST OF TABLES

Table 4.1 Tshwane Open Space Framework - Function Classification .....	86
Table 4.2 Tshwane Open Space Framework - Scale Classification .....	86
Table 4.3 Tshwane Open Space Framework - Form Classification .....	87
Table 4.4 Tshwane Open Space Framework - Character Classification .....	87
Table 4.5 Tshwane Open Space Framework - Ownership and Locality Classification .....	88
Table 4.6 Management Divisions, Sections and Subsections .....	89
Table 4.7 Tshwane Open Space Framework - Open Space Management Roles and Responsibilities .....	90
Table 4.8 Case Study Parks' Policy Classifications .....	92
Table 4.9 Additional Key Policy and Regulatory Directives .....	93
Table 4.10 Occupancy Percentage Heatmap - Magnolia Dell Park .....	100

Table 4.11 Occupancy Percentage Heatmap - Venning Park.....	101
Table 4.12 Occupancy Percentage Heatmap - Springbok Park.....	102
Table 4.13 Useability as a Theme .....	111
Table 4.14 Safety as a Theme .....	111
Table 4.15 Maintenance as a Theme .....	112
Table 4.16 Governance as a Theme .....	113
Table 4.17 Occupancy Percentage Heatmaps – All Three Case Study Parks .....	121
Table 4.18 Open-ended Question Responses .....	123
Table 7.1 Park Use and UGSA (N = 30).....	192
Table 7.2 Park Use and CES (N = 30) .....	192
Table 7.3 Park Use and SOP (N = 30) .....	192
Table 7.4 Maintenance and UGSA (N=30).....	193
Table 7.5 SOP and UGSA (N = 30).....	193
Table 7.6 UGSA and CES (N = 30).....	194
Table 7.7 CES and SOP (N = 30) .....	194
Table 8.1 Adaptation to the Data.....	195

## ABBREVIATIONS

CES.....	Cultural Ecosystem Services
CTMM.....	City of Tshwane Metropolitan Municipality
FT.....	Full-time
PT.....	Part-time
SOP.....	Sense of Place
SDG.....	Sustainable Development Goal
SDGs.....	Sustainable Development Goals
TOSF2005.....	Tshwane Open Space Framework of 2005
UGS.....	Urban Green Space
UGSs.....	Urban Green Spaces
UGSA.....	Urban Green Space Attributes

# 1 CHAPTER ONE: INTRODUCTION

This chapter serves as the introduction towards this research report. It provides the context from a global perspective down to a local perspective. Additionally, the research aim and objectives, a brief overview of the methodology, the context of the case study area, as well as the case study parks selected for this research project is then provided. Furthermore, it briefly introduces the influencing factors, and provides the rationale for the study.

## 1.1 Introduction

Agenda 2030 is an action plan for the people, the environment, and prosperity that seeks to advance worldwide peace within a greater context of liberty (United Nations, 2015). The United Nations recognise that ending poverty in all forms and dimensions is the most pressing global challenge and a prerequisite for sustainable development (United Nations, 2015). A commitment to Agenda 2030 is committing to freeing humanity from the tyranny of poverty and hunger, as well as to heal and safeguard the planet (United Nations, 2015). This calls for bold and transformative action to push the world toward a more resilient and sustainable future (United Nations, 2015).

The 17 Sustainable Development Goals (SDGs) and 169 targets represent this global agenda's scope and ambitions (United Nations, 2015). For example, Sustainable Development Goal (SDG) 11 calls to “Make cities and human settlements inclusive, safe, resilient and sustainable” (United Nations, 2017, p. 12). In addition, Target 11.7 of SDG11 involves providing universal accessibility to green and public spaces that are safe, inclusive, and accessible with specific reference to women, elderly persons, children, as well as persons with disabilities (United Nations, 2017, p. 12). Another example, SDG13, calls to “Take urgent action to combat climate change and its impacts”, and Target 13.2 of SDG13, which is to “Integrate climate change measures into national policies, strategies and planning” (United Nations, 2017, p. 14).

Indeed, the SDGs are interconnected and inseparable, and they strike a balance between the three pillars of sustainable development: economy, society, and environment (United Nations, 2015). The SDGs, interlinked with the 2030 Agenda, recognise that development should balance social, environmental and economic sustainability instead of addressing one challenge at a time (United Nations Development Programme, 2018). Particularly in the context of urban sustainability, the need for a balanced approach to sustainability is exemplified in the use and planning of urban green spaces (United Nations Development Programme, 2018).

### **1.1.1 Urban Sustainability and Three Pillars of Sustainable Development**

Urban sustainability has been defined in several ways with various criteria and emphases (National Academies of Sciences, Engineering, and Medicine, 2016). Wu (2014) specified that "urban sustainability is defined as an adaptive process of facilitating and maintaining a virtuous cycle between ecosystem services and human well-being through concerted ecological, economic, and social actions in response to changes within and beyond the urban landscape" (Wu, 2014, p. 213).

Hamilton et al. (2002) specified that the general objective is to augment urban sustainability, which is "the process of developing a built environment that meets peoples' needs whilst avoiding unacceptable social or environmental impacts" (Hamilton, et al., 2002, p. 109). Zhao (2011) refers to urban sustainability by stating that "a sustainable city is one that can provide and ensure sustainable welfare for its residents with the capacity of maintaining and improving its ecosystem services" (Zhao, 2011, p. v). Zhao (2011) also added a broad definition of a sustainable city as "one that has put in place action plans and policies that aim to ensure adequate resource availability and (re)utilization, social comfort and equity and economic development, and prosperity for future generations" (Zhao, 2011, p. 2). The *Worldwatch Institute* described that "a city moving toward sustainability improves public health and well-being, lowers its environmental impacts, increasingly recycles its materials, and uses energy with growing efficiency." (The Worldwatch Institute, 2007, p. 6).

Furthermore, the aim of urban sustainability should be to encourage and energise the long-term well-being of people and the world via the efficient use of natural resources and the production of waste within a city region (National Academies of Sciences, Engineering, and Medicine, 2016). At the same time, urban sustainability imperatives are expected to improve the liveability of the region through amenities, opportunities, and health to better fit within the ecosystem capacities of the local, regional and global scale (National Academies of Sciences, Engineering, and Medicine, 2016). Urban sustainability must therefore recognise social, economic, and environmental aspects (United Nations, 2015). After all, since cities are home to an ever-increasing proportion of the world's population and economic activity, they are pertinent, if not essential, to any debate on sustainable development (National Academies of Sciences, Engineering, and Medicine, 2016).

### **1.1.2 (Urban) Ecosystem Services**

Urban sustainability must facilitate and maintain a successful flow between ecosystem services and the well-being of persons via environmental, economic and social measures (Wu, 2014). Ecosystem services, as discussed by Gómez-Baggethun and Barton (2013), are

“benefits that humans obtain from ecosystem functions, or as direct and indirect contributions from ecosystems to human well-being” (Gómez-Baggethun & Barton, 2013, p. 236).

Similarly, Jax et al. (2013) stated that the crux of the concept of ecosystem services is that these ecosystems contribute to the well-being of people (Jax, et al., 2013). Likewise, Boyd and Banzhaf, (2007) added that ecosystems are “the benefits of nature to households, communities, and economies” (Boyd & Banzhaf, 2007, p. 616). Thus, ecosystem services play a key role in urban sustainability as it contributes towards the well-being of people, households, communities and economies (Boyd & Banzhaf, 2007; Gómez-Baggethun & Barton, 2013).

Urban ecosystems are frequently portrayed as incorporating artificial (humanmade) and ecological infrastructure in the urban planning context (Elmqvist, et al., 2013). The thought of ecological infrastructure notes the purpose of water and plants within or near the built environment in providing ecosystem services at various spatial scales (at building scale, street scale, neighbourhood scale, and regional scale) (Elmqvist, et al., 2013). It encompasses all green and blue spaces possibly found in peri-urban and urban regions, such as lawns, gardens, graveyards, urban lots and forestry, green roofs, parks, individual trees, lakes, rivers, ponds, as well as wetlands (Elmqvist, et al., 2013).

Within the urban ecosystem, there are three primary service providers or components: green infrastructure (such as vegetation), brown infrastructure (such as soils), and blue infrastructure (such as water) (Francis & Chadwick, 2013). These components provide essential (and categorised<sup>1</sup>) urban ecosystem services, namely provisioning services, regulating services, supporting services and cultural services (Francis & Chadwick, 2013; Sultana & Selim, 2021).

Provisioning services involve the provision of ecosystem products such as water, food, fuel, and medicine (Francis & Chadwick, 2013). This type of service is the most well-documented type of service and the most straightforward to assess economically (Francis & Chadwick, 2013). Urban vegetation offers fuel and food from agrarian areas or portions/gardens (especially in developing regions) (Francis & Chadwick, 2013). Aquifers, rivers, reservoirs, and directed stormwater are all sources of drinkable water in aquatic ecosystems (Francis & Chadwick, 2013). In addition to contributing to local hydropower systems, urban waterways can provide food supplies such as fish and shellfish (Francis & Chadwick, 2013).

Regulating services regulate processes or functions that can be harmful to persons, such as flooding, pollution, soil erosion, and climate change (Francis & Chadwick, 2013). Vegetation,

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<sup>1</sup> “Categorised” is used to explain that these categories or groups of ecosystem services encompass a range of different services; for example, as discussed by Francis and Chadwick (2013), under the provisioning services group, water provision falls under the provisioning services category.

soils, and water all contribute to carbon sequestration, the storage, breakdown, dispersal, dilution of pollutants, and the provision of habitat to avert biodiversity loss (Francis & Chadwick, 2013). Water and vegetation can help mitigate the urban heat island effect and reduce noise and light pollution (Francis & Chadwick, 2013). Even very low-value urban habitats such as yards or lawns can fix a significant amount of carbon due to their artificially high productivity levels and prolonged growing seasons, but cutting or mowing and biomass disposal might mitigate this benefit to some degree (Francis & Chadwick, 2013). Regulating services are critical for alleviating anthropogenic environmental consequences, yet these services are difficult to quantify (Francis & Chadwick, 2013).

Supporting services enable the existence of the other services by supporting critical ecosystem processes (Francis & Chadwick, 2013). They are long-term processes that operate behind the scenes and are possibly the least recognised and the most difficult to define of all services (Francis & Chadwick, 2013). Some examples include primary production and biomass generation, habitat provisioning, soil formation, vegetation pollination, and water and nutrient cycling (Francis & Chadwick, 2013). Soils, water, and vegetation (brown, blue and green infrastructure) all contribute to these services and are essential for a healthy ecosystem to function correctly (Francis & Chadwick, 2013). They are deeply relevant in urban ecosystems when the quality of all ecosystem services is at risk (Francis & Chadwick, 2013).

Cultural services, on the other hand, are the spiritual, aesthetic, leisure, and educational benefits humans derive from ecosystems (Francis & Chadwick, 2013). Similarly, Elmqvist et al. (2013) explained that some cultural services provided include recreation, aesthetic benefits, cognitive development, place value and social cohesion (Elmqvist, et al., 2013). These services are plentiful and significant and may have benefits ranging from enhanced quality of life to economic impacts such as increased property values (Francis & Chadwick, 2013). Both vegetation and water have well-determined psychological and physical benefits, and many leisure activities involve green and blue infrastructure (Francis & Chadwick, 2013). Given the understanding that ecosystem services play a vital part in urban sustainability, it is necessary to introduce urban green spaces.

### **1.1.3 Urban Green Spaces**

Urban green spaces (UGS), serving as critical elements of urban ecosystems, significantly contribute to sustainable development, scenery and environmental character, quality of life (Jim & Chen, 2006), to human well-being whilst providing environmental benefits (Sun, et al., 2019). Additionally, these green spaces enable a broad spectrum of ecosystem services such as improved air quality, climate control, and other factors contributing to an enhanced quality of the urban environment (de la Barrera, et al., 2016).

These spaces serve critical roles in the social, economic, cultural, and environmental aspects of sustainable development (Haq, 2011). UGSs can be a powerful approach for long-term environmental sustainability by enhancing people's quality of life and air quality, raising property value due to their amenities and aesthetic qualities, and lowering energy costs caused by cooling systems (Haq, 2011).

Similarly, Kruize et al. (2019) argue that UGS can contribute to environmental sustainability, health, and health equity (Kruize, et al., 2019). As such, UGSs, as a significant benefactor, can serve as a vital component of sustainable development (Haq, 2011). Thus, with reference to the overall contribution of green spaces, they serve a critical role in urban sustainability (Kuklina, et al., 2021), as these green spaces offer ecosystem services that benefit human quality of life (Haq, 2011). Given this understanding, what is the case of UGSs and ecosystem services in sub-Saharan Africa?

Shackleton and Blair (2013) found that variables such as low maintenance and inadequate amenities play a role in the use of urban green spaces (Shackleton & Blair, 2013). Additionally, socio-cultural values and perceptions, a lack of capacity, governance, a lack of data, and climate change are some obstacles to sustainable ecosystem service provision in Sub-Saharan Africa (du Toit, et al., 2018). For example, in terms of governance, it has been found that the Global South struggles from poor systems of formal government and planning that curb the governance of urban ecosystem services (du Toit, et al., 2018). Policy trade-offs are also evident among urban development and environmental priorities (du Toit, et al., 2018). Moreover, due to a lack of data on urban ecosystem services, there is a paucity of evidence to demonstrate the benefit of adopting urban green infrastructure in Sub-Saharan Africa and particularly in South Africa; this lack of understanding is evident. (du Toit, et al., 2018).

Despite acknowledging the importance of a range of urban green cultural ecosystem services from the perspective of urban dwellers, limited evidence about the perspectives held by people in this regard are available, especially in the context of the Global South (Sultana & Selim, 2021). The Tshwane Open Space Framework of 2005 (TOSF2005) also acknowledges that open spaces' ecological and productive functions are not fully understood and are undervalued (City of Tshwane, 2005, p. 2). With this understanding, it is, therefore, necessary to investigate the urban open space context within the city of Tshwane and the perspectives held by residents in the surrounding areas about these spaces. First, the research question and objectives are presented.

## 1.2 The Research Question and Objectives

The crux of this research is to gain an understanding of people's perceptions and use of urban green spaces, and of the nature of intersections between the determinants of these perceptions, within and close to Hatfield, City of Tshwane.

### 1.2.1 Research Aim and Objectives

This research therefore aims to assess the nature of intersections between sense of place and other factors influencing both the perceptions and the decisions to utilise urban green spaces within and close to Hatfield, City of Tshwane. To meet the stated aim, the following objectives have been formulated:

- 1 To identify key policy and regulatory directives regarding urban green space use and planning within the City of Tshwane,
- 2 To capture and assess the nature of the influencing factors in decision-making to utilise parks within the case study area, as examples of urban green spaces in the City of Tshwane,
- 3 To evaluate the nature of intersections between cultural ecosystem services, green space attributes, and sense of place, as influencing factors in decisions to utilise parks within the case study area,
- 4 To provide recommendations based on the study's findings that could inform more inclusive urban green space utilisation and planning.

### 1.2.2 Research Methodology

To meet the stated aim, the researcher applied a mixed method approach involving quantitative and qualitative data analysis, underpinned by a critical realist and systems approach. Three parks were selected as the case study area. This study investigates possible influencing factors on park use, focussing on a selection of parks within the City of Tshwane, involving a literature review, an exploration of online reviews about these parks, *Google* review ratings, and site visits. The researcher does not argue from a causal point of view, but rather correlations or relationships that can be found between possible influencing factors, and between these factors and park use.

Primary data was collected using a Google form questionnaire consisting of open and closed-ended and Likert scale questions. The questionnaire data is stored in *Google Sheets*, which, after the period of data collection, was exported, organised and processed into Microsoft Excel format. Afterwards, Spearman's Rho correlation tests were conducted to identify relationships between the factors and with park use. A thematic analysis was conducted for the qualitative analysis to interpret the responses to the open-ended questions. Finally, the researcher

conducted a document analysis of related legislative frameworks, which included the Tshwane Open Space Framework of 2005 surrounding parks within the City of Tshwane to identify key policy and regulatory directives and the extent to which these were applied in practice were examined during site visits to the parks.

Due to the fact that the research was conducted during 2021 when COVID-19 regulations were still enforced, the option to use google forms was deemed appropriate.

### **1.2.3 Context of sub-Saharan Africa**

In thirteen studies, involving Ghana, Kenya, Nigeria and South Africa, particularly with regards to cultural ecosystem services, show that recreation, and aesthetic value have been the most assessed cultural services (du Toit, et al., 2018). Respondents in six studies on urban parks and trees said that recreation for relaxation is the most important motive for them to visit, with many emphasising the importance of aesthetics and amenities like sports fields in attraction to these spaces (du Toit, et al., 2018). This demonstrates the relevance of the current research as 45 per cent of inhabitants in Kisumu, Kenya, do not frequent urban parks due to a lack of facilities and bad administration (du Toit, et al., 2018). Similarly, like forest animals, trees can also have significant cultural and heritage value for communities, however, respondents to a survey on the use of church gardens explained that they experience peacefulness and that it strengthened the atmosphere of spiritual thought and prayer (du Toit, et al., 2018).

More specifically relating to South Africa, a study done by Shackleton and Blair (2013) concerning the perceptions, willingness and use of residents regarding urban public green space in two small towns discovered that the vast majority of respondents believed having public green space is important for a variety of reasons, stating recreation and relaxation, employment, and environmental as being the top three benefits (Shackleton & Blair, 2013). Shackleton and Blair (2013) discovered similar findings for the suburban context, as there was a slight variation in the percentage of respondents selecting recreation as a primary benefit or environmental advantage (Shackleton & Blair, 2013).

Shackleton and Blair (2013) also discovered that the decrease in public green space use in underprivileged neighbourhoods was a significant reflection of not only their scarcity but also of their regarded low maintenance and inadequate amenities by local inhabitants, which led to some residents travelling to other suburbs with higher perceived quality and amenities (Shackleton & Blair, 2013).

Shackleton and Blair (2013) further found that a sizable proportion of respondents indicated a willingness to volunteer their time to assist in improving or maintaining the status of public green spaces (Shackleton & Blair, 2013). This willingness and the level of affluence had an

inverse relationship (Shackleton & Blair, 2013). They discovered that respondents were more eager to volunteer in their suburb's public green spaces rather than in the town's overall public green spaces (Shackleton & Blair, 2013). Nearly 25 per cent of respondents indicated a willingness to pay for the same purpose; however, this willingness to pay declined as the level of wealth declined (Shackleton & Blair, 2013).

### 1.2.4 Parks Within the City of Tshwane

An investigative project by Landman (2015) involving multiple case studies, including Church Square, Lilian Ngoyi Square, Sammy Marks Square, Burgers Park, Venning Park, Paul Cilliers Park, Waterkloof Glen Park, the park in front of the Union Building, and Magnolia Dell, provides valuable findings regarding the nature of these spaces as well as their physical characteristics (Landman, 2015). The following image obtained from Landman (2015)'s investigation illustrates where these parks are located:

Figure 1.1 Map illustrating the Parks from Landman (2015)

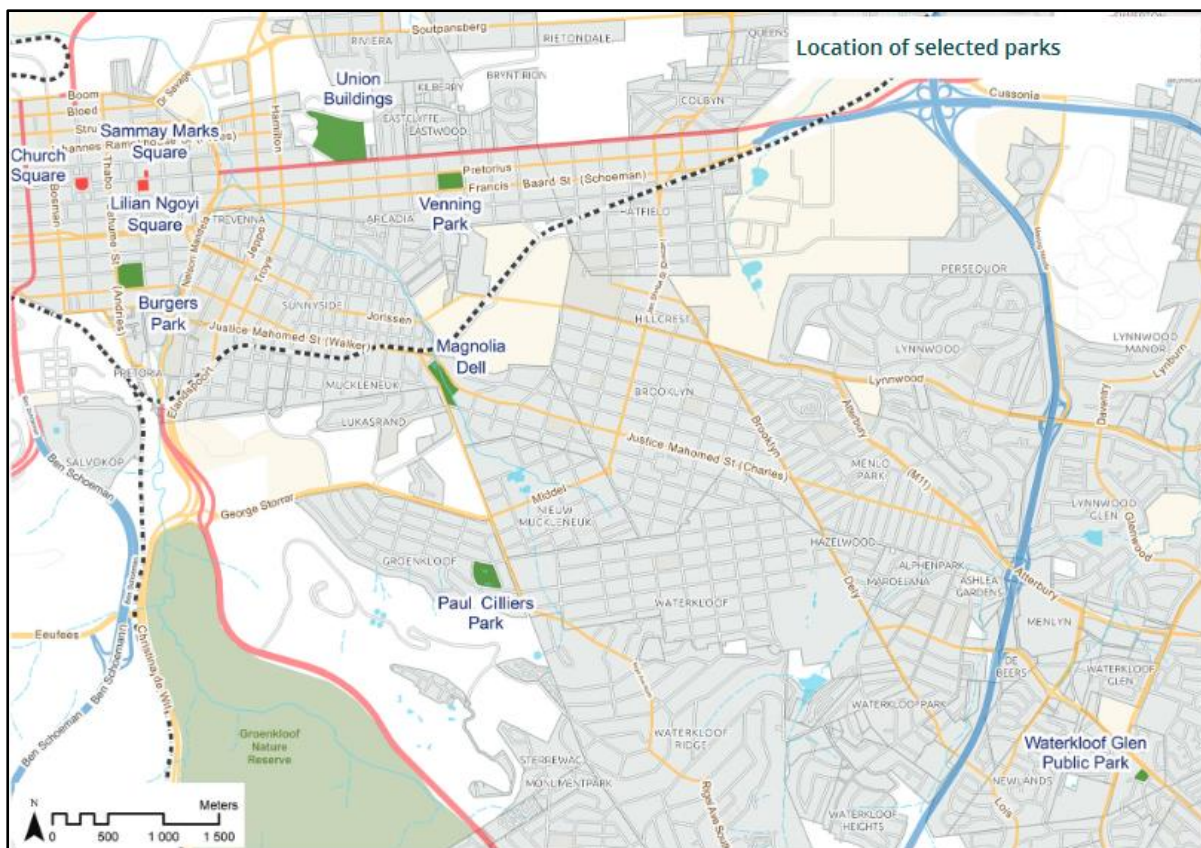


Image source: (Landman, 2015).

These investigated parks vary in size, physical characteristics, and nature (Landman, 2015). Out of the three inner-city squares (Sammy Marks Square, Lilian Ngoyi Square and Church Square), only Sammy Marks Square and Lilian Ngoyi Square are characterised as being predominantly hard open spaces with not much vegetation, whereas Church Square represents a good balance between hard and soft open spaces (Landman, 2015). The six

remaining parks, namely Burgers Park, Venning Park, Paul Cilliers Park, Waterkloof Glen Park, the park in front of the Union Building and Magnolia Dell, on the other hand, are characterised as soft open spaces with vast green areas, but some are formally designed, embodying symmetrical designs with classical structures (Landman, 2015).

Through interviews concerning the nine parks, it was found that crime, feelings of insecurity, the abuse of alcohol by persons, the presence of drug abusers and homeless people, excessive noise and the nature of the built environment all discourage park users (Landman, 2015). Furthermore, people complained about the lights not working in parks, litter, lack of shade, benches, and the lack of overall management (Landman, 2015). However, despite those concerns, the pleasantness of visiting some parks due to leisure opportunities, connecting with nature, observing persons and social interaction was highlighted (Landman, 2015).

Landman (2015) explained that the findings suggest that public spaces in the city provide opportunities for social interaction and that these activities may help to 'knit' the community over time. Furthermore, Landman (2015) explained that Tshwane [open] spaces are frequented by strangers who are not relatives or acquaintances and that these spaces may become spaces of peaceful coexistence. These admirable aspirations, however, are jeopardised by a slew of issues, including a lack of appropriate management, maintenance, and suitable and accessible ablution facilities, as well as issues with safety and security (Landman, 2015), which is in line with some of the findings of du Toit et al. (2018) explaining perceptions, a lack of capacity, and governance as obstacles to sustainable provision of ecosystem services in Sub-Saharan Africa (du Toit, et al., 2018).

Given the context of some of the parks within the City of Tshwane, what can be said about the case study parks for this research project? The following section addresses this question whilst providing the general context and where the case study parks are situated.

### **1.3 Case Study Area and Parks**

#### **1.3.1 South Africa**

South Africa, a country located at the South of the African continent, has a total land surface area of 1,214,470 square kilometres (Central Intelligence Agency, 2022). It has a large urban population, with more than two-thirds of the total population located within urban areas (Central Intelligence Agency, 2022). South Africa has nine provinces which are Limpopo; North West Province; Gauteng; Mpumalanga; Northern Cape; Free State; KwaZulu-Natal; Western Cape, and Eastern Cape (Alexander, 2019), with a mostly considered semiarid climate but subtropical along the East coast, and is characterised by cool nights and sunny days (Central Intelligence Agency, 2022).

The country had suffered significant injustices in its past and, only more recently, held its first democratic election in 1994, later after the end of apartheid (Central Intelligence Agency, 2022). However, despite the recent success of becoming a democracy, the country still has challenges, including environmental challenges, such as land degradation, desertification, acid rain due to air pollution, as well as fragile ecosystem disruption which resulted in floral extinctions (Central Intelligence Agency, 2022).

### **1.3.2 Gauteng**

Gauteng, the province in which the case study area is located, is the smallest out of all of South Africa's provinces, with a land area of just over 18,000 square kilometres, representing only ~1.5 per cent of the total land surface area of the country (Alexander, 2019). However, despite Gauteng being the smallest province, it has the largest population share of 25.3 per cent of the total population (based on data from 2017), and in terms of population density, this means about 785 persons per square kilometre (Alexander, 2019).

With a GDP contribution of around 35 per cent, Gauteng remains the subcontinent's and the nation's economic powerhouse (municipalities.co.za, 2022). South Africa's economic engine and the centre of its industrial and commercial sectors, which are also located in Gauteng, further serves as the financial services capital of Africa (municipalities.co.za, 2022).

Now within Gauteng, there are three demarcated metropolitan municipal regions, as well as two district municipal regions which are further subdivided into six local municipalities (municipalities.co.za, 2022). The three metropolitan municipalities are City of Ekurhuleni Metropolitan Municipality; City of Johannesburg Metropolitan Municipality; and City of Tshwane Metropolitan Municipality (CTMM) (municipalities.co.za, 2022). The following figure illustrates Gauteng's Municipalities:

Figure 1.2 Gauteng's Municipal Demarcation

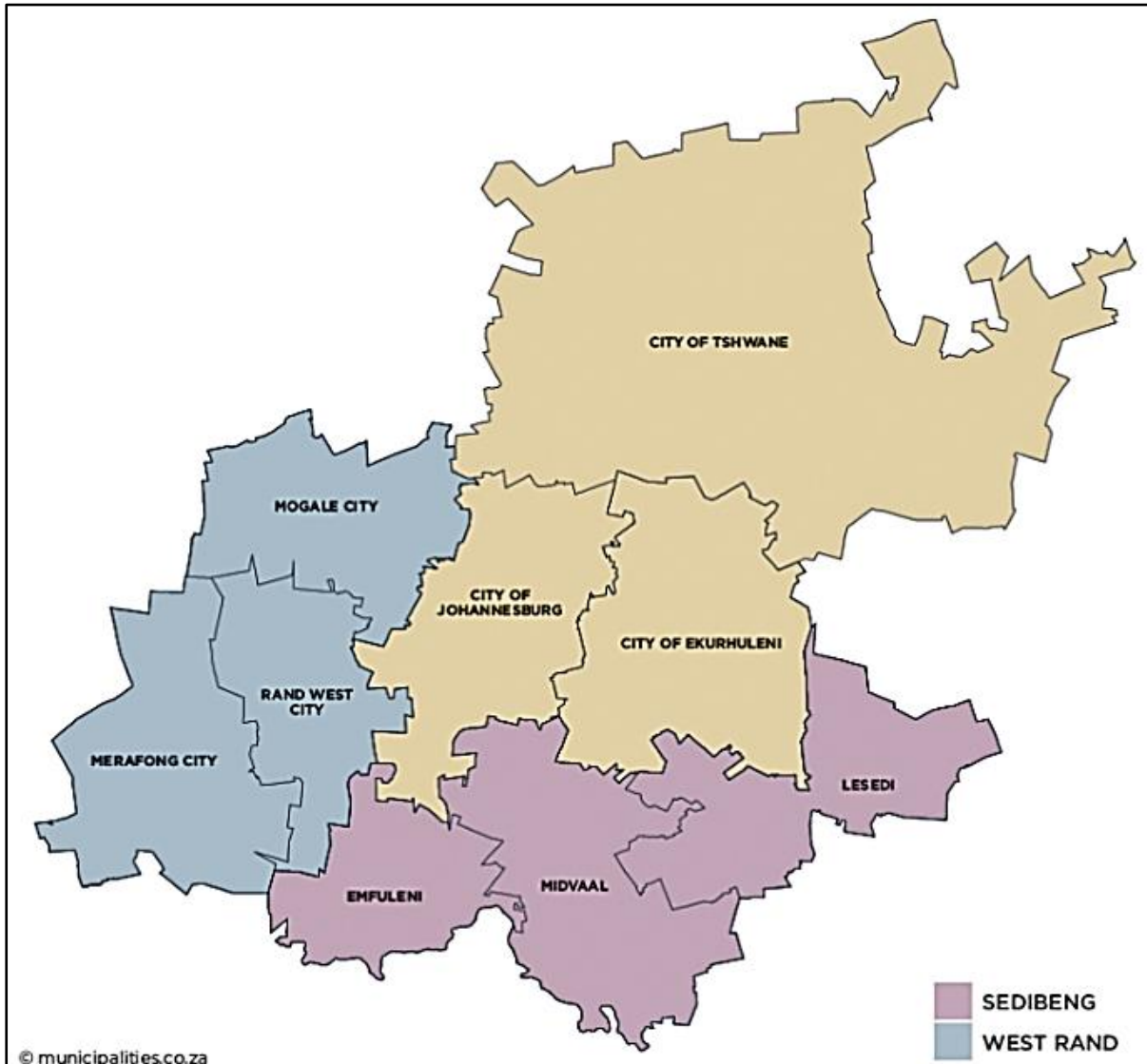


Image source: (municipalities.co.za, 2022).

The two district metropolitan regions are Sedibeng District Municipality and West Rand District Municipality (municipalities.co.za, 2022). Sedibeng District Municipality is further subdivided into six local municipalities, namely Emfuleni Local Municipality; Lesedi Local Municipality; and Midvaal Local Municipality (municipalities.co.za, 2022). West Rand District Municipality is also subdivided into six local municipalities, which are the Merafong City Local Municipality; Mogale City Local Municipality; and Rand West City Local Municipality (municipalities.co.za, 2022).

### 1.3.3 City of Tshwane

The City of Tshwane Metropolitan Municipal region is then further divided into seven regions (City of Tshwane, 2021), and the three case study parks fall within Region 3 of the City of

Tshwane (City of Tshwane, 2022). The regions within the CTMM are illustrated in the figure below:

Figure 1.3 City of Tshwane Regions

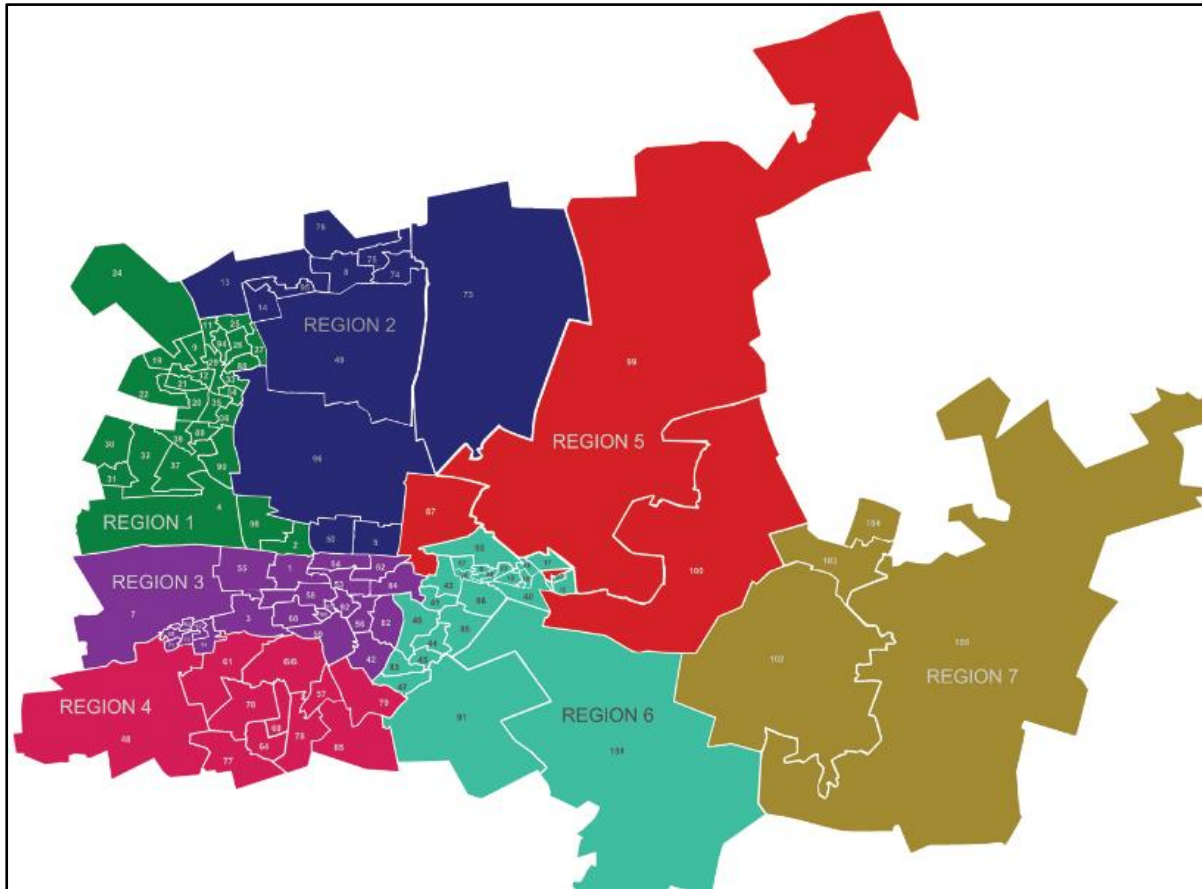
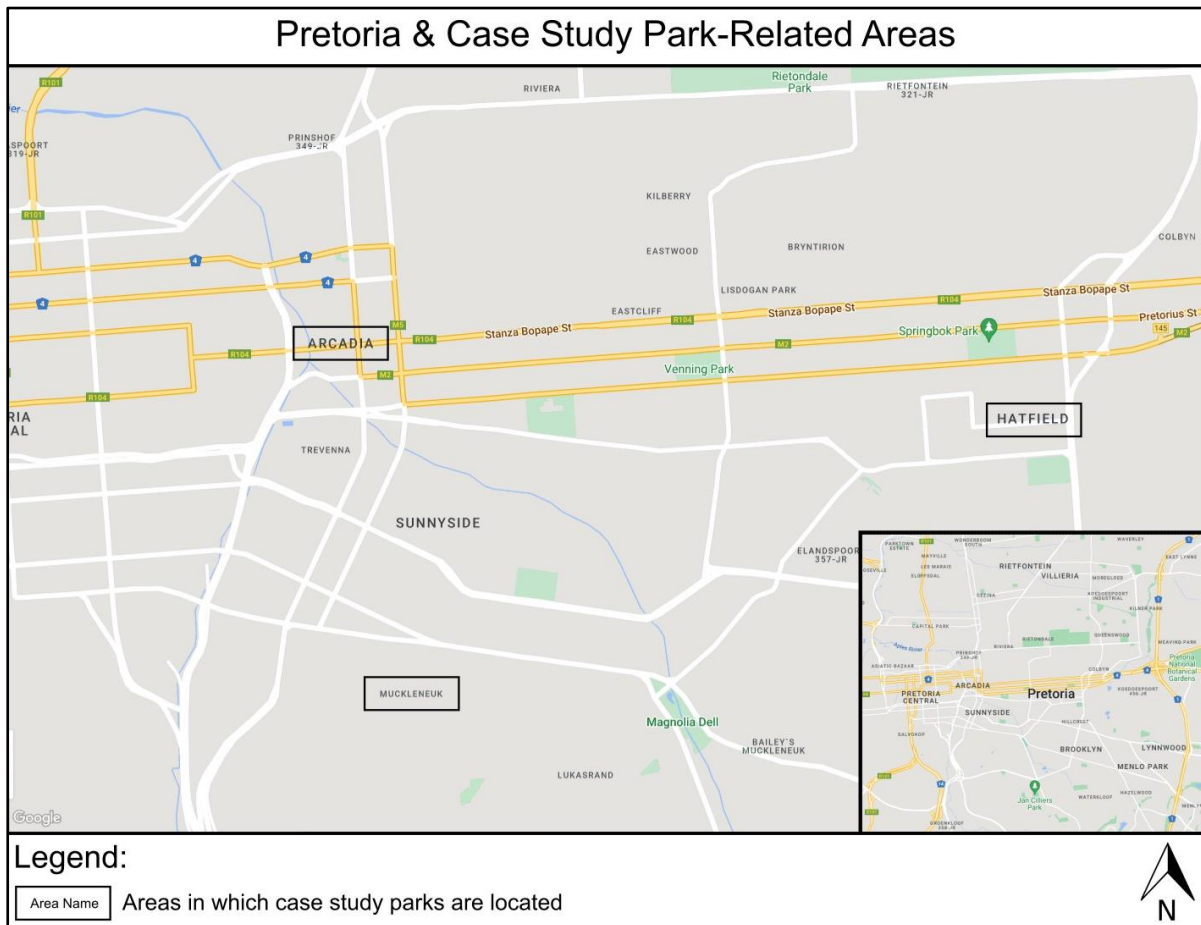


Image source: (City of Tshwane, 2022).

Note that within the TOSF2005, The City of Tshwane is divided into 8 Regions, with Muckleneuk as part of Region 8. However, according to the City of Tshwane’s website, the City of Tshwane is divided into 7 Regions, with Muckleneuk as part of Region 3 (City of Tshwane, 2022). This is most likely due to a more recent demarcation of the regions within the City of Tshwane Metropolitan area.

Now, located within the CTMM is Pretoria, the administrative capital of the country (South African Government, 2022). Arcadia, Hatfield and Muckleneuk, the areas in which the case study parks fall under, is located within Pretoria, as illustrated in the figure below:

Figure 1.4 Pretoria and Case Study Park-Related Areas



Map source: (Snazzy Maps, 2022).

### 1.3.4 Case Study Parks

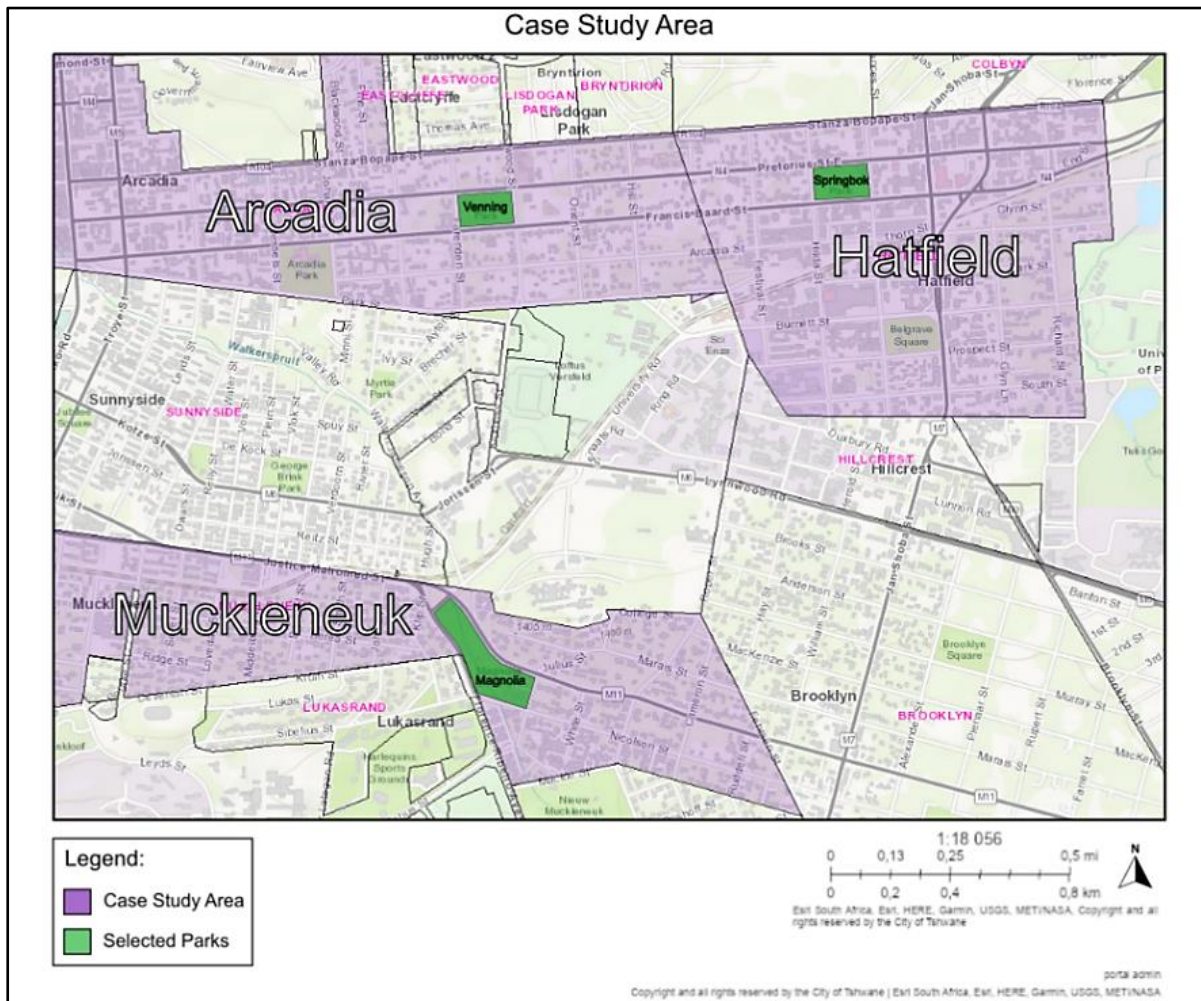
Arriving at the case study area, the three case study parks selected for this research project are Magnolia Dell Park, Venning Park, and Springbok Park:

- Magnolia Dell Park (S 25° 45' 45.126" | E 28° 13' 13.038") falls in the Muckleneuk area.
- Venning Park (S 25°44' 47.205" | E 28°13' 13.051") is located within the Arcadia area.
- Springbok Park (S 25°44' 42.564" | E 28°14' 8.942") is located within the Hatfield area.

Both Magnolia Dell and Venning Park are 3 hectares in size (City of Tshwane, 2005, p. 78), whereas the total surface area of Springbok Park is not mentioned within the TOSF2005. However, a website added that it is 30 621 m<sup>2</sup> in size (showme, n.d.), thus slightly more than 3 hectares, and by using Google Earth to determine the park's area, it resulted in the size being around 3.1 hectares.

All the case study area parks are located within Region 3 of the CTMM (City of Tshwane, 2022). The following figure illustrates the case study area, involving the selected parks for this research project:

Figure 1.5 Case Study Area



Map source: (ArcGIS Enterprise, 2022).

The case study parks are described as ornamental parks (City of Tshwane, 2022). Specifically, the TOSF2005 describes these parks as highly ornamental and developed, attracting countless international and local visitors for their heritage, sought-after recreational value, and horticultural appreciation (City of Tshwane, 2005, p. 78).

Magnolia Dell Park is described as being developed from the remains of an old quarry and is known for its monthly candlelight and art markets, in addition to Huckleberry's restaurant (City of Tshwane, 2005, p. 78). Venning Park is described as a formal rose and landscaped park containing a small café, and Springbok Park is described as being declared a National Monument in the 1970s with a restaurant and parking facilities (City of Tshwane, 2005, p. 78).

### 1.3.5 Magnolia Dell Park

Specifically, Magnolia Dell is described as a predominantly soft open space, embodying an organic nature (Landman, 2015), with trees, vegetation, grass areas (Landman, 2019), a small pond and *Walkerspruit* running through this suburban park. Magnolia Dell contains restroom

facilities (which are closed), seating areas and lighting, and a formal restaurant (Landman, 2015). The following figure illustrates an aerial view of Magnolia Dell:

Figure 1.6 Magnolia Dell Park Aerial View



Map source: (Google Earth, 2022).

Magnolia Dell Park is identified by the foliage around the perimeter, and given the angles of the roadways that pass by on three sides, it has an unusual shape (Landman, 2019). Nearby residents must cross active streets to get to the park which raises concerns about their safety (Landman, 2019). Users of the park can, however, be encouraged to feel comfortable through frequent surveillance via traffic (Landman, 2019). Additionally, informal traders could be found surrounding the park, selling a range of goods (Landman, 2019). During the weekday afternoons, children utilised Magnolia Dell, and over the weekends, the park was utilised more extensively (Landman, 2015).

Moreover, specifically on Sundays, informal markets and art exhibitions were present at Magnolia Dell (Landman, 2015). van den Einde (2015) mentioned that over the weekends, people brought their dogs to the park, played with a ball, and baby showers, family picnics and children's parties were quite popular (van den Einde, 2015). Additionally, it is described that the recreational infrastructure for children was generally utilised quite well (van den Einde, 2015). Users of Magnolia Dell mentioned that they appreciate the park because of the diverse range of persons from various cultures and ethnicities, including that it caters to all (Landman, 2019).

Homeless persons frequented Magnolia Dell, where they hide their possessions under shrubs during the day, and they would sleep at the park during night-time (Landman, 2019). As a result of the homeless persons camping out in the park and “hiding in the bushes” (Landman, 2019, p. 119), it was discovered that safety was an important concern for park visitors (Landman, 2019). It has also been claimed that visiting this park alone at night is not considered due to the uneasy sensation that one gets there (Landman, 2019). The park’s neglect is regarded as regrettable due to a lack of maintenance (Landman, 2019). Now that the first case study park, Magnolia Dell Park, is discussed, the second case study park, Venning Park, is investigated next.

### 1.3.6 Venning Park

Venning Park also considered a predominantly soft open space with large green areas, incorporates a rectangular, symmetrical layout with a classical structural design (Landman, 2019). The following figure illustrates an aerial view of Venning Park:

Figure 1.7 Venning Park Aerial View



Map source: (Google Earth, 2022).

Venning Park also has an organic nature, but it includes walkways of a more formal nature (Landman, 2019). A humanmade water body (a large pool) can be found in the park, and in addition, kiosks or coffee shops are included at Venning Park that cater for a range of activities (Landman, 2019). Lighting sources and areas for seating are also present at the park, and similar to the case of Magnolia Dell Park, children frequented the park during the afternoons

by utilising the playgrounds, and people visited the park considerably more over the weekends (Landman, 2019). Informal traders were also a common sight in the park and on the peripheries, and like the case of Magnolia Dell Park, Venning Park is also frequented by homeless persons, and they also sleep at this park during the night, while during the day they hide their possessions under shrubs (Landman, 2019). Now the second case study park, Venning Park, is discussed, the third case study park, Springbok Park, is investigated next.

### 1.3.7 Springbok Park

Springbok Park is a well-established rectangular park, characterised by dense vegetation, and a small restaurant (Landman, 2019), called *Relish Bistro*. This park is regularly used as a setting for taking photographs, particularly after graduation (Landman, 2019). The following figure illustrates an aerial view of Springbok Park:

Figure 1.8 Springbok Park Aerial View



Map source: (Google Earth, 2022).

In the case of Magnolia Dell and Venning Park, homeless persons also frequent Springbok Park and sleep at this park during the night, while during the day, they hide their possessions under shrubs (Landman, 2019). The presence of homeless persons contributed to the overall uncomfortable feeling of users (Landman, 2019). Visibility is also a concern, as Landman (2019) explained, the perimeter wall of this park makes it difficult to look inside (Landman, 2019).

Landman (2019) explained a great contributor to the general reluctance by urbanites to visit this park is fear with interviewees explaining that Springbok Park is noted as a place for dealing illicit substances, contributing to fears relating to illicit substance abuse and dealing, and it was also suspected that drug dealers were involved in muggings (Landman, 2019).

Now, given the context of parks within the City of Tshwane, specifically the case study parks, one cannot help but wonder what factors might relate to park use and if these factors apply to the case study parks. The following section introduces the reader to the possible influencing factors in question that might relate to park use.

## **1.4 The Influencing Factors**

### **1.4.1 Sense of Place**

Research on social perception and behaviour (Dijksterhuis & Bargh, 2001), risk perception and behaviour (Qin, et al., 2021), safety perception and behaviour (Kwon, et al., 2022), amongst other, explain a relationship between perception and behaviour. It could be that perception, and perhaps in this case, sense of place, can contribute, or links with behaviour. Žlender and Gemin (2020) noted that research suggests a favourable concept to investigate a person's conduct towards an area is, sense of place. Žlender and Gemin (2020) further noted that sense of place is considered a determining factor of positive behavioural intentions towards an area. People's meanings and values connect with sense of place, and as such, sense of place incorporates beliefs about how places should be managed and developed in the future (Žlender & Gemin, 2020). Last, it is important to note that sense of place has been included in spatial assessment research as a cultural ecosystem service (Gottwald, et al., 2022).

### **1.4.2 Cultural Ecosystem Services**

Some cultural services provided by urban ecosystems include recreation, aesthetic benefits, cognitive development, place value and social cohesion (Elmqvist, et al., 2013). Regarding recreation, recreational features are one of the most highly valued ecosystem services in cities (Elmqvist, et al., 2013). Parks, forests, lakes, and rivers offer a wide range of recreational opportunities which improve human health and well-being (Elmqvist, et al., 2013).

Regarding aesthetic benefits, urban ecosystems also serve an important function by providing aesthetic and psychological benefits that enrich human life with emotions and meanings (Elmqvist, et al., 2013). Some researchers noticed an association between the aesthetic benefits of urban green spaces and lower levels of stress and improved mental and physical well-being (Elmqvist, et al., 2013). As for cognitive development, exposure to nature and green space offers various prospects for cognitive growth, which raises the possibility for

environmental sustainability and a better understanding of ecosystem services (Elmqvist, et al., 2013).

Regarding place values and social cohesion, the affectively charged attachments to locations are referred to as place values (Elmqvist, et al., 2013). Sense of place, for example, was found to be a key driver for environmental protection, with respondents expressing strong emotional attachments to their allotments and the surrounding garden spaces (Elmqvist, et al., 2013). Other key societal benefits of attachment to green spaces in cities include social cohesion, development of common interests, and neighbourhood involvement (Elmqvist, et al., 2013). It has been found that urban ecosystems play a part in the formation of identity and a sense of belonging (Elmqvist, et al., 2013).

These cultural ecosystem services may relate to the use of urban green spaces. Recreational potential, aesthetics, cognitive development, place values and social cohesion could perhaps be important factors in the decision to utilise urban green spaces. However, according to de la Barrera et al. (2016) preferences and perceptions concerning green spaces influence the actual use of green spaces significantly.

The question is, thus, what attributes of urban green spaces relate to the use of urban green spaces? Could the presence of vegetation, for example, relate to park use? Or could a water body at a park relate to the use of a park? Therefore, the second influencing factor, urban green space attributes need to be investigated.

### **1.4.3 Urban Green Space Attributes**

The size (Giles-Corti et al., 2005; Gozalo et al., 2019), maintenance quality (McCormack, et al., 2010), lighting, and a range of infrastructure (de la Barrera et al., 2016; Campagnaro et al., 2020) have all been identified as attributes that may influence the use of green spaces. In addition, accessibility (Krajter Ostoić et al., 2020; Seaman et al., 2010), vegetation (Krajter Ostoić, et al., 2020), the presence of trees, water bodies, the availability of infrastructure such as walking paths (Giles-Corti, et al., 2005), security infrastructure (Kimic & Polko, 2022), and perceived park access (Petrunoff, et al., 2021) are also factors that may relate to the use of green spaces. Given the context of these possible influencing factors, what does it mean for this research project? The following subsection discusses the rationale of this research project.

## **1.5 Rationale for the Study**

Through this research project, the researcher combines various factors from literature and research studies involving cultural ecosystem services, urban green space attributes, and sense of place, and instead of conducting research solely on one factor, but rather as a

combination of these factors to determine if relationships exist between these factors themselves, and with park use.

Research indicated a need for more urban ecosystem services data (du Toit, et al., 2018); thus, with this research project, the researcher seeks to address that gap by combining these factors to produce valuable findings as well. Furthermore, this research project aims to yield invaluable findings on how, and to what extent cultural ecosystem services, urban green space attributes and sense of place combines or intersects to inform the use of urban green spaces.

The overarching goal of this proposed research project is to contribute toward more inclusive urban green space use and planning by identifying factors that relate to urban green space use, creating an understanding of possible relationships between these factors, and, ultimately, providing recommendations based on the findings. Moreover, by shaping an understanding of how cultural ecosystem services, urban green space attributes, and sense of place relate to the use of urban green spaces, and if these factors relate to one another, it can also provide an understanding about the complexity of park use.

### **1.5.1 Structure of the Research Report**

This research report consists of six chapters, namely, Chapter One – Introduction; Chapter Two – Literature Review, Chapter Three – Research Methodology, Chapter Four – Results; Chapter Five – Discussion; and Chapter Six – Conclusion and Recommendations.

The first chapter, Chapter One, provides the context of the research project. It answers the question of what the purpose of this research project is and where the research was conducted. It details the background to the study, the context of parks within sub-Saharan Africa, the case study parks, the context of parks within the City of Tshwane, a brief introduction of influencing factors of urban green spaces, the rationale for the research project, as well as the research question and objectives.

Chapter Two serves to answer the question of what is investigated. It involves defining urban green spaces, an introduction to the Tshwane Open Space Framework of 2005, and an in-depth literature review of the influencing factors and the relationships these influencing factors have with park use.

Chapter Three serves to answer the question of how the research project was conducted. It involves the methodological approach the researcher applied for this research project. The methodological approach section discusses the research process in sequential order. This chapter also provides this research project's conceptual framework and systems approach framework. Additionally, the researcher discussed the research challenges and limitations of this research project.

Chapter Four serves to answer the question of what the research project discovered. It involves the results found via the qualitative and quantitative analysis, including the open-ended question responses interpretations and the Spearman's Rho correlation analyses.

Chapter Five serves to answer the question of what the research findings suggest. It furthermore discusses the research findings and provides recommendations for more inclusive urban green space use and planning.

Chapter Six serves as the conclusion for the research project; it serves as a summary of the research project whilst providing critique of this research project and further research recommendations.

## **1.6 Summary**

Urban green spaces serve a critical role in urban sustainability. The research aim of this research project is to assess the nature of intersections between sense of place and other factors influencing both the perceptions and the decisions to utilise urban green spaces within and close to Hatfield, City of Tshwane.

To achieve this, four objectives need to be achieved. These objectives are to identify key policy and regulatory directives regarding urban green space use and planning within the City of Tshwane; to capture and assess the nature of the influencing factors in decision-making to utilise parks within the case study area, as examples of urban green spaces in the City of Tshwane; to evaluate the nature of intersections between cultural ecosystem services, green space attributes, and sense of place, as influencing factors in decisions to utilise parks within the case study area; and to provide recommendations based on the study's findings that could inform more inclusive urban green space utilisation and planning.

The influencing factors the researcher selected for the research project were urban green space attributes, cultural ecosystem services, and sense of place. In order to achieve the aim and objectives, the researcher applied a mixed method approach involving quantitative and qualitative data analysis, underpinned by a critical realist and systems approach, and selected Magnolia Dell Park, Venning Park and Springbok Park as the case study area.

## 2 CHAPTER TWO: LITERATURE REVIEW

This chapter serves to answer the question of what is investigated. The chapter begins with a discussion on what urban green spaces are, both from an academic and policy perspective. Then, the literature review of journal research articles concerning urban green space attributes, cultural ecosystem services, and sense of place on the use of urban green spaces, and how urban green space use varies concerning demographic factors, follow. A discussion, summary and a categorisation of the respective influencing factors is provided under each subsection of the influencing factors. Then, at the end of this chapter, a summary is provided.

### 2.1 Introduction

'Place' is a crucial part of everyday living and closely relates to our experiences (Butler & Sinclair, 2020). Places give people a context to understand themselves, their natural and cultural surroundings, and their connections with persons (Butler & Sinclair, 2020). They also help to shape identities, interpersonal relationships, and worldviews (Butler & Sinclair, 2020). However, what can be said about urban green spaces? How can urban green spaces be defined? Moreover, do urban green space attributes, cultural ecosystem services, and sense of place relate with one another and with park use? In order to answer these questions, these possible influencing factors that may have a relationship with the use of urban green spaces, are investigated. First, however, urban green spaces need to be defined.

### 2.2 Defining Urban Green Spaces

Green spaces in urban areas are defined in various ways, both academically and from a legislative point of view (Ko & Son, 2018), and it is necessary to discuss the concept of 'urban green spaces' from academic and policy perspectives.

#### 2.2.1 *Academic Literature Definition(s)*

From an academic standpoint, 'green spaces' can be considered as an umbrella concept, with references to specific elements depending on the area of focus. For instance, along with prominent examples of green spaces (for example, forests), the broader concept of urban green spaces includes open, non-forested spaces, land, and water that are not covered by buildings or structures (Ko & Son, 2018). In addition to Ko and Son (2018), other researchers also described what (urban) green spaces entail:

Urban green spaces are generally described as "public and private open spaces in urban areas, primarily covered by vegetation, which are directly (e.g., active or passive recreation) or indirectly (e.g. positive influence on the urban environment) available for the users" (Haq, 2011, p. 601). Similarly, urban green spaces is also described by some as , "...open space situated within city limits with a good vegetation cover planted deliberately or inherited from

pre-urbanisation vegetation and left by design or by default) receive frequent human use and impact” (Jim & Chen, 2006, p. 338). Generally, green spaces are defined as easily accessible natural, undeveloped, or developed areas (Cilliers & Cilliers, 2016). Green spaces are characterised as areas with adjoining vegetated spaces, including human made city parks, natural vegetation stands, and land areas such as botanical gardens, street medians, and private gardens (Cilliers & Cilliers, 2016). Additionally, green spaces include school grounds and athletic fields, which may be classified as formal or informal green spaces (Cilliers & Cilliers, 2016).

Urban green spaces can be summarised as to “be considered open, vegetated areas within the urban environment, and/or areas which retain features characteristic of pre-urban ecosystems” (Francis & Chadwick, 2013, p. 88). In addition, “Green space consists of parks and recreational spaces, gardens, lawns, brownfield and wasteland areas, and woodland” (Francis & Chadwick, 2013, p. 88). Examples of green spaces include urban parks, green roofs, theme parks, facilities in green areas, forests, rivers, agricultural land, reservoirs, fields, green areas in public facilities, green parks, green roads, green areas within residential areas and idle land (Ko & Son, 2018).

### **2.2.2 Policy Definition**

#### **Tshwane Open Space Framework 2005 Definition**

The TOSF2005 defines public open spaces as “: Open Space for the use of the general public. Most public Open Space is provided for during township establishment/development processes, whereafter it is transferred to the local authority, who must develop and maintain it” (City of Tshwane, 2005, p. 21), and private open spaces as “Open Space for the exclusive use of the specific community and is typically owned, development and maintained by a private individual or representative entity” (City of Tshwane, 2005, p. 21).

Furthermore, the TOSF2005 defines open spaces as “areas predominantly free of building that provide ecological, socio-economic and place-making functions at all scales of the metropolitan area” (City of Tshwane, 2005, p. v). The TOSF2005 stipulates that open spaces should be categorised according to scale, function, form, ownership, character, and locality (City of Tshwane, 2005). Note, land that is classified as public open space, according to the 2021 Draft Tshwane Land Use Scheme, can include a “Place of Refreshment”, however only with the consent from the municipality (City of Tshwane, 2021, p. 74). This “Place of Refreshment” includes land and buildings used for preparing and bartering refreshments and food (City of Tshwane, 2021, p. 37).

### **2.2.3 Discussion and Summary**

The descriptions and definitions of Haq (2011), Jim and Chen (2006), Cilliers and Cilliers (2016), and Francis and Chadwick (2013) include either explicitly or implicitly that open spaces can include vegetation, that it is used by, or available to persons, and that green spaces within urban areas are then considered as 'urban green spaces'.

UGSs then involve open spaces, embodying some pre-urban features or natural elements (such as vegetation, forestry, or bodies of water such as rivers and lakes), and perhaps also human made infrastructure (such as benches, footways or lighting), that is located within, or within a reasonable distance to an urban setting, such as a city or town. A distinction between private and public open spaces should be made; however, for simplicity, an urban green space then, for the context of this research project, involves a green space within an urbanised area, characterised by human made- and natural infrastructure, open to the general public. Now that 'urban green space' is defined, the first possible influencing factor, urban green space attributes, is investigated in detail in the following subsection.

## **2.3 Urban Green Space Attributes**

The size (Giles-Corti et al., 2005; Gozalo et al., 2019), maintenance quality (McCormack, et al., 2010), lighting, and a range of infrastructure (de la Barrera et al., 2016; Campagnaro et al., 2020), have all been identified as attributes that may influence the use of green spaces. In addition, accessibility (Krajter Ostoić et al., 2020; Seaman et al., 2010), vegetation (Krajter Ostoić, et al., 2020), the presence of trees, water bodies, the availability of infrastructure such as walking paths (Giles-Corti, et al., 2005), security infrastructure (Kimic & Polko, 2022), and perceived park access (Petrunoff, et al., 2021) are also factors that may relate to the use of green spaces. First, the investigation of natural infrastructure follows.

### **2.3.1 Natural Infrastructure**

A more recent study by Krajter Ostoić et al. (2020) found that naturalness was significant in woodlands, parks, and park-forests, as well as the green sports and recreational facilities, greenways, and others. The presence of trees, particularly those that were old or towering or even specific species, was virtually equally significant, despite being connected with slightly different types of urban green spaces (parks being the only aspect in common) (Krajter Ostoić, et al., 2020). According to the participants, naturalness is defined as the presence of a "genuine" forest that is well-preserved and has a sense of biodiversity (Krajter Ostoić, et al., 2020).

The participants had to use a range of attributes, which were categorised in terms of accessibility; maintenance; experiences; aesthetics; emotional ties; and presence of water bodies; amongst other, to describe their favourite places (Krajter Ostoić, et al., 2020). Forests

and parks were the most prevalent beloved urban green space, with individuals attaching the most attributes to these kinds of urban green spaces (Krajter Ostoić, et al., 2020). For park forests, greenery around residential structures, walking routes along streams, greenways, and other urban green spaces, provided slightly fewer attributes (Krajter Ostoić, et al., 2020).

The participants identified parks and forests, similar to beloved urban green spaces, as the most aesthetically appealing sites (Krajter Ostoić, et al., 2020). The participants also attached more attributes to parks and forests, compared to other kinds of urban green spaces (Krajter Ostoić, et al., 2020). More specifically, “tree lines” (Krajter Ostoić, et al., 2020, p. 15) were among the most pronounced forms of urban green spaces, although they have far fewer qualities connected with them than parks and forests (Krajter Ostoić, et al., 2020). The essential single characteristic was the presence of specific tree species, followed by the presence of trees in general and specific tree features like old and majestic trees or trees with massive crowns and flowering (Krajter Ostoić, et al., 2020). Furthermore, water in conjunction with greenery was favoured (Krajter Ostoić, et al., 2020).

The researchers concluded that for their participants, recreation was vital, and it was also an intrinsic purpose for their engagement with urban green spaces (Krajter Ostoić, et al., 2020). Trees, with their various features, are crucial for place attachment and aesthetics, regardless of the type of urban green spaces (Krajter Ostoić, et al., 2020).

### **2.3.2 Humanmade Infrastructure and Safety**

Infrastructure, such as fencing, may also relate to park use. Kimic and Polko (2022) conducted a study to determine which factors influenced people’s sense of security and how this evaluation of personal security would inform the use or non-use of parks (Kimic & Polko, 2022). They explained that urban parks use various security methods, the most popular of which is the use of a fence, which serves as a psychological deterrent, a spatial control element, and an element that offers a certain amount of seclusion (Kimic & Polko, 2022). Specifically, visual and physical enclosure can influence safety and calmness and can induce restorative experiences (Kimic & Polko, 2022). The researchers found that the presence of park paths, the condition of pavement and equipment items, natural and artificial lighting, video surveillance and the possibility to see other people, have the greatest impact on the sense of security of older adults (Kimic & Polko, 2022).

More specifically, Campagnaro et al. (2020) conducted a study that focused on the perception of green spaces, vegetation, and the presence of historic city walls within the context of perceived stress and safety (Campagnaro, et al., 2020). They discovered a positive relationship between the presence of benches and safety-related preferences, with or without the presence of people, while stating that benches indicate the possible presence of people

(Campagnaro, et al., 2020). They further explained that these are areas or spots that makes it possible to be observed or to observe people (Campagnaro, et al., 2020). Campagnaro et al. (2020)'s study concluded that humanmade elements correlated positively with picturesque quality and perceived safety (Campagnaro, et al., 2020). Green spaces with recreational infrastructure (such as benches and drinking fountains) are also regarded as essential for participants in this research (Campagnaro, et al., 2020). However, the presence of paths was rather unimportant for safety-related preferences but relatively important for general preferences regarding green spaces (Campagnaro, et al., 2020).

However, a study conducted by Lapham et al. (2016) that aimed to determine the proportional impact of personal- and park-related traits in affecting park utilisation as well as specific involvement in sporting activities, walking, and passive leisure, discovered that whilst safety perception had a significant impact on park visits, it only influenced a small proportion of their population (Lapham, et al., 2016).

The presence of other park visitors may also play a role in park use. Seaman et al. (2010) explored the subjective rationale of why residents in urban areas decide to either visit, or refrain from utilising local public green spaces (Seaman, et al., 2010). More specifically, they discovered that the presence of youth in parks (even if they are regarded as appropriate users) might elicit ambiguous responses from respondents (Seaman, et al., 2010). Numerous respondents regarded the presence of unsupervised older children and adolescents as a deterrent to using green spaces (Seaman, et al., 2010). Seaman et al. (2010) noted that the presence of young individuals might be related (rightfully or wrongfully) to anti-social behaviour. Seaman et al. (2010) also found that subgroup attitudes (such as of young persons and adults) toward one another can result in some members (such as adults) self-excluding from parks. This self-exclusion becomes a real obstacle to green space access that is not captured in conventional notions of the natural quality of green spaces (Seaman, et al., 2010).

The second type of reaction was to remain stoical in the face of anti-social behaviour (Seaman, et al., 2010). These were reactions in which participants acknowledged the presence of incivilities and anti-social behaviour and acknowledged the negative impact it had on the experience of accessing urban green space and public space overall (Seaman, et al., 2010). Stoicism looked to be based on self-assurance and a sense of control. Stoics often interpreted such activities as less dangerous by attempting to understand the roots of such behaviours (Seaman, et al., 2010).

Overall, Seaman et al. (2010)'s analysis emphasised the significance of subjectively experienced social cohesion in our ability to anticipate and understand the activities of others

in public space. Now, given the context of natural-, and humanmade infrastructure, as well as safety, could park cleanliness also relate to park use?

### **2.3.3 Cleanliness**

Park maintenance, specifically park cleanliness, may play a role in park use. A study by McCormack et al. (2010) that involves a review of qualitative evidence explored the linkages among urban parks and patterns of physical activity concluded that a lack of maintenance was frequently cited as a problem affecting park usage (McCormack, et al., 2010). Notably, the quality of playground equipment or park cleanliness was frequently cited by adults and kids as crucial (McCormack, et al., 2010).

Qualitative results from McCormack et al. (2010)'s study indicate that bad conditions (such as uneven playing areas, courts with cracks, and poor walkways) may discourage people from using parks (McCormack, et al., 2010). While poor maintenance and condition can deter visitors from visiting parks, it is also likely to hurt the appearance, perceived safety, use, and overall perception of park quality (McCormack, et al., 2010). This finding is supported by Fontán-Vela et al. (2021) who found that poor maintenance (as well as unsafety) has been reported as barriers to park use (Fontán-Vela, et al., 2021).

### **2.3.4 Size**

Moving over to park size, a study by Gozalo et al. (2019) aimed to analyse the characteristics and uses of two types of green areas that varied in size, where the characteristics of urban green spaces were assessed based on user perceptions (Gozalo, et al., 2019).

Regarding consumer satisfaction with features in two types of urban green spaces (parks) and regarding the relationship between feature satisfaction and overall satisfaction, Gozalo et al. (2019) discovered that for five (aesthetics, conservation, size, groves, and shade) of the eleven<sup>2</sup> qualities involved in their study, satisfaction with vast green urban spaces was considerably higher (Gozalo, et al., 2019). Despite this, both groups of parks had equal levels of overall user satisfaction (Gozalo, et al., 2019). General satisfaction with large parks substantially correlated with cleanliness, and conservation, amongst other (Gozalo, et al., 2019).

The frequency of activities undertaken in both types of green spaces (small and large), as well as their link with users' satisfaction with green space features, revealed that in both types of green spaces, walking and talking were the most common activities, while chatting and taking children outside were also common (Gozalo, et al., 2019). Additionally, the researchers

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<sup>2</sup> Cleanliness, air (quality), noise, aesthetics, safety, user, conservation, location, size, shade and groves (Gozalo, et al., 2019).

discovered that large parks experienced much higher rates of walking, relaxation, and exercise (Gozalo, et al., 2019). The park size is found to have positive correlations with the average frequency of walking, relaxing, and exercising (Gozalo, et al., 2019). However, the relationship between average walking frequency and park area (size) was asymptotic (Gozalo, et al., 2019).

The researchers further discovered a positive correlation between grove and exercise satisfaction in both types of parks (Gozalo, et al., 2019). In large parks, the walking frequency only positively correlated with customer satisfaction (Gozalo, et al., 2019). However, in small parks, walking also correlated significantly with environmental factors (including groves, and cleanliness) and social factors (including safety) (Gozalo, et al., 2019).

### **2.3.5 Park Access**

Moving over to accessibility, a study by Giles-Corti et al. (2005) aimed to determine the extent to which access to public open spaces is related to the use of public open spaces and attaining suggested levels of physical activity by making use of three models of accessibility that progressively changed for the distance to, the size and attractiveness of public open space (Giles-Corti, et al., 2005).

According to this study, on the one hand, without the addition of park size in their model, the impact of public open space attractiveness on park utilisation and greater levels of walking was inconclusive (Giles-Corti, et al., 2005). However, the researchers concluded that the larger public open spaces, tend to have more appealing features (Giles-Corti, et al., 2005). Furthermore, their observational study, which was adjusted for the size of public open spaces and compared high- and low-quality public open space, provided additional evidence for the premise that public open spaces with more features<sup>3</sup> attract more customers even in smaller public open spaces of equal size (Giles-Corti, et al., 2005).

The researchers explained that the inconclusive results on attractiveness in the main study could have been ascribable to the features selected in the composite score, the weights assigned, or the incorporation of the attractiveness-decay parameter in the researchers' accessibility model (Giles-Corti, et al., 2005). Nevertheless, the researchers concluded that access to large and attractive public open spaces related to higher levels of walking (Giles-Corti, et al., 2005). However, in terms of perceived park access, a study exploring park use in relation to perceived and objective park access, found that perceived

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<sup>3</sup> The public open space features the researchers included are shade along paths, the presence of walking paths, sport facilities, water features, lighting and birdlife, irrigated lawns, the adjacency to an ocean or rivers and quiet surrounding roads (Giles-Corti, et al., 2005).

access to parks relates with park utilisation, whereas true or objective park access did not strongly associate with park use (Petrunoff, et al., 2021).

Moving over to distance, a study conducted by Schipperijn et al. (2010) aimed to define and analyse the distance to green space, the prevalence of green space use among different demographic groups, and the primary motivations for utilising green space (Schipperijn, et al., 2010). In addition, Schipperijn et al. (2010) investigated factors that influence the use of green space.

Regarding the distance to green space and the frequency of use, Schipperijn et al. (2010) found that just slightly over 66 per cent of their respondents reside within three hundred meters of any green space, and more than 50 per cent of the respondents live within three hundred meters of a park (Schipperijn, et al., 2010). The average distances to water, beaches, and forests, on the other hand, are significantly longer, with just over 27 per cent of respondents having to travel more than five kilometres to reach the sea, a beach, or a lake, compared to just over 15 per cent of respondents having to travel more than one kilometre to their closest park (Schipperijn, et al., 2010).

The prevalence of use regarding the various kinds of green space varies (Schipperijn, et al., 2010). The researchers found that of all the daily users of parks, just over 80 per cent reside within three hundred meters; of all the daily forest users, just slightly more than 70 per cent reside within three hundred meters; of all the other open green space users, just slightly more than 75 per cent reside within three hundred meters, and more than 50 per cent of all daily users of beaches, lakes and sea reside within three hundred meters (Schipperijn, et al., 2010). The researchers concluded that this could suggest the effect of distance is the most prevalent factor for parks, whereas it is less important for using beaches, lakes, and the sea (Schipperijn, et al., 2010).

Regarding the relation between the frequency of green space use and distance, Schipperijn et al. (2010) found evidence of distance decay in the utilisation of all kinds of green space, *i.e.*, the larger the distance to the green space, the lower the frequency of use (Schipperijn, et al., 2010). They explained that this distance decay had a similar pattern for all four kinds of green spaces, where the number of daily users decreased between 28.8-36.9 per cent when the nearest green space was more than three hundred meters from the place of residence (Schipperijn, et al., 2010). The researchers further explained that if the place of residence is more than one kilometre from the closest green space, the number of daily users (respondents) decreased to between 28 -8.5 per cent (Schipperijn, et al., 2010). Nonetheless, they did find a significant correlation between distance and the use of green space (Schipperijn, et al., 2010).

### **2.3.6 Discussion and Summary**

Research shows that in addition to maintenance, (McCormack, et al., 2010), size, aesthetics, conservation, groves, shade, safety, and the presence of other park users all influence user satisfaction with parks and the use of parks (Gozalo, et al., 2019).

In terms of park size, Gozalo et al. (2019) found that park size has positive correlations with the average frequency of walking, relaxing, and exercising, which complements the findings of Giles-Corti et al. (2005), who found that access to large and attractive public open spaces is related to higher levels of walking (Giles-Corti, et al., 2005). In terms of perceived park access, however, Petrunoff et al. (2021) found that perceived access to parks related with park utilisation, whereas true, or objective park access did not strongly associate with park use (Petrunoff, et al., 2021). Gozalo et al. (2019) explained that perhaps satisfaction with groves and shade can contribute to some of the visual characteristics, in which they found a significant relationship among the perception of groves, shade and aesthetics (Gozalo, et al., 2019).

Park attractiveness is also considered as the underlying factor, and since a large park embodies a large surface area, it could mean more space for attractive or natural infrastructure, people might tend to use larger parks, not necessarily due to the size but due to its aesthetics or features. This is indirectly supported by Giles-Corti et al. (2005), that found public open spaces with more features attract more users even in smaller public open spaces of equal size (Giles-Corti, et al., 2005). However, Giles-Corti et al. (2005) did find that the impact of public open space attractiveness (arguably aesthetics) on park use and greater levels of walking was inconclusive (Giles-Corti, et al., 2005).

Regarding park cleanliness, McCormack et al. (2010) concluded that a lack of maintenance was frequently cited as a problem affecting park use. Results from McCormack et al. (2010)'s study indicates that bad conditions (such as uneven playing areas, courts with cracks, and poor walkways) may discourage people from using parks (McCormack, et al., 2010).

More specific to natural infrastructure, research participants identified parks and forests, similar to beloved urban green spaces, as the most aesthetically appealing sites, and they also attached more attributes to those urban green spaces compared to others (Krajter Ostoić, et al., 2020). The presence of trees was essential for aesthetics, followed by flowering (Krajter Ostoić, et al., 2020). The presence of a water body is also favoured, and trees, with their diverse features, are revealed to be crucial for both place attachment and aesthetics, regardless of the type of urban green space (Krajter Ostoić, et al., 2020). Furthermore, research shows that humanmade structures or infrastructure correlated positively with picturesque quality and perceived safety (Campagnaro, et al., 2020).

It is evident thus that some humanmade- and natural infrastructure, can relate to park use. However, could it contribute to being content with the presence of humanmade- and natural infrastructure, and if so, relate to park use?

As for perceived safety, research does show a positive relationship between the number of people and the presence of humanmade infrastructure (such as benches) and perceived safety (Campagnaro, et al., 2020). Lapham et al. (2016) also found that the perception of safety greatly impacted park visits, including that park facilities had some influence on park visits (Lapham, et al., 2016).

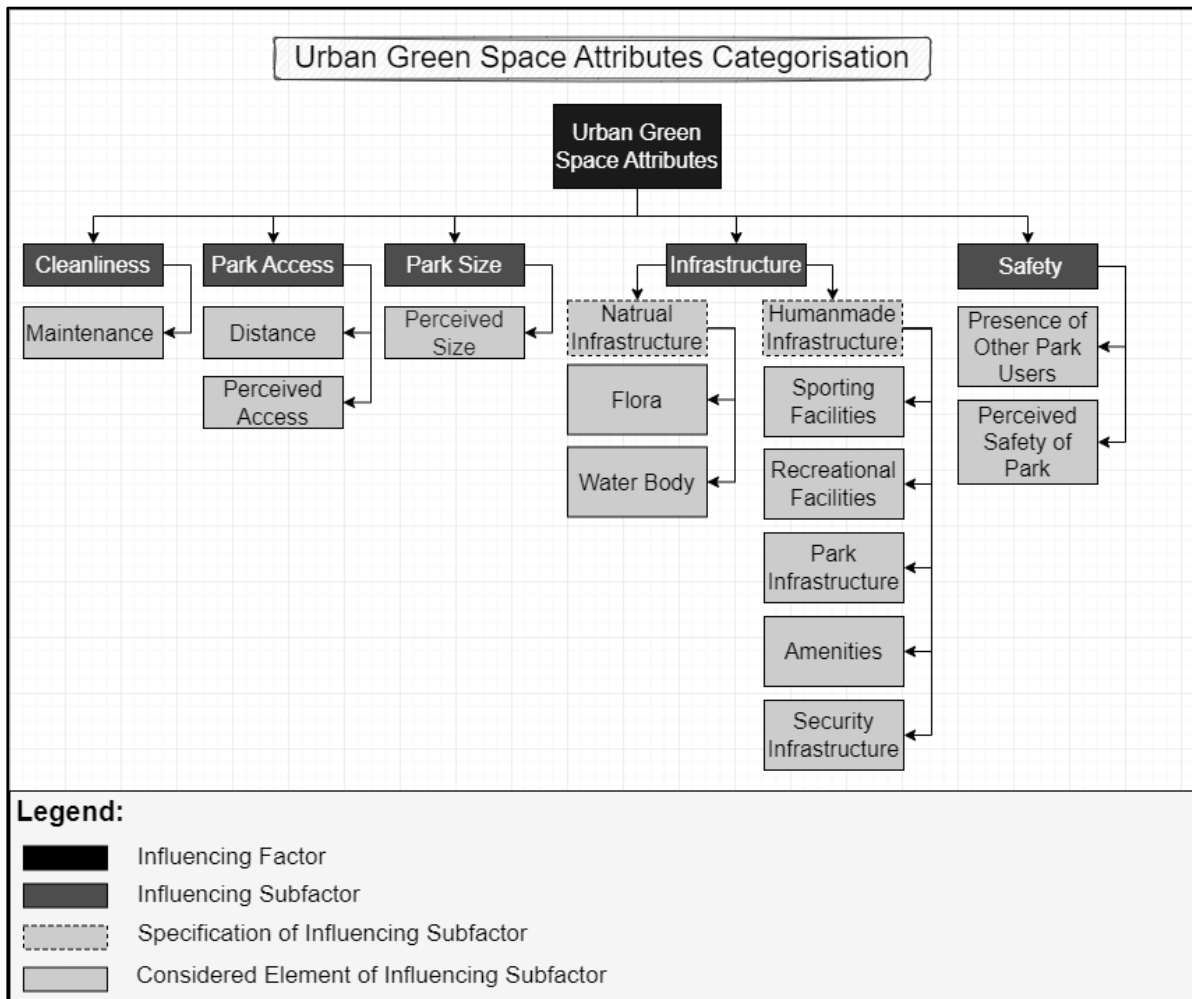
Given that natural infrastructure, humanmade infrastructure, and perceived safety relate to the overall preferences of parks and, thus, potentially to the use of parks, what could relate to the perceived safety of park users? Seaman et al. (2010) discovered that fear plays a role, where they found that fear of young persons in public places could lead to removing oneself from public places, including parks, or simply lead to increased supervision over one's children (Seaman, et al., 2010).

Kimic and Polko (2022) found that security infrastructure, such as fencing, might also relate to park use. Visual and physical enclosure can influence safety and calmness and induce restorative experiences (Kimic & Polko, 2022). From Kimic and Polko (2022)'s results, they explained that the possibility to be visible and to see others are one of the factors that have the most considerable influence on the sense of security of adults (Kimic & Polko, 2022). As for distance, research shows that the effect of distance is the most prevalent in using parks (Schipperijn, et al., 2010), where the larger the distance to the green space, the lower the frequency of use (Schipperijn, et al., 2010). A correlation between distance and the use of green space is evident (Schipperijn, et al., 2010).

### **2.3.7 Categorisation**

From the discussion so far, urban green space attributes that plays an influencing role in park visitation or avoidance can be represented in terms of five subfactors, further representing the elements considered in this research project. The following figure represents the categorisation of the urban green space attributes obtained and derived from the reviewed literature:

Figure 2.1 Urban Green Space Attributes Categorisation



The element of 'Cleanliness' involves the overall quality of maintenance of the parks. The elements of 'Park Access' involve the perceived distance needed to travel to the park and perceived access.

'Park Access' involves the perceived appropriateness of the travel distance and the perceived park access, similar to the works of (Petrunoff, et al., 2021). Perceived travel distance and park access is considered instead of true travel distance (i.e., in kilometres) and perceived park access, as for real or objective park access, the entry points (i.e., gates) do not need to be used to access the park.

'Park Size' represents the size of the parks as an element; however, in terms of it being perfect for persons, thus 'Park Size', in this case, is used to categorise the 'Perceived Size' element, given that the parks are identical in size.

'Infrastructure' distinguishes between both natural and humanmade infrastructure. The natural infrastructure represents tangible things found in nature and is not produced by persons, such as trees, water bodies, shade, flowering, or grass.

Humanmade infrastructure represents tangible elements that persons produce. This is further specified in terms of sporting facilities (playground equipment, outdoor gymnasiums, area for sport activities such as soccer); recreational facilities (space for picnics, a braai area); park infrastructure (walkways, footpaths, lighting, bins, benches); amenities (a restaurant, kiosk, drinking fountains, clean and accessible public restrooms); and security infrastructure (gates, fencing).

Last, 'Safety' represents the safety perception of a park, as well as the presence of other park users. Regarding the safety perception at the park, it may be considered as an informed (or misinformed) subjective construction held by a person of a space (at a particular time), thus, a (relative) characterisation of that space, which can be externally informed, for example, by park users, fencing, or other factors.

Now that urban green spaces, and the first influencing factor have been discussed, the following subsection provides a more detailed discussion surrounding demographic factor discrepancies with respect to green space use. This includes age, gender (sex assigned at birth) and level of education.

## **2.4 Demographic Factors**

Ample research on green space use examines how it relates to demographic factors such as population density, age, gender, and the socio-economic or ethnic composition of the surrounding neighbourhood and users (de la Barrera, et al., 2016). For this research project, age, gender (Garcia-Ramon et al., 2004; Wendel et al., 2012), level of education (Schipperijn, et al., 2010), as well as employment status are the demographic factors included to provide a context of the respondents' demographic profiles.

### **2.4.1 Age, Gender, and Level of Education**

As for age, Kemperman and Timmermans (2006) explained that studies show an inverse relationship between age and participation in leisure activities. As age increases, leisure activity participation decreases (Kemperman & Timmermans, 2006). In contrast, Schipperijn et al. (2010), who investigated links between age and gender and green space use, discovered that as age increases (until 80 years of age), the chances of males visiting green spaces at least a few days a week increased (Schipperijn, et al., 2010). Considering the level of education, Schipperijn et al. (2010) also found that people with a lower level of education were less likely than those with a more extended education to visit green spaces at least a few times per week (Schipperijn, et al., 2010).

However, Kemperman and Timmermans (2006) asserts that there are studies supporting both sides of the argument. Kemperman and Timmermans (2006) explained a study found that age

is not a vital factor in explaining the use of parks (Raymore & Scott, 1998), yet a different study suggests that age is a vital factor in leisure activity preferences and visits to parks (Payne, et al., 2002). Kemperman and Timmermans (2006) concluded from their study that age significantly influences park choice behaviour, thus supporting the latter argument that age is an important factor in visits to parks and leisure activity preferences (Kemperman & Timmermans, 2006).

Regarding sex assigned at birth [male and female], a study done by Garcia-Ramon et al. (2004) that focussed on assessing the residents' use and appropriation of a public space in Spain, Barcelona, called *Via Julia*, found a near-balanced use of public space by both men and women, of different ages in a variety of activities (Garcia-Ramon, et al., 2004). However, a study done by Wendel et al. (2012) in Latin America, Santa Cruz, Bolivia, did find higher use frequencies for men in comparison to women for all the examined demographic user groups, including a higher average night and weekend visits, noting that exceptions were present in neighbourhood parks, which had a higher average number of visitors during the week (Wendel, et al., 2012). Nonetheless, when the researchers compared day- and night-time use, they did find significant differences between men and women (Wendel, et al., 2012).

#### **2.4.2 Discussion and Summary**

Research shows that there is a relationship between age and park use (Kemperman & Timmermans 2006, Schipperijn et al. 2010). One study found that leisure activity participation decreases as age increases, indicating an inverse relationship between age and leisure activity participation, and concluded that age has a significant influence on park choice behaviour (Kemperman & Timmermans, 2006). Whereas Schipperijn et al. (2010) discovered that as age increase, the probability of green space visits increases, particularly for males, however, until a certain age.

This research project considers generational cohorts instead of specific ages, predominantly for the consideration of the respondents' privacy. The generational cohorts are based on the work of (Duh & Struwig, 2015), and according to Lapperman et al. (2020), Duh and Struwig (2015) justified the use of Western cohorts definitions and terminology and that they claim events in the U.S coincide with events in South Africa, despite some discrepancies (Lappeman, et al., 2020). Therefore, the generational cohorts that are not described in the work of Duh and Struwig (2015), are based on the Western cohorts.

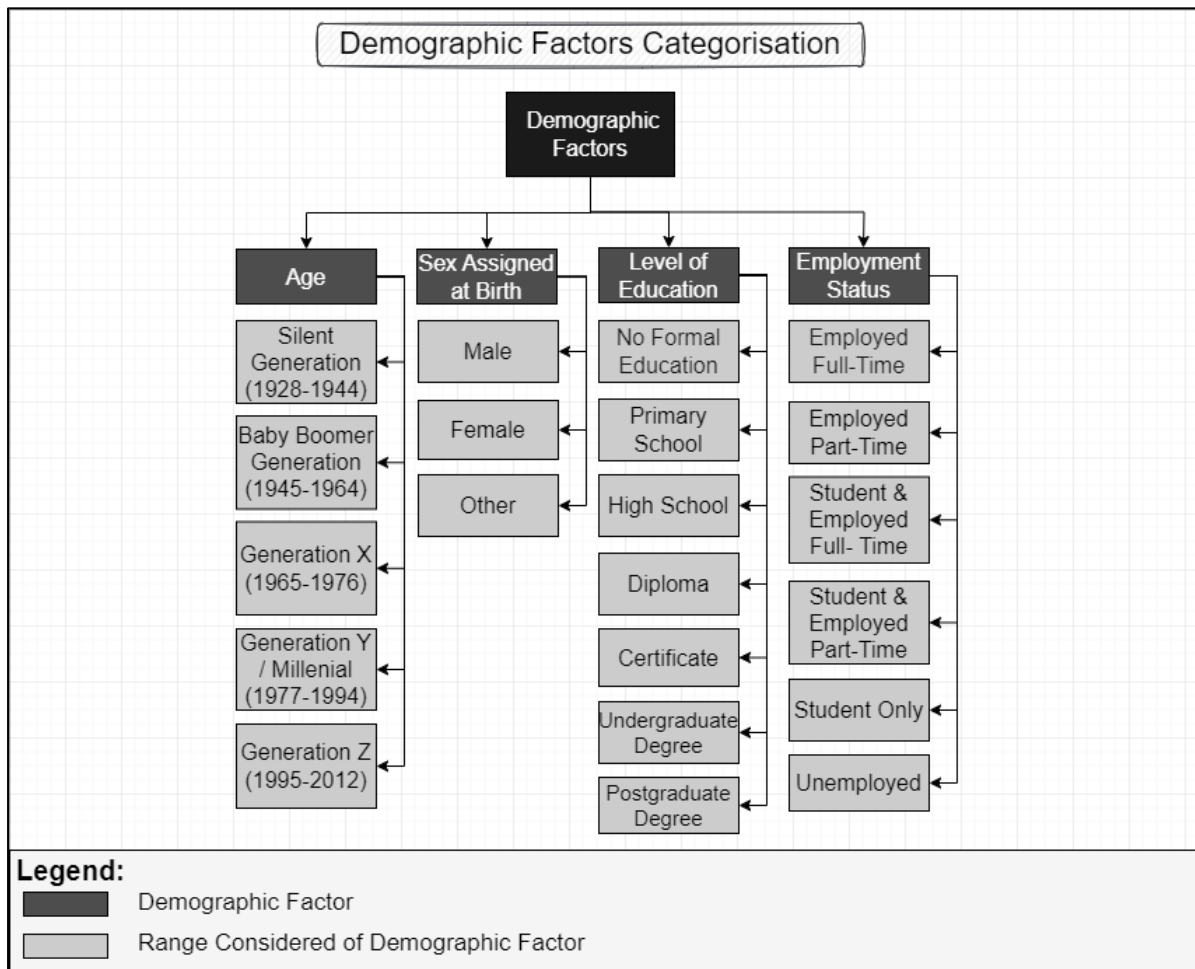
Now, moving over to sex assigned at birth [male and female], Wendel et al. (2012) found higher use frequencies for males compared to females, whereas Garcia-Ramon et al. (2004) found a nearly balanced use of a public space for both males and females. Regarding the level of education, Schipperijn et al. (2010) found a positive relationship between the level of

education and visits to green spaces. Employment status is included as well to shape a more comprehensive profile of the participants.

### 2.4.3 Categorisation

The demographic factors involve three factors, which ranges are further specified in the following figure. It represents the categorisation of the demographic factors obtained, and derived from the reviewed literature:

Figure 2.2 Demographic Factors Categorisation



For age, generational cohorts are used. For sex assigned at birth, male, female and other are included. In terms of the level of education, a wide range is considered, from having no formal education, up to having a postgraduate degree. In terms of employment status, from fully employed to unemployed is considered. These factors are included to investigate the park visit frequency in relation with the demographic factors of the participants.

Now that the first influencing factor, and the demographic factors have been discussed, the following subsection investigates the second influencing factor, cultural ecosystem services,

involving recreational value, aesthetic value, educational value, cultural heritage value, spiritual value, and the social relations value services.

## **2.5 Cultural Ecosystem Services**

What is referred to as cultural services are the spiritual, aesthetic, leisure, and educational benefits humans derive from ecosystems (Francis & Chadwick, 2013). Similarly, Elmqvist et al. (2013) explained that some cultural services provided include recreation, aesthetic benefits, cognitive development, place value and social cohesion (Elmqvist, et al., 2013).

More specifically, cultural (ecosystem) services are defined as the intangible benefits humans receive from ecosystems through reflection, spiritual enrichment, recreation, aesthetic experiences and cognitive development, including cultural diversity, spiritual and religious values, knowledge systems, educational values, inspiration, aesthetic values, social relations, sense of place, cultural heritage values, and recreation and ecotourism (Millennium Ecosystem Assessment, 2005).

A study conducted by Ko and Son (2018) provided valuable insights into cultural ecosystem services, whereby Ko and Son (2018) also utilised the Millenium Ecosystem Assessment to guide the cultural ecosystem services context for their study. Ko and Son (2018) sought to identify the function of urban green spaces and to investigate their value from the user's perspective, with a particular emphasis on cultural (ecosystem) services, whilst aiming to reveal what types of cultural service functions are presented via various urban green spaces types (Ko & Son, 2018).

The researchers identified seven categories of cultural (ecosystem) services possibly provided by urban green spaces, which are also generally applied worldwide (Ko & Son, 2018). These include recreation; cultural heritage; aesthetic value; educational value; and spiritual or religious value; and in addition to those applied globally, the researchers included social relations value and health value (Ko & Son, 2018). For their study, they combined ecotourism with recreation to be able to evaluate urban cultural ecosystem services for the residents rather than for tourists, and they classified activities that relate to health (for example, outdoor exercise) from recreation and ecotourism separately (Ko & Son, 2018).

Ko and Son (2018) also incorporated recreation (and ecotourism), aesthetic value, educational value, and social relations value, similar to that of Elmqvist et al. (2013); however, in addition, they included cultural heritage and spiritual or religious value as part of the cultural ecosystem services (Ko & Son, 2018). From their study, Ko and Son (2018) discovered that recreation value, social relations value, and aesthetic value services were ascribed to urban parks, somewhat different from those ascribed to forests (Ko & Son, 2018). While the cultural

ecosystem services' distributions were relatively similar across various green space types (i.e., forests, parks, and public facilities), their respondents associated spiritual value and social relations value to forests and urban parks (Ko & Son, 2018). The case could be similar to parks within the City of Tshwane; however, what these cultural ecosystem services are, requires investigation.

### **2.5.1 Recreation Value**

Ko and Son (2018) described the recreation service as “facilitating outdoor activities for recreation and leisure activities such as walking and relaxing” (Ko & Son, 2018, p. 302). The Millennium Ecosystem Assessment discussed that “people often choose where to spend their leisure time based in part on the characteristics of the natural or cultivated landscapes in a particular area” (Millennium Ecosystem Assessment, 2005, p. 40).

Since city areas can be stressful for residents, urban ecosystems' recreational features are one of the most highly valued ecosystem services in cities (Elmqvist, et al., 2013). Parks, forests, lakes, and rivers offer a wide range of recreational opportunities which improve human health and well-being (Elmqvist, et al., 2013). For example, an outing to a park can help alleviate stress, augment contemplativeness, invigorate urbanites, and create a sense of calmness (Elmqvist, et al., 2013). The recreational significance of parks is determined by ecological factors such as biological and structural variation and built infrastructure factors such as the supply of benches and other recreational facilities for sport (Elmqvist, et al., 2013). The leisure opportunities of these urban ecosystems are also affected by social criteria such as accessibility, safety, privacy, comfort, and sensory annoyance elements (for example, the value of recreation decreases if green spaces are perceived to be unpleasant, vulgar, or clamorous) (Elmqvist, et al., 2013).

### **2.5.2 Aesthetic Value**

In terms of aesthetic value, Ko and Son (2018) described the aesthetic value service as “facilitating enjoyment of various aesthetic pleasures of the ecosystem; promotion of thoughts such as visual satisfaction and artistic inspiration; stimulation from the natural scenery” (Ko & Son, 2018, p. 302). The Millennium Ecosystem Assessment discussed, “Many people find beauty or aesthetic value in various aspects of ecosystems, as reflected in the support for parks, scenic drives, and the selection of housing locations” (Millennium Ecosystem Assessment, 2005, p. 40).

Research on scenery aesthetics has investigated how various cultural and stakeholder groups perceive environmental conditions, including urban, rural, and wilderness settings (Daniel, et al., 2012). Studies focusing on natural capital and the aesthetic benefits of landscapes,

vegetative land cover, and water characteristics are consistent with attempts to define aesthetic benefits in the ecosystem service literature (Daniel, et al., 2012).

Urban ecosystems also serve an important function by providing aesthetic and psychological benefits that enrich human life with emotions and meanings (Elmqvist, et al., 2013). Some researchers noticed an association between the aesthetic benefits of urban green spaces and lower levels of stress and improved mental and physical well-being (Elmqvist, et al., 2013). Elmqvist et al. (2013) also discussed a correlation between the proximity of a person's home to green spaces and stress-related health problems and general health perception. The proximity of a home correlated with less stress-related health issues and a higher overall health perception (Elmqvist, et al., 2013). Persons regularly make decisions partly on where they want to reside in cities based on the characteristics of the natural landscapes, and research has shown that properties with higher proximity to green areas increase in value (Elmqvist, et al., 2013).

### **2.5.3 Educational Value**

In terms of educational value, Ko and Son (2018) described the educational value service as “providing opportunities for scientific knowledge creation, research, experiences and education through the natural environment of the ecosystem” (Ko & Son, 2018, p. 302). The Millennium Ecosystem Assessment added that “ecosystems and their components and processes provide the basis for both formal and informal education in many societies” (Millennium Ecosystem Assessment, 2005, p. 40).

Exposure to nature and green space offers various prospects for cognitive growth, which raises the possibility for environmental sustainability and a better understanding of ecosystem services (Elmqvist, et al., 2013). For example, urban woodlands and allotted gardens (such as urban green commons) are frequently utilised for environmental education and facilitate cognitive coupling to seasons and ecological changes in modern and urbanised settings (Elmqvist, et al., 2013). Similarly, communal gardens, graveyards and other green spaces have been found to preserve significant bodies of local ecological knowledge and have the potential to mitigate observed ecological knowledge losses in more affluent areas (Elmqvist, et al., 2013). The advantages of retaining local ecological knowledge have been emphasised in terms of greater urban systems' resilience and adaptive capacity and the potential to preserve and increase other ecosystem services (Elmqvist, et al., 2013).

### **2.5.4 Cultural Heritage Value**

In terms of cultural heritage, Ko and Son (2018) described the cultural heritage service as “preserving cultural heritage such as remains and cultural assets” (Ko & Son, 2018, p. 302). The Millennium Ecosystem Assessment added that “many societies place high value on the

maintenance of either historically important landscapes (“cultural landscapes”) or culturally significant species” (Millennium Ecosystem Assessment, 2005, p. 40).

Natural or semi-natural environmental characteristics are frequently linked to the identity of a person, a group of people, or a society (Daniel, et al., 2012). They offer cross-generational experiences and spaces for group interactions, which are crucial to maintaining cultural bonds (Daniel, et al., 2012). The heritage of biophysical characteristics, tangible objects, and intangible features of a community or society inherited from previous generations, preserved in the present, and passed down to future generations is generally defined as cultural heritage (Daniel, et al., 2012).

Understanding cultural heritage as an ecosystem service necessitates a simultaneous study of ecological and cultural contexts since various cultures may have distinct heritage linkages with the same environmental attributes (Daniel, et al., 2012). Historical linkages between human communities and ecosystems and cultural heritage are inextricably connected (Daniel, et al., 2012). Cultural landscapes serve as carriers for cultural values and strengthen community identity (Daniel, et al., 2012). Ecosystems that have been modified or even intensively maintained across time may have cultural importance. (Daniel, et al., 2012).

Daniel et al. (2012) explained that culture is dynamic and frequently serves as a significant catalyst for environmental change (Daniel, et al., 2012). For instance, places managed on a small scale using traditional methods might result in particular features like solitary trees, hedgerows, and terraces that have an impact on the resilience and production of ecosystems as well as the aesthetic appeal of the environment (Daniel, et al., 2012). Preserving cultural heritage could benefit significantly from protecting other ecosystem services (Daniel, et al., 2012).

### ***2.5.5 Spiritual or Religious Value***

In terms of spiritual or religious value, Ko and Son (2018) described the spiritual or religious value service as “providing spiritual stability while being protected from people, to enable activities such as self-reflection, nature worship, meditation” (Ko & Son, 2018, p. 302). The Millennium Ecosystem Assessment added that “many religions attach spiritual and religious values to ecosystems or their components” (Millennium Ecosystem Assessment, 2005, p. 40).

There has been an increased interest in the religious and spiritual importance associated with many aspects of nature, as some included the spiritual/religious value as a subtype of cultural ecosystem services (Daniel, et al., 2012). The assigning of spiritual or religious value to certain areas or species occurs in most societies; however, it varies across and within societies in how they express this value (Daniel, et al., 2012). Religious symbolism is frequently applied

to mark sacred places, such as prayer flags, crosses on mountain summits, or shrines alongside pilgrimage routes (Daniel, et al., 2012). These places vary in size as they can range from a few trees to an entire mountain range, and the boundaries of these sacred places might not be fixed (Daniel, et al., 2012). In some instances, just a small number of religious leaders may have access (Daniel, et al., 2012). In other instances, sacred spaces are accessible to the general public for religious activities such as worship, which may entail gathering natural resources (Daniel, et al., 2012).

### **2.5.6 Social Relations Value**

In terms of social relations value, Ko and Son (2018) described the social relations value service as “providing and contributing space for the formation and cohesion of local communities” (Ko & Son, 2018, p. 302). The Millennium Ecosystem Assessment added that “ecosystems influence the types of social relations that are established in particular cultures. Fishing societies, for example, differ in many respects in their social relations from nomadic herding or agricultural societies” (Millennium Ecosystem Assessment, 2005, p. 40).

Similarly, the affectively charged attachments to locations are referred to as place values (Elmqvist, et al., 2013). 'Sense of place,' for example, was found to be a key driver for environmental protection, with respondents expressing strong emotional attachments to their allotments and the surrounding garden spaces (Elmqvist, et al., 2013). Other key societal benefits of attachment to green spaces in cities include social cohesion, development of common interests, and neighbourhood involvement (Elmqvist, et al., 2013). Environmental authorities in the European Union have stressed the significance of urban green space in promoting social cohesion and reducing criminality by offering opportunities for interaction between groups and individuals (Elmqvist, et al., 2013).

### **2.5.7 Discussion and Summary**

Green spaces provide a range of benefits through the cultural ecosystem services they deliver (Elmqvist, et al., 2013). The recreational cultural ecosystem service provided by parks, for example, delivers a diverse range of recreational opportunities which contribute to the well-being of persons (Elmqvist, et al., 2013). One could argue that these recreational opportunities could be considered in the decision to utilise a park. Elmqvist et al. (2013) explained that social criteria also affect leisure opportunities, criteria such as safety, comfort, and accessibility (Elmqvist, et al., 2013).

The aesthetic cultural ecosystem service provided also delivers a range of aesthetic pleasures, including visual satisfaction, natural scenery stimulation and artistic inspiration (Ko & Son, 2018). Water bodies and vegetative land cover are all part of the aesthetic value persons derive from this cultural ecosystem service (Daniel, et al., 2012).

The scientific knowledge creation and educational opportunities provided by the educational cultural ecosystem service (Ko & Son, 2018) may foster a better understanding of ecosystem services. Elmqvist et al. (2013) described that urban green commons are regularly used for environmental education purposes and that they facilitate cognitive coupling to seasons and ecological changes in modern and urbanised settings (Elmqvist, et al., 2013).

The cultural heritage cultural ecosystem service, as described by Daniel et al. (2012), involves the heritage of biophysical characteristics, tangible objects and intangible features of a community that's preserved in the present (Daniel, et al., 2012).

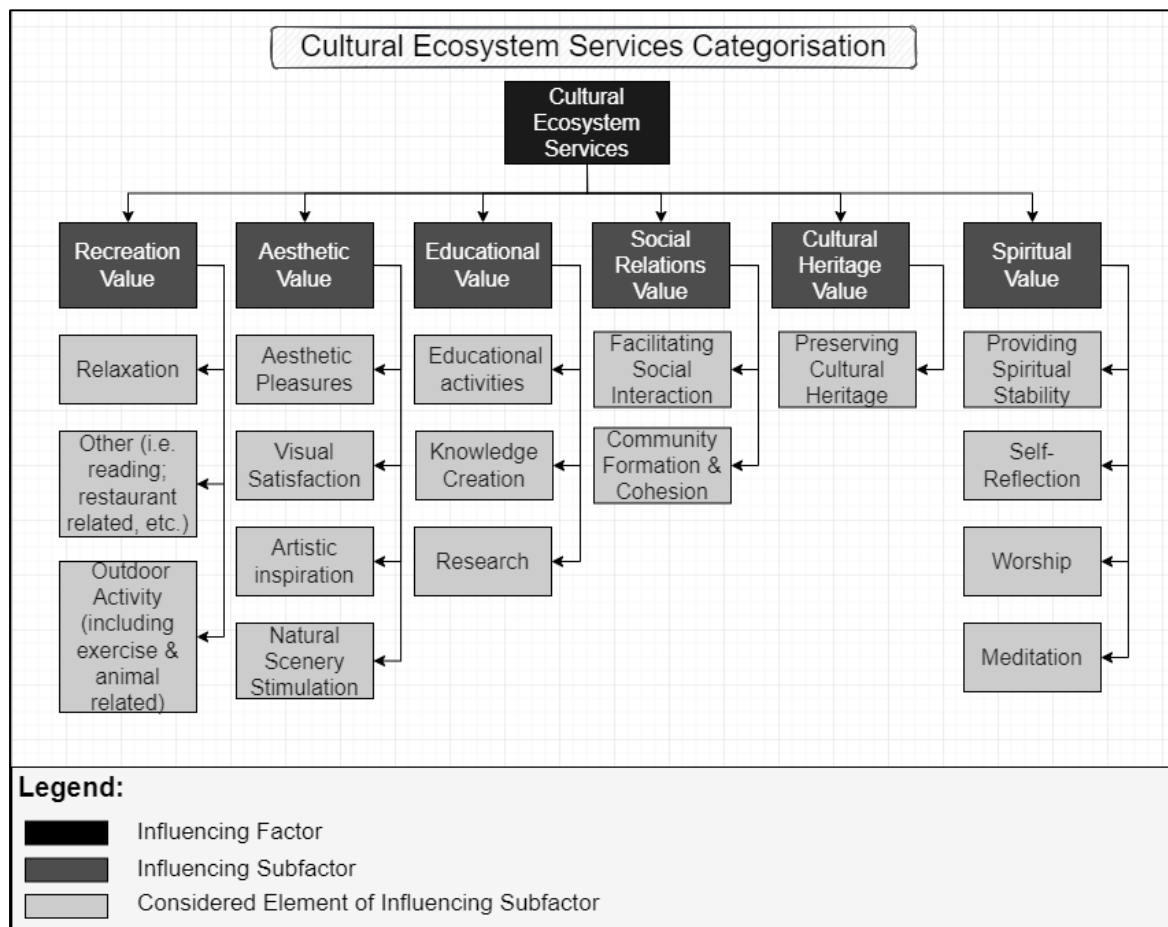
The spiritual value, as described by Ko & Son (2018), involves the provision of spiritual stability, enabling activities such as meditation, worship or self-reflection, and the assigning of spiritual or religious value to certain areas or species occurs in most societies (Ko & Son, 2018). The social relations cultural ecosystem service influences the types of social relations (Millennium Ecosystem Assessment, 2005). This service provides and contributes a space for local communities to form and unify (Ko & Son, 2018).

In general, these benefits include a space for recreation and leisure activities, the promotion of thoughts, visual satisfaction, artistic inspiration and overall stimulation from the natural scenery, opportunities for knowledge creation and research, a space for community cohesion, and the development of common interests (Ko & Son, 2018). In addition, these spaces could also preserve cultural heritage and accommodate for spiritual stability (Ko & Son, 2018). Therefore, it is important to investigate relationships between cultural ecosystem services and park use.

### **2.5.8 Categorisation**

The cultural ecosystem services influencing factor represents six subfactors, representing the elements considered in this research project. The following figure represents the categorisation of the cultural ecosystem services, obtained and derived from the reviewed literature:

Figure 2.3 Cultural Ecosystem Services Categorisation



For this research project, the social relations value (which involves social cohesion) is considered instead of place values, as sense of place is considered as an influencing factor rather than considering sense of place as part of the cultural ecosystem services.

The 'Recreation Value' involves the facilitation of outdoor activities (i.e., exercise<sup>4</sup> and walking the dog), relaxation, and other, i.e., reading. Indeed, interpersonal socialisation i.e., meeting people, and spending time with family and friends, can be considered recreational in nature; however, for this research project, it falls under social relations value, as the 'Social Relations Value' involves the facilitation of interaction between persons, community formation and cohesion (Ko & Son, 2018), as well as opportunities for interaction between groups and individuals (Elmqvist, et al., 2013).

'Aesthetic Value' involves the facilitation of aesthetic pleasures (such as a nice scenery), visual satisfaction (similar to aesthetic pleasures), artistic inspiration, and natural scenery stimulation

<sup>4</sup> Although Ko and Sun (2018) classified activities that relates to health (for example outdoor exercise) from recreation and ecotourism, separately, for this research project, exercise falls under recreation, and ecotourism is excluded.

(Ko & Son, 2018). 'Educational Value' involves the facilitation of educational activities, knowledge creation and research (Ko & Son, 2018).

'Cultural Heritage Value' facilitates the preservation of cultural heritage, remains or assets (Ko & Son, 2018). Last, the 'Spiritual Value' that facilitates spiritual stability, self-reflection, worship and meditation (Ko & Son, 2018).

Now, that cultural ecosystem services as the second influencing factor is discussed, the following subsection investigates the third and final influencing factor considered for this research project namely, sense of place.

## **2.6 Sense of Place**

Various disciplines have devoted considerable attention to person-setting relationships, which have been conceptualised in a variety of ways and under several related terms such as "sense of place", "place belonging", "topophilia", "place attachment", and "place belongingness" (Moore & Scott, 2003, p. 2). Underpinning these conceptions is the notion that a sense of place results from the attachment of meaning by people to that which would be considered as merely "space" (Moore & Scott, 2003). Put simply, the relationship between a person, a person's image, and environmental qualities is the sense of place (Hashemnezhad, et al., 2013).

This idea is based on the subjective experience of individuals (memories, rituals, history, culture, and the social order) on the one hand, and the objective and external impacts of the environment (landscape, smell, sound) on the other, which all lead to different associations with a place (Hashemnezhad, et al., 2013). Consequently, a sense of place is a complex idea of emotion and attachment to the environment formed via people's adoption and use of spaces (Hashemnezhad, et al., 2013).

Hashemnezhad et al. (2013) explained that a sense of place encompasses the descriptive and emotional parts of environmental experiences. This indicates that sense of place is a psychological and physical notion (Hashemnezhad, et al., 2013). Physical and social aspects make up the environment, and as such, the connection between individuals and location is mutual (Hashemnezhad, et al., 2013). Persons get distinct (positive or negative) meanings from places, which they subsequently imbue with meaning (Hashemnezhad, et al., 2013).

However, Hashemnezhad et al. (2013) further explained sense of place could not solely be referred to as an emotional sense of a space (Hashemnezhad, et al., 2013). It is a cognitive structure to which persons can assign their own meanings, and so, based on this cognitive theory, this definition of sense of place as an emotional link between individuals and location has been developed (Hashemnezhad, et al., 2013). Therefore, based on persons'

experiences, their goals, their intellectual background, and the physical aspects of their environment, different senses have formed (Hashemnezhad, et al., 2013).

### **2.6.1 Defining Sense of Place**

Sense of place, in short, “is ultimately about the meanings and connections individuals develop” (Larson, et al., 2013, p. 227). Larson et al. (2013) highlighted that the conditions enabling individuals to develop a sense of place can be identified.

Similar to Larson et al. (2013), some noted that sense of place is “a complex concept of emotion and attachment to the human environment which is created from people[’s] adoption and use of places” (Hashemnezhad, et al., 2013, p. 7), whilst explaining that this means sense of place is not predetermined but rather created from interactions amongst places and people (Hashemnezhad, et al., 2013).

According to Larson et al. (2013), people form attachments and create meanings over time, the amount of time they spend in a place is likely to affect their sense of place, and people’s sense of place also develops as a result of their social connections and interactions they have in a place (Larson, et al., 2013). These social connections, including social cohesion, civic participation, and local ancestry, are likely to influence the relationships and meanings people form throughout time (Larson, et al., 2013).

Žlender and Gemin (2020) discussed that sense of place is considered a determining factor of positive behavioural intentions towards an area. They explained that people’s meanings and values connect with sense of place, and as such, sense of place incorporates beliefs about how places should be managed and developed in the future (Žlender & Gemin, 2020). As a result, it is vital to recognise people’s sense of place to manage and maintain environmental quality effectively (Žlender & Gemin, 2020).

Now, two branches of enquiry have been identified within sense of place literature, namely “place as a locus of attachment” and place as a “center of meaning” (Raymond, et al., 2017, p. 2). In other words, sense of place can be described as the place meanings and place attachment to an area held by an individual or a group of persons (Masterson, et al., 2017).

However, Jorgensen and Stedman (2001) explained sense of place could have a multidimensional foundation, with each of the three dimensions signifying different aspects. First, place attachment equates to the affective or emotional dimension (Jorgensen & Stedman, 2001), which is discussed by Shao and Liu (2017) as an emotional bond between place and persons.

Second, place identity represents the cognitive dimension where a space is part of the person’s sense of self; and third, place dependence, which is representative of the conative

dimension (Jorgensen & Stedman, 2001), sometimes referred to as the “behavioral dimension” of place (Hashemnezhad, et al., 2013), where the dependence expressed for a person’s setting is relative to the behaviours performed there (Jorgensen & Stedman, 2001). However, it has been stated that place meanings represent the cognitive domain by which sense of place forms (Rajala, et al., 2020). Both place attachment (emotive domain) and place meaning (cognitive domain) are investigated for this research project.

### **2.6.2 Place Meaning**

[Place] meanings are descriptive statements (cognitions) about what a place is like, what a place is, as well as the types of imageries it conveys (Masterson et al. 2017, Brehm et al. 2013), contrast to place attachment, noting that place meanings are regularly distinguished from emotions (Brehm, et al., 2013). Masterson et al. (2017) discussed that place meaning can be considered to have three forms. The first form of meaning can be thought of as a series of adjectives, for example, answers to the type of a place a setting might be, such as *polluted*, *lonely*, or *warm* (Masterson, et al., 2017). A second form of meaning is considered less descriptive and more interpretive or symbolic; for example, what does a place mean symbolically, does a particular place mean *home*, or perhaps, *escape*? (Masterson, et al., 2017).

A third form of meaning involves place meaning to be considered as place character; for example, a given setting can be a farmland, a tourist place, or a wilderness (Masterson, et al., 2017). Place character is conveyed by a compilation of distinct place attributes that work together to give settings their distinct identity and is defined by a collection of distinguishing features and one's familiarity with them over time (Green, 2010).

### **2.6.3 Place Attachment**

With regards to place attachment, Masterson et al. (2017) noted that “place attachment is an emotional bond, usually positive, between individuals or groups and their environment” (Masterson, et al., 2017, p. 2), and is fundamentally evaluative, for example, good versus bad, or important versus unimportant (Masterson, et al., 2017).

Place attachment has been considered a subdomain of place identity; place identity has been considered a subdomain of place attachment, or place attachment and place identity have been considered the same concept (Shao & Liu, 2017). Additionally, place attachment is sometimes considered as involving two sub-concepts, namely [place] dependence and [place] identity (Masterson, et al., 2017):

#### **2.6.4 Place Identity**

Place identity refers to “those dimensions of self that define the individual’s personal identity in relation to the physical environment” (Masterson, et al., 2017, p. 2). The researchers explained that place identity is an evaluative concept and ought not to be mistaken with the structures and functions that characterise a specific setting or what is occasionally referred to as place character (Masterson, et al., 2017).

More specifically, Proshansky et al. (1983) explained that place identity, a sub-structure of an individual's self-identity<sup>5</sup>, consists of broadly conceived cognitions about the physical environment in which the person finds themselves in. These cognitions represent “memories, ideas, feelings, attitudes, values, preferences, meanings and conceptions of behaviour and experience” (Proshansky, et al., 1983, p. 59), which relates to the diversity and complexity of physical environments that define the day-to-day existence of every person (Proshansky, et al., 1983). The person's 'environmental past', which consists of places, spaces, and characteristics that have significantly contributed to the fulfilment of the person's biological, psychological, social, and cultural needs, is at the heart of such physical environment-related cognitions (Proshansky, et al., 1983).

#### **2.6.5 Place Dependence**

Place dependence, on the other hand, is defined as an “occupant’s perceived strength of association between him or herself and specific places” (Stokols & Shumaker, 1981, cited in Jorgensen & Stedman, 2001, p. 234). Given a variety of options, place dependence refers to how well a setting facilitates goal achievement, given a variety of alternatives (Jorgensen & Stedman, 2001). It conveys a fundamental link between people and place, conceptualised and measured as a setting's potential to accommodate people to achieve their goals and meet their needs (Masterson, et al., 2017). In short, place dependence can be thought as “the perceived behavioral advantage of a spatial setting relative to other settings” (Jorgensen & Stedman, 2001, p. 238).

Jorgensen and Stedman (2001) highlighted that place attachment is formed over time and is greatly based on relationships with persons in a setting instead of the physical environment. People are most attached to places where they have had diverse experiences (Jorgensen & Stedman, 2001).

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<sup>5</sup> However, one should not assume that place identity serves as an intelligible and integrated cognitive sub-structure of an individual's self-identity. It may be the case to some extent, however, it is best to consider place-identity as a medley of interpretations, ideas, thoughts, and related feelings about a particular physical environment, as well as the types of physical environments (Proshansky, et al., 1983).

### **2.6.6 The Physical Environment Context**

Place can be characterised by natural features and the connection to that space, including attachment and meanings, which can be formed via cultural or social processes (for example, social gatherings) (Gottwald, et al., 2022).

The physical environment offers meanings for attachment; for example, persons might feel attached to nature's beauty or a place's possible recreational opportunities, while noting that the physical environment shapes the boundaries of potential constructed and attributed meanings (Gottwald, et al., 2022). Additionally, the type and strength of place attachment differs and is subject to factors linked with places, such as size, physical characteristics, and people (including social relations) (Lewicka, 2011). Aside from physical characteristics, a place's accessibility is a determining factor for the experienced sense of place (Gottwald, et al., 2022).

Gottwald et al. (2022) added that research shows place characteristics have little impact on place attachment, but influence place meanings (which greatly relates to place attachment); however, some argue that natural features and green space augment a sense of community and community attachment (Gottwald, et al., 2022), where others have shown that no significant association between sense of place and neighbourhood greenness (Gottwald, et al., 2022).

So, does the physical environment relate to sense of place, or is there no relation? Some have suggested a direct relationship between sense of place and landscape features (Stedman, 2003). Some suggest sense of place is not innate to the actual physical settings, but instead, it resides in persons' interpretations of a setting that are constructed via experience with that setting (Stedman, 2003). Spaces then become "places" as they become instilled with meaning through experience (Stedman, 2003). Stedman (2003) explained that for some, meaning is primarily a social construct, that persons imbue meanings to space based on their experiences (Stedman, 2003).

Claims such as that meanings of the environment are not given and that too much importance has been put on the deterministic factors of the environment in contributing to human behaviour, have also been made (Stedman, 2003). Stedman (2003) particularly pointed out some argued that meaning about the environment has been conferred by persons that reflect their cultural as well as social experiences while explaining that with that understanding, a space can embody multiple places, reflecting the uniqueness of human culture, and differences in persons' experiences with the landscape (Stedman, 2003).

In contrast, Stedman (2003) explained that in spite of the constructed nature of place, some argue the significance of the physical environment in creating places. Some suggest the physical facilities or features of a setting as environment attributes that meet certain needs (Stedman, 2003). Others link culture, social relations as well as nature in the creation of a place (Stedman, 2003). Others, Stedman (2003) explained, suggest that community attachment is based on the facilities or features present in the natural environment (Stedman, 2003).

Therefore, according to Stedman (2003), a dichotomy exists in literature: the physical environment does and does not directly factor in sense of place. Community culture influences place meanings; however, so could the physical environment's nature influence community culture (Stedman, 2003).

Stedman (2003) asked if the physical environment itself determines a limit to the constructed landscape perspective. In particular, Stedman (2003) asked, likely in a rhetorical sense, "Are we really likely to attribute "wilderness" meanings to a suburban shopping mall?" (Stedman, 2003, p. 673), making a valid point, albeit applying an extreme form of reductionism. Stedman (2003) suggested that these symbolic meanings are, at minimum, partially based on some material reality (Stedman, 2003).

Stedman (2003)'s investigation of a relationship between sense of place and the physical landscape show that the only model not rejected as poor fit, is the model which considers the physical environment's characteristics as the basis of meanings. Models where the landscape's attributes directly serve as the source of sense of place (the direct effects) nor models that include experience, illustrated acceptable model fit<sup>6</sup> (Stedman, 2003). As such, an investigation is required for whether urban green space attributes relate to sense of place, and more specifically, if noticing natural- and humanmade infrastructure contribute to feeling content.

### **2.6.7 The Cultural Ecosystem Service Context**

Gottwald et al. (2022) conducted a study to assess people-place relationships by integrating sense of place theory and cultural ecosystem services (including meanings based on cultural ecosystem services) regarding river landscapes (Gottwald, et al., 2022). In order to assess place meanings, the researchers utilised a list of cultural ecosystem services, where

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<sup>6</sup> Stedman (2003) explained that the characteristics of the study area (lake-rich landscape) and the persons, may have contributed to the findings (Stedman, 2003).

respondents could have chosen as many of the nine cultural ecosystem services<sup>7</sup> which are, spiritual services; biodiversity; inspiration; natural significance; recreation; social relations; cultural heritage; aesthetic appreciation; and local history and culture (Gottwald, et al., 2022).

Gottwald et al. (2022)'s results illustrate the most prevalent stated meanings (free-listing exercise) related to recreational activities, aesthetic values and well-being. Additionally, the most commonly listed meanings via the cultural ecosystem service selection (multiple response exercise) are nature experience and education; social relations; and aesthetic appreciation (Gottwald, et al., 2022). Gottwald et al. (2022) discovered one of the highest attachment scores for place attachment was for spiritual services. Gottwald et al. (2022) explained that they can conclude that instrumental meanings (nature-related meanings and sociocultural meanings) can be covered with cultural ecosystem services.

Gottwald et al. (2022)'s contribution to sense of place research, with the integration of sense of place theory and cultural ecosystem services, provides valuable results, specifically regarding place meaning. However, they explained that meanings that are more subjective and individual, should be included in assessments of sense of place (and relational values) linked to ecosystem services (Gottwald, et al., 2022), and therefore, investigating subjective meanings in relation to cultural ecosystem services, is required.

### **2.6.8 Measuring Sense of Place**

In terms of place meanings, these are descriptive statements (cognitions) about what a place is like, what a place is, as well as the types of imageries it conveys (Brehm et al. 2013; Masterson et al. 2017). Place meaning can be thought of as having three forms; descriptive (series of adjectives), interpretive (more symbolic), or place meaning considered as place character (Masterson, et al., 2017), which can be considered in an attempt to measure place meaning.

In terms of place identity, place attachment and place dependence, Jorgensen and Stedman (2001) investigated the functionality of evaluating Sense of Place as a multidimensional construct consisting of (1) Identity (beliefs about the relationship between self and place), (2) Attachment (emotional connection to place), and (3) Dependence, or the extent whereby the space is perceived to influence behaviour in relation to alternative spaces (Jorgensen & Stedman, 2001).

In Jorgensen and Stedman (2001)'s investigation, several models of measurement are proposed as possible reasons for the construct validity of the scale. On the foundation of

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<sup>7</sup> In addition to the multiple-response exercise, Gottwald et al. (2022) included an open question asking participants why the place is meaningful to them, enabling the free-listing exercise.

research on attitude structure, these models were created to stimulate additional thought towards notions of sense of place from a measuring viewpoint (Jorgensen & Stedman, 2001).

In Jorgensen and Stedman (2001)'s study, their findings indicate that their scale assesses a general 'sense of place' dimension that is reflected in lakefront property owners' thoughts, feelings, and behavioural attitudes. Although support was also found for the existence of three univariate dimensions (cognitive dimension, affective/emotional domain, conative domain) associated with place identity, place attachment, and place dependence, respectively, the general evaluative dimension<sup>8</sup> described observed responses stronger than the domain-specific constructs (Jorgensen & Stedman, 2001). In three distinct measuring models positing both general and specialised components, the sense of place factor predominated over the narrower dimensions, i.e., the cognitive, affective or emotional, and conative dimensions (Jorgensen & Stedman, 2001).

The degree of covariation between the domain-specific constructs was indicative of shared variability with the general sense of place variable that associated most strongly with (place) attachment and least with (place) identity beliefs (Jorgensen & Stedman, 2001). In other words, (place) attachment was more synonymous with the sense of place component compared to (place) identity and (place) dependence (Jorgensen & Stedman, 2001). Could focus then rest predominantly on a general sense of place construct, or perhaps on place attachment, or both? What can be said about place identity?

Shao and Liu (2017) explained that place identity has been analysed from three perspectives<sup>9</sup>; the cognitive, affective or emotive, and objective perspectives, and it has been found that place attachment and place identity typically overlap (Shao & Liu, 2017). Place identity and place attachment share two dimensions: an affective dimension, and a cognitive dimension (Shao & Liu, 2017).

The cognitive dimension focuses on the features of physical space, such as distance and, and, as well as the conscious beliefs of how to utilise a specific location, and affective dimension highlights emotions and preferences of a specific location, such as sight, smell, and sound (Shao & Liu, 2017). In summary, Shao and Liu (2017) explained, the term emphasises

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<sup>8</sup> "The most explanatory factor was a general evaluative dimension (i.e., the sense of place factor) summarised by owners' positive emotion toward their lakeshore properties" (Jorgensen & Stedman, 2001, p. 244).

<sup>9</sup> Similar to the dimensions of Jorgensen and Stedman (2001), with place attachment equating the affective or emotive dimension, but Shao and Liu (2017) explained the cognitive dimension, which according to Jorgensen and Stedman (2001) can represent place identity, Shao and Liu (2017) also incorporated the features of a physical space with the cognitive dimension.

four distinct facets, namely, sensory experience, physical appearance, historical character, and social interaction.

Sensory experience is feedback from both physical and spiritual interaction between persons and the environment; it provides an understanding of how people are attached to the location, as well as a crucial basis for the evolution of place identity and place attachment through time (Shao & Liu, 2017). Since place identity is also evolving with time, the senses play a crucial role in determining how individuals alter place identity and how place identity adapts to the physical and psychological needs of its persons (Shao & Liu, 2017).

Physical appearance has a significant impact on the identity and attachment of a place (Shao & Liu, 2017). The manually adjustable and distinguishable layout and functionality of a place's physical characteristics add to its users' sense of comfort (Shao & Liu, 2017). Persons are able to position themselves and be influenced by nodes, roads, edges, and other landmarks due to place identity and place attachment (Shao & Liu, 2017).

Historical character is also involved (Shao & Liu, 2017). Not only do local environment fixtures (bricks, steel, stone, etc.) provide a contrast and comparison to the present after a period of time, but so do local culture and society throughout history (Shao & Liu, 2017). History is also part of a location's identity (Shao & Liu, 2017). Consequently, it is frequently seen that people who have lived in a location longer have a stronger affinity to it (Shao & Liu, 2017).

Social interaction is one of the aspects that influence place identity and place attachment, as users are also a significant aspect of a space (Shao & Liu, 2017). Research describes place identity as a component of place attachment based on the type of resident-environment interactions (Wester-Herber, 2004). In addition, a responsive space will be capable of meeting the different day-to-day activities of its users (Shao & Liu, 2017). Diversity is an essential component of place identity, as it offers residents with a degree of choice and a variety of purposes (Shao & Liu, 2017).

Even though there are numerous definitions of the idea of 'place' and how it varies from the definition of "space," an individual may feel attached to places with very diverse characteristics, but place attachment emerges due to factors such as shared meanings and social belonging (Shao & Liu, 2017). Although they have defined the term differently from different perspectives, they all agree on one point; the formation of emotional attachments with places help persons overcome identity crises and gives them a sense of stability they need in a constantly changing world (Shao & Liu, 2017). Regardless of whether place attachment should incorporate the idea of place identity, place attachment consists of four aspects, and any evaluation of place attachment could be based on those four aspects (Shao & Liu, 2017).

### **2.6.9 Discussion and Summary**

In sum, sense of place is described as meanings and connections persons develop (Larson, et al., 2013). From the literature, sense of place involves two main concepts, place meaning and place attachment (Masterson, et al., 2017; Raymond et al., 2017).

Place attachment, on the other hand, “is an emotional bond, usually positive, between individuals or groups and their environment” (Masterson, et al., 2017, p. 2), and is fundamentally evaluative, for example, good versus bad, or important versus unimportant (Masterson, et al., 2017). Additionally, place attachment, is sometimes considered to involve two sub-concepts, namely place dependence and place identity (Masterson, et al., 2017).

Place identity refers to “those dimensions of self that define the individual’s personal identity in relation to the physical environment” (Masterson, et al., 2017, p. 2). Place dependence, on the other hand, refers to how well a setting facilitates goal achievement (Jorgensen & Stedman, 2001).

Note that Shao and Liu (2017)’s explanation involving sensory experience, physical appearance, historical character, and social interaction is considered, but in terms of urban green space attributes, as well as the cultural ecosystem services, specifically sensory experience and physical appearance. Historical character and social interaction are not explicitly considered. The two influencing factors, urban green space attributes and cultural ecosystem services for this research project are considered to contribute or represent the aspects, in particular the sensory experience, and physical appearance aspects.

It is important to note that the physical environment (and its characteristics, amenities, or attributes) might relate to sense of place, or it might not. In favour of the former, Gottwald et al. (2022) mentioned that research show place characteristics have little impact on place attachment, but they influence place meanings (Gottwald, et al., 2022). Lewicka (2011) discussed that the type and strength of place attachment differs and is subject to factors linked with places themselves, such as size, physical characteristics, and people (including social relations) (Lewicka, 2011). Aside from physical characteristics, a place’s accessibility is a determining factor for the experienced sense of place (Gottwald, et al., 2022).

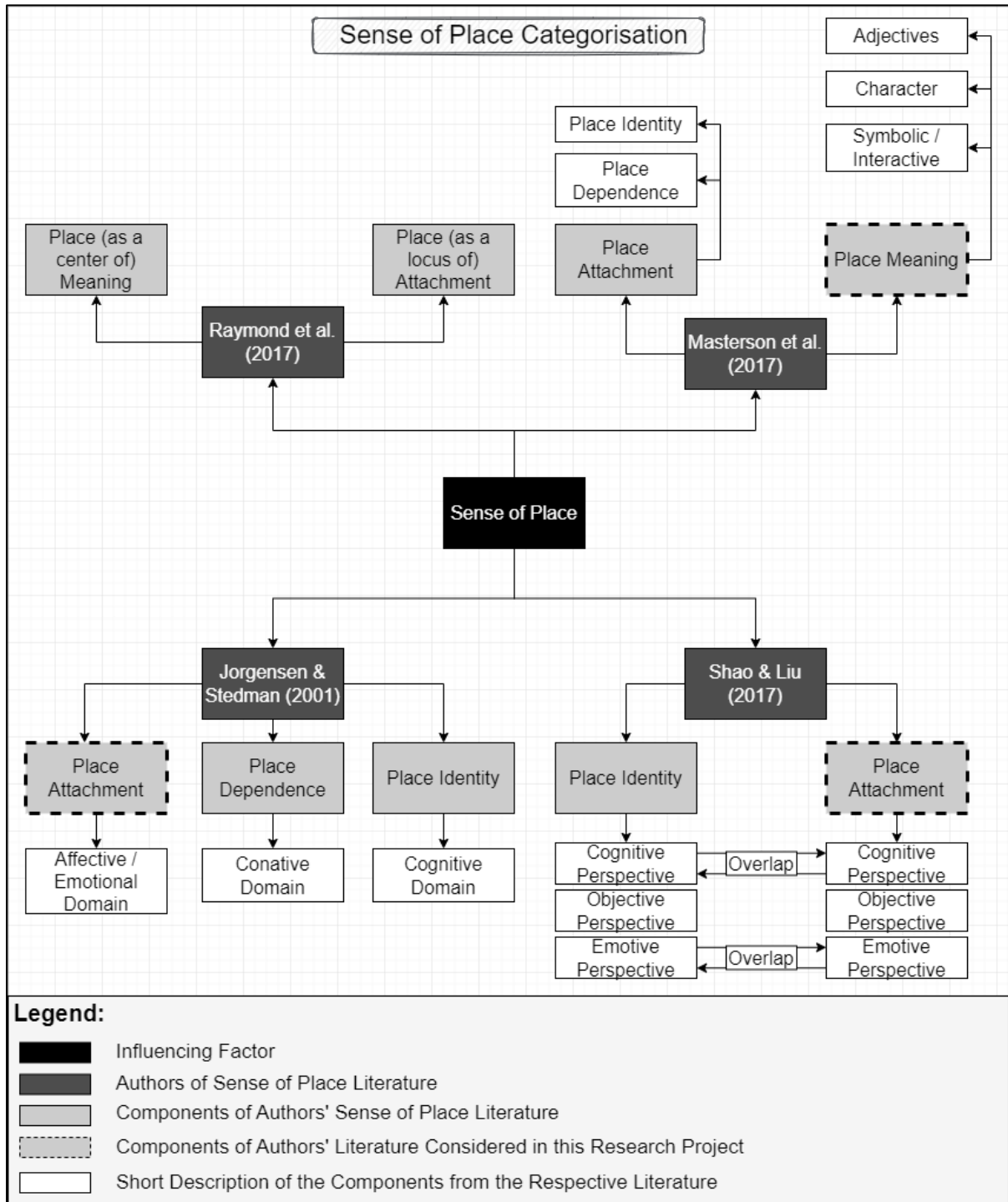
In favour of the latter, some suggest that sense of place is not innate to the actual physical settings, but instead, it resides in persons’ interpretations of a setting that are constructed via experience with that setting (Stedman, 2003). Spaces then become “places” as they become instilled with meaning through experience (Stedman, 2003). Stedman (2003) explained that for some, meaning is primarily a social construct, that persons imbue meanings to space based on their experiences (Stedman, 2003). Therefore, an investigation is needed into

whether the physical environment, more specifically, the urban green space attributes of parks, relate to sense of place.

### 2.6.10 Categorisation

For this research project, sense of place is considered in terms of place meaning and place attachment. The following figure represents the categorisation of sense of place, obtained, and derived from the reviewed literature in terms of the respective authors:

Figure 2.4 Sense of Place Categorisation



For this research project, sense of place represents two components, place meaning, and place attachment (Raymond, et al., 2017). For place attachment, Jorgensen & Stedman (2001)'s understanding is considered including the general evaluative item, Masterson et al. (2017)'s approach toward place meaning in relation to Gottwald et al. (2022)'s understanding is considered, and Stedman (2003)'s understanding surrounding the physical environment is considered, as well as Shao & Liu (2017)'s explanation regarding the four facets.

Now that sense of place as the third influencing factor is discussed, the following subsection provides a discussion and a summary of the sub-elements and components of the influencing factors investigated.

## **2.7 Discussion and Summary**

Recall that the second objective of this research project is to capture and assess the nature of the influencing factors in decision-making to utilise parks within and close to Hatfield as examples of urban green spaces in the City of Tshwane. The influencing factors are tested between themselves only<sup>10</sup>, as well as with park use.

Daniel et al. (2012) explained that natural or semi-natural environmental characteristics are frequently linked to the identity of a person, group, or society. The heritage of biophysical characteristics, tangible objects, and intangible features of a community or society inherited from previous generations, preserved in the present, and passed down to future generations is generally defined as cultural heritage (Daniel, et al., 2012). A relationship may thus exist between humanmade- and natural infrastructure subfactors and the cultural heritage value subfactor.

Shao and Liu (2017) explained that place attachment consists of four aspects: sensory experience; physical appearance; historical character; and social interaction. The researchers explained that sensory experience is the feedback from physical and spiritual interaction between persons and the environment (Shao & Liu, 2017). A relationship may thus be present between the presence of humanmade- and natural infrastructure subfactors and the spiritual value subfactor share a relationship.

Elmqvist et al. (2013) mentioned for a possible relationship between the cultural ecosystem services factor and the urban green space attributes factor. They explained that the recreational significance of parks is determined by ecological factors such as biological and structural variation and built infrastructure factors such as the supply of benches and other recreational facilities for sport (Elmqvist, et al., 2013). Therefore, a relationship may be present

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<sup>10</sup> With one exception, a correlation test is conducted between park maintenance, and the remaining urban green space attributes.

between the humanmade- and natural infrastructure subfactors, and the recreation value subfactor.

Gozalo et al. (2019) explained that the walking frequency only positively correlated with customer satisfaction in large parks, however, in small parks, walking also correlated significantly with environmental factors (including groves, and cleanliness) and social factors (including safety). Giles-Corti et al. (2005) concluded that access to large, attractive public open spaces related to higher levels of walking. In addition, Schipperijn et al. (2010) did find a significant correlation between distance and the use of green space. Therefore, a relationship between the park size subfactor and park access subfactors, and the recreation value subfactor may be present.

The leisure opportunities of these urban ecosystems are also affected by social criteria such as accessibility, safety, privacy, comfort, and sensory annoyance elements (for example, the value of recreation decreases if green spaces are perceived to be unpleasant, vulgar, or clamorous) (Elmqvist, et al., 2013). Therefore, a relationship between the recreational value subfactor, and the safety subfactors may be present.

Krajter Ostoić et al. (2020) explained that flora (trees with diverse features) are crucial for both place attachment and aesthetics. Shao and Liu (2017) also added that physical appearance significantly impacts the identity and attachment of a place. Campagnaro et al. (2020) explained that humanmade structures or infrastructure correlated positively with picturesque quality and perceived safety. Therefore, relationships may exist between the humanmade- and natural infrastructure subfactors, and a sense of place component, the aesthetic value subfactor and safety subfactors.

Qualitative results from McCormack et al. (2010)'s study indicate that bad conditions (such as uneven playing areas, courts with cracks, and poor walkways) may discourage people from using parks. While poor maintenance and condition can deter visitors from visiting parks, it is also likely to have a negative impact on the appearance, perceived safety, use, and overall perception of park quality (McCormack, et al., 2010). Therefore, a relationship may be found between the cleanliness subfactor and the aesthetic value subfactor.

Seaman et al. (2010) discovered that community cohesion plays a significant role in deciding access to green space, and that fear plays a role as well. A fear of young persons in public places resulted in either removing oneself and one's family from public places or, for those with children, increasing the amount of supervision was deemed appropriate (Seaman, et al., 2010). Therefore, a relationship between the social relations value subfactor, and the safety subfactors could be present.

In terms of educational value, Ko and Son (2018) described the educational service as “providing opportunities for scientific knowledge creation, research, experiences and education through the natural environment of the ecosystem” (Ko & Son, 2018, p. 302). Therefore, a relationship may be present between both the humanmade- and natural infrastructure subfactors, and the educational service subfactor, given that the infrastructure is used for educational purposes.

It is, therefore, essential to investigate if relationships are present between influencing factors. The third objective of this research project involves precisely that; to evaluate the nature of intersections between cultural ecosystem services, urban green space attributes, and sense of place as influencing factors in decisions to utilise parks within and close to Hatfield, and to identify if these influencing factors relate to park use.

In sum, the investigated sub-elements of the first influencing factor, UGSA, are humanmade - and natural infrastructure; park maintenance; safety perception at the parks; park size; as well as access and travel distance to the parks. The investigated sub-elements of the second influencing factor, CES, are cultural heritage value services; aesthetic value services; spiritual value services; recreation value services; social relations services; and educational value services. Last, the investigated components of the third influencing factor, SOP, are place meaning and place attachment. Note, the demographic factors included for in this research project are, sex assigned at birth; level of education; generation cohort (ages); and employment status. The next chapter, Chapter Three, consists of the research project’s research methodology. See Figure 3.3 for the conceptual framework, for an overview of the influencing factors and the sub-elements and components.

## 3 CHAPTER THREE: RESEARCH METHODOLOGY

### 3.1 Introduction

Chapter Three details how the research was conducted. This chapter commences with a discussion surrounding the theoretical framework underpinning this research project, followed by a discussion about the research design. The research commenced with investigating the policy and regulatory directives identification. Then, the researcher determined the case study parks to include, followed by the literature reviews and online reviews. Afterwards, the researcher formulated the questionnaire, and during the time of data collection, the researcher investigated the Google Maps data. Once the data collection was completed, the researcher conducted, and discussed the quantitative and qualitative analyses. Afterwards, the researcher provided the conceptual framework for the research project and concluded with recommendations for urban green space use and planning, and the research challenges.

### 3.2 Theoretical Framework

#### 3.2.1 *Critical Realism*

Critical realism is considered a comprehensive philosophy of science since it utilises both constructivist and positivist approaches to render a detailed account of epistemology and ontology (Lawani, 2020). Critical realism enables the identification of the underlying causal relationships among social events to obtain an enhanced understanding of matters, thus allowing for strategic suggestions to address social predicaments (Lawani, 2020).

Critical realism involves ontological realism and epistemological relativism (Vincent & O'Mahoney, 2018; Yucel, 2018), however, Vincent and O'Mahoney (2018) clarified that it is not that simple, as critical realism, whilst holding that actual events do transpire, also proposes that these events are caused by real mechanisms that are oftentimes imperceptible to the researcher (Vincent & O'Mahoney, 2018).

In critical realism ontology, reality is layered into three levels; the empirical, the actual and the real level (Fletcher, 2017; Vincent & O'Mahoney, 2018). The empirical level is what is perceived to be the case; the actual level refers to the events that transpire in time and space which might differ from what is perceived to be the case; and the real level constitutes the mechanisms and structures which produce and explain events (Vincent & O'Mahoney, 2018).

Similarly, the empirical layer involves events that are observable or experienced via perception or measurement (Lawani, 2020). The real layer involves events, whether observable or not, that occur when the causal powers of objects and structures are enacted (Lawani, 2020). The real layer involves the "total reality"; the experiences, causal powers, mechanisms, and events

inherent to these objects or entities as they exist independently (Archer et al., 2013, cited in Lawani, 2020, p. 323).

More specifically, Fletcher (2017) explains that the empirical level is where researchers can measure events or objects empirically; however, these events are regularly conciliated via the filter of personal experience and interpretation. This empirical level, Fletcher (2017) states, is the "transitive level of reality, where social ideas, meanings, decisions and actions occur" - including that these can be causal (Fletcher, 2017, p. 183). The actual level serves as the middle level (Fletcher, 2017). Here, the filter of personal experience is absent (Fletcher, 2017). Events happen whether or not humans experience or interpret them, and the observations at the empirical level often differ from these true happenings (Fletcher, 2017). The third level is considered the real level (Fletcher, 2017). Here, causal mechanisms or structures are present (Fletcher, 2017).

These causal structures or mechanisms are the intrinsic properties in an object or structure that function as causal forces to create events (Fletcher, 2017). Fletcher (2017) states that critical realism aims to explain "social events through reference to these causal mechanisms and the effects they can have throughout" these three layers or levels of reality (Fletcher, 2017, p. 183). Moreover, Vincent and O'Mahoney (2018) explained that events are not defined solely by a single mechanism, as reality is "multiply determined", and that beyond direct observation, to suggest other potential mechanisms that could (wholly or partially) neither manifest nor be readily observable (though still have an influence) is a possibility.

A critical realist's perspective, therefore, involves acknowledging and accepting the detail between the empirical and the actual but also acknowledges causal mechanisms that relate to the object under investigation (for example, a speed camera<sup>11</sup>) with the subject (for example, a driver) under investigation, asking what variety of causal relations must be involved for the empirical events to transpire (Vincent & O'Mahoney, 2018). Critical realism thus also provides researchers with an understanding of why things change (Vincent & O'Mahoney, 2018).

Similar research studies, which includes; the analyses of relationships between groups of cultural ecosystem services (Shi, et al., 2020), an investigation of the extent to which urban

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<sup>11</sup> In Chapter 13 of the book *SAGE Handbook of Qualitative Research Methods*, Vincent and O'Mahoney (2018) further explained using a fixed roadside speed camera as an example. They stated that a traditional positivist approach might involve measuring incidences of new speed cameras (whether these cameras are working or not) and changes in vehicle's speed, undergo a regression analysis that shows positive correlation and thus concluding that cameras cause vehicle speed reductions. Whereas a critical realist approach can place the speed camera in numerous related, stratified or laminated systems, which could involve both possible structural relations of the "citizen, the state and the police", in addition to the psychological institutionalisation of the drivers and their responses to "disciplinary techniques" – which depend on the identification of deep causal relations that might be invisible to the researcher that only focused on actual events (Vincent & O'Mahoney, 2018).

green spaces provide cultural ecosystem services (Ko & Son, 2018), and the combination of sense of place theory with cultural ecosystem services (Gottwald, et al., 2022), applied a Spearman's rank correlation analysis. However, it would be contrary to the stratified ontology of critical realism to solely concentrate on identifying narrowly defined patterns of observable events to derive causal conclusions in support of the assertion that correlation is causation (Zachariadis, et al., 2013).

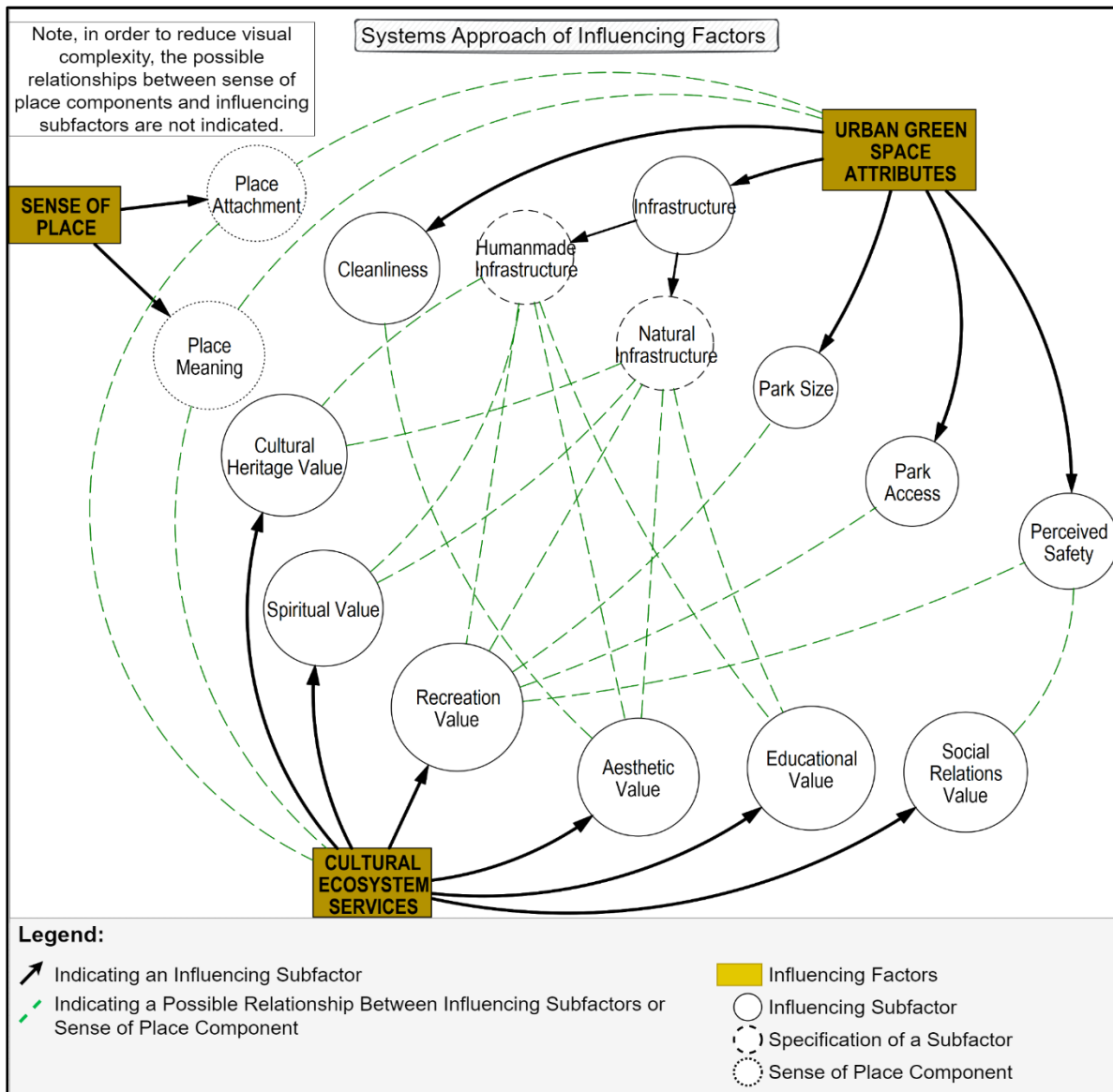
From a critical realist standpoint, it could thus be helpful to utilise quantitative approaches to quantify some features of a structure or object, if it is acknowledged that structures are made up of contextual interactions that are better understood qualitatively (Zachariadis, et al., 2013). Therefore, statistical descriptions are seen as useful simplifications since they function as a quantitative measure of the number of items belonging to some group or a statement about specific common attributes of objects (Zachariadis, et al., 2013). For example, one may assert that larger businesses typically make greater investments in technology or that 80 per cent of enterprises with high diversity are multinationals (Zachariadis, et al., 2013). These statements should be viewed as descriptive summaries rather than prediction tools since, despite suggesting a required relationship or correlation, they make no claims regarding the causal status of the associations (if any) (Zachariadis, et al., 2013).

This research report does not argue (in an absolute sense) for causality in terms of the influencing factors, but rather to identify possible relationships between factors, and with the use of parks, as a step towards a pursuit in the investigation of causal relationships or mechanisms. With a systems approach (discussed below), this research project also aims to illuminate the complex relationships regarding park use and influencing factors.

### **3.2.2 Systems Approach**

An interdisciplinary field called 'systems thinking' provides a variety of approaches to produce an enhanced understanding of the behaviour and structure of complex systems (Hossain, et al., 2020). A systems approach is a method of approaching an issue that adopts a holistic viewpoint, striving to consider all relevant factors while focusing on the interactions between the many components of a problem or issue at hand (Checkland 1981, cited in Goede, 2006, p. 68). Because systems thinking creates links in space and time, encourages increased awareness of the related elements, and facilitates adaptation to new contexts, systems thinking, when utilised as a thinking technique, can build confidence in solving problems (Smith, 2011). Therefore, a systems approach toward these influencing factors was applied, that enabled the researcher to evaluate the nature of intersections between the influencing factors. The following figure illustrates how the influencing factors investigated, might be possibly related to one another from a systems approach perspective:

Figure 3.1 Systems Approach Framework

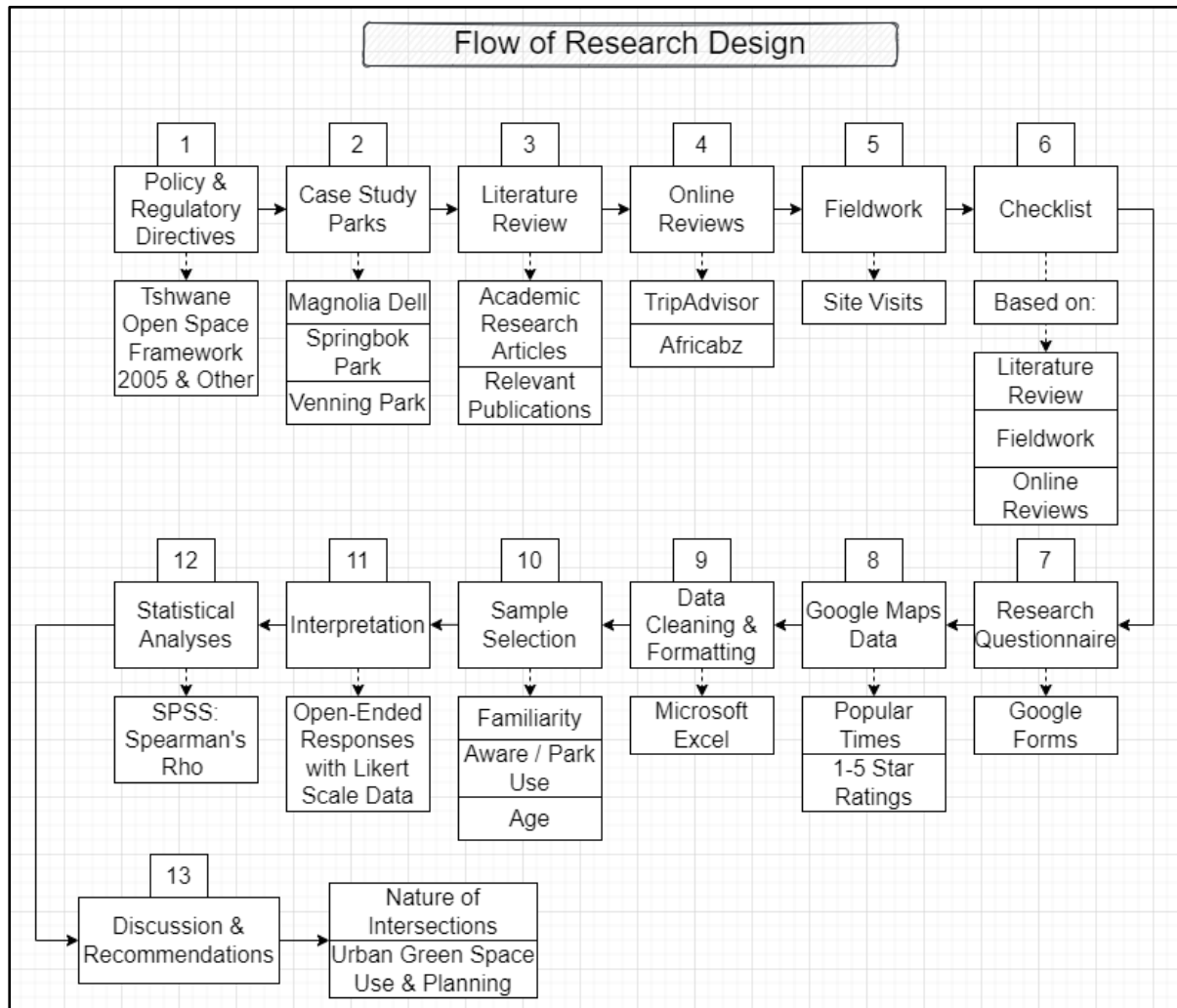


Objective 2 of this research project is to capture and assess the nature of the influencing factors in decision-making to utilise parks within the case study area as examples of urban green spaces in the City of Tshwane. By investigating how and if the influencing factors relate to park use achieves this objective. Objective 3 of this research project is to evaluate the nature of intersections between cultural ecosystem services, green space attributes, and sense of place as influencing factors in decisions to utilise parks within the case study area. By investigating how and if the influencing factors relate to park use achieves this objective. Now, the next subsection provides an in-depth explanation of how the research was conducted, as well as a comprehensive discussion of methodological approach to this research project.

### 3.3 Research Design

de la Barrera et al. (2016) explained that a qualitative method enables a more solid comprehension of how people’s perceptions and preferences can influence the utilisation of green spaces in various urban environments. This research project is underpinned by a mixed method approach involving both quantitative and qualitative analyses. Figure 3.1 illustrates the research design underpinning the research project:

Figure 3.2 Research Design



#### 3.3.1 Policy and Regulatory Directives

First, to identify the key policy and regulatory directives regarding urban green space use and planning within and near Hatfield, the researcher contacted professionals in town and regional planning to obtain information surrounding key policy and regulatory directives. The researcher concluded on the TOSF2005, due to the relevancy and in-depth discussion of urban green spaces individually and collectively, after identifying the key policy and regulatory directives from the TOSF2005. It was mentioned that a new Tshwane Open Space Framework

is being developed; however, the publishing date is unknown, and public access to a draft is not available at the time of writing.

### **3.3.2 Case Study Parks**

Next, the case study parks were determined. The researcher applied non-probability purposive sampling in selecting the case study parks based on commonalities between these parks. The TOSF2005 informed this purposive sampling, as the policy provided the researcher with information surrounding the parks' classifications. All three parks are classified the same in terms of scale, function, form, character, and locality. However, Magnolia Dell Park is maintained by the private sector, at least at the time of writing, whereas Venning Park and Springbok Park are both maintained by the public sector. The advantages of a case study approach include its applicability to modern contexts, providing in-depth and applicable data; however, noting that the investigation of one case cannot lead to a foundation for the generality or reliability of the findings (Krusenvik, 2016).

### **3.3.3 Literature Review**

After selecting the case study parks, the researcher obtained relevant literature by means of internet searches of applicable research articles and publications that focus on possible influencing factors on the use of urban green spaces with specific emphasis on cultural ecosystem services, urban green space attributes, and sense of place, whilst incorporating research on demographic elements such as age and gender [male and female]. It should also be noted that some sources used within the research articles were used, given relevance to this research project. Most of the research articles investigated can be accessed via *Scopus*. Last, only literature in the English language were utilised.

### **3.3.4 Online Reviews**

Following the literature review, the researcher then investigated case study park reviews from two websites, *TripAdvisor* and *Africabz*. The online reviews are included to highlight perspectives and experiences held by persons of the park, and by investigating publicly available reviews, it provides some insights on what persons think about the parks, the general sentiment, what persons might consider as concerning to them and what persons might appreciate.

### **3.3.5 Fieldwork**

The fieldwork involved site visits of the case study parks. The site visits were conducted on a date randomly selected. The date of operation was determined via an online date generator from the website *random.org* (Random.org, 2022). The parameters for this generator were to randomly select a date between the first and last day of a month. The site visits were conducted to verify the presence of tangible subfactors on the checklist and the possible

presence of intangible subfactors, in addition to illustrating the more recent conditions of the parks.

### **3.3.6 Checklist**

The researcher created a *Microsoft Excel* file at the start of the literature review. The researcher categorised and populated the *Microsoft Excel* file with possible influencing factors in tabular format during the literature review process. Some influencing subfactors identified during the online review investigation were also incorporated into the checklist (see Appendix II).

The checklist further served to enable verification of the influencing (sub)factors, elements and components identified in the literature review, online review investigation, and site visits, that of which could be verified, i.e., the presence of the tangible influencing subfactors. However, intangible subfactors, such as the spiritual value that forms part of the cultural ecosystem services, are verified in terms of their possibility. If the presence of an intangible subfactor is possible, it is indicated as such on the checklist.

### **3.3.7 Research Questionnaire**

The questionnaire (see Appendix III) was based on the checklist, which was based on the contents obtained via literature review, online reviews, and then verified via site visits. The questionnaire comprised of Likert-scale questions, two closed-ended questions pertaining to park use, and one open-ended question.

The questionnaire had seven sections. The first section, Section 1, included the researcher's contact details; the entire procedure; the aim of the study; the consent form; as well as the rights of the participants. This section was also where the participant gave consent to the questionnaire. If no consent was given, the participant could not commence with the questionnaire.

The second section, Section 2, focused on demographic factors. This included age; level of education; sex assigned at birth; and employment status. This section was included to provide a demographic profile of the respondents, as well as to investigate park visit frequency in relation with the demographic factors of the participants.

The third section, Section 3, focused on the park usage of the participant. This allowed data collection regarding actual park usage, and enabled testing for relationships between the use and influencing factors.

The fourth section, Section 4, focused on the park attributes, such as humanmade infrastructure, park visitors, sporting facilities, recreational facilities, park amenities, and

natural infrastructure, such as trees, flowering, grass, and water bodies. Questions that related to park size, distance and accessibility were also included in this section.

The fifth section, Section 5, focused on cultural ecosystem services, specifically recreation value; aesthetic value; educational value; social relations value; cultural heritage value; and spiritual value cultural ecosystem services.

The sixth section, Section 6, focused on the sense of place questions. This enabled an evaluation of the questions of all the sections in comparison with the general sense of place findings obtained via Section 6. These questions in the questionnaire tried to gauge place attachment, and was based on the questions of Jorgensen & Stedman (2001), and more specifically, on the item description of the place attachment factor (Jorgensen & Stedman, 2001, p. 241). Additionally, a general question regarding feelings toward the park(s) was also included, given that in Jorgensen & Stedman (2001)'s study, a general evaluative dimension (i.e., the sense of place factor) was the most explanatory factor, which was captured by their research participants' emotions toward their properties.

In measuring place meaning as the second component of sense of place, place meaning is investigated in a general sense, perhaps considered as a combination of the first and second types or approaches toward place meaning as discussed by Masterson et al. (2017). Where instead of prescribing phrases or words for the participant to choose from, such as 'warm' or 'lonely', the participants themselves get to determine if what the parks mean to them are of a negative or positive nature. By measuring place meaning in this regard, it relates more to a subjective approach towards meaning and is complementary to Gottwald et al. (2022), where meanings that are more subjective and individual should be included in assessments of sense of place linked to ecosystem services (Gottwald, et al., 2022).

Then, the last section, Section 7, focused on the park's maintenance. This was used for testing possible relationships between park use and the perceived level of maintenance, as well as between perceived level of maintenance and the influencing factors.

For the qualitative component of this research project, one open-ended question and two closed-ended questions were added. The open-ended question asked the respondents if they had any comments they would like to add, one closed-ended question asked to provide reasons for park use, and one closed-ended question to provide reasons against park use. Once the questionnaire was finalised, the questions were then added to *Google Forms*.

The *Google Forms* questionnaire, then, was made available through conventional social media channels. Non-probability convenience sampling was applied. The participants were encouraged to share the link with friends and family to reach a wider audience and, thus, more

potential participants. The sample size of the participants is 30. The conditions required for answering the questionnaire were that it is only available to those 18 years of age or older and that the participants reside in South Africa, more specifically, within Gauteng. As participants answered the questionnaire, the data was automatically captured in *Google Sheets*. The questionnaire was open to participants until an equal number of males and females took part in answering the questionnaire, in addition to reaching a sample size of 30 participants.

### **3.3.8 Google Maps Data**

The researcher obtained data from Google Maps during the questionnaire data collection period. *Google Maps* has a popular times feature involving a graph illustrating the activity level at a specific location. *Google Maps* also has a feature where persons can leave a review of an establishment while allowing a reviewer to give an establishment or place a 1-5 Star rating. *Google* review ratings were included to highlight general sentiment about the parks, and the *Google Popular Times* data was included to indicate when the park is used.

The researcher utilised *Apify* (Apify, 2022) to gather *Google Maps* popular times data, as well as 1-5 Star review ratings from *Google Maps*. In order to obtain the data, the researcher copied the *Google Maps* links of the parks and pasted them into the "search terms" bar under the input tab, then saved and ran the task after setting the parameters to obtain the popular times data and the number of 1-5 Star ratings (reviews). Once the task was completed, the researcher downloaded the collected data in .xlsx format. Once the download was complete, the researcher transformed the data into a heatmap table format using *Microsoft Excel's* conditional formatting feature. This enabled the researcher to obtain the popular times data and the number of reviews categorised according to the number of (1-5) stars allocated by a reviewer.

### **3.3.9 Data Cleaning and Formatting**

Then, after the period for data collection was over, the questionnaire data was downloaded in *Microsoft Excel* format. Once the data was downloaded, data cleaning and formatting were required. First, the data was transformed into table format. The demographic data was changed into numerical format.

Regarding the park visit frequency, changes were required. The respondents had the option to write how many times they use the park; thus, if the participants used the park once a year, they had the option to write that. Due to some respondents adding yearly info, the monthly park visit frequency has been converted to yearly park visit frequency, and closed-ended question responses that have the same meaning i.e., to relax, and, to take a break, are considered as the same response. The table on Appendix VII shows the changes and

conversions. Now, after the data conversion and changes, the researcher commenced with the sampling.

### **3.3.10 Sample Selection**

Nonprobability sampling was used. Participants who visited and did not visit the parks were included based on two inclusion criteria and one exclusion criterion. The inclusion criteria were:

- The participant(s) must have selected the option "yes" to the question "Are you aware of, or have you ever been to parks within or close to the Hatfield area?".
- The participant(s) must have selected one of the case study parks.

The one exclusion criterion, for ethical reasons, was:

- If the participant selected the option of "High school (grade 8 – 12)" as their current level of education, the participant's response was excluded.

The exclusion criterion was necessary as it could have meant that the participant(s) was younger than 18 years of age, given that the participant(s) selected "Generation Z (ages 18 - 28)" as their generation cohort. Throughout the research project the age range of Generation Z is 18 – 28, instead of 11 – 28, as only those who are a minimum age of 18 was considered. The sampling was done once an equal number of males and females took part in answering the questionnaire, in addition to reaching a sample size of 30 participants.

### **3.3.11 Closed- and Open-ended Question Responses**

After sampling, given the number of open-ended question responses obtained, they are interpreted whilst considering the respective answers to the Likert scale questions. Once the researcher completed interpreting the comments, the researcher embarked on the statistical analysis process. Both the closed-ended and open-ended questions' responses were discussed in terms of the results obtained via the statistical analyses and the identification of relationships between influencing factors based on the qualitative data.

### **3.3.12 Statistical Analyses**

After the open-ended question responses' interpretation, Spearman's Rho correlation analyses were conducted using the software, *SPSS*, to determine if and to what extent relationships exist between the influencing factors and between the influencing factors and park use. The findings are included in the Results chapter.

Two-tailed tests were used. The reasoning becomes clear by using an example: as the park offers a cultural ecosystem service, people visit it more, or, as people visit parks more, the park offers cultural ecosystem services. The latter, perhaps considered as being unfounded,

remains valid. Consider the following perspective: It may be possible that if people visit or use a park more, more attention is given to the park in terms of maintenance, and therefore possibly, the maintenance of the park may enable, maintain, or relate to the facilitation or presence of cultural ecosystem services. For example, as persons visit a park more frequently, they perceive the park as a safe space, or, as persons perceive it as a safe space, they visit it more frequently.

This perspective aims to complement critical realism: Although this research project does not argue for causality, it acknowledges the existence of causal mechanisms (visible or invisible) by not subjecting possible relationships to directionality (albeit discussing both directions in some instances), thereby not distinguishing between dependency and independency (in terms of causality), instead, 'X may relate to Y, Y may relate to X', or 'X contributes to Y' rather than, 'because of X, Y', or 'X causes Y'. There may be underlying aspects that were not factored in the identified relationships; hence, causality is avoided, but possible underlying mechanisms were acknowledged. After the statistical analyses, the findings were provided in the Results chapter and discussed in the Discussion chapter.

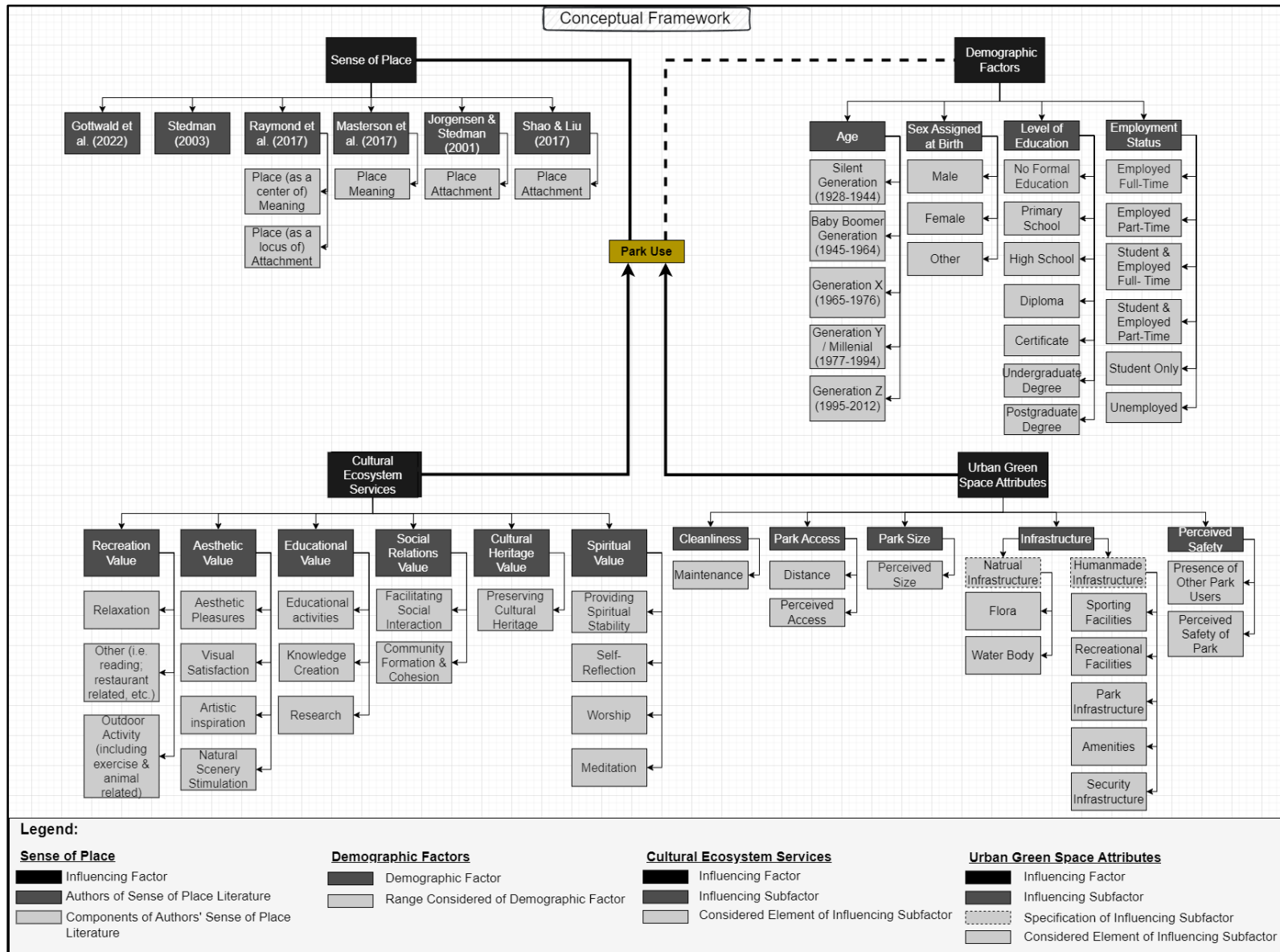
### **3.3.13 Discussion and Recommendations**

After finalising the Discussion chapter and providing recommendations based on the results for more inclusive urban green space utilisation and planning, the researcher concluded the research project in the Conclusion chapter.

## **3.4 The Conceptual Framework**

Recall that the influencing factors considered in this research are urban green space attributes, cultural ecosystem services and sense of place. The literature review chapter provided findings of the influencing (sub)factors and elements and if they relate to urban green space use. Demographic factors were also included to investigate different usage patterns with respect to the demographic factors. The following figure illustrates the conceptual framework of this research project, specifically with regard to park use:

Figure 3.3 Conceptual Framework



### **3.4 Ethical Considerations**

In order to abide by the ethical considerations, ethical clearance was obtained prior to any direct or indirect interaction with research respondents. The Faculty of Natural and Agricultural Sciences Ethics Committee approved the researcher's ethical clearance application (see Appendix VIII). The respondents also had to provide their consent to answer the questionnaire, which was possible in the first section of the questionnaire. The questionnaire could not have been answered if a respondent did not provide consent. The respondents were informed that their responses are completely anonymous and will be treated with the highest confidentiality, and should the respondents wish to withdraw from the study, they can do so without any consequences.

### **3.5 Research Challenges and Limitations**

#### **3.5.1 Participation**

A trade-off between questionnaire length and the tendency to complete the questionnaire is a possibility. The questionnaire was designed only to involve the necessary questions, as a lengthy questionnaire might lead to some participants not completing the questionnaire. Additionally, given the scope of this research project, the determination of appropriate questions to include in the questionnaire is based on the literature review findings, the online reviews, and the site visits.

#### **3.5.2 Likert Scale**

The questionnaire predominantly consists of questions seeking responses of an ordinal nature. In order to avoid a "forced choice" survey scale (Elaine & Seaman, 2007), the researcher specifically designed these questions on a scale of 1 – 5 by providing the participant with a neutral choice as well (item 3 on the Likert scale).

#### **3.5.3 Privacy**

Questionnaire respondents may want to remain completely anonymous. The data collected via questions (that could be considered identifier questions, such as sex assigned at birth) is used as aggregate data. The questions are designed so that 1) it is ethical, 2) it respects the participant's privacy, and 3) the respondent is confident that their privacy and anonymity is respected. Direct personal identifier questions are excluded (such as name, surname, address, and career). However, rather broad, circumstantial personal identifier questions were asked, such as employment status instead of income group and age cohorts instead of specific age. Therefore, A significant trade-off is present between the reliability and validity of this research project and the participants' privacy.

### 3.5.4 *Bias*

Social desirability bias (Krumpal, 2011) could affect the questionnaire responses. One question in particular asks the participant, "If you do not visit parks, what would the main reason be? Select the option you agree with the most", in which one possible option is "homeless people using the park". Albeit perhaps subtle, participants may feel socially (or morally) inclined not to select the option, even if that option is what they agree with the most, as the participant might believe it can be interpreted that they do not like the presence of homeless people, which, arguably, can be perceived as socially insensitive. However, to attend to this, the researcher assured and emphasised that the participants are and will remain anonymous, in addition to explicitly stating that their responses are and will be treated with the highest confidentiality.

Survival [survivorship] bias (Morgenstern, 2018) is present due to the online reviews, *Google* review ratings, and *Google Popular Times* data. Only some park users have reviewed the park, and only some park users may be included in the *Google Popular Times* data. There may be valuable information persons have to share about the parks that did not leave online reviews or on *Google*, and their input is not included in this research project. Persons who did not leave a review of the parks on *Google*, are not included in the *Google* reviews data, and therefore not considered.

### 3.5.5 *Google Maps and Popular Times Data*

For the *Google* review ratings, and at the time of its investigation, all the reviews of the parks are included, which does not consider the differences in the date and time when the reviews and thus their ratings were made.

As stated on the *Google Support* website, in order to determine the popular times of places, "Google uses aggregated and anonymised data from users who have [opted-in] to Google Location History"<sup>12</sup> (Google, n.d.). Thus, according to that statement, people who opted out to Google Location History from their mobile devices are not considered in the *Google Maps* popular times data. In addition, the data is based on the average popularity in the past couple of months and the popularity for any specific hour is presented relative to the usual peak popularity for an establishment or place for the week (Google, n.d.).

Additionally, this does not mean counting persons, but in essence, the number of devices, such as cell phones (Dinita, 2021). Hence, the data obtained is not entirely reliable, as a

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<sup>12</sup> "Location History is turned off by default for your Google Account and can only be turned on if you opt in" (Google, n.d.). Therefore, should this statement be true, it means that persons with mobile devices who opted-out of Google Location History are not included in the popular times data.

person who carries two or more mobile devices might be considered as two persons instead of as one person (Dinita, 2021). Last, the types of mobile devices, such as *Android* or *iOS*, may also have an impact, subject to the companies' privacy policy. Therefore, Google's method of collecting the popular times data may not be completely reliable, as the data is based on the number of devices, i.e., mobile devices with opted-in Location History (Google, n.d.).

A perfect correlation with the number of persons at a particular place might not necessarily be the case. As such, the data obtained does not contain the actual number of persons with mobile devices at the specific times (in addition to being opted-in to Location History). The activity can indicate a presence of 100 persons at a park, or it can mean ten persons present at the park, also relative to its peak number of persons. If the actual number of persons at the park at its peak (for example, 11h00 on a Saturday) is publicly available, only then can calculations and more assumptions be made. For example, if peak occupancy is 50 persons (mobile devices) (representing 100 per cent occupancy at 11h00 on Saturdays), then 30 per cent at 09h00 on Wednesdays would mean a presence of 15 persons (mobile devices). Nonetheless, it remains useful to investigate the popular times data as it provides some indication of what time and day, establishments, and in this case, parks, are frequented.

### **3.5.6 Reflection**

This research project served as a wonderful challenge; however, it presented implications. The researcher could not find research studies that combined all three influencing factors, and so a heuristic approach was needed to answer the objectives. Even though the researcher had to disentangle the influencing factors, which technically, is not always ideal, the researcher incorporated a systems approach to provide a framework where the influencing factors were separated. Testing for possible relationships between these influencing factors were limited to existing research as well, meaning that some possible relationships were not investigated for in this research project. The systems approach was the only solution towards achieving the objectives.

## **3.6 Summary**

The researcher applied a mixed quantitative and qualitative approach, underpinned by a critical realist framework and a systems approach. The research project has challenges and limitations regarding participation, participant privacy, bias, and the quality (reliability) of the data used.

First, determining applicable policy and regulatory directives was needed for the research process. After identifying the key policy and regulatory directives, the researcher concluded on the TOSF2005 due to its relevancy. Following this, the researcher selected the case study

parks based on similarities, after which the literature review commenced. After the literature review, the researcher investigated online reviews of the parks, followed by site visits. The research questionnaire was based on a checklist derived from the literature review, online reviews, and site visits.

The researcher conducted site visits to verify the presence of tangible factors and the possible presence of intangible factors (i.e., cultural ecosystem services) on the checklist and inform the final questionnaire. Once the questionnaire was finalised, it was made available to participants. During the period the questionnaire was available to participants, the researcher gathered *Google* reviews data of the parks. Once the questionnaire data collection period was over, the researcher cleaned and formatted the data. The questionnaire included both closed-ended and open-ended questions, as well as Likert scale questions. Then, the open-ended question responses were interpreted. Following, the statistical analyses commenced. Last, the research project has challenges and limitations, specifically regarding participation, privacy, bias, and data. Now, the next chapter, Chapter Four, consists of the results obtained regarding the research project.

## 4 CHAPTER FOUR: RESULTS

### 4.1 Introduction

Chapter Four serves to answer the question of what the research project discovered. It introduces the reader to the results obtained via qualitative and quantitative analysis. Now that the case study parks; and the literature review findings; and the research methodology have been discussed in the previous chapters, this chapter thus commences with the key policy and regulatory directives identified regarding urban green space use and planning within the City of Tshwane. Then the online review findings follow to provide some contextual information on perspectives about the parks. Afterwards, the *Google* review ratings, *Google Popular Times* findings, and the fieldwork findings follow. Then, the respondents' demographic profile in terms of park use is discussed, followed by their park use choice. Their perceived maintenance is then provided, followed by the qualitative data results. Afterwards, the statistical analysis results are provided, and the chapter concludes with a summary.

### 4.2 Tshwane Open Space Framework of 2005

The TOSF2005, consisting of three volumes, is an integrated open space policy framework that can address sustainable use and integration of open spaces across its whole jurisdictional area. It is a framework for streamlining administrative procedures, ensuring efficient environmental administration, and maximising the potential of open space for the city's benefit (City of Tshwane, 2005, pp. 2,3). The first volume involves the analysis of Tshwane's open space context, the second volume involves the open space vision, plans and policy, and the third volume involves the implementation strategies (City of Tshwane, 2005, p. 3). All three volumes are collectively investigated in this research project.

#### 4.2.1 Aim and Objectives

The TOSF2005 aims to provide an extensive understanding of the inherent value of open space and develop an ingenious strategy for building an open space system for the residents and the city (City of Tshwane, 2005, p. 2). The objectives of the TOSF2005 include the provision of an institutional and management framework, as well as for the development of an open space network that is based on typologies, categories, a vision, principles and goals, on both a regional as well as a metropolitan scale (City of Tshwane, 2005, p. 2).

#### 4.2.2 Classifications

The TOSF2005 Volume 2 provides six possible classifications of open spaces according to function (ecological, socio-economic and placemaking), scale (metropolitan, regional, local), form (nodal and linear), character (natural, built-up/urban, cultivated), ownership (state, municipal, private), and locality (capital core, urban and metropolitan cores, urban

environment, natural environment) (City of Tshwane, 2005). Information regarding the locality and ownership was also obtained in the Hatfield Precinct Plan of 2021 (Habitat Landscape Architects, 2021). These classifications are important to contextualise and categorise the case study parks from a policy perspective.

First, in terms of function, the TOSF2005 explains that open spaces serve a primary ecological function that any other aspect of the built environment cannot fulfil. All open space resources, whether soft or hard, efficaciously serve an ecological function. An open space can be multifunctional by collectively serving ecological, socio-economic and placemaking functions; however, it will always be dominated by one specific function (City of Tshwane, 2005). Nonetheless, the TOSF2005 classifies open spaces in terms of function in the following table:

*Table 4.1 Tshwane Open Space Framework - Function Classification*

Function	Possible Examples
Ecological (including natural)	Nature reserves, botanical gardens
Socio-economic (including recreational, utility, heritage, and agriculture)	Sports facilities, recreational facilities
Placemaking (including scenic and spatial resources)	Ornamental parks

In terms of scale, the TOSF2005 proposed that the scale in which open spaces can be classified is necessary as the City of Tshwane is too large to be dealt with on only one scale (City of Tshwane, 2005). The classification according to scale is illustrated in the table below:

*Table 4.2 Tshwane Open Space Framework - Scale Classification*

Scale
Local Open Spaces (also known as Neighbourhood parks)
Metropolitan Open Spaces
Regional Open Spaces (also known as Community/District Parks)

In terms of form, the TOSF2005 explains that all open spaces must become part of a continuous open space network on all the different types of scales. However, certain open spaces that are valuable can be 'self-standing', though all open spaces must be connected where feasible. By connecting these open spaces, it enables the formation of "ecological corridors" (City of Tshwane, 2005, p. 17), that facilitate the passage and movement of fauna and flora from one open space system to another, thus enabling processes and the open space system's health and function. These links between open spaces also assist with defining the landscape, providing links to the natural environment and better mobility for residents. As such, open spaces can also be defined as either nodal or linear (City of Tshwane, 2005). The classification according to form is illustrated in the table below, with examples:

Table 4.3 Tshwane Open Space Framework - Form Classification

Form	Types and Examples				
Linear Open Spaces	<u>Natural Elements, for example:</u>	<u>Planned Open Spaces, for example:</u>	<u>Movement Routes, for example:</u>		<u>Utility Spaces, for example:</u>
	Ridges, Rivers	Linear Parks	Activity streets, Corridors		Railway lines, Servitudes
Nodal Open Spaces	<u>Natural Elements, for example:</u>	<u>Planned Open Spaces, for example:</u>		<u>Economic Centres, for example:</u>	<u>Utility Spaces, for example:</u>
	Nature reserves, Bird sanctuaries	Parks, sport stadia		Business nodes, Urban cores	Cemeteries, Landfills

In terms of character, the TOSF2005 explains that open spaces can also be classified as a continuum, ranging from green, soft, and natural, to brown, hard, and urban. The open spaces on the 'green' end would serve an ecological purpose, for example, a nature reserve. Conversely, the 'brown' end would predominantly serve as a socio-economic or placemaking space, for example, a [public] square. However, even though the majority of open spaces will contain both hard and soft characteristics, the character of an open space will be determined by the degree of human involvement, the extent to which the environment has been altered, for example, its "dominant visual language" and how it is being utilised, developed and perceived by society. (City of Tshwane, 2005, p. 19).

The TOSF2005 also provides a classification of open spaces according to character, such as natural (minimal human intervention), cultivated (natural cover, still soft but transformed), and built-up (completely hard) (City of Tshwane, 2005). This classification according to character is illustrated in the table below, with examples:

Table 4.4 Tshwane Open Space Framework - Character Classification

Character	Description	Example
Natural	Area existing in nature, or an area produced by nature, not artificial, with vegetation typically being dominant, with little human intervention, and not intensively used by people.	Nature reserve.
Cultivated	Area still considered as mostly "green", however it is not in its natural state, and due to human intervention it is developed and care for the use of people.	A Park with manicured lawns and shrubs.
Built-up	Area that was completely transformed due to the human intervention, and is predominantly hard, while accommodating intensive utilisation.	A public square.

The TOSF2005 explains that open spaces could also be classified according to ownership, in terms of state owned open space (owned, developed, and maintained by the state), public open space (for the use of the general public) and private open space (owned, developed and

maintained by a private individual or entity) (City of Tshwane, 2005). In terms of locality, the TOSF2005 classified the open spaces according to the Municipal Spatial Development Framework (MSDF) (City of Tshwane, 2005, p. 21). Localities will impact how an open space should be developed, managed, and be dealt with (City of Tshwane, 2005). As such, the classification according to ownership and locality is illustrated in the table below:

*Table 4.5 Tshwane Open Space Framework - Ownership and Locality Classification*

Ownership	Locality (MSDF)
Public (State)	Capital core
Public (Municipal)	Urban and metropolitan cores
Private	Urban environment
	Natural Environment

The TOSF2005 does not include specific information regarding ownership of the parks; regardless, all open spaces should form a continuous network as ecological processes cannot be confined by property boundaries. The ownership of a property will dictate the role which the local government can serve in ensuring its effective management (City of Tshwane, 2005, p. 21).

#### **4.2.3 Management**

“Management”, in Volume 3 of the TOSF2005, collectively relates to the aspects of planning, development implementation and operational maintenance (City of Tshwane, 2005, p. 6). Specifically, according to the TOSF2005, management includes that the Roads and Stormwater division; Sport and Recreation division; Electricity division; Water and Sanitation division; Streetscape Management division; City Planning division; and the Environmental Management division are involved in open space management (City of Tshwane, 2005, p. 13). More specifically, the Environmental Management division is considered the main body in terms of integrated environmental management, consisting of six sections (City of Tshwane, 2005, p. 13).

However, on the webpage of the City of Tshwane Environmental Management division (City of Tshwane, 2022), it is stated that the Environmental Management division involves four sections, which are further divided into several subsections. The following table illustrates the Environmental Division's sections and subsections, from the TOSF2005 and the webpage of the City of Tshwane Environmental Management division:

Table 4.6 Management Divisions, Sections and Subsections

Tshwane Open Space Framework of 2005		City of Tshwane Environmental Management division website		
Division	Sections of Division	Division	Sections of Division	Subsections of Section(s)
Environmental Management (City of Tshwane, 2005, p. 13).	Environmental Planning	Environmental Management (City of Tshwane, 2022).	Open Space Planning	<ul style="list-style-type: none"> <li>• Strategic Open Space Planning,</li> <li>• Open Space Design Management,</li> <li>• Open Space Development Impact Management.</li> </ul>
	Environmental Resource Management		Environmental Policy and Resource Management	<ul style="list-style-type: none"> <li>• Environmental Policy, Programme and Information Management,</li> <li>• Environmental Audit, Risk and Management Systems Development Facilitation,</li> <li>• Environmental Education and Awareness Management,</li> <li>• Air Quality,</li> <li>• Climate Change and Sustainable Energy.</li> </ul>
	Parks and Horticultural Services		Parks, Horticulture and Cemetery Provision	<ul style="list-style-type: none"> <li>• Parks and Horticulture Service Provision Management,</li> <li>• Cemetery Service Provision Management,</li> <li>• Urban Forestry, Nursing and Training Provision Management,</li> <li>• Parks and Horticulture and Cemetery Services Technical Support.</li> </ul>
	Nature Conservation and Resorts		Nature Conservation and Resorts Management	<ul style="list-style-type: none"> <li>• Nature Conservation Management,</li> <li>• Resorts Operation Management,</li> <li>• Swimming Pools Operations Management,</li> <li>• Nature Conservation, Resorts and Swimming Pool Technical Support.</li> </ul>
	Waste Management			
	Cemetery Services			

Note, the TOSF2005 allows for partnerships and cooperative agreements. Such agreements include the CTMM to make an open space resource available to a private party, amongst others, for the purposes of improved development and maintenance (City of Tshwane, 2005, p. 28). For partnerships, the CTMM enables a portion of an open space resource to be available for the benefit of a private party for the development and operation of a business that is predominantly focused on recreational and tourism-related development, such as a restaurant (City of Tshwane, 2005, p. 27).

The TOSF2005 does state that the CTMM is, and will always be, the key figure in open space management whilst acknowledging that in order to improve the management status of open space resources, the CTMM should pursue collaboration efforts with both internal and external stakeholders (City of Tshwane, 2005, p. 25).

With the understanding of how parks within the City of Tshwane can be classified and the management responsibilities, park maintenance is investigated next.

#### 4.2.4 Operational Maintenance

Operational maintenance deals with the everyday management of Open Space resources, including horticultural practices, labour management, conservation management practices, and public relations management (such as responding to complaints received, clean-ups, engaging with non-governmental organisations) (City of Tshwane, 2005, p. 7). The TOSF2005 explains that to allocate human resource knowledge effectively and to optimise, streamline, and rationalise service delivery, it is vital to distinguish between the many management components and tasks (City of Tshwane, 2005, p. 7). The following table illustrates the relevant roles and responsibilities to the management of open spaces within Tshwane (City of Tshwane, 2005, p. 7):

Table 4.7 Tshwane Open Space Framework - Open Space Management Roles and Responsibilities

	Planning	Development Implementation	Operational Management
Open Space Agent	<b>Ecological Open Space</b>		
	Environmental Planning	Nature Conservation and Resorts	Nature Conservation and Resorts
	Metropolitan Planning		
	Regional Spatial Planning		
	<b>Socio-Economic Open Space</b>		
	Environmental Planning	Streetscape Management	Parks and Horticultural Services
	Metropolitan Planning	Parks and Horticultural Services	Cemetery Services
	Regional Spatial Planning	Cemetery Services	Waste Management
	Streetscape Management	Waste Management	Roads and Stormwater
	Roads and Stormwater	Sport and Recreation	
		Roads and Stormwater	
		Water and Sanitation	
		Electricity	
	<b>Placemaking Open Space</b>		
	Environmental Planning	Parks and Horticultural Services	Parks and Horticultural Services
	Metropolitan Planning	Streetscape Management	
	Regional Spatial Planning		
	Streetscape Management		
	Roads and Stormwater		

It is evident that the Parks and Horticultural Services serve an essential role in the operational management of placemaking open spaces, which, according to the TOSF2005, is the Parks and Horticultural Services section (City of Tshwane, 2005, p. 7).

However, based on more recent information from the City of Tshwane's Environmental Management Division website, the Parks and Horticulture Service Provision Management, as well as the horticulture and cemetery provision, is also involved in the management of the parks (City of Tshwane, 2022, p. 7).

Note, the TOSF2005 states that to ensure its implementation is successful, the identification and consensus about implementation priorities must be cooperative by collaborating in

resource allocation and project and programme integration and support (City of Tshwane, 2005, p. 7).

#### **4.2.5 Discussion and Summary**

According to the Tshwane Open Space Framework Volume 2 of 2005, Magnolia Dell Park is considered as placemaking (ornamental park) in terms of function, a metropolitan park in terms of scale, as nodal (red node<sup>13</sup>) in terms of form (City of Tshwane, 2005, p. 112), as cultivated in terms of character (City of Tshwane, 2005, p. 20). Magnolia Dell Park is considered as publicly owned; however, the maintenance is the responsibility of the restaurant at Magnolia Dell Park. As for locality, Magnolia Dell Park is considered as metropolitan in scale (City of Tshwane, 2005, pp. 111,112).

Venning Park is considered as a placemaking (ornamental park) in terms of function, as a metropolitan park in terms of scale, as nodal (red node) in terms of form (City of Tshwane, 2005, p. 112), as cultivated in terms of character (City of Tshwane, 2005, p. 20). Venning Park is considered as publicly owned (Habitat Landscape Architects, 2021), and as for locality, Venning Park is considered as metropolitan in scale (City of Tshwane, 2005, pp. 111,112).

Springbok Park is considered as an ornamental park with sought-after recreational value (City of Tshwane, 2005, p. 78) in terms of function. Note, that even though these parks are considered as placemaking (ornamental) in terms of function, it is worth highlighting that the TOSF2005 also describes these parks as having recreational value (City of Tshwane, 2005, p. 78). The Tshwane Open Space Framework Volume 2 of 2005 does not describe Springbok Park in terms of scale. As such, given that the standard size for local parks is between 0,25 – 1 hectare, and given that regional parks' standard size is 4 – 40 hectares (City of Tshwane, 2005, pp. 66-67), it can thus be argued that metropolitan scale parks would be between 1 – 4 hectares in size, and given that Springbok Park is around 3 hectares in size, it is considered as metropolitan in scale.

The Tshwane Open Space Framework Volume 2 of 2005 does not explicitly classify Springbok Park, but Volume 1 describes Springbok Park (and Magnolia Dell Park and Venning Park) as an ornamental park (City of Tshwane, 2005, p. 78), and given that ornamental or placemaking parks are considered as nodal (red nodes), Springbok Park is thus also considered as nodal in terms of form, and as cultivated in terms of character (City of Tshwane, 2005, p. 20). In

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<sup>13</sup> Note that a red node's function is placemaking; for example, a landmark, a cultural or historical feature or destination, a square and a gateway are examples of a red node. It should be noted that a brown node, which function serves the socio-economic function, includes a recreational park as an example (City of Tshwane, 2005, p. 23). Irrespective, the TOSF of 2005 describes Magnolia Dell and Venning Park as red nodes (City of Tshwane, 2005, p. 108), as well as Springbok Park (City of Tshwane, 2005, p. 81).

terms of ownership, the Hatfield Precinct Plan of 2021 also indicates Springbok Park as being public, and as for locality, Springbok Park is also considered to be located within a metropolitan core as the park is metropolitan in scale.

From the TOSF2005, all the case study parks are considered as placemaking (ornamental parks) in terms of function, as nodal (red nodes) in terms of form, as cultivated in terms of character, as metropolitan in terms of scale, as within a metropolitan core in terms of locality, and public owned in terms of ownership. In terms of maintenance responsibility, Magnolia Dell Park's maintenance is the responsibility of the Huckleberry's restaurant, at least at the time of writing. Venning Park and Springbok Park's maintenance responsibility rests on the Parks and Horticultural Services section (City of Tshwane, 2005, p. 7), at the very least during the TOSF2005's publication or drafting. All three parks share most classifications except for maintenance responsibility. The following table illustrates the selected parks of the case study area into the classifications, as well as maintenance responsibility:

*Table 4.8 Case Study Parks' Policy Classifications*

Park	Function	Form	Character	Scale	Locality	Ownership	Maintenance
<b>Magnolia Dell Park</b>	Place-making: Ornamental	Nodal (Red Node)	Cultivated	Metro-politan (3 hectares)	Metro-politan core	Public sector (maintained by private sector)	Restaurant (cleaning and maintenance)
<b>Venning Park</b>	Place-making: Ornamental	Nodal (Red Node)	Cultivated	Metro-politan (3 hectares)	Metro-politan core	Public sector	Parks and Horticultural Services section
<b>Springbok Park</b>	Place-making: Ornamental	Nodal (Red Node)	Cultivated	Metro-politan (~3.1 hectares)	Metro-politan core	Public sector	Parks and Horticultural Services section

Now that urban green spaces, as well as the aim and objectives of the TOSF2005, its classifications of green spaces, and the maintenance responsibilities are discussed, an investigation regarding other relevant and key policy and regulatory directives is required.

### 4.3 Additional Key Policy and Regulatory Directives

In addition to the TOSF2005, there are additional documents that, at least at the time of the TOSF2005's publication, guide open space planning and development, which include the City Vision; the City Development Strategy; the Metropolitan Spatial Development Framework; the Environmental Management Division's vision; and the Tshwane Integrated Environmental Policy, as well as the following legal obligations ranging from international scale down to local scale (City of Tshwane, 2005, pp. 7, 109). The following table summarises the policy and regulatory directives identified in the TOSF2005:

Table 4.9 Additional Key Policy and Regulatory Directives

<b>Key Policy and Regulatory Directives Identified (City of Tshwane, 2005):</b>				
<b>International Scale</b>	<b>National Scale</b>	<b>Provincial Scale</b>	<b>Regional and Local Scale</b>	<b>Local Scale</b>
(City of Tshwane, 2005, p. 105):	(City of Tshwane, 2005, pp. 106 - 108):	(City of Tshwane, 2005, p. 109):	(City of Tshwane, 2005, pp. 110 - 115):	(City of Tshwane, 2005, pp. 109,110):
Guidelines for Protected Area Management Categories (1994)	Constitution of the Republic of South Africa (1996)	Gauteng Planning and Development Act, (Act No. 3 of 2003)	Tshwane Metropolitan Spatial Development Framework	[Draft] Land Use Management Bill 2001 (Government Gazette 22473, 20 July 2001)
1992 Convention on Biological Diversity	National Environmental Management Amendment Act, 2004 (Act No. 8 of 2004) (NEMA)	Gauteng Removal of Restrictions Act, 1996 (Act No. 3 of 1996)	Tshwane Integrated Environmental Policy, 2004	Municipal Systems Act, 2000 (Act No. 32 of 2000)
UNESCO Convention: Protection of the World Cultural and Natural Heritage (1972)	Development Facilitation Act, 1995 (Act No. 67 of 1995) and the DFA regulations for Gauteng (Gen Notice 3004, 30 August 1996)		Gauteng Departmental of Agriculture, Conservation and Environment In-house Red Data Policy Document, 2004	Municipal Structures Act, 1998 (Act No. 117 of 1998)
Commitment to the World Summit on Sustainable Development (2002)	Environment Conservation Act, 1989 (Act No. 73 of 1989)		Gauteng Department of Agriculture, Conservation and Environment In-house Ridges Policy Document, 2004	Town-planning and Townships Ordinance 15 of 1986
Ramsar Convention (1971)	Promotion of Administrative Justice Act, 2000 (Act No. 3 of 2000)		Gauteng Department of Agriculture, Conservation and Environment In-house Conservation Plan (2004)	
	National Heritage Resources Act, 1999 (Act No. 25 of 1999)		The Environmental Resource Plan, 1999	
	National Forests Act, 1998 (Act No. 84 of 1998)			
	National Water Act, 1998 (Act No. 36 of 1998)			
	Biodiversity Act, 2004 (Act No. 10 of 2004)			
	Protected Areas Act, 2003 (Act No. 57 of 2003)			

Note that some policies or directives may have been updated, repealed, or replaced, and more recent directives or policies have been added, such as the Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013), and as such, the following should be noted:

A number of national statutes were repealed by the Spatial Planning and Land Use Management Act of 2013, including the Development Facilitation Act 67 of 1995 (van Wyk, 2020, pp. 8,22). Additionally, NEMA repealed most of the Environment Conservation Act 73 of 1989 (ECA) and its environment impact assessment regulations (van Wyk, 2020, p. 416), whilst noting that the National Environmental Management Act 107 of 1998 (van Wyk, 2020, p. 131) is the overarching environmental statute (van Wyk, 2020, p. 417). Furthermore, ECA regulations were replaced by the Environment Impact Assessment Regulations in 2006, which then later got replaced by the Environment Assessment Regulations in 2010 and 2014 (van Wyk, 2020, p. 416).

In terms of the provincial scale, the proposed Gauteng Planning and Development Act 3 of 2003 was never put into operation (van Wyk, 2012, p. 3); however, it is being replaced (van Wyk, 2012, p. 61), whilst noting that in 2011 a draft Gauteng Planning and Development Bill was circulated for comment (van Wyk, 2020, p. xii). According to the TOSF2005, the Gauteng Removal of Restrictions Act, 1996 (Act No. 3 of 1996) would have been repealed by the Gauteng Planning and Development Act 3 of 2003 (City of Tshwane, 2005, p. 109); however, it was replaced by the Spatial Planning and Land Use Management Act of 2013 (van Wyk, 2020, p. 391).

In terms of the regional and local scale, the only information found regarding the Gauteng Conservation Plan, is that the Gauteng Conservation Plan Version 3.3 (2011) (Gauteng Department of Agriculture and Rural Development, 2011) is the most contemporary version.

Last, in terms of the local scale, the draft Land Use Management Bill of 2001 was followed up with other drafts; however, they remained drafts (van Wyk, 2020, p. 4). Concerns about the Bill's constitutionality were raised and later withdrawn (van Wyk, 2020, p. 58). As for the Town-planning and Townships Ordinance 15 of 1986, it is to be repealed by Gauteng Planning and Development Act, Act 3 of 2003, according to the TOSF2005 (City of Tshwane, 2005, p. 110); however, van Wyk (2020) explained that the Town-planning and Townships Ordinance 15 of 1986 is still applicable, containing detailed provisions for the creation of town planning schemes, but will be repealed once new provincial legislation is in place (van Wyk, 2020). The ordinance, however, is subject to the Spatial Planning and Land Use Management Act (van Wyk, 2020, p. 37).

### **4.3.1 Discussion and Summary**

The Tshwane Open Space Framework of 2005's aim is to provide an extensive understanding of the inherent value of open space and then to develop an ingenious strategy for building an open space system for the residents and the city (City of Tshwane, 2005, p. 2). In addition to the TOSF2005, it is evident that there are numerous policy and regulatory directives that (at least at the time of the TOSF2005's publication) involve open spaces, or that can serve an important part in informing the compilation as well as the direction of an open space policy.

These policy and regulatory directives range from the international level down to the local level. However, some of these directives got repealed or replaced, some were never put into operation, and some remained drafts. Nonetheless, now that the key policy and regulatory directives regarding open space have been identified, the following subsection investigates the online reviews with regards to the case study parks.

## **4.4 Online Reviews**

### **4.4.1 Magnolia Dell Park**

By investigating online reviews of Magnolia Dell Park on the *TripAdvisor* website, a review titled "Recent Visit" (June 2022), described the park as appearing "like a mini jungle and [deserted]" at the time the reviewer previously visited the park in 2021 (TripAdvisor, 2022). The reviewer compared their past visit with their most recent one, explaining that it "looked better" than before (TripAdvisor, 2022). The lawns were cut, new flowers were planted, and the trees were trimmed (TripAdvisor, 2022). The restaurant also appeared to be "fresher" with some changes here and there (TripAdvisor, 2022). What saddened the reviewer was the removal of a tree they considered a "trademark" and that this tree was liked by children who used it to cross the stream, as well as couples posing for pictures at this "trademark" tree (TripAdvisor, 2022). The reviewer explained that "as usual", many groups celebrated birthday parties and that "at least" no litter was present in the stream (TripAdvisor, 2022). Visitors were diverse in demographics, and "as usual dog lovers" were present. The reviewer concluded and explained that they enjoyed their time, thanks to the warm weather and clean environment, whilst expressing that they hope the park will remain like that (TripAdvisor, 2022).

A different review (March 2020) explained that they visited the park just prior to and during the lockdown (TripAdvisor, 2022). The reviewer described that it was the first time the reviewer witnessed the park as empty as it was, stating that the reviewer could only see one couple sitting on a bench (TripAdvisor, 2022). The reviewer expressed that the park was "naturally tranquil", complemented by the sounds of birds and the stream (TripAdvisor, 2022). The

reviewer expressed their enjoyment, but the reviewer had to leave the park due to the "emptiness and darkness" (TripAdvisor, 2022).

Another review (September 2019) titled "Improved behavior" explained that the reviewer visited the park on a Saturday and Sunday for relaxation purposes but also to observe the latest trends and behavioural [patterns] (TripAdvisor, 2022). The reviewer expressed that they wanted to see if the most recent homeless people murders had any impact on park visitors. The reviewer explained that things appear to be improving (TripAdvisor, 2022). The reviewer further explained that littering was a concern, especially on Saturdays, as a lot of parties took place (TripAdvisor, 2022). The park remained attractive and well maintained; however, people using "braai stands", and the park as a soccer field was becoming a problem to the reviewer, in addition to the "locked" public restrooms (TripAdvisor, 2022). The reviewer also expressed that a "downside" was the sight of the cut "trademark" tree (TripAdvisor, 2022).

#### **4.4.2 Venning Park**

Venning Park, at the time of writing, has no reviews on *TripAdvisor*. However, on *Africabz.com*, there are a couple of online reviews. One reviewer (July 2022) expressed that the park is clean, peaceful, and quiet (Africabz.com, 2022). The reviewer added that the park is suitable for picnics with family and that the presence of swings, and "other obstacles" keeps children occupied while enjoying themselves (Africabz.com, 2022).

Another review (June 2022) described that the park, which was beautiful at a time, "deteriorated into a dreadful jungle" with unwanted inhabitants that visitors find scary (Africabz.com, 2022). The reviewer expressed that the grass needs to be regularly mowed, and the flower beds are not weeded, albeit mentioning that the park has been cleaned up in the last couple of months (Africabz.com, 2022).

A reviewer (February 2022) expressed that the park is not as beautiful as it was in the past and is "just a mess" (Africabz.com, 2022). The reviewer wrote that a person might mistake the park for a forest and cannot visit it and relax with family members (Africabz.com, 2022). Another reviewer (September 2019) expressed that the park's standard decreased over the years, as the park used to be pleasant, with a decent "cozy" restaurant (Africabz.com, 2022). At the time of writing their review, the reviewer added that this "cozy" restaurant shut down and that its windows are broken "and all" (Africabz.com, 2022). Similarly, another reviewer (December 2021) wrote that it is fine to "chill" at the park; however, certain places at the park might make a person feel unsafe, and that the park is not "so clean" (Africabz.com, 2022).

### **4.4.3 Springbok Park**

By looking at the online reviews from *Africabz.com*, a reviewer (April 2022) expressed that when they first visited Springbok Park, it was unkempt and overgrown but stated it has since been maintained and cleaned (*Africabz.com*, 2022). The reviewer expressed that the water feature is being repaired, and even though the park has been trimmed, manicured, and cleaned up, it is still inhabited by homeless persons (*Africabz.com*, 2022). The reviewer added that it is somewhat secure throughout the day but that they do not advise visiting after midnight (*Africabz.com*, 2022).

Another reviewer (January 2022) expressed that the park is not sufficiently maintained and that a person would truly "want to be there" if a person spent more than a half-hour at the park (*Africabz.com*, 2022). A different reviewer (August 2021) expressed their concerns surrounding "junkies" and that they don't believe the park is a good place for children to play (*Africabz.com*, 2022).

By looking at online reviews of Springbok Park on the *TripAdvisor* website, a review titled "could do with some maintenance" (July 2019) described that it is pleasant to walk through the park, however that there are people "hanging" around the park whilst including that the reviewer got offered drugs (*Africabz.com*, 2022). The reviewer expressed their concern regarding the safety at night whilst explicitly warning a possible reader to "be aware", and that the sprinkler system was very "erratic", which sprayed water over the paths and onto the "road outside" (*TripAdvisor*, 2022).

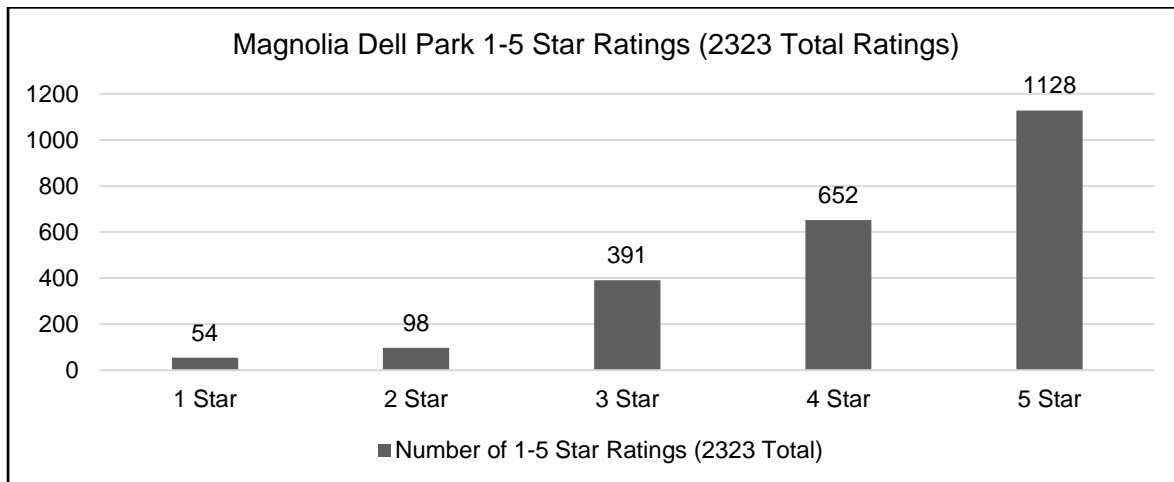
A different review titled "Needs maintenance" (January 2017) described the hedges as unkempt, and the fencing was broken, followed by questioning if the lights are still working and how safe the park is at night (*Africabz.com*, 2022). Another reviewer (April 2017) referred to park neglect but added that the park is one of the 'safer' parks (*TripAdvisor*, 2022).

## **4.5 Google Review Ratings**

### **4.5.1 Magnolia Dell Park**

Magnolia Dell Park has a *Google* review count of 2323 at the time of writing. The following figure illustrates the 1-5 Star rating distribution in terms of the number of stars allocated to the park by each reviewer:

Figure 4.1 Number of 1-5 Star Ratings - Magnolia Dell Park

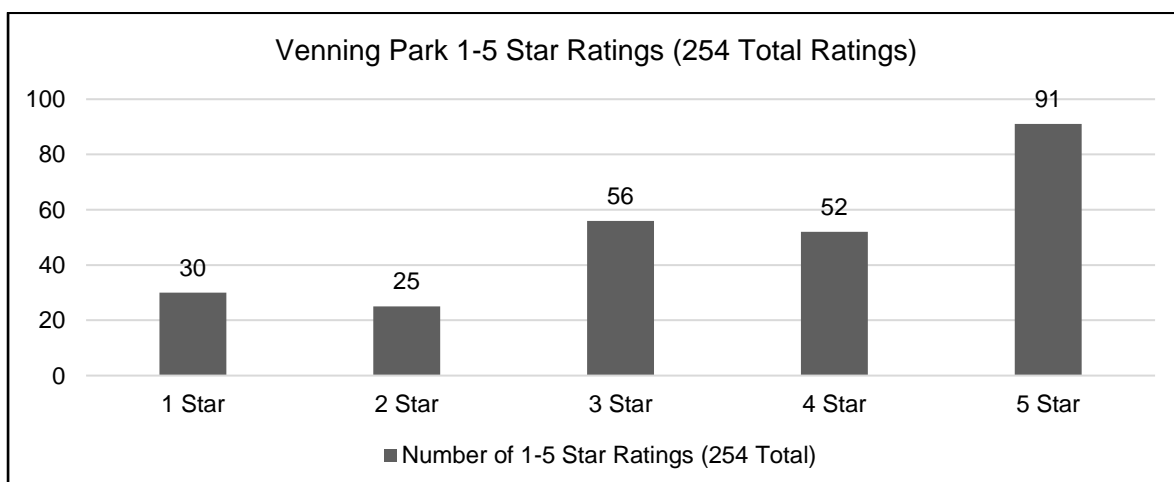


From the figure above it is evident that Magnolia Dell Park, at the time, has 54 one-star ratings; 98 two-star ratings; 391 three-star ratings; 652 four-star ratings; and 1128 five-star ratings. It is furthermore evident from the figure, based on the stars allocated to the park in the reviews, that the general sentiment towards the park is positive with an average rating of 4.2 (Google Maps, 2022). In addition, even though the restaurant has its separate *Google* reviews, by investigating the park's reviews on *Google Maps*, countless reviewers referred to the restaurant, some exclusively to the restaurant, the quality of the food and service (Google Maps, 2022), even though the restaurant has its review section (Google Maps, 2022).

#### 4.5.2 Venning Park

At the time of writing, Venning Park has a *Google* review count of 254. The following figure illustrates the 1-5 Star rating distribution in terms of the number of stars allocated to the park by a reviewer:

Figure 4.2 Number of 1-5 Star Ratings - Venning Park

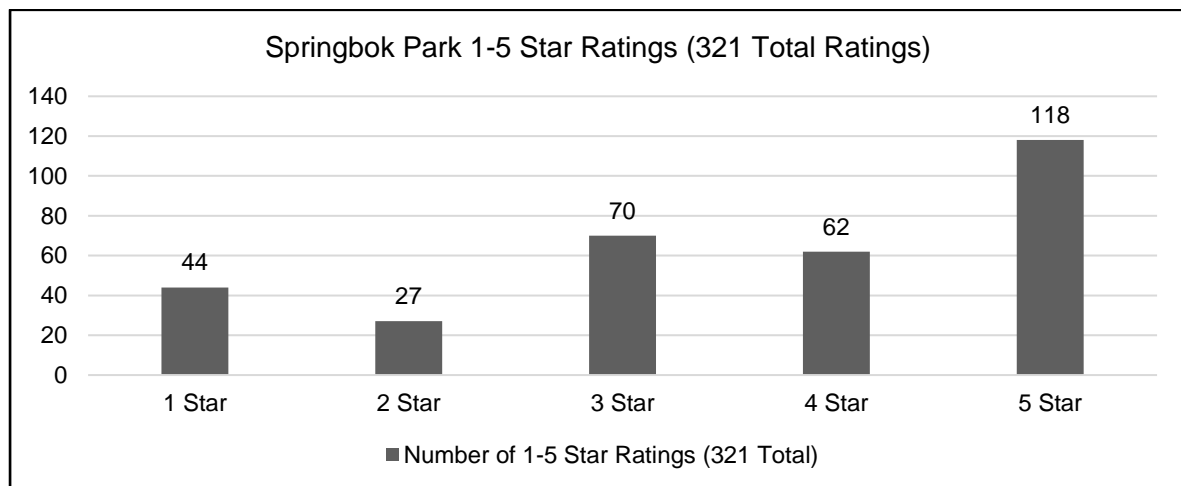


From the figure above it is evident that Venning Park, at the time, has 30 one-star ratings; 25 two-star ratings; 56 three-star ratings; 52 four-star ratings; and 91 five-star ratings. It is furthermore evident from the figure, based on the stars allocated to the park in the reviews, it appears that the general sentiment towards the park is also more positive with an average rating of 3.6 (Google Maps, 2022), but lower compared to the average rating of Magnolia Dell Park.

### 4.5.3 Springbok Park

In general, Springbok Park has a *Google* review count of 321 at the time of writing. The following figure illustrates the 1-5 Star rating distribution in terms of the number of stars allocated to the park by a reviewer:

Figure 4.3 Number of 1-5 Star Ratings - Springbok Park



From the figure above it is evident that Springbok Park, at the time, has 44 one-star ratings; 27 two-star ratings; 70 three-star ratings; 62 four-star ratings; and 118 five-star ratings. It is furthermore evident from the figure, based on the stars allocated to the park in the reviews, the general sentiment towards the park is also positive with the same average rating of Venning Park, which is 3.6 (Google Maps, 2022). Note, however, that even though the restaurant has its separate reviews, its presence could have had and still possibly can contribute to the reviews.

## 4.6 Popular Times Data

### 4.6.1 Magnolia Dell Park

As for Magnolia Dell Park's *Google Maps* popular times data, the following figure illustrates the popular times for park visitation in terms of an occupancy percentage heatmap:

Table 4.10 Occupancy Percentage Heatmap - Magnolia Dell Park

		Day of the Week						
		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Hour of Day and Night	00:00:00	1	0	2	0	1	1	1
	01:00:00	1	0	4	1	1	2	1
	02:00:00	0	1	5	3	3	3	0
	03:00:00	3	2	8	7	6	6	3
	04:00:00	7	6	11	13	9	11	8
	05:00:00	12	12	14	20	13	18	17
	06:00:00	17	20	19	27	19	26	25
	07:00:00	20	29	23	32	25	36	31
	08:00:00	22	37	27	34	30	49	35
	09:00:00	24	43	30	34	35	66	45
	10:00:00	26	45	30	33	37	85	62
	11:00:00	27	43	29	32	37	100	78
	12:00:00	26	36	25	29	33	99	77
	13:00:00	21	28	20	24	27	80	56
	14:00:00	15	20	15	17	20	53	30
	15:00:00	8	14	10	10	14	29	11
	16:00:00	3	9	6	5	9	13	2
	17:00:00	0	6	3	1	5	6	1
	18:00:00	1	4	1	1	2	2	1
	19:00:00	1	3	1	1	1	1	1
	20:00:00	1	2	1	1	1	0	1
	21:00:00	1	2	1	1	1	0	1
	22:00:00	1	1	0	1	1	0	1
	23:00:00	1	1	1	1	1	0	1
		Occupancy Percentage						

From the table above, is evident that the occupancy percentage (relative to the usual peak occupancy percentage for the park for the week) of Magnolia Dell is predominantly high over the weekends, particularly Saturdays and Sundays, with peak occupancy at 11h00 on Saturdays. On Tuesdays, however, Magnolia Dell has an occupancy of 37 per cent at 08h00, with a peak of 45 per cent at 10h00, then back down to 36 per cent at 12h00.

Last, according to the *Google Maps* popular times data, activity increases from around 03h00 to 04h00, peaks at around 10h00 to 11h00, and decreases from 12h00 during all the days of the week. Over the weekend, particularly on Saturday, activity increases from 03h00 to 11h00, peaking at 11h00 at 100 per cent of its peak occupancy, then decreasing from 11h00 to 17h00 (all relative to its peak occupancy).

#### 4.6.2 Venning Park

As for Venning Park's *Google Maps* popular times data, the following figure illustrates the popular times data in terms of an occupancy percentage heatmap:

Table 4.11 Occupancy Percentage Heatmap - Venning Park

		Day of the Week						
		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Hour of Day and Night	00:00:00	1	0	2	1	1	0	1
	01:00:00	3	2	5	7	4	0	3
	02:00:00	5	4	7	13	6	0	6
	03:00:00	6	7	9	18	7	0	10
	04:00:00	7	9	10	20	8	0	15
	05:00:00	7	10	11	18	9	0	20
	06:00:00	7	12	12	15	9	1	24
	07:00:00	7	12	12	12	11	4	28
	08:00:00	7	12	13	11	13	12	30
	09:00:00	8	12	14	13	16	25	30
	10:00:00	8	13	16	17	19	35	29
	11:00:00	9	15	17	21	20	35	27
	12:00:00	9	19	18	24	21	46	23
	13:00:00	9	21	19	23	19	100	18
	14:00:00	8	20	18	20	16	36	14
	15:00:00	6	14	16	15	11	2	10
	16:00:00	3	7	12	11	6	0	6
	17:00:00	1	0	8	7	1	0	4
	18:00:00	1	1	4	4	1	0	2
	19:00:00	1	1	1	2	1	0	0
	20:00:00	1	1	1	1	1	0	1
	21:00:00	1	1	1	1	1	0	1
	22:00:00	1	1	1	1	1	0	1
	23:00:00	1	1	1	1	1	0	1
		<b>Occupancy Percentage</b>						

From the table above, it is evident that the peak occupancy percentage of Venning Park is at 13h00 on Saturdays. It is worth mentioning that on Tuesdays to Fridays and Sundays, some activity is present (presence of devices, i.e., mobile devices with opted-in Location History) from 01h00 to 17h00. Specifically, early mornings, from around 01h00 to 07h00, could indicate that people are sleeping at the park, which complements Landman (2019)'s discussion of homeless persons sleeping at the park at night. It is also worth pointing out that on Saturdays, according to the *Google Maps* popular times data, from 00h00 to 05h00 and from 16h00 to 23h00, the occupancy percentage at the park, compared to its peak, is precisely zero. The data may be flawed; if the park is completely closed off during those times and without access to any persons with mobile devices, then it may be the case.

Last, on Mondays, Tuesdays and Wednesdays, activity increases from around 01h00, peaking at around 13h00, and then decreases from 13h00. On Thursdays, however, activity also increases from around 01h00, peaking at 04h00 before dropping until 08h00. Activity then increases again from 08h00 until 12h00, followed by a decrease in activity until around 18h00.

Over the weekend, particularly on Saturday, activity increases from 07h00 to 13h00, peaking at 13h00 at 100 percent of its peak occupancy, then decreases from 13h00 to 15h00.

### 4.6.3 Springbok Park

As for Springbok Park's *Google Maps* popular times data, the following figure illustrates the popular times data in terms of an occupancy percentage heatmap:

Table 4.12 Occupancy Percentage Heatmap - Springbok Park

		Day of the Week						
		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Hour of Day and Night	00:00:00	1	1	1	1	1	1	1
	01:00:00	1	1	1	1	1	1	1
	02:00:00	1	1	1	5	2	1	1
	03:00:00	6	3	3	10	6	1	4
	04:00:00	12	11	7	15	10	13	10
	05:00:00	16	19	12	19	13	37	15
	06:00:00	20	26	16	22	15	63	20
	07:00:00	23	29	19	24	15	81	24
	08:00:00	25	28	19	25	15	81	26
	09:00:00	27	25	17	25	16	66	28
	10:00:00	35	27	18	32	26	46	28
	11:00:00	55	50	42	61	47	33	26
	12:00:00	76	82	94	100	66	28	23
	13:00:00	77	82	100	93	66	25	18
	14:00:00	51	43	43	45	45	21	13
	15:00:00	20	7	6	9	18	13	8
	16:00:00	0	1	1	1	1	6	3
	17:00:00	1	1	1	1	1	0	1
	18:00:00	1	1	1	1	1	1	1
	19:00:00	1	1	1	1	1	1	1
	20:00:00	1	1	1	1	1	1	1
	21:00:00	1	1	1	1	1	1	1
	22:00:00	1	1	1	1	1	1	1
	23:00:00	1	1	1	1	1	1	1

From the table above, is evident that Springbok Park has its peak occupancy at 13h00 on Wednesdays and 12h00 on Thursdays. According to the data, the park is close to its peak activity at 12h00 to 13h00 on Mondays to Thursdays. This could indicate that persons within the immediate or nearby neighbourhood might visit the park at those times i.e., during lunchtime, given that it is permitted, and that lunchtime is from 12h00 to 13h00. Note, however, the restaurant's occupancy could also contribute to the park's occupancy percentages, and people might enjoy the park whilst having lunch at the restaurant.

Last, during the weekdays, activity increases from around 03h00, peaking at around 12h00 and 13h00, then decreases from 13h00. Over the weekend, particularly on Saturday, activity

increases from 04h00 to 06h00, peaking at 07h00 to 08h00, with 81 per cent of its peak occupancy, then decreases from 09h00.

## **4.7 Fieldwork – Site Visits**

At no time during the site visits were the researcher and his acquaintance offered any illegal substances, nor did we see any person or persons consuming, dealing or trading illicit substances. However, it does not necessarily indicate the lack thereof. For reference, see Appendix I.

### **4.7.1 *Magnolia Dell Park***

Regarding Magnolia Dell Park, it was clear that at the time of the site visit, the human-made water structure (the pond) appeared to have been transformed into a place for skateboarding. The park's restrooms were inaccessible (locked), however, no water waste was seen. Fencing at the perimeter was evident, however, some areas at the perimeter had no fencing. Persons could access the park without restrictions (fencing). Lighting infrastructure was present and appeared to be in an operable state at the time. Litter is present, however mostly at and in Walkerspruit which runs through the park. No cultural infrastructure (i.e., monuments) was present during the site visit. The park is open and visible from most points at the park.

### **4.7.2 *Venning Park***

Regarding Venning Park, it was clear that at the time of the site visit, the pools did not contain any water; the park's restrooms were inaccessible and in a poor state, and the flora quality might be predominantly considered as of a lesser nature. In addition, some water waste was present; some fencings were present, although there was no fencing at some areas of the perimeter. Persons can access the park without restrictions. Lighting infrastructure was present, although some lights appeared to be inoperable. Litter was present at the park. No cultural infrastructure seemed to be present at the park. The park is open and visible from some points at the park, less than Magnolia Dell Park.

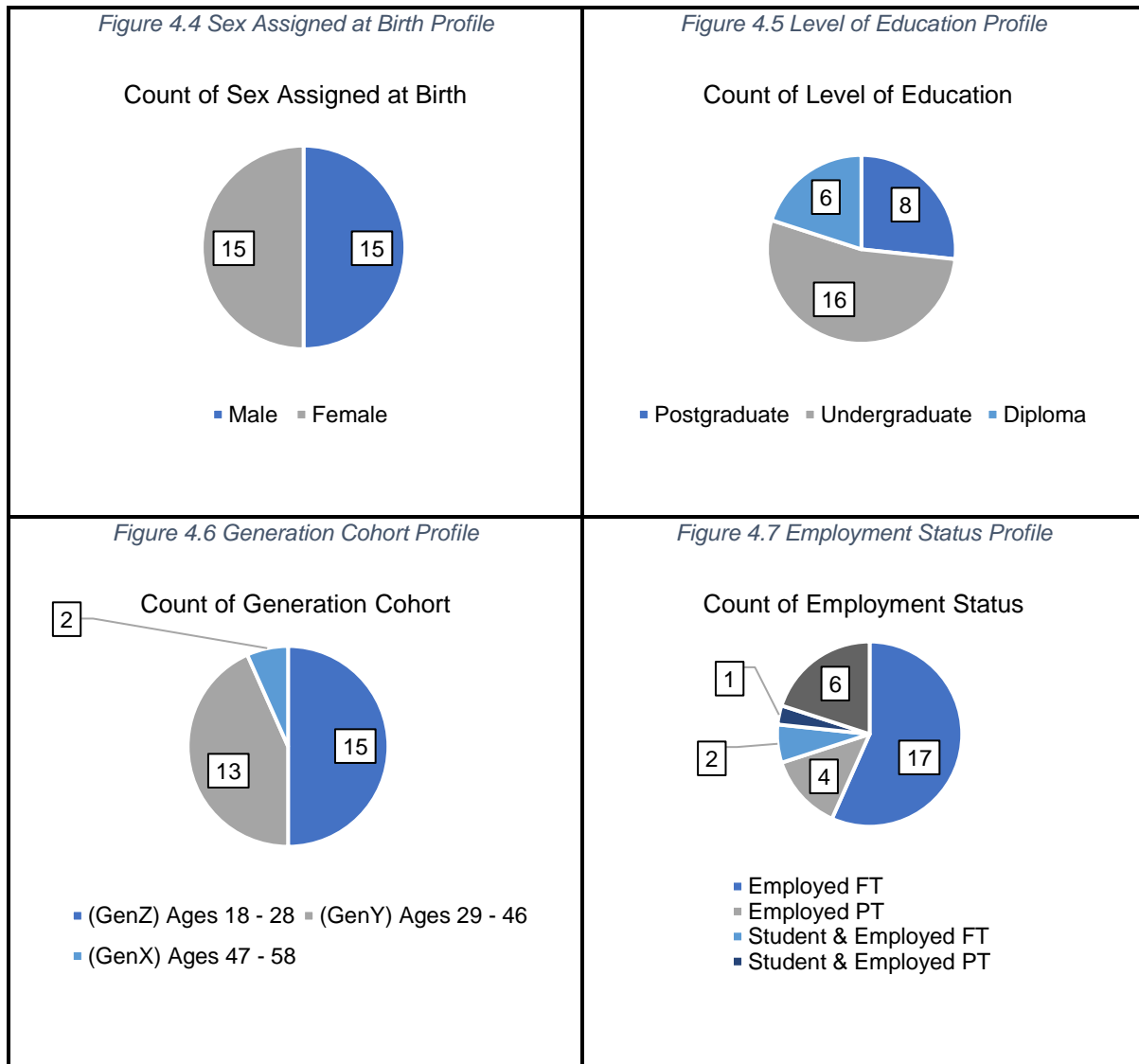
### **4.7.3 *Springbok Park***

Regarding Springbok Park, it was clear at the time of the site visit that the natural water body contained water; the park's restrooms were also inaccessible, and the quality of the flora was in a poor state. No water waste was seen during the site visit, and in the case of Magnolia Dell Park and Venning Park, Springbok Park's perimeter had areas without any fencing. Litter was present in some areas of the park. Lighting infrastructure was present, however, most of the lights at some parks appeared to be in an inoperable state. No cultural infrastructure (such as monuments) was present at the time of the site visit; however, Springbok Park was declared a national monument in the 1970s (City of Tshwane, 2005, p. 78), therefore overall preserving

the country's heritage. The park's jungle-like appearance affects its on-site visibility significantly.

## 4.8 Respondent Profile

The following figures below illustrate the respondents' demographic profile:



Out of thirty-six respondents, only thirty respondents were selected based on the criteria. Of the thirty respondents, fifteen selected Generation Z (ages 18 - 28); thirteen selected Generation Y / Millennial (ages 29 - 46); and two selected Generation X (ages 47 - 58). Regarding sex assigned at birth, fifteen respondents selected male; and fifteen respondents selected female.

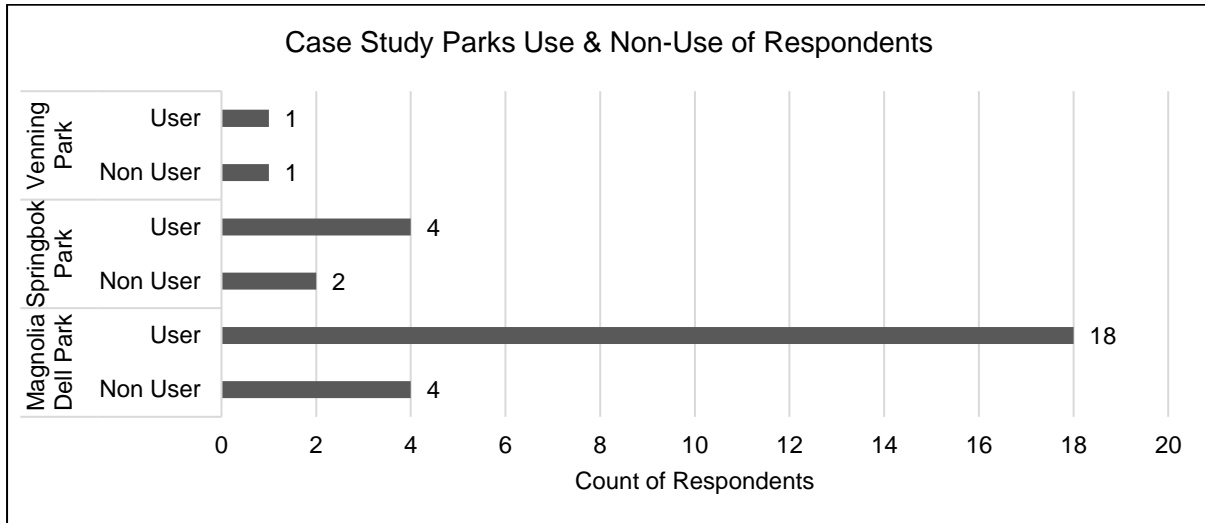
Regarding the current level of education, sixteen respondents selected undergraduate degree; eight selected postgraduate degree; and six selected diploma. Regarding employment status, seventeen respondents selected full-time employment; four selected part-time employment;

two selected student and employed full-time; one selected student and employed part-time; and six selected student only.

#### 4.9 Respondents' Park Use

The following figure below captures the respondents' park use choice:

Figure 4.8 Park Use Choice

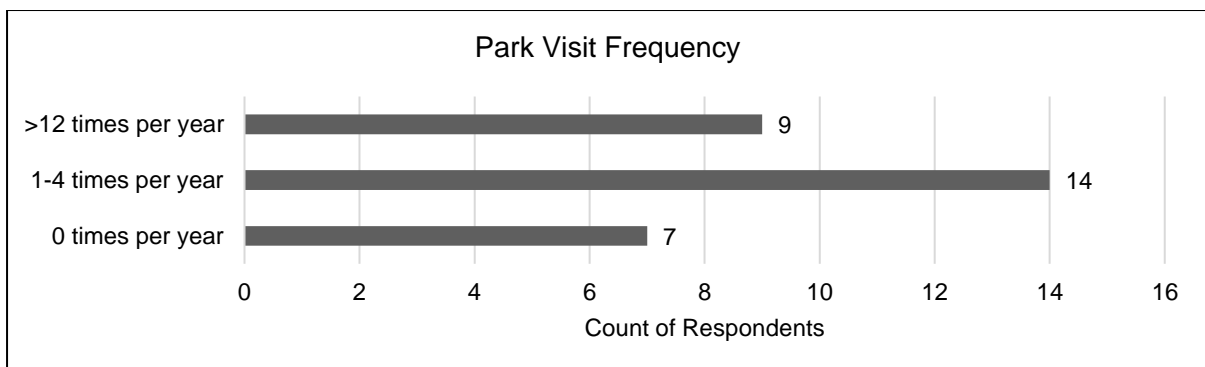


The results indicate that the respondents predominantly visit Magnolia Dell Park more than Springbok Park and Venning Park. From the sample, eighteen respondents use Magnolia Dell Park, four respondents use Springbok Park and one respondent use Venning Park. From the respondents that do not visit parks, four respondents are at least familiar with Magnolia Dell Park, four respondents with Springbok Park, and one respondent with Venning Park. The results are discussed in terms of 'the case study parks' or 'the parks', however, keep in mind the respondents predominantly use Magnolia Dell Park.

##### 4.9.1 Park Visit Frequency

The following figure below illustrates the respondents' park use frequencies:

Figure 4.9 Park Visit Frequency

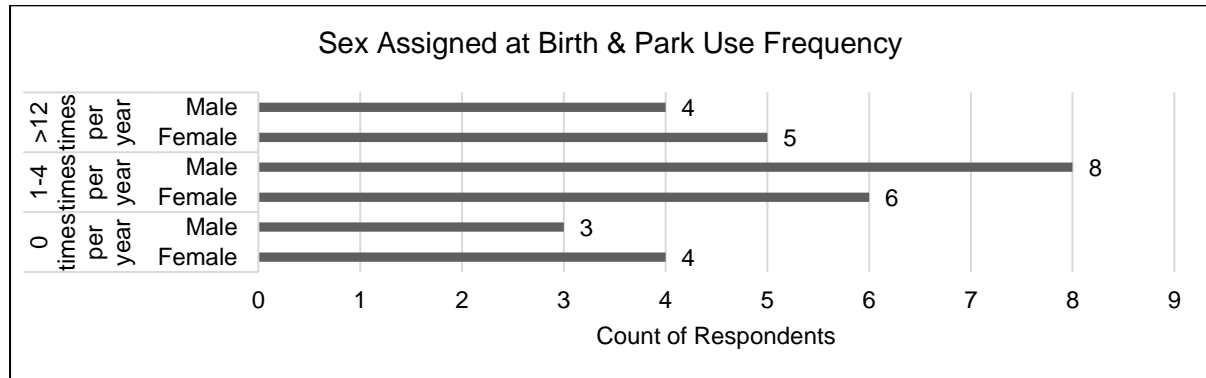


Overall, nine of the thirty respondents reported that they use a case study park more than 12 times a year, fourteen respondents reported they use a case study park 1 – 4 times per year, and seven respondents reported that they do not use a case study park, or any other park at all.

### 4.9.2 Sex Assigned at Birth

The following figure below illustrates the park use frequency concerning sex assigned at birth:

Figure 4.10 Park Use and Sex Assigned at Birth

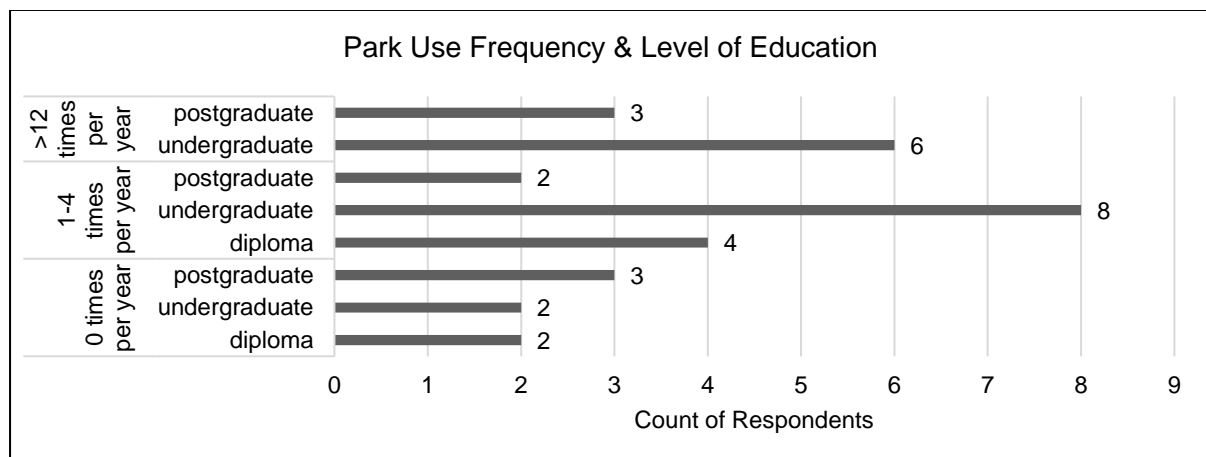


In terms of park use frequency with respect to sex assigned at birth, fewer female respondents visit parks compared to the male respondents, however, there are more female respondents that visit the park more than 12 times a year when compared to the male respondents. More male respondents frequent parks 1-4 times per year compared to their female counterparts.

### 4.9.3 Level of Education

The following figure below illustrates the park use frequency with respect to level of education:

Figure 4.11 Park Use and Level of Education



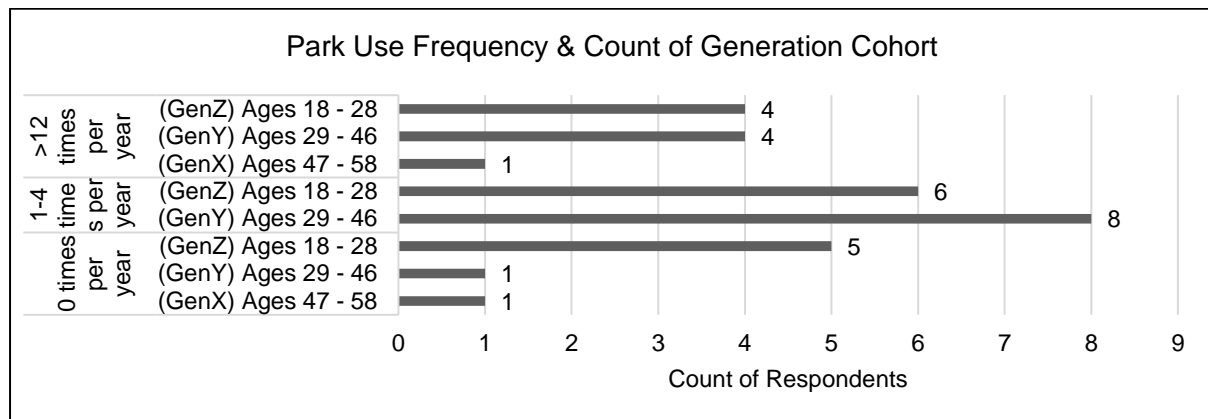
In terms of park use frequency with respect to level of education, the undergraduates frequent parks more often when compared to the postgraduates. However, in terms of the 1-4 times

per year frequency, more respondents with diplomas use the park 1-4 times per year compared to the postgraduates.

#### 4.9.4 Generation Cohort

The following figure below illustrates the park use frequency with respect to generation cohorts:

Figure 4.12 Park Use and Generation Cohort

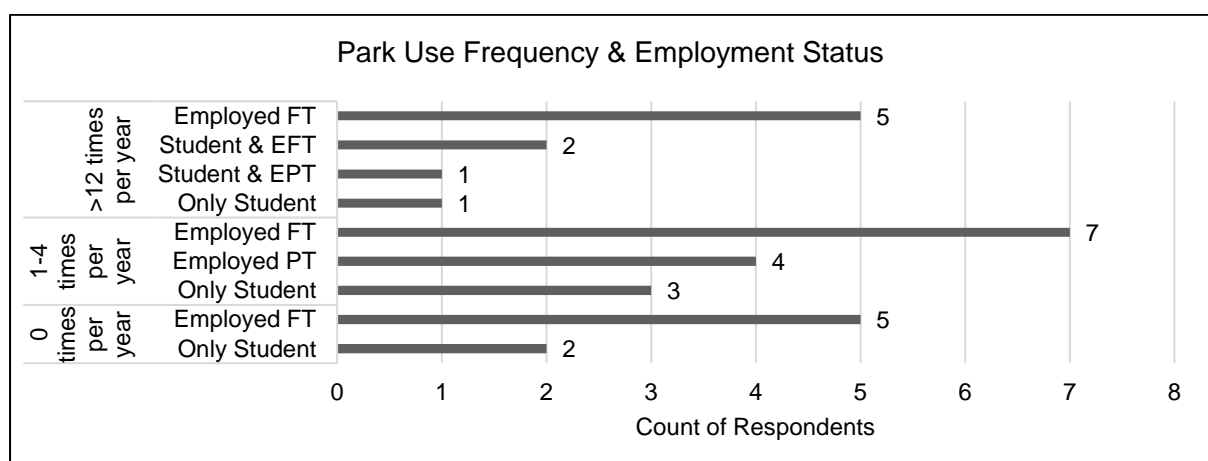


In terms of park use frequency with respect to generational cohort, those aged 29 - 46 (Generation Y) frequent parks more compared to those aged 18 – 28 (Generation Z) and those aged 47 – 58 (Generation X). However, an equal number of Generation Y and Generation Z respondents frequent parks more than 12 times per year.

#### 4.9.5 Employment Status

The figure below illustrates the park use frequency with respect to employment status:

Figure 4.13 Park Use and Employment Status

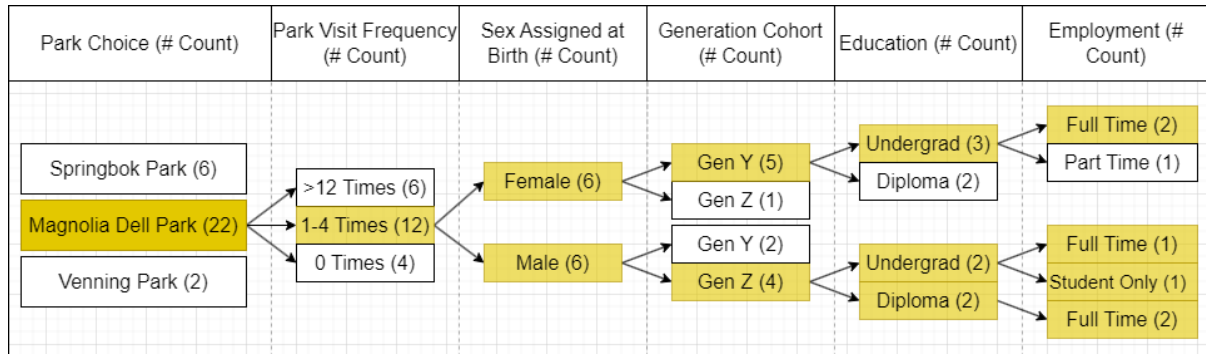


In terms of park use frequency with respect to employment status, those employed full-time (FT) frequent a park more compared to those employed part-time (PT), those who are students and employed full-time (Students EFT), those who are students and employed part-time (Students EPT), and to those who are students only.

### 4.9.6 Overview

The following figure captures the demographic factors data with regards to the case study parks and park visit frequency:

Figure 4.14 Park Use Tree Diagram

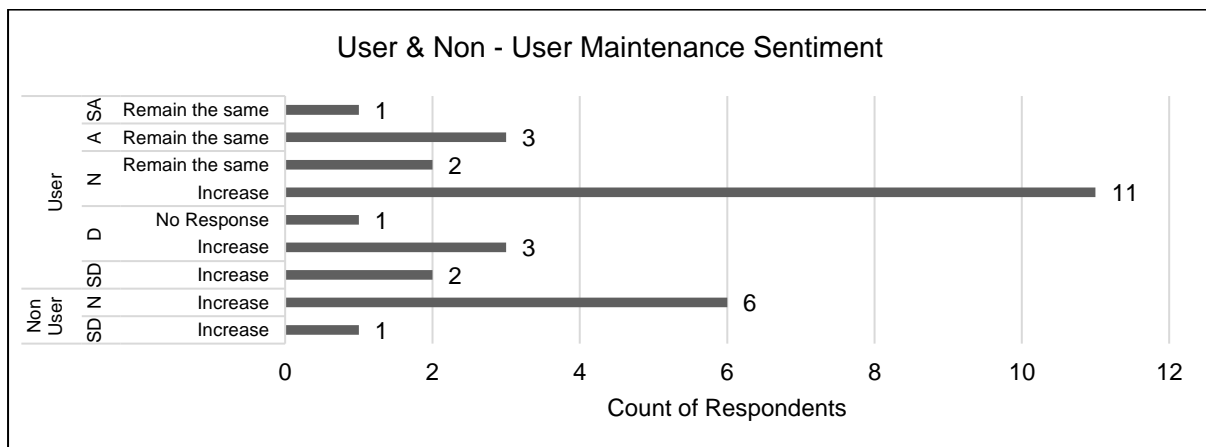


### 4.10 Park Cleanliness

#### 4.10.1 Perceived Maintenance Sentiment

The following table illustrates the sentiment regarding the maintenance of the parks. It includes the Likert scale data<sup>14</sup> to the park maintenance question and the responses to the question 'I would like to see the park's level of maintenance to' (remain the same vs. increase), while differentiating between park users and non-park users:

Figure 4.15 Perceived Maintenance Sentiment



Regarding the agreement of whether the parks are well maintained, one park user strongly agrees and calls for maintenance to remain the same. Three park users agree and call for maintenance to remain the same. Nineteen respondents are neutral. Of the nineteen, thirteen are park users, eleven of which call for increased maintenance. The remaining six non-park users also call for increased maintenance. Four respondents disagree. All four of them are park users, of which three call for increased maintenance. Three respondents strongly

<sup>14</sup> SA = Strongly Agree (5); A = Agree (4); N = Neutral (3); D = Disagree (2); SD = Strongly Disagree (1).

disagree. Of the three, two are park users, calling for increased maintenance; the remaining non-park user also calls for increased maintenance.

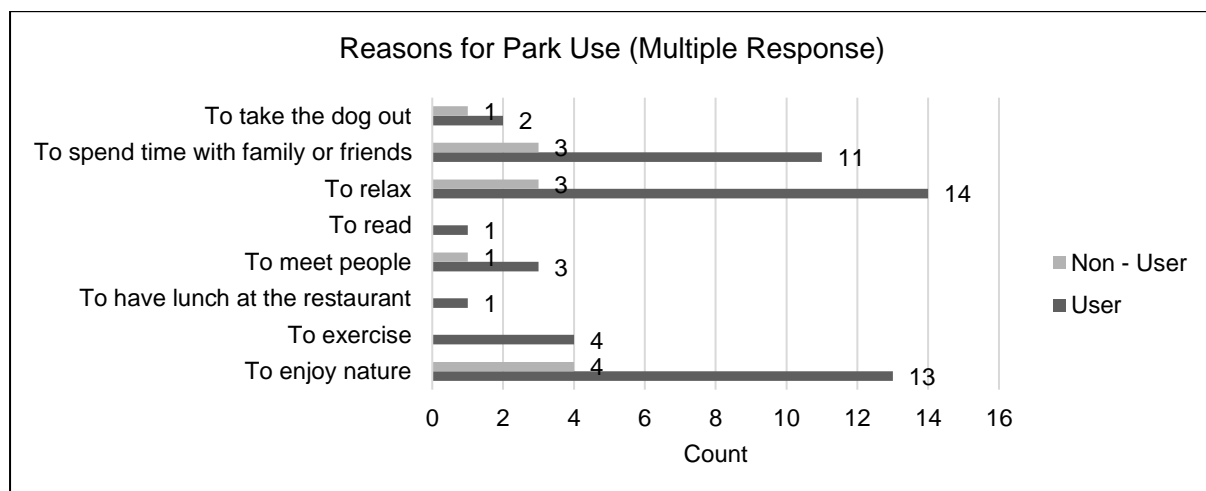
## 4.11 Closed-ended Question Responses

This subsection provides the closed-ended question responses results obtained via the online questionnaire, specifically, reasons for park use and reasons against park use.

### 4.11.1 Reasons for Park Use

The figure below illustrates the responses to the first closed-ended question that asked respondents to provide or select reasons for park use. These responses in favour of park use also involves reasons why respondent(s) might be willing to visit parks, given that non-park users also answered the question of, "What would you say are the reasons for visiting park?". It should be noted that the respondent might have answered this question in a general sense and not for themselves. The data is presented as reasons against park use from both park users and non-park users:

Figure 4.16 Reasons for Park Use Count



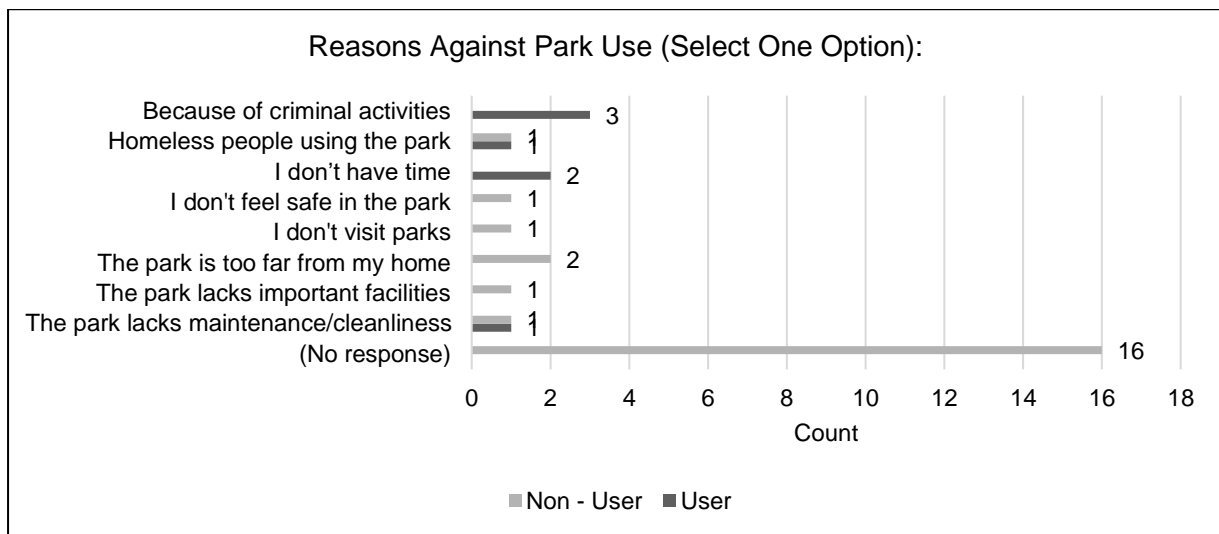
By looking at the reported reasons for why the respondents use (park users) or may use parks (non-users), the most cited reason in favour of park use is "to relax". To "enjoy nature" is the second most cited reason in favour of park use (14), and "to spend time with family or friends" is the third most cited reason in favour of park use.

"To exercise" and "to meet people" are only selected by four respondents, and for animal-related purposes, "to take the dog out" is only selected by three respondents. "To read" is selected by one respondent. One respondent answered "to have lunch at the restaurant" as a reason for park use, noting that this respondent selected Magnolia Dell Park as the park they use the most. It should be noted that this question allowed for multiple responses, where many respondents selected more than one reason for their park use.

#### 4.11.2 Reasons against Park Use

The figure below illustrates the responses to the second closed-ended question that asked respondents to provide or select one option they agree with the most for why they do not use parks, if they do not use parks. These responses against park use are considered as involving reasons why respondents might be hesitant to visit parks as well, given that park users also answered the question "If you do not visit parks, what would the main reason be? Select the option that you agree with the most". As such, the data is presented as reasons against park use from both park users and non-park users:

Figure 4.17 Reasons against Park Use Count



Sixteen respondents did not respond to this question. Three respondents selected criminal activity as a reason against park use. The reasons for a lack of maintenance or cleanliness; distance issues, time constraints, and homeless persons; are all selected twice. Lack of facilities; safety concerns; and simply not visiting parks are all selected once as reasons against park use.

#### 4.12 Open-ended Question Responses

This subsection provides the open-ended question response results obtained via the online questionnaire and is thematically analysed and further informed by the Likert scale data.

##### 4.12.1 Thematic Analysis of Responses

Here, the open-ended question responses to the question, "Do you have any comments you would like to add?", are categorised in terms of the themes that emerged with varied responses, involving park useability; safety; maintenance; and governance.

##### Useability

The first theme that emerged involves specific uses at a park. The following table captures the open-ended question responses that pertain to specific uses at a park:

Table 4.13 Useability as a Theme

Respondent	Open-ended Question Responses
8	<i>"The park should be more animal friendly"</i>
9	<i>"the restaurant is great"</i>
7	<i>"I only visit the park because of the restaurant. I don't actively use the park, but sometimes walk around with friends who goes to the restaurant with me"</i>

The first theme is the issue of use, the fact that it is not as dog friendly as respondent 8 (female, aged between 47 – 58) would have liked the park to be. In addition, one response exclusively pertains to the restaurant. This could imply that the person has most likely used the restaurant at the park, and perhaps, the restaurant is the main attractor for Respondent 9. The respondent added "To spend time with family or friends" as a reason for visiting the park. This case may be similar to the case of respondent 7, where this person and company go to the restaurant at the park (perhaps for socialisation purposes), and not necessarily go to the park, for the park. The restaurant at the park (Magnolia Dell) also has an impact on the reason to visit the park, as one respondent explicitly stated that they only visit the park because of the restaurant. Interestingly, both respondents 7 and 9 are female, and was aged between 29 – 46.

### Safety

The second theme that emerged involves safety. The following table captures the open-ended question responses that pertain to safety:

Table 4.14 Safety as a Theme

Respondent	Open-ended Question Responses
5	<i>"sometimes I wonder if I should go to the park because of safety concerns"</i>
6	<i>"I do not go alone to the park for safety reasons"</i>
18	<i>"My answers are all negatively impacted due to the criminal activities in and around the park, as well as the lack of infrastructure maintenance"</i>
20	<i>"it's not safe at night so I don't go at night"</i>

It is evident that from the open-ended question responses, criminal activities and safety considerations have an impact on park visits. This could mean that for the respondent, they might feel safe enough to visit the park if they are accompanied by a person or persons. Specifically, respondent 6 pointed out that they do not visit parks alone. Both respondent 5 and 6 are female and was aged between 29 – 46.

Furthermore, for Respondent 18 (male, and aged between 47 – 58), safety is a concern (arguably becoming a victim of crime). Respondent 18 has a negative sentiment toward safety at the park and, which is further supported by the respondent's answer of strongly disagree (Likert scale option 1) in their response to the "I generally perceive the park as a safe place" item.

Time is also a factor in the sense of natural lighting. Respondent 20, for example, does not visit parks during nighttime, but it could be that they visit the park during daytime. In addition, Respondent 20 selected the disagree option (Likert scale option 2) in their response to the "I generally perceive the park as a safe place" item. It may be that Respondent 20 would like to go to the park at night but chooses against it due to Respondent 20's perception of the park's safety. The respondent explicitly stated that it is unsafe during the night; however, the respondent may perceive the park as less unsafe during the day.

### **Maintenance**

The third theme that emerged relates to the issue of maintenance and who park users think should be responsible for it. The following table captures the open-ended question responses that pertain to maintenance.

*Table 4.15 Maintenance as a Theme*

Respondent	Open-ended Question Responses
18	<i>"My answers are all negatively impacted due to the criminal activities in and around the park, as well as the lack of infrastructure maintenance"</i>
27	<i>"Government needs to get their act together"</i>

The third theme that emerged from the open-ended question responses pertains to maintenance, specifically the lack thereof. Respondent 18 also mentioned the issue of infrastructure maintenance, which is further supported by the respondent's response to "The park I visit is well maintained" as strongly disagree (Likert scale option 1).

Respondent 27 (male, aged between 18 – 28) commented on government, that government should "get their act together", perhaps referring to efficiency and organisation. This could perhaps be a comment made in reference to local government, or to the public body responsible for parks, as the respondent selected strongly disagree (Likert scale option 1) for both the items "The park I visit is well maintained" and "The park is well managed" on the questionnaire.

## Governance

The fourth theme that emerged relates to the issue of governance, who park users possibly think is responsible for the state of the parks. The following table captures the open-ended question response that pertain to governance.

Table 4.16 Governance as a Theme

Respondent	Open-ended Question Responses
27	"Government needs to get their act together"

Similar to the maintenance theme, Respondent 27's response (male, aged between 18 – 28), could point to the issue of governance, as the respondent made explicit reference to government, pointing out possible issues with organisation or efficiency. The respondent may believe that the parks are the responsibility of a public authority.

### 4.13 Statistical Analyses

This subsection provides the statistical results obtained via Spearman's Rho correlation tests. The statistical results are reported in terms of the variable names<sup>15</sup>. First, the correlation test results between park use and the influencing factors are provided. Then, the correlation test results between park maintenance and the UGSA are provided, followed by the correlation test results between all the influencing factors. See Appendix VI for the results in table format.

#### 4.13.1 Park Use and Influencing Factors

The following results between park visit frequency and the influencing factors are provided in terms of the Spearman's Rho correlation analyses, respectively.

##### Urban Green Space Attributes

The correlation test results between park visit frequency and the elements of the first influencing factor, UGSA, are provided below. The results show no significant relationships between the park visit frequency and the UGSA elements, except for the following: The two-tailed Spearman's Rho correlation test with regards to park visit frequency (park use) and the urban green space attributes elements, show statistical significance at the 0.01 level:

There is a significant positive relationship between the park visit frequency, and PerfectSize ranking, ( $r_s(28) = .50, p = .005$ ).

There is a significant positive relationship between the park visit frequency, and the NoEntryAccessIssues ranking, ( $r_s(28) = .502, p = .005$ ).

<sup>15</sup> See Appendix IV for the SPSS variables in terms of the questionnaire questions, and Appendix VI for the tables containing the SPSS results.

There is a significant positive relationship between the park visit frequency, and the PerceiveParkSafeSpace ranking, ( $r_s(28) = .47$   $p = .009$ ).

There is a significant positive relationship between the park visit frequency, and the Park\_Maintenance ranking, ( $r_s(28) = .503$   $p = .005$ ).

### **Cultural Ecosystem Services**

Following, the correlation test results between park visit frequency and the elements of the second influencing factor, CES, are provided below. The results show no significant relationships between the park visit frequency and the CES elements, except for the following:

The two-tailed Spearman's Rho correlation test with regards to park visit frequency (park use) and the cultural ecosystem services elements, show a significant positive relationship at the 0.05 level, between the park visit frequency, and the RecreationValue ranking, ( $r_s(28) = .429$ ,  $p = .018$ ).

### **Sense of Place**

Next, the correlation test results between park visit frequency and the components of the third influencing factor, CES, are provided below. The results show no significant relationships between the park visit frequency and the SOP components, except for the following:

The two-tailed Spearman's Rho correlation test with regards to park visit frequency (park use) and the sense of place components, show statistical significance at both the 0.01 level and 0.05 levels:

There is a significant positive relationship at the 0.01 level, between the park visit frequency, and the SOP\_FavPlaces component ranking, ( $r_s(28) = .481$ ,  $p = .007$ ).

There is a significant positive relationship at the 0.05 level, between the park visit frequency, and the SOP\_MissingItAwayTooLong component ranking, ( $r_s(28) = .442$ ,  $p = .015$ ).

There is a significant positive relationship at the 0.01 level, between the park visit frequency, and the SOP\_MeaningPosNeg component ranking, ( $r_s(28) = .535$ ,  $p = .002$ ).

#### **4.13.2 Park Maintenance and Urban Green Space Attributes:**

Now, the correlation test results between park maintenance and the UGSA are provided below. The results show no significant relationships between the parks' perceived maintenance and the remaining urban green space attributes, except for the following:

The two-tailed Spearman's Rho correlation test with regards to (perceived level of) park maintenance and the remaining urban green space attributes, show statistical significance at both the 0.01 level and 0.05 levels:

There is a significant negative relationship at the 0.05 level, between the Park\_Maintenance, and the ParkInfra ranking ( $r_s(28) = -.403$   $p = .027$ ).

There is a significant negative relationship at the 0.05 level, between the Park\_Maintenance, and the NaturallInfra ranking ( $r_s(28) = -.443$   $p = .014$ ).

There is a significant positive relationship at the 0.01 level, between the Park\_Maintenance, and the PerceiveParkSafeSpace ranking, ( $r_s(28) = .632$   $p < .005$ ).

#### **4.13.3 Sense of Place and Urban Green Space Attributes**

The following results between the SOP and UGSA components and elements are provided in terms of the Spearman's Rho correlation analyses. The results show no other significant relationships are present between the sense of place components, and urban green space attributes elements, except for the following:

The two-tailed Spearman's Rho correlation test with regards to the sense of place components and urban green space attributes elements, show statistical significance at both the 0.01 level and 0.05 levels:

There is a significant positive relationship at the 0.01 level, between the SOP\_FeelRelaxed, and NoEntryAccessIssues rankings, ( $r_s(28) = .557$ ,  $p = .001$ ).

There is a significant positive relationship at the 0.05 level, between the SOP\_FeelHappy, and PerfectSize rankings, ( $r_s(28) = .425$ ,  $p = .019$ ).

There is a significant positive relationship at the 0.01 level, between the SOP\_FeelHappy, and NoEntryAccessIssues rankings, ( $r_s(28) = .629$ ,  $p < .001$ ).

There is a significant positive relationship at the 0.01 level, between the SOP\_FavPlaces, and NoEntryAccessIssues rankings, ( $r_s(28) = .582$ ,  $p = .001$ ).

There is a significant positive relationship at the 0.01 level, between the SOP\_MissingItAwayTooLong, and NoEntryAccessIssues rankings, ( $r_s(28) = .698$ ,  $p < .001$ ).

There is a significant positive relationship at the 0.05 level, between the SOP\_MeaningPosNeg, and NoEntryAccessIssues rankings, ( $r_s(28) = .387$ ,  $p = .035$ ).

There is a significant positive relationship at the 0.01 level, between the SOP\_MeaningPosNeg, and NoEntryAccessIssues rankings, ( $r_s(28) = .699$ ,  $p < .001$ ).

There is a significant positive relationship at the 0.05 level, between the SOP\_MeaningPosNeg, and PerceiveParkSafeSpace rankings, ( $r_s(28) = .383$ ,  $p = .037$ ).

#### **4.13.4 Urban Green Space Attributes and Cultural Ecosystem Services**

The following results between the UGSA and CES elements are provided in terms of the Spearman's Rho correlation analyses. The results show no other significant relationships are present between the urban green space attributes elements, and cultural ecosystem services elements, except for the following:

The two-tailed Spearman's Rho correlation test with regards to the urban green space attributes elements and cultural ecosystem services elements, show statistical significance at both the 0.01 level and 0.05 levels:

There is a significant positive relationship at the 0.05 level, between the ParkUsersPresence, and EducationalValue rankings, ( $r_s(28) = .439, p = .015$ ).

There is a significant negative relationship at the 0.05 level, between the ParkInfra, and AestheticValue rankings, ( $r_s(28) = -.365, p = .047$ ).

There is a significant positive relationship at the 0.05 level, between the ParkInfra, and EducationalValue rankings, ( $r_s(28) = .364, p = .048$ ).

There is a significant positive relationship at the 0.05 level, between the RecreationFacilities, and SpiritualValue rankings, ( $r_s(28) = .451, p = .012$ ).

There is a significant positive relationship at the 0.05 level, between the PerfectSize, and RecreationValue rankings, ( $r_s(28) = .447, p = .013$ ).

There is a significant positive relationship at the 0.05 level, between the PerfectSize, and SocialRelationsValue rankings, ( $r_s(28) = .390, p = .033$ ).

There is a significant positive relationship at the 0.01 level, between the NoEntryAccessIssues, and RecreationValue rankings, ( $r_s(28) = .503, p = .005$ ).

There is a significant positive relationship at the 0.01 level, between the NoEntryAccessIssues, and AestheticValue rankings, ( $r_s(28) = .504, p = .005$ ).

There is a significant positive relationship at the 0.05 level, between the NoEntryAccessIssues, and SpiritualValue rankings, ( $r_s(28) = .449, p = .013$ ).

There is a significant positive relationship at the 0.05 level, between the DistanceAppropriate, and SpiritualValue rankings, ( $r_s(28) = .435, p = .016$ ).

There is a significant positive relationship at the 0.05 level, between the PerceiveParkSafeSpace, and RecreationValue rankings, ( $r_s(28) = .439, p = .015$ ).

There is a significant positive relationship at the 0.05 level, between the Park\_Maintenance, and RecreationValue rankings, ( $r_s(28) = .383, p = .037$ ).

There is a significant positive relationship at the 0.05 level, between the Park\_Maintenance, and AestheticValue rankings, ( $r_s(28) = .457, p = .011$ ).

#### **4.13.5 Cultural Ecosystem Services and Sense of Place**

The following results between the CES and SOP elements and components are provided in terms of the Spearman's Rho correlation analyses. The results show no other significant relationships are present between the cultural ecosystem services elements, and sense of place components, except for the following:

The two-tailed Spearman's Rho correlation test with regards to the cultural ecosystem services elements and sense of place components, show statistical significance at both the 0.01 level and 0.05 levels:

There is a significant positive relationship at the 0.01 level, between the RecreationValue, and SOP\_FeelRelaxed rankings, ( $r_s(28) = .595, p = .001$ ).

There is a significant positive relationship at the 0.01 level, between the RecreationValue, and SOP\_FeelHappy rankings, ( $r_s(28) = .510, p = .004$ ).

There is a significant positive relationship at the 0.01 level, between the RecreationValue, and SOP\_FavPlaces rankings, ( $r_s(28) = .612, p < .001$ ).

There is a significant positive relationship at the 0.01 level, between the RecreationValue, and SOP\_MissingItAwayTooLong rankings, ( $r_s(28) = .503, p = .005$ ).

There is a significant positive relationship at the 0.01 level, between the RecreationValue, and SOP\_MeaningPosNeg rankings, ( $r_s(28) = .614, p < .001$ ).

There is a significant positive relationship at the 0.05 level, between the RecreationValue, and SOP\_HowIFeelTowardParkPosNeg rankings, ( $r_s(28) = .369, p = .045$ ).

There is a significant positive relationship at the 0.01 level, between the AestheticValue, and SOP\_FeelRelaxed rankings, ( $r_s(28) = .500, p = .005$ ).

There is a significant positive relationship at the 0.01 level, between the AestheticValue, and SOP\_FeelHappy rankings, ( $r_s(28) = .484, p = .007$ ).

There is a significant positive relationship at the 0.01 level, between the AestheticValue, and SOP\_FavPlaces rankings, ( $r_s(28) = .646, p < .001$ ).

There is a significant positive relationship at the 0.01 level, between the AestheticValue, and SOP\_MissingItAwayTooLong rankings, ( $r_s(28) = .513, p = .004$ ).

There is a significant positive relationship at the 0.01 level, between the AestheticValue, and SOP\_MeaningPosNeg rankings, ( $r_s(28) = .625, p < .001$ ).

There is a significant positive relationship at the 0.05 level, between the EducationalValue, and SOP\_FeelHappy rankings, ( $r_s(28) = .376, p = .041$ ).

There is a significant positive relationship at the 0.05 level, between the EducationalValue, and SOP\_MeaningPosNeg rankings, ( $r_s(28) = .375, p = .041$ ).

There is a significant positive relationship at the 0.01 level, between the SocialRelationsValue, and SOP\_FeelRelaxed rankings, ( $r_s(28) = .465, p = .010$ ).

There is a significant positive relationship at the 0.05 level, between the CulturalHeritageValue, and SOP\_MissingItAwayTooLong rankings, ( $r_s(28) = .391, p = .032$ ).

There is a significant positive relationship at the 0.05 level, between the SpiritualValue, and SOP\_FeelRelaxed rankings, ( $r_s(28) = .429, p = .018$ ).

There is a significant positive relationship at the 0.01 level, between the SpiritualValue, and SOP\_FeelHappy rankings, ( $r_s(28) = .584, p = .001$ ).

There is a significant positive relationship at the 0.05 level, between the SpiritualValue, and SOP\_FavPlaces rankings, ( $r_s(28) = .401, p = .028$ ).

There is a significant positive relationship at the 0.01 level, between the SpiritualValue, and SOP\_MissingItAwayTooLong rankings, ( $r_s(28) = .491, p = .006$ ).

There is a significant positive relationship at the 0.05 level, between the SpiritualValue, and SOP\_MeaningPosNeg rankings, ( $r_s(28) = .436, p = .016$ ).

There is a significant positive relationship at the 0.01 level, between the SpiritualValue, and SOP\_HowIFeelTowardParkPosNeg rankings, ( $r_s(28) = .615, p < .001$ ).

#### **4.14 Summary**

This subsection provides a summary of the case study park context from the literature and online reviews. In addition, an overview of the *Google* review ratings and popular times data is provided, followed by an overview of the fieldwork. Then, an overview of the respondent profile is provided, followed by an overview of the qualitative and quantitative results.

#### **4.14.1 Case Study Park Context**

For Magnolia Dell Park, at times littering is a concern, and the park use also involves braaiing (or arguably barbecuing) which is not allowed (see Appendix I as illustrated by the parks' information boards) and doing sport activities such as soccer, as expressed by an online reviewer (TripAdvisor, 2022). The removal or loss of the “trademark” tree is also something that was negatively received (TripAdvisor, 2022), and some park visitors were concerned about their safety (Landman, 2019). Informal traders could be found surrounding Magnolia Dell, selling a range of goods (Landman, 2019), and during the weekday afternoons, Magnolia Dell was utilised by children (Landman, 2015). Over the weekends, however, the park was utilised more extensively (Landman, 2015). Literature goes on to explain that the park's neglect, given a lack of maintenance, is regrettable (Landman, 2019), albeit more recent reviews noted the park remains attractive (aesthetic) and well-maintained (TripAdvisor, 2022).

The second case study park, Venning Park, included formal walkways, greenery, a water body (a large pool that was empty at the time of the site visit), kiosks or coffee shops<sup>16</sup> catering for a range of activities, lighting sources, areas for seating (Landman, 2019), swings and “other obstacles” (Africabz.com, 2022). Children frequented the park during the afternoons by utilising the playgrounds, and persons visited the park considerably more over the weekends. Informal traders were also a common sight, and like the case of Magnolia Dell Park, Venning Park is also frequented by homeless persons (Landman, 2019). Feelings of safety were also a concern to some persons, and there are mixed perspectives surrounding the maintenance and attractiveness (aesthetics) surrounding the park (Africabz.com, 2022).

The third and final case study park, Springbok Park, includes walkways, greenery, a restaurant (Landman, 2019), lighting sources (TripAdvisor, 2022) and benches (as seen during the site visit). Like the case of Magnolia Dell Park and Venning Park, homeless persons also frequented Springbok Park, and their presence contributed to feelings of discomfort. Fear contributes to the hesitation to visit the park, and crime is a significant problem (Landman, 2019). In addition, it was expressed by a reviewer that, at the time, the park is not a good place for children to play (Africabz.com, 2022), and there are also mixed perspectives surrounding the maintenance of the park (TripAdvisor, 2022).

#### **4.14.2 Google Review Ratings**

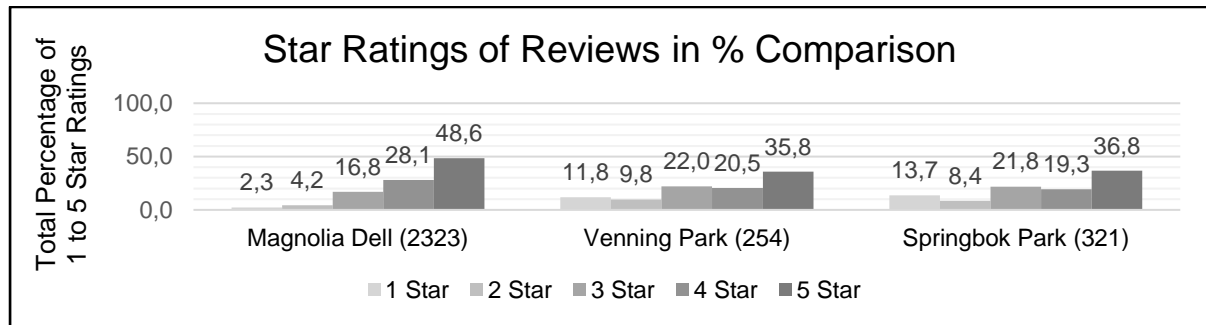
Based on the Google review ratings, the parks' general sentiment is overall more positive than negative. All three parks have an average rating of more than 3.5 out of 5 stars. Magnolia Dell Park's Google review count of 2323, compared to Venning Park's count of 254 and Springbok Park's count of 321, allows for the creation of an assumption that Magnolia Dell Park is

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<sup>16</sup> At the time of the site visits, Venning Park does not have any kiosks or coffee shops.

frequented more often than Venning Park and Springbok Park. The following figure illustrates the total percentage of all three case study parks' *Google Maps* 1-5 Star ratings:

Figure 4.18 1-5 Star Ratings of Reviews Percentage Comparison



By formulating a least common denominator (see Appendix V for the calculations) for all three parks' 1-5 Star rating data, a reasonable comparison is possible:

Magnolia Dell Park has the highest allocated 5 Star reviews as 48.6 per cent of the total reviews rate the park as 5 Star, while only 2.3 per cent of the total reviews rate the park as 1 Star. Springbok Park and Venning Park share more or less the same amount of 1-5 Star ratings. 35.8 per cent of Venning Park's reviews are 5 Star, and 36.8 per cent of Springbok Park's reviews are 5 Star.

Compared to Magnolia Dell Park's 1 Star ratings, the amount of both Venning Park and Springbok Park's 1 Star ratings exceed that of Magnolia Dell Park's 1 Star ratings, as 11.8 per cent and 13.7 per cent accounts for Venning Park and Springbok Park's 1 Star ratings out of the total number of ratings, respectively. Based on *Google* reviews, Magnolia Dell Park is rated more positively compared to Venning Park and Springbok Park.

#### 4.14.3 Popular Times Data

Now, as for the occupancy percentages of the parks, some patterns emerge. The following table illustrates the occupancy percentage heatmaps of all three case study parks:

Table 4.17 Occupancy Percentage Heatmaps – All Three Case Study Parks

		Magnolia Dell Park							Venning Park							Springbok Park								
		Day of the Week							Day of the Week							Day of the Week								
		Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su		
Hour of Day & Night	00:00:00	1	0	2	0	1	1	1	1	0	2	1	1	0	1	1	1	1	1	1	1	1	1	1
	01:00:00	1	0	4	1	1	2	1	3	2	5	7	4	0	3	1	1	1	1	1	1	1	1	1
	02:00:00	0	1	5	3	3	3	0	5	4	7	13	6	0	6	1	1	1	5	2	1	1	1	1
	03:00:00	3	2	8	7	6	6	3	6	7	9	18	7	0	10	6	3	3	10	6	1	4	1	4
	04:00:00	7	6	11	13	9	11	8	7	9	10	20	8	0	15	12	11	7	15	10	13	10	13	10
	05:00:00	12	12	14	20	13	18	17	7	10	11	18	9	0	20	16	19	12	19	13	37	15	37	15
	06:00:00	17	20	19	27	19	26	25	7	12	12	15	9	1	24	20	26	16	22	15	63	20	63	20
	07:00:00	20	29	23	32	25	36	31	7	12	12	12	11	4	28	23	29	19	24	15	81	24	81	24
	08:00:00	22	37	27	34	30	49	35	7	12	13	11	13	12	30	25	28	19	25	15	81	26	81	26
	09:00:00	24	43	30	34	35	66	45	8	12	14	13	16	25	30	27	25	17	25	16	66	28	66	28
	10:00:00	26	45	30	33	37	85	62	8	13	16	17	19	35	29	35	27	18	32	26	46	28	46	28
	11:00:00	27	43	29	32	37	100	78	9	15	17	21	20	35	27	55	50	42	61	47	33	26	33	26
	12:00:00	26	36	25	29	33	99	77	9	19	18	24	21	46	23	76	82	94	100	66	28	23	28	23
	13:00:00	21	28	20	24	27	80	56	9	21	19	23	19	100	18	77	82	100	93	66	25	18	25	18
	14:00:00	15	20	15	17	20	53	30	8	20	18	20	16	36	14	51	43	43	45	45	21	13	21	13
	15:00:00	8	14	10	10	14	29	11	6	14	16	15	11	2	10	20	7	6	9	18	13	8	13	8
	16:00:00	3	9	6	5	9	13	2	3	7	12	11	6	0	6	0	1	1	1	1	6	3	6	3
	17:00:00	0	6	3	1	5	6	1	1	0	8	7	1	0	4	1	1	1	1	1	0	1	0	1
	18:00:00	1	4	1	1	2	2	1	1	1	4	4	1	0	2	1	1	1	1	1	1	1	1	1
	19:00:00	1	3	1	1	1	1	1	1	1	1	1	2	1	0	0	1	1	1	1	1	1	1	1
	20:00:00	1	2	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
	21:00:00	1	2	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
	22:00:00	1	1	0	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1
	23:00:00	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1

Based on the Google popular times data, activity at the park increases in the early mornings with a sudden decrease in the afternoons. Magnolia Dell Park and Venning Park experience higher activity over the weekend compared to during the week, whereas Springbok Park experiences more activity during the week compared to the weekend, however, the park does experience high activity over the weekend.

Magnolia Dell experiences the most weekend activity compared to Venning Park and Springbok Park. Park activity varies throughout the week; however, at all three parks, activity drastically reduces (compared to peak activity levels) to low levels around 16h00 to 18h00. This indicates that irrespective of the number of persons, activity remains low at night.

Compared to Magnolia Dell Park and Venning Park, with peak occupancy on a weekend day, Springbok Park experiences peak occupancy on two separate weekdays. A possible explanation might be that Springbok Park is visited most during lunchtime. The same could have been said about Magnolia Dell if it showed a pattern similar to that of Springbok Park, *ceteris paribus*, but it is not the case.

Last, from around 01h00 to 02h00, it appears that activity starts to increase (albeit slowly) at all the parks, which might be an indication of persons sleeping at the park at night time, which, in turn, might also explain the lack of activity in the evenings as persons might leave the parks, expecting the arrival of homeless persons that sleep at the parks, should the presence of homeless persons be a concern to park users.

#### **4.14.4 Fieldwork – Site Visits**

The public restrooms are inaccessible at the time of the site visits and at all three parks. Fencing is present; however, it is lacking in some perimeter areas. Lighting infrastructure is present; however, at some parks, it appears to be in an inoperable state. Wastewater is present at some of the parks. Litter is present, and no cultural infrastructure appears to be present at the parks. In addition, at no time during the site visits were the researcher and his acquaintance offered any illegal substances, nor did we see any person or persons consuming, dealing or trading illicit substances.

#### **4.14.5 Respondent Profile**

Of the thirty respondents, and in terms of sex assigned at birth, fifteen respondents selected male; and fifteen respondents selected female. In terms of generation cohort, two selected Generation X (ages 47 – 58); thirteen selected Generation Y / Millennial (ages 29 – 46); and fifteen selected Generation Z (ages 18 - 28). In terms of current level of education, sixteen respondents selected undergraduate degree; eight selected postgraduate degree; and six respondents selected diploma. Regarding employment status, seventeen respondents selected full-time employment; four selected part-time employment; two selected student and employed full-time; one selected student and employed part-time; and six selected student only.

#### **4.14.6 Park Use and Cleanliness**

Magnolia Dell Park is frequented the most compared to Venning Park and Springbok Park. Whether the park maintenance should remain the same or increase, park users and non-park users are in the majority that the park maintenance should increase.

#### **4.14.7 Closed-ended Question Responses**

The reasons in favour of park use include to relax; enjoy nature; exercise; meet people; read; have lunch at the restaurant; for interpersonal time spending; and animal-related purposes. The reasons against park use include maintenance, facilities, distance, safety, time, homeless persons, crime, and not visiting parks in the first place.

#### 4.14.8 Open-ended Question Responses' Thematic Analysis

Reference to safety is made four times, and reference to the restaurant (Huckleberry's) is made twice. Lack of infrastructure maintenance and animal friendliness are referenced, and one reference is made to government. The themes that emerged are, useability; safety; maintenance; and governance. The sentiment about the parks, in terms of the open-ended question responses, is generally more negative than positive. The following table contains the open-ended question responses:

Table 4.18 Open-ended Question Responses

Respondent	Open-ended Question Responses
5	<i>"sometimes I wonder if I should go to the park because of safety concerns"</i>
6	<i>"I do not go alone to the park for safety reasons"</i>
7	<i>"I only visit the park because of the restaurant. I don't actively use the park, but sometimes walk around with friends who goes to the restaurant with me"</i>
8	<i>"The park should be more animal friendly"</i>
9	<i>"the restaurant is great"</i>
18	<i>"My answers are all negatively impacted due to the criminal activities in and around the park, as well as the lack of infrastructure maintenance"</i>
20	<i>"its not safe at night so I dont go at night"</i>
27	<i>"Government needs to get their act together"</i>

#### 4.14.9 Statistical Analyses

Relationships are present between the park visit frequency, and four urban green space attributes elements; one cultural ecosystem services element; and three sense of place components. Three relationships are present between maintenance and three other urban green space attributes. In addition, thirteen relationships are present between the urban green space attributes and cultural ecosystem services elements; twenty-one between cultural ecosystem services elements and sense of place components; and eight between the sense of place components and urban green space attributes elements. These relationships vary and are present at both the 0.01 and 0.05 levels.

#### 4.14.10 Conclusion

The case study park context provided mixed views surrounding the parks. The Google review ratings of the parks are generally more positive than negative, based on the allocated ratings provided, however, Magnolia Dell Park is rated more positively compared to Venning Park and Springbok Park. The popular times data illustrate increasing activity from early mornings, and a sudden decrease in the afternoons at the parks. The site visits showed the presence of inaccessible, missing, or inoperable infrastructure, with at some parks having wastewater present. Litter was also present. No activity relating to illicit substances was seen. Magnolia Dell Park is frequented the most, and of all the respondents, the majority would like the park maintenance to increase. Additionally, reasons against, or hesitant to visit parks and reasons

for, or in favour of visiting parks are cited by the respondents, and the thematic analysis showed that the themes that emerged are, useability; safety; maintenance; and governance. The statistical analysis shows relationships between park visit frequency and the influencing factors, maintenance and UGSA, as well as relationships between the influencing factors themselves, both identified via the quantitative and qualitative analyses.

## 5 CHAPTER FIVE: DISCUSSION

Chapter Five serves to answer the question of what the research findings suggest. The chapter introduces the reader to the respondents' park use and commences with the discussion surrounding the nature of intersections between the influencing factors and park use. Then, the discussion of intersections between the influencing factors follows, and the chapter concludes with urban green space use and planning implications. The results are discussed in terms of the case study parks; however, the responses provided are predominantly based on Magnolia Dell Park, very little on Springbok Park, and negligible on Venning Park. Note, double counting regarding closed-ended and open-ended question response instances is taken into account.

### 5.1 Park Use Context

The questionnaire participant profile illustrates that of the thirty respondents, twenty-three, or ~76 per cent, are considered park users, and Magnolia Dell Park is visited the most. Whilst acknowledging that the population from which the sample is derived is biased, it should still be pointed out that the case study park, Magnolia Dell Park, is frequented more than Venning Park and Springbok Park, which is somewhat in line with the *Google* reviews distribution. It may be due to the biased population, and it is likely the case. However, it may also indicate park preferences, should a choice be offered between the three parks.

The results show that twenty-two respondents are familiar with Magnolia Dell Park, twelve of which visit the park 1-4 times per year, equally by males and females. Of the six females, five are between 29 – 46 of age (Generation Y / Millennial). Of those five, three have undergraduate degrees, two of which are employed full-time. Of the six males, four are between 18 – 28 of age (Generation Z), two of which have a diploma, and two have an undergraduate degree. Of the two with diplomas, both are employed full-time, and of the two with undergraduate degrees, one is employed full-time, and the other is only a student (see Figure 4.14).

### 5.2 The Nature of Intersections Between Influencing Factors and Park Use

#### 5.2.1 Urban Green Space Attributes

Regarding the urban green space attributes (see Figure 2.1), the quantitative results show that park size; maintenance; access; and perceived park safety all share positive and statistically significant relationships with the park use frequency. However, no statistically significant relationships were found between park use frequency and being content when

noticing other park users; park infrastructure; security infrastructure; sporting facilities; recreation facilities; amenities or natural infrastructure.

The qualitative results, however, show that from the open-ended question responses, all eight responses pertain to urban green space attributes, specifically, to safety concerns and crime; infrastructure (animal-friendliness and a restaurant); and to (a lack of) maintenance. From the closed-ended questions responses, (a lack of) park maintenance; (a lack of) facilities; distance; safety; crime; and the presence of other park users (homeless persons) are cited as reasons against park use. Amenities (the restaurant), sporting facilities (exercise) and park users (to meet people), however, are cited as reasons in favour of park use.

### **Park Size**

Regarding perceived size, the statistical relation between park visit frequency and a park's size supports the findings captured in Gozalo et al. (2019) who found that park size have positive correlations with park use<sup>17</sup>. Specifically, the statistical results show a positive relationship between the park visit frequency and the agreement of the park's size as being perfect (see Table 7.1). Note however, that 'perfect' here involves for park sizes of 3 – 3.1 hectares, as the case study parks were between 3 – 3.1 hectares in size. The quantitative results indicate that park size as being perfect, intersects with park use.

Giles-Corti et al. (2005) explained that larger public open spaces tend to have more appealing features; therefore, perhaps it is not only size related but what large parks embody, making this relationship possible, and should this finding apply to the case study parks, it may mean that the consideration of a park's size as not being perfect, may relate to a decreased, or lack of use, or to an increased hesitancy to use those parks, perhaps not due to access per se, but do to park features, and the extent to which they are aesthetically pleasing. Based on cleanliness, if park appeal is influenced by maintenance, then it may very well be the case at Magnolia Dell Park.

### **Park Access**

Regarding perceived access, the statistical relation between park visit frequency and the parks' perceived access complements the findings of Petrunoff et al. (2021) who found perceived access to parks related to park use, whereas objective park access did not strongly associate with park use in their study. Specifically, the statistical results show a positive relationship between the park visit frequency and the agreement of being able to reach and visit the park without any entry issues (see Table 7.1), which also complements Giles-Corti et al. (2005)'s study that found access to large and attractive public open spaces is related to

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<sup>17</sup> Park use in terms of the average frequency of walking, relaxing, and exercising (Gozalo, et al., 2019).

higher levels of walking. As seen during the fieldwork, the parks can be accessed without using the access points (gates). Should reductionism apply, this relationship is rather straightforward. Without park access (and thus perceived access), persons would be unable to visit the park. Therefore, more specifically perceived access, most likely informed by objective access, relates to park use. Nonetheless, the quantitative results indicate that perceived access intersects with park use.

Regarding distance, the lack of a statistical relation does not complement Schipperijn et al. (2010)'s study<sup>18</sup>, whose findings suggest the effect of distance could be the most prevalent factor for parks, however, qualitative results point to distance as being a factor as two closed-ended question responses (against park use - see Figure 4.17) pertains to distance.

Subjective or perceived travel distance to parks therefore shares a relationship with park use, but not identified via the quantitative analysis. Objective or true travel distance may also perhaps relate to park use, although not similar to Petrunoff et al. (2021)'s case, they found a disconnect between true or objective, and perceived access. Should reductionism apply here, it is also rather straightforward. If a park is too far, a person will most likely be deterred from visiting the park due to the travel distance required to reach the park. Nonetheless, the qualitative results indicate that perceived travel distance intersects with park use.

### **Cleanliness**

Regarding maintenance, the statistical relation between park visit frequency and the perceived quality of park maintenance, findings from this study is congruent with results from McCormack et al. (2010)'s who concluded that a lack of maintenance was frequently cited as a problem affecting park usage, and Fontán-Vela, et al. (2021)'s findings that poor maintenance has been reported as barriers to park use.

Specifically, the quantitative results indicate a positive and statistically significant relationship between park visit frequency and the perception that the park is being well maintained (see Table 7.1). The qualitative results also point to maintenance (cleanliness) as a factor, as one open-ended question response (against park use – see Table 4.18) and two closed-ended question responses (against park use – see Figure 4.17) pertain to park maintenance (cleanliness). Therefore, the quantitative results indicate that perceived maintenance intersects with park use.

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<sup>18</sup> This is also most likely due to the differences in measuring distance, as this research project focuses on the subject's perceived travel distance.

## **Safety**

Findings from the study also confirms that perceptions about safety relates to park use. The statistical relation between park visit frequency and respondent's perception about park safety (see Table 7.1) complements Lapham et al. (2016)'s study that found safety perception has a significant impact on park visits (Lapham, et al., 2016). In addition, the qualitative results point to safety being a factor, as four open-ended question responses (against park use - see Table 4.18) and four closed-ended question responses (against park use – see Figure 4.17) pertain to crime or safety. The quantitative and qualitative results indicate that safety perception intersects with park use.

Regarding the presence of other park users, the qualitative results point to other users' presence as a factor, as two closed-ended question responses (against park use – see Figure 4.17) pertains to the presence of homeless persons. This could be considered as being in line with Seaman et al. (2010)'s findings, where a fear of a specific group of persons (associated with anti-social behaviour) may influence the park use behaviour (Seaman, et al., 2010); therefore perhaps in this case, if homeless persons are being associated with anti-social behaviour, it may relate to fear or safety concerns, and thereby possibly influence park use. However, the nature of this relation was not statistically significant, and therefore does not complement the research of Campagnaro et al. (2020) that found a positive relationship between the number of people and perceived safety.

Perhaps it is that some respondents may prefer the presence of any users at the park; some respondents may only prefer some groups of park users, i.e., park users visibly using the park for recreational, spiritual, educational, or social purposes; some respondents may only prefer persons that they are acquainted with; or some respondents may not prefer the presence of specific park users, i.e., homeless persons, as illustrated by the qualitative results.

## **Humanmade- and Natural Infrastructure**

In assessing if the presence of natural- and humanmade infrastructure (including security infrastructure) relates to park use, the results indicate that natural infrastructure and some humanmade infrastructure relate to park use but does not share a statistically significant relationship.

However, from the qualitative results, some humanmade infrastructure are considered as factors, specifically amenities, park infrastructure, and recreational facilities or park infrastructure. For example, a few responses highlighted the value of the restaurant and walking, whilst another response mentioned the need for increased animal-friendliness (in favour of park use - see Table 4.18), but no statistically significant relationship was found between the park visit frequency, and being content when noticing these infrastructures

present in a park. These responses are therefore in contradiction with the observations made by Campagnaro et al. (2020)'s regarding the role of park infrastructure and visitation. On the other hand, responses from this study supports the observations made by Kimic and Polko (2022)'s findings involving security infrastructure and Lapham et al. (2016)'s findings regarding park facilities.

Additionally, the qualitative results further point to, arguably<sup>19</sup>, sporting facilities, park infrastructure, or natural infrastructure; and amenities; recreational facilities or park infrastructure; and facility availability as being determining factors of park visitation. From the closed-ended questions, four respondents indicated that they visits parks to exercise; one response indicated their use of the restaurant; three responses linked visits to animal-related purposes, and seventeen respondents indicated that they visit parks to enjoy nature (in favour of park use – see Figure 4.16). One closed-ended question response (against park use – see Figure 4.17) cites a lack of facilities. Nonetheless, the qualitative results indicate that some humanmade infrastructure and natural infrastructure intersect with park use.

### **5.2.2 Cultural Ecosystem Services**

Regarding the cultural ecosystem services (see Figure 2.3), the quantitative results show that only one cultural ecosystem service subfactor, recreation value service relates to park use. The qualitative results further indicate relationships between aesthetic, recreation, and social relations value service and park use. The remaining subfactors, educational value and spiritual value, share relationship with the park visit frequency.

#### **Recreation Value Service**

Regarding the recreation value service, the quantitative results show that recreation value service shares a positive relationship with the park visit frequency (see Table 7.2). The qualitative results also point to recreation value service as a factor, as one open-ended question response pertains to a restaurant, walking, (and socialisation), one response pertains to a restaurant only, and one response to animal-friendliness (in favour of park use - see Table 4.18).

Furthermore, seventeen closed-ended responses pertain to relaxation; three responses pertain to animal-related activities; one pertains to reading<sup>20</sup>; one pertains to a restaurant; and

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<sup>19</sup> Park infrastructure and natural infrastructure may be used for sport or exercise, i.e., pathways for running, grass area for sports, in addition to sporting facilities.

<sup>20</sup> Should the reading be done for recreational purposes, not educational or spiritual purposes (i.e., a research paper, or religious text). It may well depend on the intent of reading, the intent of reading at a park, and the material being read. Would it not be possible to read educational material, or material related to spirituality, be done for those purposes, or those purposes and recreational purposes, or perhaps solely for recreational purposes?

four pertain to exercise (all favouring park use – see Figure 4.16). However, per respondent and instance of recreation value service-related responses concerning both the open- and closed-ended questions, twenty-one responses indicate to recreation value service as a factor. This finding complements Gottwald et al. (2022)'s study, where they found the most prevalent stated meanings also related to recreational activities (albeit in a sense of place context), and Ko and Son (2018)'s study where respondents ascribed recreation value to urban parks.

Nonetheless, the quantitative and qualitative results indicate that recreation value service intersects with park use. The findings are rather straightforward, as parks are generally considered as recreational spaces. The recreation value service, therefore, intersects with park use, based on both the quantitative and qualitative results, indicating the importance of recreation potential at the parks.

### **Aesthetic Value Service**

The aesthetic value sharing no statistical relation with park visit frequency is in line with the findings of Giles-Corti et al. (2005), that found inconclusive results regarding the impact of public open space attractiveness on park use and greater levels of walking. The qualitative results, however, point to aesthetic value service as a factor, as seventeen closed-ended question responses pertain to enjoying nature (in favour of park use – see Figure 4.16), should the respondents experience stimulation from the natural infrastructure scenery. The qualitative results therefore complement Ko and Son (2018)'s study, where respondents ascribed aesthetic value to urban parks.

The quantitative results indicating no statistically significant relationship between aesthetic value service and park use may be partly due to the maintenance of the parks, supported by one open-ended question response. It may be that the parks lack sufficient maintenance, which negatively impacts the aesthetic value service facilitation, or it may be that the park does not facilitate the aesthetic value service based on the respondents' preferences (even though Magnolia Dell Park's cleanliness was rather high at the time of fieldwork), which may then negatively impact park use. Nonetheless, based on the qualitative results, natural infrastructure (should it contribute to aesthetic preferences) intersects with park use.

### **Social Relations Value**

The results do indicate a relationship between the park visit frequency and the social relations value service, however it is not statistically significant. The qualitative results point to social relations value service as a factor, as one open-ended question response pertains to socialisation with friends (in favour of park use – see Table 4.18), four closed-ended question responses pertain to meeting people, and fourteen pertain to spending time with family and

friends (in favour of park use – see Figure 4.16). However, per respondent and instance of social relations value service concerning both the open- and closed-ended questions, sixteen responses indicate to social relations value service as a factor. Nonetheless, the qualitative results complement Ko and Son (2018)'s study, where respondents ascribed social relations value to urban parks.

It is evident that even though the related quantitative question and qualitative responses pertain to social relations value service, the quantitative question pertains to local community events, whereas the related qualitative responses pertain more to social interaction on an individual level instead of a larger scale, such as what local community events may aim for. This may be indicative of social cohesion decay on a larger scale but social cohesion growth on a more personal scale. However, personal preference and character types are not accounted for. Nonetheless, based on the qualitative results, social relations value service intersects with park use.

### **5.2.3 Sense of Place**

The quantitative results show that place meaning and two components measuring place attachment share positive and statistically significant relationships with the park use frequency.

#### **Place Attachment**

Regarding place attachment, the quantitative results show statistically significant relationships between two place attachment items based on Jorgensen and Stedman (2001)'s approach to measuring place attachment and the park visit frequency.

Specifically, the quantitative results show a positive and statistically significant relationship between the park visit frequency and the agreement of the park being a favourite place, and the agreement of missing the park when being away from it for too long (see Table 7.3). No other statistically significant relationships are found between the remaining place attachment items of Jorgensen and Stedman (2001), and park visit frequency. In addition, no statistical significance is found between the general evaluative dimension item, and park visit frequency.

The qualitative results point to relaxation as a factor, as seventeen closed-ended question responses (in favour of park use – see Figure 4.16) pertain to relaxation purposes. This may be indicative of a disconnect between an intent to relax and truly feeling relaxed when a respondent is at the park. Nonetheless, based on the quantitative results, place attachment does intersect with park use, however only between park visit frequency and the consideration of the park as one of the respondents' favourite places to be, as well as a relationship between missing the park and park visit frequency.

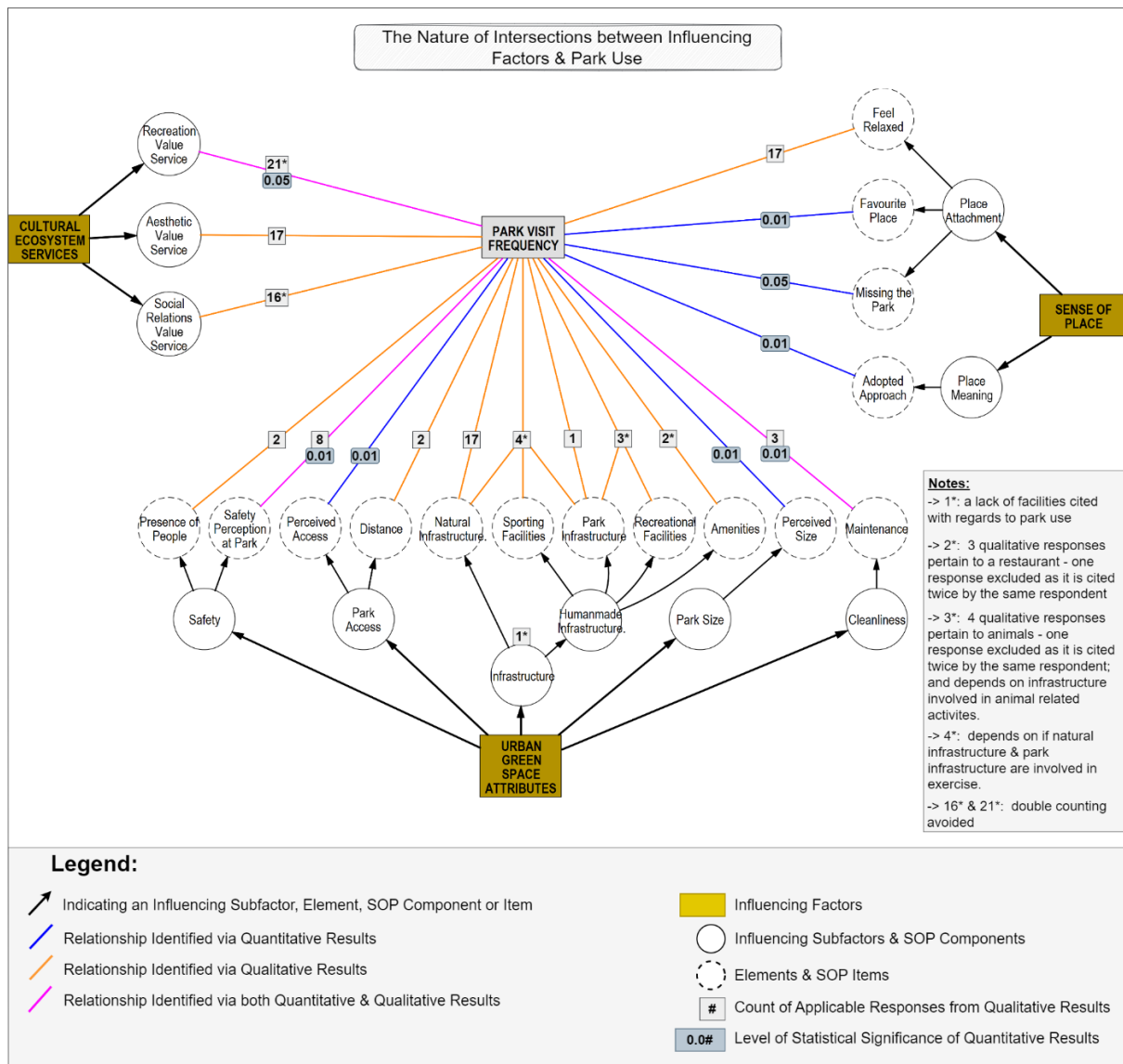
## Place Meaning

Regarding place meaning, results indicate a positive and statistically significant relationship between the adopted approach in measuring place meaning based on Masterson et al. (2017)'s study and the park visit frequency. For the respondents, a positive place meaning relates to a higher park visit frequency. Therefore, place meaning intersects with park use.

### 5.2.4 Summary

In determining if the possible relationships that were discussed in the literature review chapter, are present, it is clear from the results and discussion that the recreation value service and aesthetic value service components; place meaning and some place attachment items; cleanliness, park size, infrastructure, park access, and safety elements, all intersect with the use of parks. The following figure captures the nature of intersections between the influencing factors and park use within and close to Hatfield, City of Tshwane:

Figure 5.1 Intersections between Influencing Factors and Park Use



### **Urban Green Space Attributes**

For the safety subfactor, the presence of people qualitatively intersects with park use, and the safety perception at the park quantitatively and qualitatively intersects with park use. For the park access subfactor, perceived access quantitatively intersects with park use, and (perceived) distance qualitatively intersects with park use. For the infrastructure subfactor, natural infrastructure; amenities; sporting facilities; park infrastructure; recreational facilities; park infrastructure; and non-specified infrastructure (a lack of facilities cited in a close-ended question response) all qualitatively intersect with park use. For the park size subfactor, perceived size (in terms of being perfect) intersects with park use. For the cleanliness subfactor, (perceived) maintenance quantitatively and qualitatively intersects with park use.

### **Cultural Ecosystem Services**

For the recreation value service subfactor, the facilitation of the recreation service quantitatively and qualitatively intersects with park use. For the aesthetic value service subfactor, the facilitation of the aesthetic value service qualitatively intersects with park use. For the social relations service subfactor, the social relations value service facilitation qualitatively intersects with park use.

### **Sense of Place**

For the place attachment component, the park as one of the favourite places to be, and missing the park when being away from it for too long quantitatively intersect with park use. Feeling relaxed at the park quantitatively and qualitatively<sup>21</sup> intersects with park use. For the place meaning component, the nature (being negative or positive) of a word describing what the park means to a respondent intersects with park use.

## **5.3 The Nature of Intersections Between the Influencing Factors**

### **5.3.1 Sense of Place and Urban Green Space Attributes**

The results show statistically significant relationships between park access; safety; and park size, and sense of place items except with the general evaluative dimension item.

#### **Humanmade- and Natural Infrastructure**

The results show no statistically significant relationships between any of the sense of place components and being content when noticing humanmade- and natural infrastructure<sup>22</sup>. The results therefore do not complement Krajter Ostoić et al. (2020)'s explanation that natural infrastructure (trees with their diverse features) is crucial for place attachment. For the case

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<sup>21</sup> Depending on if the intent to feel relaxed at the park is met with truly feeling relaxed at the park.

<sup>22</sup> This can be due to the language used for or the phrasing of the questions pertaining to the humanmade- and natural infrastructure.

study parks, the results illustrate no direct intersections between sense of place and humanmade- and natural infrastructure, more specifically, being content with its presence does not intersect with the sense of place components. The results furthermore do not complement the suggestion by Stedman (2003) of a direct relationship between sense of place and landscape features.

Additionally, the results do not complement Gottwald et al. (2022)'s study that explains the physical environment offers meanings for attachment; for example, persons might have a feeling of attachment to nature's beauty or a place's possible recreational opportunities whilst noting that the physical environment shapes the boundaries of potential constructed and attributed meanings.

However, perhaps the results complement Gottwald et al. (2022)'s explanation should the enjoyment of nature (see Figure 4.16) contribute to the respondents' sense of place, as Gottwald et al. (2022) explained persons may have a feeling of attachment to nature's beauty. Last, the results complement research pointed out by Gottwald et al. (2022), where place characteristics have little impact on place attachment.

### **Park Access**

Perceived access relates to almost all place attachment components. The results show positive and statistically significant relationships between all the place attachment items of Jorgensen and Stedman (2001) and perceived access, except the general evaluative dimension item.

This finding is arguably in line with Gottwald et al. (2022)'s study, where they explained a place's accessibility is a determining factor for the experienced sense of place. Should Gottwald et al. (2022) have referred to objective access, a possible discrepancy between perceived access and true or objective access must be pointed out. Recall Petrunoff et al. (2021)'s findings where perceived access relates to park use. Furthermore, recall that the access points (gates) are not exclusively required for entry to the case study parks. Should there be little to no discrepancy between perceived access and objective access of the case study parks, then it can be argued that perceived access relates to these sense of place components only due to there being little to no disconnect between perceived and objective access, should there be a disconnect for the case study parks.

Furthermore, two speculative arguments can be made. Good access relates to a stronger sense of place (as better access could enable more park visits and thus more exposure to a park), or by developing a sense of place of a park (through park visits, for example) may contribute to developing, or a change in perceived access, as over time, persons' perceived

access change, and so a possible discrepancy between objective access and perceived access lessens over time.

Perceived access also relates positively with place meaning. The quantitative results show positive and statistically significant relationships between perceived access and place meaning. Does perceived access relate to a person's place meaning (in terms of something positive or negative), or does a park's meaning relate to the perceived access? Perhaps a person can have a negative place meaning about a park, possibly induced by anti-social behaviour of others, which may contribute to their perceived access. Or, for example, a respondent may be in favour of a park (biased) due to their place meaning of a park being positive, which contributes to their perceived access being higher, given a positive relationship.

### **Park Size**

The parks' size (3 – 3.1 hectares) being perfect also relates to a place attachment component. The results show a positive and statistically significant relationship between the park size considered as being perfect and feeling happy at the park, which is in line with Lewicka (2011)'s study that explained the type and strength of place attachment differs and is subject to factors linked with places themselves, including size. It should be noted that only one component, feeling happy at the park, shares a positive and statistically significant relationship with perceived park size.

The consideration of a park's size as being perfect relates to feeling happy at the park, or, as the respondents feel happy at the park, the park's size is considered as perfect for the respondent. The former is dependent on the park itself, and the latter on the user. Perhaps it could be that, for example, the presupposed (yet informed) idea of a park prior to its use, dictates the perception of the park's attributes and therefore contributes to the determination of its perceived value.

Additionally, the results show a positive and statistically significant relationship between the park size, considered as being perfect, and place meaning. Does the consideration of a park's size as being perfect relate to a positive place meaning of a park, or could it be that, for example, if a respondent already has a positive place meaning of a park, influenced by factors other than park size, the respondent considers that park as being perfect in size? Perhaps both these two statements hold.

## **Safety**

The results further show a positive and statistically significant relationship between safety perception and place meaning. Similar to park size and place meaning, perhaps it may be that since a park is perceived as a safe space, it relates to a positive place meaning, or since a respondent's place meaning of the park is positive, it relates to perceiving the park as a safe place. The question is, thus, given this relationship between place meaning and safety perception, what could relate to this element and component? Perhaps it may very well be that that of which relates to place meaning, may contribute to the reason for this relationship.

Stedman (2003)'s suggestion implies that meanings depend on some material reality, which in this case, could be tangible factors. However, the humanmade- and natural infrastructure, and more specifically, being content with its presence, shares no statistical relation with place meaning<sup>23</sup>.

### **5.3.2 Urban Green Space Attributes and Cultural Ecosystem Services**

The quantitative results show statistically significant relationships between safety; cleanliness; some humanmade infrastructure; park access; and park size, and all the cultural ecosystem services except the cultural heritage value service. The qualitative results are also indicative of relationships between infrastructure and the recreation value service, between natural infrastructure and aesthetic value service, and between the presence of park users and the social relations value service.

#### **Recreation Value Service**

The results show a positive and statistically significant relationship between the safety perception of the park and the recreation value service. The services offered (i.e., recreation value service) could feature in a person's safety perception of a park. Recall that the recreation value service facilitation relates to park use. Perhaps persons may be content with the presence of other park users (in this case, for example, possibly with those that frequent the park for recreational purposes, thus enabling users to justify the presence of other park users). As such, the recreation value service could potentially contribute to the safety perception of a park, which is complemented by Elmqvist et al. (2013)'s explanation that leisure opportunities of these urban ecosystems are also affected by safety and comfort.

The quantitative results further show the presence of humanmade- and natural infrastructure, specifically, being content with its presence, shares no statistically significant relationship with the recreation value service.

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<sup>23</sup> This can also be due to differences in the methodological approaches between this research project and Stedman (2003)'s study.

However, the qualitative results are indicative of possible relationships. The recreation value service facilitation may relate to the presence of humanmade- and natural infrastructure, as reasons for park use regarding recreation, include; walking (park infrastructure); relaxation; reading; animal-related activity (recreational facilities or park infrastructure); restaurant (amenities); and exercise (sporting facilities, park infrastructure, or natural infrastructure) (see Table 4.18 and Figure 4.16).

Therefore at least some infrastructure should be present to further enable, or accommodate the cited reasons, which complement, and is complemented by Elmqvist et al. (2013)'s explanation regarding recreational significance of parks, which is determined by ecological factors such as biological and structural variation and built infrastructure factors such as the supply of benches and other recreational facilities for sport. The qualitative results are therefore indicative of intersections between some humanmade infrastructure and natural infrastructure, and the recreation value service.

Additionally, the quantitative results show a positive and statistically significant relationship between considering the parks' size as being perfect and the recreation value service. The consideration of the size as perfect, contributes the perceived recreation value service facilitation, or the perceived recreation value service facilitation contributes to the consideration of the size as being perfect. In favour of the former, it may be that since the size is perfect, the respondents may consider the parks offering enough space for their recreational needs, or in favour of the latter, since the park facilitates recreation, they consider the size as perfect automatically, as a person may be biased in favour of the park, as it serves their recreational needs. Nonetheless, the results complement Giles-Corti et al. (2005)'s and Gozalo et al. (2019)'s discussion regarding a relationship between size and use, should park use involve recreation facilitated by the recreation value service.

Regarding park access, the results only show a positive and statistically significant relationship between perceived access and the recreation value service. The results complement Elmqvist et al. (2013)'s explanation that leisure opportunities are affected by accessibility. However, recall Petrunoff et al. (2021)'s findings of a difference in objective and perceived access regarding park use.

Regarding cleanliness, the quantitative results show a positive and statistically significant relationship between the perceived quality of maintenance quality and the recreation value service. Either the perceived maintenance quality contributes to recreation value service facilitation, or the recreation value service facilitation contributes to perceived maintenance quality. In favour of the former, it may be that if the perceived maintenance quality is high, it contributes to a higher recreation value service facilitation. In favour of the latter, as the parks

facilitate space for recreation, the respondents may consider the maintenance quality to be higher, perhaps depending on the infrastructure used or the extent to which it accommodates recreational purposes. The results are in line with Elmqvist et al. (2013)'s explanation that leisure opportunities are also affected by sensory annoyance elements.

### **Aesthetic Value Service**

In answering the question of if the perception of natural- and humanmade infrastructure relates the overall aesthetics of a park, the results show it to be the case. The negative and statistically significant relationship between being content when noticing park infrastructure and aesthetic value may be indicative of a trade-off between aesthetic value and park infrastructure. Should persons be less content when noticing park infrastructure, perhaps they prefer visiting parks more for their aesthetics (those that are aesthetically pleasing), or should persons visit the parks more for purposes facilitated by the aesthetic value service, the presence of park infrastructure may be less significant for persons, should the focus rest more on the aesthetics, rather than the humanmade infrastructure.

Alternatively, and perhaps more likely, the negative relationship could also be indicative of the quality of the park infrastructure itself, as pointed out by an open-ended question response that a lack of infrastructure maintenance is an issue (against park use – see Table 4.18). Aesthetics may be impacted by the maintenance quality as well, and as the maintenance sentiment is more negative than positive<sup>24</sup> (see Figure 4.15), it can explain the negative relationship between the aesthetic value service and being content with the presence of park infrastructure. This possibility is further supported by the relationship between park maintenance and aesthetic value service (see Figure 4.15).

The quantitative therefore results do not complement Campagnaro et al. (2020)'s discussion of research showing humanmade infrastructure positively correlated with picturesque quality (aesthetics), which may be due to the humanmade infrastructure pertaining to Campagnaro et al. (2020)'s discussion, is of high visual quality. Nonetheless, the results show a statistically significant relationship between park infrastructure and the aesthetic value service.

The results show no other relationships between humanmade infrastructure, and aesthetic value service<sup>25</sup>, thus not complementing Gozalo et al. (2019)'s study, which found a relationship between the perception of groves, shade and aesthetics, perhaps also due to it being of good visual quality. A possible explanation may be that the natural infrastructure quality, perhaps due to perceiving the natural infrastructure's quality as mediocre, not being

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<sup>24</sup> Based on the call for maintenance to remain the same or to increase.

<sup>25</sup> Recall Ko and Son (2018) described that aesthetic value includes natural scenery stimulation (Ko & Son, 2018).

aesthetic enough, or not aesthetic at all, which is supported by the negative and statistically significant relationship between perceived maintenance and natural infrastructure (see Table 7.4).

Nonetheless, the results point to natural infrastructure as a factor in terms of natural scenery stimulation (see Figure 4.16), however the nature of this relationship was however not statistically significant. Therefore, natural infrastructure intersects with the aesthetic value service. However, it being possibly impacted by the quality of the natural infrastructure, which may significantly depend on the maintenance quality and schedule.

Regarding the maintenance quality, the results show a positive and statistically significant relationship between the perceived park maintenance quality and the aesthetic value service. Should the parks be perceived as well maintained, the respondents may consider the aesthetic value service facilitation high. Or, should the respondents consider the parks as being more aesthetically pleasing to them, they may consider that the parks are well maintained. Nonetheless, the results complement McCormack et al. (2010)'s explanation that poor maintenance is also likely to have a negative impact on the appearance and overall perception of park quality. Perceived maintenance, therefore, intersects with the aesthetic value service.

Now, a possible relationship between park maintenance and the safety perception of the parks may be linked to aesthetic value service facilitation (see Table 7.4). Perhaps through maintenance, the parks facilitate the aesthetic value service better, and so, should it be the case, it may be that should the parks be well maintained, the parks can better facilitate the aesthetic value service, and should the facilitation then be better, (parks being more aesthetically pleasing), the safety perception of the parks are better, which may, and perhaps only to an extent, overrule objective safety at the parks. Regardless, the relationship between perceived maintenance and the safety perception of the parks complements McCormack et al. (2010)'s explanation that poor maintenance is likely to impact the safety perception of the parks (McCormack, et al., 2010).

The results further show a positive and statistically significant relationship between perceived access and the aesthetic value service. Perceived access relates to the aesthetic value service in terms of access to aesthetic pleasures (should the parks be aesthetically pleasing) or should the aesthetic value service facilitation contribute to perceived access, it may be that the desire to access aesthetic pleasures perhaps partly contributes to the perceived access of the parks. It could also be that perceived access serves as a subcomponent of aesthetics, however unlikely, and should objective access (which may influence perceived access) contribute to the facilitation of the aesthetics, for example, an arch of flora serving as an entry point.

### **Educational Value Service**

The quantitative results show a positive and statistically significant relationship between being content when noticing park users and the educational value service whilst pointing out that safety perception of the parks does not share a statistically significant relationship with the educational value service. Yet, recall the qualitative results point to other users' presence as a factor (against park use – see Figure 4.17).

Two questions arise. Does being content with the presence of park users contribute to the parks' (perceived) ability to facilitate an educational environment, or does the educational value service facilitation, contribute to persons' being content with (or perhaps being more appreciative of) the presence of park users?

For the former, should persons feel safe (when content) with the presence of other park users, it may contribute to a park's (perceived) ability to facilitate an educational environment or the possibility to benefit from its facilitation via enabling a more positive perception of the parks' ability to facilitate the educational value service. For the latter, it may be due to persons considering the possibility of other park users visiting the park for purposes facilitated by the educational value service; since then, for park users, the other park users' motives for using the park are justified or warranted. These two arguments also complement Seaman et al. (2010)'s findings Where a fear of a specific group of persons (that is associated with anti-social behaviour) may influence the park use behaviour.

The results further show a positive and statistically significant relationship between being content with park infrastructure and educational value service. This may be due to the park infrastructure (which includes benches) enabling or accommodating the educational value service (such as a suitable place for educational activities), or, due to the (perceived) facilitation of the educational value service, persons may be content when they notice the park infrastructure as they, or others, can utilise said infrastructure in, or for educational activities, for example, a place to sit and conduct research. Nonetheless, humanmade infrastructure, specifically park infrastructure, intersects with educational value service.

### **Social Relations Value Service**

The results show a positive relationship between the consideration of the parks' size as perfect and the social relations value service. It can be either that since the parks' size is perfect, it further enables the facilitation of local community events, or, since the park offers local community events, the parks are perfect in size for the respondents, as they may prefer, or be willing to frequent local community events hosted at the parks. Nonetheless, the results show the consideration of the parks' size as perfect intersects with the social relations value service.

Furthermore, the results are also indicative of an intersection between the presence of park users and the social relations value service, as sixteen<sup>26</sup> responses indicate to the presence of people (acquainted with and non-acquainted with) as a factor. This further points to an intersection, as it is indicative of the social relations value service facilitation (albeit on a more personal level from the qualitative results), given that to meet people, involves the intent to form relations with persons other than family or friends.

### **Spiritual Value Service**

The results show a positive and statistically significant relationship between being content when noticing recreational facilities and the spiritual value service, and is in line with Shao and Liu (2017)'s explanation regarding sensory experience. The case can be similar to the park infrastructure and educational value service.

The parks' perceived spiritual value service facilitation may contribute to persons' being content when noticing the recreational facilities, should the recreational facilities be used for purposes relating to the spiritual value service. However, persons being content with the presence of recreational facilities may consider that these recreational facilities further enable or contribute to the spiritual value service facilitation, perhaps not for themselves, but for other park users, which in turn, can lead to the thought of more persons being at the park, and additionally, another manner where persons can justify the presence of other park users, for them in order to feel safe, or less unsafe.

The results further show positive and statistically significant relationships between both the park access factors (perceived travel distance and access) and the spiritual value service. Given the spiritual value service facilitation, the perceived park access and perceived travel distance (in the sense that it is not too far to travel or too difficult to access since a respondent may greatly value the spiritual value service) or, as the perceived access and perceived travel distance are adequate, the respondents may be more familiar with the parks, and so the parks serve as a place that facilitates the spiritual value service for the respondents.

### **Cultural Heritage Value Service**

The cultural heritage value service shares no statistically significant relationship with any of the urban green space attribute elements. Based on Daniel et al. (2012)'s explanation, this can be due to the humanmade- and natural infrastructure not embodying or representing cultural characteristics that can be linked to, or is of significance, for the respondents. The

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<sup>26</sup> Per respondent and per instance of social relations value service with respect to both the open- and closed-ended questions.

case study parks, specifically Magnolia Dell Park, do not embody explicit tangible cultural elements associated with the country, which may also explain this finding.

### **5.3.3 Cultural Ecosystem Services and Sense of Place**

The results show that the recreation and spiritual value services all share positive and statistically significant relationships with all the place attachment items of Jorgensen and Stedman (2001), including the general evaluative dimension item. However, the aesthetic value service also shares relationships with all the place attachment items, except with the general evaluative dimension item. The educational and cultural heritage value service only share a relationship with two place attachment items, feeling happy at the park, and missing the park when away from it for too long, respectively. The social relations value service shares only one relationship with feeling happy at the park. As for place meaning, only the recreation, aesthetic, educational, and spiritual value services share relationships with the adopted place meaning item based on Masterson et al. (2017).

Note that Sense of place has been considered a cultural ecosystem service in spatial assessment research (Gottwald, et al., 2022), which could also explain why there are significant statistical relationships between the SOP components and CES elements.

#### **Place Attachment**

From the results, a park that facilitates recreation value service, aesthetic value service, and spiritual value service is accompanied by strong place attachment, which partly complements Gottwald et al. (2022)'s findings of spiritual services having a high attachment score.

Should these services be efficaciously facilitated, it may contribute to a stronger place attachment. Specifically, the facilitation of these services, and therefore the presence of these services, may contribute to the respondents being relaxed; feeling happy; missing the place when they are away from it for too long; considering a case study park as their favourite place; and their general sentiment about the park.

However, recall the relationship between the presence of other park users and recreation value service. Perhaps, it is not the recreation value service that induces a stronger place attachment. However, rather the better a park facilitates the recreation value service, the more justifiable the presence of other park users is, the less unsafe the respondents feel, and thus the more they visit the park, and so it contributes to a stronger place attachment. Nonetheless, the relationships between the place attachment items and recreation value service complement Gottwald et al. (2022)'s explanation that persons may also have a feeling of attachment to a place's possible recreational opportunities.

For the aesthetic value service, recall the relationship between park maintenance and aesthetic value. Perhaps, the level of maintenance is responsible for the degree to which a park facilitates the aesthetic value service. Park maintenance does share a relationship with the park visit frequency, and so, perhaps, the higher the maintenance quality is, the better the aesthetic value service facilitation and perceived maintenance, the more the respondents may be inclined to visit the park, and should they then visit the park more frequently, the stronger their place may attachment (and place meaning) become, as according to Larson et al. (2013), people form attachments and create meanings over time.

For the social relations value, the parks' ability to facilitate a space for local community events shares a relationship with the feeling relaxed. Perhaps, it is a matter of social cohesion that serves as an underlying factor in this relationship. Should a park host such events, and should it then be attended by persons, perhaps on a regular basis, it could be indicative of a more integrated (local) society, which may then translate into feeling relaxed; however only speculative.

For the cultural heritage value service, it may be that if a park facilitates this service, attachment to cultural heritage induces feelings of missing the park, or feelings of missing the park may be induced by persons' attachment to the facilitated cultural heritage value service.

### **Place Meaning**

The results show that the recreation value service is related to the place meaning item. From the results, a higher perceived ability of the parks to facilitate the recreational service relates to a more positive place meaning of the park. The case is the same with aesthetic value service, educational value service and spiritual value service. Place meaning of the park positively relates to the perceived ability of these services' facilitation. This complements some of the intersections between the urban green space attributes and the cultural ecosystem services, at least regarding the recreation and educational value services.

First, recall the relationship between the recreation value service and the presence of other park users. Given that perceived recreation value also relates to safety perception and that safety perception links with place meaning and park use frequency, it is concluded that the recreation value service relates to place meaning, not only due to the service facilitated which persons go to enjoy, but also due to the justification of other park users.

The case is similar to the educational value service, as the presence of other park users positively relates with educational value service. Even though the educational value service does not share a relationship with the park visit frequency, it does with the presence of other park users. Recall the relationship between place meaning and the safety perception of the parks. Should the educational value service facilitation be high, it may enable additional

justification of the other park users' presence, which in turn may contribute to more park use or an increased willingness to visit parks. In addition, good, perceived educational value service facilitation relates with a high place meaning, which in turn, can mean more park use, or at least, an increased willingness to visit parks, as place meaning positively relates with park visit frequency.

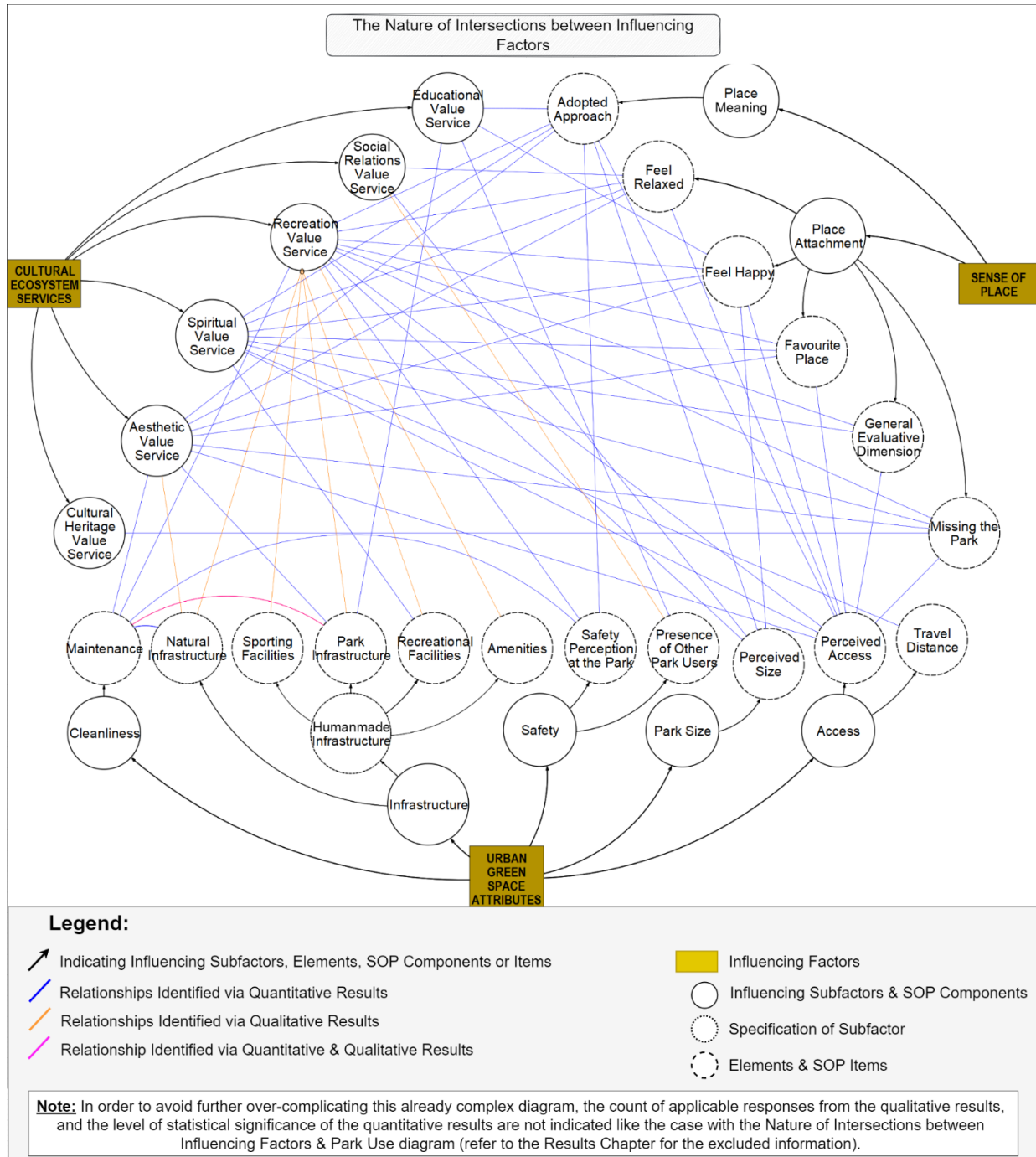
Similar case with the aesthetic value service. Recall the results illustrating 'to enjoy nature' as a significant reason to visit parks. Furthermore, recall the relationship between park maintenance and the aesthetic value service. Recall the relationship between park visit frequency and park maintenance. Should the perceived level of maintenance be high, the aesthetic value service facilitation, or its ability to facilitate the service, may be high, and the park visit frequency, or the willingness to visit the parks more frequently may be or becomes higher over time.

Similar case with the spiritual value service. Although the perceived ability to facilitate the spiritual value service does not relate to park visit frequency, place meaning does. Recall that recreation facilities relate with the spiritual value service. Perhaps, if recreation facilities enable, or at least contribute to the spiritual value service facilitation, then by understanding that the spiritual value service relates to place meaning, and place meaning relates to park visit frequency, perhaps by enhancing the presence of recreation facilities to increase the level of content when noticing it, it may not only enable more park use or a higher willingness to visit the parks but contribute to an increased justification of the presence of other park users, despite moral implications, perhaps even if these park users don't visit the parks for the spiritual value service or the recreation facilities.

#### **5.3.4 Summary**

It is clear from the results and discussion that there are numerous quantitative intersections and a few qualitative intersections between the influencing factors. The following figure captures the findings:

Figure 5.2 Intersections between Influencing Factors



### **Sense of Place and Urban Green Space Attributes**

For the safety subfactor, the safety perception of the parks quantitatively intersects with place meaning. For the park access subfactor, feeling relaxed; feeling happy; the park as one of the favourite places to be; missing the park when being away from it for too long; and place meaning, quantitatively intersects with perceived access. For the park size subfactor, feeling happy; and place meaning intersects with size (in terms of being perfect).

### **Urban Green Space Attributes and Cultural Ecosystem Services**

The educational value service quantitatively intersects with being content with the presence of other park users and being content with the presence of park infrastructure. The social relations value service quantitatively intersects with size (in terms of being perfect), and qualitatively intersects with being content with the presence of other park users.

The recreation value service quantitatively intersects with park size (in terms of being perfect); perceived access; with safety perception at the parks; and (perceived) maintenance, and qualitatively intersects with amenities; recreational facilities; park infrastructure; sporting infrastructure; and natural infrastructure.

The spiritual value service quantitatively intersects with being content with the presence of recreational facilities; perceived access; and (perceived) distance. The aesthetic value service quantitatively intersects with park infrastructure; perceived access; and perceived maintenance, and qualitatively intersects with natural infrastructure.

### **Cultural Ecosystem Services and Sense of Place**

For place attachment, feeling relaxed at the park quantitatively intersects with recreation value service; aesthetic value service; social relations value service, and spiritual value service. Feeling happy at the park quantitatively intersects with recreation value service; aesthetic value service; educational value service, and with spiritual value service.

The park as one of the favourite places to be quantitatively intersects with recreation value service; aesthetic value service; and with the spiritual value service. Missing the park when being away from it for too long quantitatively intersects with the recreation value service; aesthetic value service; cultural heritage value service, and spiritual value service.

The general emotive dimension quantitatively intersects with recreation and spiritual value services. Place meaning quantitatively intersects with recreation value service; aesthetic value service; educational value service, and spiritual value service.

### **Maintenance and Urban Green Space Attributes**

For cleanliness, being content with the presence of park infrastructure quantitatively and qualitatively intersects with perceived maintenance; being content with the presence of natural

infrastructure quantitatively intersects with perceived maintenance; and with safety, specifically, with safety perception at the parks.

## **5.4 Implications and Recommendations**

The research findings illustrate the complex nature of urban green space attributes, cultural ecosystem services, and sense of place, specifically, how these factors relate with one another and with park use. However, the solutions to the complexity are rather simple.

### **5.4.1 Park Use**

Safety, cleanliness (perceived maintenance), the recreation value service, aesthetic value service and social relations value service facilitation should be focussed on to improve the park use experience for current park users and to accommodate non-park users, should the influencing factors be the significant aspects (different from the influencing factors, for example, time availability, weather, upbringing) that dictate park use (and non-park use) behaviour.

A programme or initiative that simultaneously focuses on these subfactors and elements can improve the park user experience and sentiment about parks. By doing so, it is possible that addressing one aspect, for example, maintenance, will be accompanied by changes in safety perception, as safety and (perceived) maintenance may be addressed simultaneously (see Table 7.4). To improve perceived maintenance, the enhancement of actual maintenance can assist. Enhancing actual maintenance and cleanliness can assist with a safer perception at the parks. A safer perception of the parks may assist with an increased sentiment and furthermore assist with an increased willingness to visit parks, which may translate into park use. This does not mean that addressing maintenance will cause a change in safety perception, but rather what is done in addressing perceived maintenance may also assist with safety perception.

Furthermore, the negative relationship between these infrastructures and perceived maintenance may change by improving the quality of natural and park infrastructure (which may be possible via addressing actual maintenance itself). Whilst noting Magnolia Dell Park's maintenance appeared to be efficient on the day of the fieldwork, however, as concluded from the online reviews, the maintenance at the parks varies from time to time. The negative relationships are likely a result of two possible reasons:

Reason one is that maintenance is objectively inefficient, resulting in the maintenance quality being perceived as inefficient (that spills over to the aesthetics and safety perceptions of the parks), resulting in hesitancy in park use. For reason two, recall that even though nineteen respondents are neutral about whether the park is well maintained, seventeen of those respondents would like to see the maintenance level to increase. Additionally, six non-park

users call for maintenance to remain the same, even though they are neutral about whether the park is well maintained. One can perhaps consider reason two as a causal mechanism, which is that presupposed or outdated ideas that lead to misperceptions (a disconnect between what is and what persons perceive there is), after all, de la Barrera et al. (2016) added that research indicate preferences and perceptions concerning green spaces, influence the actual use of green spaces significantly (de la Barrera, et al., 2016).

By speculating, a shift in persons' perspectives may occur when people become aware of a disconnect between what truly is and their perceptions of what is. Should they welcome this shift in perspective, and in this context, their sense of place, may also change, along with a range of other perceptions, i.e., perceived maintenance and safety perception.

In order to become aware of a possible disconnect, this can be done by addressing the social relations value facilitation as well. Social initiatives could be hosted at the parks, either organised by the private sector, public sector or via public-private partnerships. Given that the operational maintenance regarding the public sector involves engaging with non-governmental organisations, the public sector can approach and collaborate with such organisations. These organisations could direct these social initiatives, and where the private sector is involved (i.e., *Huckleberry's Restaurant* and *Relish Bistro*), further cooperation is ideal.

These events should be monetised. The capital generated, or a percentage of the generated capital through these events, should go to social programmes assisting homeless persons in enhancing their quality of life with the aim of reducing poverty. By doing so, not only will the facilitation of the social relations value be improved vis a vis a more cohesive community, but it will also benefit both the public sector, private sector and non-governmental organisations. Should these social initiatives be successful, it may further increase the willingness to use the parks outside the social initiative events as well. By increasing the park use willingness, park use may increase, contributing to an increase in persons' becoming aware of their misperceptions, which then, itself, may ultimately enhance their sense of place.

Should these elements and subfactors be addressed, it may also enhance the recreation value service facilitation, which may increase non-users' park use willingness. However, recall the qualitative relationships between the recreation value service, natural infrastructure and four humanmade infrastructure elements. Should these infrastructures be used in recreational activities, it should then be noted that these infrastructures should also be included to address the recreation value service facilitation. It may enhance park use, overall park use experience and, in turn, perhaps contribute to a stronger sense of place.

### **5.4.2 UGS Planning**

In the formulation of UGS policy and planning, instead of compartmentalising park challenges and their solutions, a systems approach should be considered. This may enable the identification of areas that can be addressed simultaneously, ensuring a more efficient budget allocation. Should a more efficient budget allocation lead to a capital surplus, the surplus should be used to host public participation events for information on the sentiment and perceptions held by park- and non-park users, which should guide future UGS policy and planning. From the online reviews, it is clear that park sentiment is more fluid than fixed. Therefore, regular liaison between the public sector and the public will enable up-to-date information on where the focus should rest. The ultimate aim should be a more fixed (and positive) sentiment about the parks.

For all local urban green space planning related policy, and for the (upcoming) Tshwane Open Space Framework specifically, a classification of parks in terms of cultural ecosystem services they offer should be added according to rank. Should this be done, it may enable the identification of areas requiring attention and the validation of the attention areas via the public participation events while based on the public's park use needs.

UGS policy and planning should also allow and enable community initiatives at parks regarding cleanliness (where applicable). Recall Žlender and Gemin (2020)'s explanation that sense of place is considered a determining factor of positive behavioural intentions towards an area. They explained that people's meanings and values connect with sense of place, and as such, sense of place incorporates beliefs about how places should be managed and developed in the future. Therefore, recognising people's sense of place to effectively manage and maintain environmental quality is crucial (Žlender & Gemin, 2020). It will be beneficial for both the people and the public sector. For people, they will get to contribute to and foster a sense of community. For the public sector, maintenance costs may decrease. This may further contribute to the social relations value service and its facilitation. This could also apply for public open green spaces outside of the City of Tshwane.

Furthermore, as with Magnolia Dell Park, the public sector should approach *Relish Bistro* for a partnership regarding maintenance. Should the maintenance quality improve, the park's sentiment may improve, and park use may increase, meaning more clientele and, thus, more revenue. Should the restaurant carry the total cost incurred, then in the short term, it may not be profitable at all. However, in the medium- and long run, should the sentiment of the park have improved, it may lead to more revenue and thus profit.

In general, urban green space policy, particularly the TOSF, should be updated more frequently, as it has been more than fifteen years since its latest publication. Additionally,

policy should be enacted, or at the very least approved, before referring to said policy, stating that they pertain to open spaces like the case with the Gauteng Planning and Development Act, (Act No. 3 of 2003).

As explained by du Toit et al. (2018), in terms of governance, it has been found that the Global South struggles from poor systems of formal government and planning that curbs the governance of urban ecosystem services. Policy trade-offs are also evident among urban development and environmental priorities (du Toit, et al., 2018). As with the TOSF2005, the disconnect within the policy and regulatory environment is evident and should be addressed.

## 6 CHAPTER SIX: CONCLUSION

Chapter Six serves as the conclusion for the research project. It serves as a summary of the research project whilst providing a critique of this research project and further research recommendations. It reintroduces the research project, the influencing factors and briefly summarises the research methodology. A summary of the findings and implications are then provided, followed by the research critique and closing off with further research recommendations.

### 6.1 Introduction

The SDG 11 calls to “Make cities and human settlements inclusive, safe, resilient and sustainable” (United Nations, 2017, p. 12). In addition, Target 11.7 of SDG11 involves providing universal accessibility to green and public spaces that are safe, inclusive, and accessible with specific reference to women, elderly persons, children, as well as persons with disabilities. Urban sustainability must facilitate and maintain a successful flow between ecosystem services and the well-being of persons via environmental, economic and social measures (Wu, 2014). Urban green spaces, critical elements of urban ecosystems, significantly contribute to sustainable development, scenery and environmental character, quality of life (Jim & Chen, 2006), and human well-being whilst providing environmental benefits (Sun, et al., 2019).

However, these spaces face a range of issues, including low maintenance and inadequate amenities (Shackleton & Blair, 2013). Moreover, some obstacles to sustainable ecosystem service provision include socio-cultural values and perceptions, a lack of capacity, governance, a lack of data, and climate (du Toit, et al., 2018). Policy trade-offs are also evident among urban development and environmental priorities (du Toit, et al., 2018). Moreover, due to a lack of data on urban ecosystem services, there is a paucity of evidence to demonstrate the benefit of adopting urban green infrastructure in Sub-Saharan Africa (du Toit, et al., 2018).

The crux of this research was to understand the possible factors that relate to persons’ use of urban green spaces and the nature of intersections between the influencing factors within and close to Hatfield, City of Tshwane. The research objectives were met by identifying factors that relate to urban green space use, by creating an understanding about possible relationships between these factors, and ultimately, by providing recommendations based on the findings.

### 6.2 Influencing Factors

The influencing factors identified and investigated were urban green space attributes, cultural ecosystem services and sense of place. First, urban green space attributes were investigated.

This factor included aspects relating to cleanliness; park access; size; infrastructure; and safety.

Research shows that the size (Giles-Corti et al., 2005; Gozalo et al., 2019), maintenance quality, lighting, and a range of infrastructure (de la Barrera et al., 2016; Campagnaro et al., 2020) have all been identified as key elements that relate to the utilisation of green spaces (de la Barrera, et al., 2016). In addition, accessibility (Krajter Ostoić et al., 2020; Seaman et al., 2010), perceived proximity, vegetation (Krajter Ostoić, et al., 2020), the presence of trees, water bodies, and the availability of infrastructure such as walking paths (Giles-Corti, et al., 2005), and park maintenance (McCormack, et al., 2010) are also factors that could relate to the use of public open spaces.

Second, cultural ecosystem services were investigated. This includes the recreation value; aesthetic value; educational value; spiritual value; and social relations value services. Ko and Son (2018) discovered that recreation value, social relations value, and aesthetic value services were ascribed to urban parks, somewhat different from those ascribed to forests. While the cultural ecosystem services' distributions were relatively similar across various green space types (i.e., forests, parks, and public facilities), their respondents associated spiritual and social relations values to forests and urban parks (Ko & Son, 2018).

Moreover, and albeit from a sense of place perspective, Gottwald et al. (2022)'s study illustrates the most prevalent stated meanings (free-listing exercise) related to recreational activities, aesthetic values and well-being. The most commonly listed meanings via the cultural ecosystem service selection (multiple response exercise) are nature experience and education, social relations, and aesthetic appreciation (Gottwald, et al., 2022). For place attachment, the researchers discovered one of the highest attachment scores was for spiritual services (Gottwald, et al., 2022). It was therefore important to investigate cultural ecosystem services regarding urban green spaces.

Last, sense of place was investigated as the third and final influencing factor. Sense of place represents two components, place meaning, and place attachment (Raymond, et al., 2017). The physical environment offers meanings for attachment; for example, persons might feel attached to nature's beauty or a place's possible recreational opportunities while noting that the physical environment shapes the boundaries of potential constructed and attributed meanings (Gottwald, et al., 2022). Additionally, the type and strength of place attachment differs and is subject to factors linked with places themselves, such as size, physical characteristics, and people (including social relations) (Lewicka, 2011).

It was therefore important to investigate all the influencing factors regarding urban green spaces, how they relate to park use, and with one another.

### 6.3 Research Methodology

The research objectives for this research project were, to identify key policy and regulatory directives regarding urban green space use and planning within the City of Tshwane; to capture and assess the nature of the influencing factors in decision making to utilise parks within the case study area, as examples of urban green spaces in the City of Tshwane; to evaluate the nature of intersections between cultural ecosystem services, green space attributes, and sense of place, as influencing factors in decisions to utilise parks within the case study area; and to provide recommendations based on the findings of the study that could inform more inclusive urban green space utilisation and planning.

To meet the stated aims, the researcher applied a mixed method approach involving quantitative and qualitative data analysis, underpinned by a critical realist and systems approach. Three parks were selected as the case study area. This study investigates possible influencing factors on park use, focusing on a selection of parks within the City of Tshwane, involving a literature review, an exploration of online reviews about these parks, Google review ratings, as well site visits. The researcher does not argue from a causal point of view, but rather correlations or relationships that can be found between possible influencing factors and between these factors and park use.

Primary data was collected using a Google form questionnaire consisting of open and closed-ended questions and Likert scale questions. The questionnaire data was stored in Google Sheets, which, after the period of data collection, was exported, organised and processed into Microsoft Excel format. Afterwards, Spearman's Rho correlation tests were conducted to identify relationships between the factors and with park use. A thematic analysis was conducted for the qualitative analysis to interpret the responses to the open-ended questions. Finally, the researcher conducted a document analysis of related legislative frameworks, which included the Tshwane Open Space Framework of 2005 surrounding parks within the City of Tshwane to identify key policy and regulatory directives and the extent to which these were applied in practice were examined during site visits to the parks. Due to the fact that the research was conducted during 2021, when COVID-19 regulations were still enforced, the option to use google forms was deemed appropriate.

## 6.4 Objectives and Findings

### 6.4.1 Policy and Regulatory Directives

The key policy and regulatory directives identified at the time of the TOSF2005, involved the following:

**International scale** (City of Tshwane, 2005, p. 105):

- Guidelines for Protected Area Management Categories (1994)
- 1992 Convention on Biological Diversity
- UNESCO Convention: Protection of the World Cultural and Natural Heritage (1972)
- Commitment to the World Summit on Sustainable Development (2002)
- Ramsar Convention (1971)

**National Scale** (City of Tshwane, 2005, pp. 106 - 108):

- Constitution of the Republic of South Africa (1996)
- National Environmental Management Amendment Act, 2004 (Act No. 8 of 2004) (NEMA)
- Development Facilitation Act, 1995 (Act No. 67 of 1995) and the DFA regulations for Gauteng (Gen Notice 3004, 30 August 1996)
- Environment Conservation Act, 1989 (Act No. 73 of 1989)
- Promotion of Administrative Justice Act, 2000 (Act No. 3 of 2000)
- National Heritage Resources Act, 1999 (Act No. 25 of 1999)
- National Forests Act, 1998 (Act No. 84 of 1998)
- National Water Act, 1998 (Act No. 36 of 1998)
- Biodiversity Act, 2004 (Act No. 10 of 2004)

**Provincial Scale** (City of Tshwane, 2005, p. 109):

- Gauteng Planning and Development Act, (Act No. 3 of 2003)
- Gauteng Removal of Restrictions Act, 1996 (Act No. 3 of 1996)

**Regional and Local Scale** (City of Tshwane, 2005, pp. 110 - 115):

- Tshwane Metropolitan Spatial Development Framework
- Tshwane Integrated Environmental Policy, 2004
- Gauteng Departmental of Agriculture, Conservation and Environment In-house Red Data Policy Document, 2004
- Gauteng Department of Agriculture, Conservation and Environment In-house Ridges Policy Document, 2004

- Gauteng Department of Agriculture, Conservation and Environment In-house Conservation Plan (2004)
- The Environmental Resource Plan, 1999

**Local Scale** (City of Tshwane, 2005, pp. 109,110):

- [Draft] Land Use Management Bill 2001 (Government Gazette 22473, 20 July 2001)
- Municipal Systems Act, 2000 (Act No. 32 of 2000)
- Municipal Structures Act, 1998 (Act No. 117 of 1998)
- Town-planning and Townships Ordinance 15 of 1986

Note that some policies or directives may have been updated, repealed, or replaced, and more recent directives or policies have been added, such as the Spatial Planning and Land Use Management Act, 2013 (Act No. 16 of 2013), and as such, the following should be noted:

A number of national statutes were repealed by the Spatial Planning and Land Use Management Act of 2013, including the Development Facilitation Act 67 of 1995 (van Wyk, 2020, pp. 8,22). Additionally, NEMA repealed most of the Environment Conservation Act 73 of 1989 (ECA) and its environment impact assessment regulations (van Wyk, 2020, p. 416), whilst noting that the National Environmental Management Act 107 of 1998 (van Wyk, 2020, p. 131) is the overarching environmental statute (van Wyk, 2020, p. 417). Furthermore, ECA regulations were replaced by the Environment Impact Assessment Regulations in 2006, which then later got replaced by the Environment Assessment Regulations in 2010 and 2014 (van Wyk, 2020, p. 416).

In terms of the provincial scale, the proposed Gauteng Planning and Development Act 3 of 2003 was never put into operation (van Wyk, 2012, p. 3); however, it is being replaced (van Wyk, 2012, p. 61), whilst noting that in 2011 a draft Gauteng Planning and Development Bill was circulated for comment (van Wyk, 2020, p. xii). According to the TOSF2005, the Gauteng Removal of Restrictions Act, 1996 (Act No. 3 of 1996) would have been repealed by the Gauteng Planning and Development Act 3 of 2003 (City of Tshwane, 2005, p. 109); however, it was replaced by the Spatial Planning and Land Use Management Act of 2013 (van Wyk, 2020, p. 391).

In terms of the regional and local scale, the only information found regarding the Gauteng Conservation Plan, is that the Gauteng Conservation Plan Version 3.3 (2011) (Gauteng Department of Agriculture and Rural Development, 2011) is the most contemporary version.

Last, in terms of the local scale, the draft Land Use Management Bill of 2001 was followed up with other drafts; however, they remained drafts (van Wyk, 2020, p. 4). Concerns about the Bill's constitutionality were raised and later withdrawn (van Wyk, 2020, p. 58). As for the Town-

planning and Townships Ordinance 15 of 1986, it is to be repealed by Gauteng Planning and Development Act, Act 3 of 2003, according to the TOSF2005 (City of Tshwane, 2005, p. 110); however, van Wyk (2020) explained that the Town-planning and Townships Ordinance 15 of 1986 is still applicable, containing detailed provisions for the creation of town planning schemes, but will be repealed once new provincial legislation is in place (van Wyk, 2020). The ordinance, however, is subject to the Spatial Planning and Land Use Management Act (van Wyk, 2020, p. 37).

#### **6.4.2 Park Use and Influencing Factors**

The nature of the influencing factors in decision-making to utilise parks within the case study area are as follows:

Regarding UGSA and park visit frequency, positive and statistically significant relationships were found between park visit frequency, and park size, perceived access, safety perception of the parks, and park maintenance. The qualitative results further show intersections between park visit frequency, and the presence of people, travel distance, natural- and humanmade infrastructure.

Regarding UGSA and park maintenance, negative and statistically significant relationships were found between park maintenance, and park infrastructure and natural infrastructure, and a positive and statistically significant relationship was found between park maintenance and safety perception at the parks. The qualitative results also indicate an intersection between park maintenance and park infrastructure.

Regarding CES and park visit frequency, a positive and statistically significant relationship was found between park visit frequency and the recreation value service. The qualitative results also show an intersection between park visit frequency and the recreation value service, but also with the aesthetic value service and social relations value service.

Regarding SOP and park visit frequency, positive and statistically significant relationships were found between park visit frequency, and two place attachment components (the park as a favourite place to be, and missing the park when away from it for too long), and place meaning.

#### **6.4.3 Between Influencing Factors**

The nature of intersections between cultural ecosystem services, green space attributes and sense of place, as influencing factors in decisions to utilise parks within the case study area, are as follows:

Regarding SOP and UGSA, positive and statistically significant relationships were found between almost all the sense of place components (except the general evaluative item) and park access; between the feeling happy when at the park component and park size; and between place meaning and park size, and safety perception at the park.

Regarding UGSA and CES, positive and statistically significant relationships were found between the recreation value service, and park size, perceived access, park maintenance and safety perception at the parks. The qualitative results also indicate intersections between recreation value service, and natural infrastructure, sporting facilities, park infrastructure, recreational facilities, and amenities. For the aesthetic value service, perceived access and park maintenance share statistically significant relationships with the aesthetic value service. A negative and statistically significant relationship was also found between the aesthetic value service and park infrastructure. The qualitative results furthermore indicate an intersection between the aesthetic value service and natural infrastructure.

For the educational value service, the presence of other park users, and park infrastructure share a positive and statistically significant relationship with the educational value service. As for the social relations value service, only park size shares a positive and statistically significant relationship with the social relations value service. Last, the spiritual value service shares positive and statistically significant relationships with, recreational facilities, perceived access, and perceived travel distance.

Regarding CES and SOP, all of the sense of place components shares a positive and statistically significant relationship with the recreation value service and the spiritual value service. The aesthetic value service shares a positive and statistically significant relationship with place meaning and all the place attachment components, except with the general evaluative item. The educational value service only shares a positive and statistically significant relationship with place meaning, and one place attachment component (feeling happy when at the park). The social relations value service only shares a positive and statistically significant relationship with one place attachment component (feeling relaxed at the park). Last, the cultural heritage value service only shares a positive and statistically significant relationship with one place attachment component (missing the park when away from it for too long).

## **6.5 Implications**

### **6.5.1 Park Use**

Safety, cleanliness (perceived maintenance), the recreation value service, aesthetic value service and social relations value service facilitation should be focussed on in order to improve the park use experience for current park users and to accommodate non-park users, should

the influencing factors be the significant aspects that contribute park use (and non-park use) behaviour. Public private partnerships can assist, and be beneficial for all the parties involved.

### **6.5.2 UGS Planning**

In the formulation of UGS policy and planning, instead of compartmentalising park challenges and their solutions, a systems approach should be considered. Specifically, for the (upcoming) Tshwane Open Space Framework, a classification of parks in terms of cultural ecosystem services they offer should be added according to rank. Should this be done, it may enable the identification of areas requiring attention, and the validation of the attention areas via the public participation events, while based on the public's park use needs. UGS policy and planning should also allow and enable community initiatives at parks regarding cleanliness (where applicable).

### **6.5.3 The Complexity of Intersections**

The research project shows just how interconnected the intersections between influencing factors and park use are, but also how interconnected the influencing factors are between themselves. Yet, these intersections, and their nature, are rather complex. It could also be very possible that one factor may explain an intersection between two different factors, even though that the one factor may not necessarily intersect with the two different factors, directly. This notion, arguably, can open avenues to chaos theory.

Despite that the systems approach greatly assisted in shaping an understanding of how influencing factors intersect with one another and with park use, reductionism was almost unavoidable in discussing some of the intersections between park use and the influencing factors, but also between the influencing factors themselves. Yet, however, by applying a systems approach in this research project, it could also be seen as a form of reductionism, but it was needed to investigate, and understand the complexity of the intersections. Even so, reductionism was also required at some instances in explaining some intersections. Therefore, in investigating for such relationships, one may encounter possible trade-offs between complexity and reductionism, and albeit it is a given, by applying reductionism to a complex system of interconnected relationships, it can diminish how truly complex the intersections are.

The lack of intersections between UGSA and SOP for example, also led to the researcher questioning the validity of the UGSA questionnaire items, but also questioning the extent to which external influences (the objective) has on the internal (subjective), and vice versa. Additionally, due to the number of intersections between SOP and CES, it could be justifiable to argue that SOP and CES can be categorised under the same aspect.

## **6.6 Research Critique**

### **6.6.1 Data Collection and Sampling**

The ideal sample would include an equal number of respondents based on age, gender, and perhaps employment status, which is not the case for this research project. In addition, non-probability sampling was used for the data collection via social media platforms. Therefore, the population and sample are biased as the researcher made use of social media platforms to share the questionnaire with potential participants.

### **6.6.2 Influencing Factors**

The influencing factors considered in this research project are limited in range and depth. Park accessibility is not investigated in much detail. Travelling distance, for example, may also relate to park use, which, in this research report, is also not investigated in much detail, but instead, the (subjective) appropriateness of the travel distance for the respondent to the park, is considered. The setting of the parks, and the demographic profile of the case study park area are not investigated, nor are the natural elements considered, i.e., the weather. Furthermore, the level of income is also not investigated in this research project. Instead, employment status is considered. The diverse range of natural infrastructure, such as trees, flowers, grass, rivers, and water bodies, are coupled and categorised under natural infrastructure, instead of categorising them according to types, like the case with the humanmade infrastructure. Additionally, this research project did not consider aspects such as possible Tshwane Wi-Fi hotspots at the parks.

### **6.6.3 Questionnaire Questions**

In retrospect, the urban green space attributes subfactor and element classifications were unnecessarily complex. Specifically, the humanmade infrastructure and natural infrastructure questions were too simplistic. The urban green space attributes questions are based on the effect (i.e., being content) of its presence instead of only based on its presence. The high park visit frequency (per month) was optimistic. Research done prior to formulating the park visit frequency question i.e., determining the average park visit frequency, then basing the question on the average, may have been more aligned with the current park user context.

In addition, the questions involving reasons in favour of park use, and reasons against park use should have been phrased differently, as non-users answered the question of 'what would you say are the reasons for visiting the park'. This question should have been phrased as 'If you paid a visit to a park, what are the reasons for visiting the park?' Furthermore, park users also answered the question of 'if you do not visit parks, what would the main reason be? Select the option that you agree with the most', which, is considered as reasons why the park users may be hesitant to use the parks (despite using parks).

The phrasing of the place meaning question used in the questionnaire can include meaning from an emotive perspective. Therefore, the place meaning item in the questionnaire could have captured meanings from an emotive perspective. The place dependence and place identity components should also have been included in this research project, where place dependence could have focussed on if a case study area meets the intentions of visiting, and place identity could have focussed on how well a case study area complements a person's identity (or identities) with respect to the area.

## **6.7 Further Research Recommendations**

Future research, combining sense of place theory and other factors, such as cultural ecosystem services or physical attributes of a place, should consider using a systems approach as part of the methodological approach, should the aim be to investigate relationships. Additionally, a mixed quantitative and qualitative research project may be beneficial, as for relationships missed via the quantitative component but identified via the qualitative component, it may uncover possible relationships that would not have been identified solely by a quantitative study.

When considering urban green spaces, focusing on parks that vary in function, size, design, ownership, and location may be more valuable. Analysing these parks can provide valuable insights into the factors that impact them and clarify why certain factors are related. To gain a more comprehensive understanding of these dynamics, it would be beneficial to conduct a longitudinal study that captures the perspectives of park users and non-users over time. This will help to better understand how changes in the park environment affect people's perceptions and behaviour.

## BIBLIOGRAPHY

- Africabz.com, 2022. *Africabz - Springbok Park*. [Online]  
Available at: <https://za.africabz.com/gauteng/springbok-park-43209>  
[Accessed 11 August 2022].
- Africabz.com, 2022. *Africabz.com - Venning Park*. [Online]  
Available at: <https://za.africabz.com/gauteng/venning-park-44188>  
[Accessed 11 August 2022].
- Alexander, M., 2019. *The nine provinces of South Africa*. [Online]  
Available at: <https://southafrica-info.com/land/nine-provinces-south-africa/>  
[Accessed 28 October 2022].
- Apify, 2022. *Apify*. [Online]  
Available at: <https://apify.com/>  
[Accessed 26 September 2022].
- ArcGIS Enterprise, 2022. *Map*. [Online]  
Available at: <https://e-gis002.tshwane.gov.za/portal/home/index.html>  
[Accessed 28 October 2022].
- Archer, M. et al., 2013. *Critical Realism: Essential Readings*. London: Taylor & Francis Group.
- Boyd, J. & Banzhaf, S., 2007. What are ecosystem services? The need for standardized environmental accounting units. *Ecological Economics*, 63(2-3), pp. 616-626.
- Brehm, J. M., Eisenhauer, B. W. & Stedman, R. C., 2013. Environmental Concern: Examining the Role of Place Meaning and Place Attachment. *Society & Natural Resources*, 26(5), pp. 522-538.
- Butler, A. & Sinclair, K. A., 2020. Place Matters: A Critical Review of Place Inquiry and Spatial Methods in Education Research. *Review of Research in Education*, 44(1), pp. 64-96.
- Campagnaro, T. et al., 2020. General, stress relief and perceived safety preferences for green spaces in the historic city of Padua (Italy). *Urban Forestry & Urban Greening*, Volume 52.
- Central Intelligence Agency, 2022. *The World Factbook: South Africa*. [Online]  
Available at: <https://www.cia.gov/the-world-factbook/countries/south-africa/#geography>  
[Accessed 28 October 2022].
- Checkland, P., 1981. *Systems thinking, systems practice*. Chichester Sussex: J. Wiley.
- Cilliers, J. & Cilliers, S., 2016. *Planning for Green Infrastructure: Options for South African Cities*. Johannesburg: South African Cities Network.
- City of Tshwane, 2005. *Proposed Tshwane Open Space Framework Volume 1*, Pretoria: City of Tshwane.
- City of Tshwane, 2005. *Proposed Tshwane Open Space Framework Volume 2*, Pretoria: City of Tshwane.
- City of Tshwane, 2005. *Proposed Tshwane Open Space Framework Volume 3*, Pretoria: City of Tshwane.

City of Tshwane, 2021. *Regions*. [Online]

Available at:

[https://www.tshwane.gov.za/sites/about\\_tshwane/Regionalisation/Pages/Regions.aspx](https://www.tshwane.gov.za/sites/about_tshwane/Regionalisation/Pages/Regions.aspx)

[Accessed 28 October 2022].

City of Tshwane, 2021. *Tshwane Land Use Scheme*, Pretoria: City of Tshwane.

City of Tshwane, 2022. *Environmental Management Division*. [Online]

Available at: [https://www.tshwane.gov.za/sites/Departments/Agriculture-and-Environment-Managemental/pages/environmental\\_management\\_division.aspx](https://www.tshwane.gov.za/sites/Departments/Agriculture-and-Environment-Managemental/pages/environmental_management_division.aspx)

[Accessed 16 August 2022].

City of Tshwane, 2022. *Region 3*. [Online]

Available at: <https://www.tshwane.gov.za/Sites/Regions/Pages/Region-3.aspx>

[Accessed 25 June 2022].

City of Tshwane, 2022. *Region 7*. [Online]

Available at: <https://www.tshwane.gov.za/sites/regions/Pages/Region-7.aspx>

[Accessed 28 October 2022].

Daniel, T. C. et al., 2012. Contributions of cultural services to the ecosystem services agenda. *Proceedings of the National Academy of Sciences*, 23(109), pp. 8812-8819.

de la Barrera, F. et al., 2016. People's perception influences on the use of green spaces in socio-economically differentiated neighborhoods. *Urban Forestry & Urban Greening*, Volume 20, pp. 254-264.

Dijksterhuis, A. & Bargh, J. A., 2001. The perception-behavior expressway: Automatic effects of social perception on social behavior. *Advances in Experimental Social Psychology*, Volume 33, pp. 1-40.

Dinita, M., 2021. *How Does Google Know if a Place is Busy?*. [Online]

Available at: <https://www.technipages.com/how-does-google-know-if-a-place-is-busy>

[Accessed 27 September 2022].

du Toit, M. J. et al., 2018. Urban green infrastructure and ecosystem services in sub-Saharan Africa. *Landscape and Urban Planning*, Volume 180, pp. 249-261.

Duh, H. & Struwig, M., 2015. Justification of generational cohort segmentation in South Africa. *International Journal of Emerging Markets*, 10(1), pp. 89-101.

Elaine, A. I. & Seaman, C. A., 2007. Likert Scales and Data Analyses. *Quality Progress*, 40(7), pp. 64-65.

Elmqvist, T. et al., 2013. *Urbanization, Biodiversity and Ecosystem Services: Challenges and Opportunities: A Global Assessment*. Dordrecht: Springer.

Fletcher, A. J., 2017. Applying critical realism in qualitative research: methodology meets method. *International Journal of Social Research Methodology*, 20(2), pp. 181-194.

Fontán-Vela, M. et al., 2021. Active use and perceptions of parks as urban assets for physical activity: A mixed-methods study. *Health & Place*, Volume 71, p. 102660.

Francis, R. A. & Chadwick, M. A., 2013. *Urban Ecosystems: Understanding The Human Environment*. 1 ed. New York: Routledge.

Garcia-Ramon, M. D., Ortiz, A. & Prats, M., 2004. Urban planning, gender and the use of public space in a peripheral neighbourhood of Barcelona. *Cities*, 21(3), pp. 215-223.

Gauteng Department of Agriculture and Rural Development, 2011. *Gauteng Conservation Plan Version 3.3 (C-Plan 3.3)*, s.l.: Gauteng Department of Agriculture and Rural Development.

Giles-Corti, B. et al., 2005. Increasing walking: How Important Is Distance To, Attractiveness, and Size of Public. *American Journal of Preventive Medicine*, 28(2), pp. 169-176.

Goede, R., (2006). *A framework for the explicit use of specific systems thinking methodologies in data-driven decision support system development*, Ph.D. Thesis. University of Pretoria. Available at: <http://hdl.handle.net/2263/24606>: .

Gómez-Baggethun, E. & Barton, D. N., 2013. Classifying and valuing ecosystem services for urban planning. *Ecological Economics*, Volume 86, pp. 235-245.

Google Earth, 2022. *Google Earth*. [Online] Available at: <https://earth.google.com/web/> [Accessed 29 October 2022].

Google Maps, 2022. *Huckleberry's Restaurant*. [Online] Available at: <https://www.google.com/maps/place/Huckleberry's+Restaurant/@-25.7632342,28.2186303,17z/data=!3m1!4b1!4m6!3m5!1s0x1e95619ba1d84fa1:0x8e7bc69afe46fbe5!8m2!3d-25.763239!4d28.220819!16s%2Fg%2F1pzyvnyy> [Accessed 29 September 2022].

Google Maps, 2022. *Magnolia Dell*. [Online] Available at: <https://www.google.com/maps/place/Magnolia+Dell/@-25.7624415,28.2181272,1026m/data=!3m2!1e3!4b1!4m5!3m4!1s0x1e95619a8d9ae6c7:0xe9008cf57e3634b7!8m2!3d-25.7624463!4d28.2203159> [Accessed 27 September 2022].

Google Maps, 2022. *Springbok Park*. [Online] Available at: <https://www.google.com/maps/place/Springbok+Park./@-25.7975019,28.2007702,16412m/data=!3m1!1e3!4m9!1m2!2m1!1sSpringbok+Park!3m5!1s0x1e9561c748906959:0x3c6f0e7979532d9c!8m2!3d-25.745205!4d28.235828!15sCg5TcHJpbmdib2sqUGFya5IBBHBhcmvgAQA> [Accessed 27 September 2022].

Google Maps, 2022. *Venning Park*. [Online] Available at: <https://www.google.com/maps/place/Venning+Park/@-25.7463347,28.2166483,1026m/data=!3m2!1e3!4b1!4m5!3m4!1s0x1e9561ec5043e177:0xc7c7e11d4403fd5a!8m2!3d-25.7463396!4d28.221133> [Accessed 27 September 2022].

Google, n.d. *Manage your Location History*. [Online] Available at: <https://support.google.com/accounts/answer/3118687?hl=en> [Accessed 27 September 2022].

Google, n.d. *Popular times, wait times, and visit duration*. [Online] Available at: <https://support.google.com/business/answer/6263531?hl=en> [Accessed 27 September 2022].

- Gottwald, S., Albert, C. & Fagerholm, N., 2022. Combining sense of place theory with the ecosystem services concept: empirical insights and reflections from a participatory mapping study. *Landsc Ecol*, Volume 37, pp. 633-655.
- Gozalo, G. R., Barrigón Morillas, J. M. & Montes González, D., 2019. Perceptions and use of urban green spaces on the basis of size. *Urban Forestry & Urban Greening*, Volume 46, p. 126470.
- Green, R. J., 2010. *Coastal towns in transition: local perceptions of landscape change*. London: Springer.
- Habitat Landscape Architects, 2021. *HATFIELD METROPOLITAN NODE PRECINCT PLAN 2021*. [Online]  
Available at:  
[https://www.tshwane.gov.za/PublicParticipation/Hatfield%20Precinct%20Plan%20\(2021\).pdf](https://www.tshwane.gov.za/PublicParticipation/Hatfield%20Precinct%20Plan%20(2021).pdf)  
[Accessed 16 July 2022].
- Hamilton, A., Mitchell, G. & Yli-Karjanmaa, S., 2002. The BEQUEST toolkit: a decision support system for urban sustainability. *Building Research & Information*, 30(2), pp. 109-115.
- Haq, S. M. A., 2011. Urban Green Spaces and an Integrative Approach to Sustainable Environment. *Journal of Environmental Protection*, 2(5), pp. 601-608.
- Hashemnezhad, H., Heidari, A. A. & Hoseini, P. M., 2013. "Sense of Place" and "Place Attachment". *International Journal of Architecture and Urban Development*, 3(1), pp. 5-12.
- Hossain, N. U., Dayarathna, V. L., Nagahi, M. & Jaradat, R., 2020. Systems thinking: A review and Bibliometric Analysis. *Systems*, 8(3), p. 23.
- Jax, K. et al., 2013. Ecosystem services and ethics. *Ecological Economics*, Volume 93, pp. 260-268.
- Jim, C. Y. & Chen, W. Y., 2006. Perception and Attitude of Residents Toward Urban Green Spaces in Guangzhou (China). *Environmental Management*, 38(3), pp. 338-349.
- Jorgensen, B. S. & Stedman, R. C., 2001. Sense Of Place As An Attitude: Lakeshore Owners Attitudes Toward Their Properties. *Journal of Environmental Psychology*, 21(3), pp. 233-248.
- Kemperman, A. D. A. M. & Timmermans, H. J. P., 2006. Heterogeneity in Urban Park Use of Aging Visitors: A Latent Class Analysis. *Leisure Sciences*, 28(1), pp. 57-71.
- Kimic, K. & Polko, P., 2022. The Use of Urban Parks by Older Adults in the Context of Perceived Security. *International Journal of Environmental Research and Public Health*, 19(7), pp. 1-20.
- Ko, H. & Son, Y., 2018. Perceptions of cultural ecosystem services in urban green spaces: A case study in Gwacheon, Republic of Korea. *Ecological Indicators*, Volume 91, pp. 299-306.
- Krajter Ostoić, S., Marin, A. M., Kičić, M. & Vuletić, D., 2020. Qualitative Exploration of Perception and Use of Cultural Ecosystem Services from Tree-Based Urban Green Space in the City of Zagreb (Croatia). *Forests*, 11(8), p. 876.
- Kruize, H. et al., 2019. Urban Green Space: Creating a Triple Win for Environmental Sustainability, Health, and Health Equity through Behavior Change. *International Journal of Environmental Research and Public Health*, 16(22), p. 4403.

- Krumpal, I., 2011. Determinants of social desirability bias in sensitive surveys: a literature review. *Quality & Quantity : International Journal of Methodology*, 47(4), pp. 2025-2047.
- Krusenvik, L., 2016. *Using Case Studies as a Scientific Method: Advantages and disadvantage*, Halmstad: Halmstad University.
- Kuklina, V., Sizov, O. & Fedorov, R., 2021. Green spaces as an indicator of urban sustainability in the Arctic cities: Case of Nadym. *Polar Science*, p. 100672.
- Kwon, J.-H., Kim, J., Kim, S. & Cho, G.-H., 2022. Pedestrians safety perception and crossing behaviors in narrow urban streets: An experimental study using immersive virtual reality technology. *Accident Analysis & Prevention*, 174(106757), pp. 1-12.
- Landman, K., 2015. *University of Pretoria*. [Online]  
Available at: [https://www.up.ac.za/media/shared/404/Articles/innovate\\_10\\_2015\\_the-nature-and-use-of-public-open-space-in-the-city-of-tshwane.zp73371.pdf](https://www.up.ac.za/media/shared/404/Articles/innovate_10_2015_the-nature-and-use-of-public-open-space-in-the-city-of-tshwane.zp73371.pdf)  
[Accessed 21 October 2021].
- Landman, K., 2019. *Evolving Public Space in South Africa: Towards Regenerative Space in the Post-Apartheid City*. 1st ed. London: Routledge.
- Lapham, S. C. et al., 2016. How important is perception of safety to park use? A four-city survey. *Urban Studies*, 53(12), pp. 2624-2636.
- Lappeman, J., Coppin, V. & Egan, P., 2020. Time for an update: Proposing a new age segmentation for South Africa. *Management Dynamics*, 29(1), pp. 2-16.
- Larson, S., De Freitas, D. M. & Hicks, C., 2013. Sense of place as a determinant of people's attitudes towards the environment: Implications for natural resources management and planning in the Great Barrier Reef, Australia. *Journal of Environmental Management*, Volume 117, pp. 226-234.
- Lawani, A., 2020. Critical realism: what you should know and how to apply it. *Qualitative Research Journal*, 21(3), pp. 320-333.
- Lewicka, M., 2011. Place attachment: How far have we come in the last 40 years?. *Journal of Environmental Psychology*, 31(3), pp. 207-230.
- Masterson, V. A. et al., 2017. The contribution of sense of place to social-ecological systems research: a review and research agenda. *Ecology and Society*, 22(1), pp. 1-14.
- McCormack, G. R., Rock, M., Toohey, A. M. & Hignell, D., 2010. Characteristics of urban parks associated with park use and physical activity: A review of Qualitative Research. *Health & Place*, 16(4), pp. 712-726.
- Millennium Ecosystem Assessment, 2005. *Ecosystems and Human Well-being: Synthesis*. Washington, DC.: Island Press.
- Moore, R. L. & Scott, D., 2003. Place Attachment and Context: Comparing a Park and a Trail Within. *Forest Science*, 49(6), pp. 1-8.
- Morgenstern, J., 2018. *Survival bias*. [Online]  
Available at: <https://first10em.com/ebm/survival-bias/>  
[Accessed 29 September 2022].

municipalities.co.za, 2022. *Gauteng Municipalities*. [Online]  
Available at: <https://municipalities.co.za/provinces/view/3/gauteng>  
[Accessed 28 October 2022].

National Academies of Sciences, Engineering, and Medicine, 2016. *Pathways to Urban Sustainability: Challenges and Opportunities for the United States*, Washington, DC: The National Academies Press.

Payne, L. L., Mowen, A. J. & Orsega-Smith, E., 2002. An examination of park preferences and behaviors among urban residents: The role of residential location, race and age.. *Leisure Sciences*, Volume 24, pp. 181-198.

Petrunoff, N. A. et al., 2021. Associations of Park Access, park use and physical activity in parks with wellbeing in an Asian urban environment: A cross-sectional study. *International Journal of Behavioral Nutrition and Physical Activity*, 18(1), pp. 1-15.

Proshansky, H. M., Fabian, A. K. & Kaminoff, R., 1983. Place-identity: Physical world socialization of the self. *Journal of Environmental Psychology*, 3(1), pp. 57-83.

Qin, H. et al., 2021. Exploring the dynamic relationships between risk perception and behavior in response to the Coronavirus Disease 2019 (COVID-19) outbreak. *Social Science & Medicine*, 285(114267), pp. 1-11.

Rajala, K., Sorice, M. G. & Thomas, V. A., 2020. The meaning(s) of place: Identifying the structure of sense of place across a social–ecological landscape. *People and Nature*, 2(3), pp. 718-733.

Random.org, 2022. *Random Calendar Date Generator*. [Online]  
Available at: <https://www.random.org/calendar-dates/>  
[Accessed 28 August 2022].

Raymond, C. M., Kyttä, M. & Stedman, R., 2017. Sense of Place, Fast and Slow: The Potential Contributions of Affordance Theory to Sense of Place. *Frontiers in Psychology*, 8(1674), pp. 1-14.

Raymore, L. & Scott, D., 1998. The characteristics and activities of older visitors to a metropolitan park district. *Journal of Park and Recreation Administration*, 16(4), pp. 1-21.

Schipperijn, J. et al., 2010. Factors influencing the use of green space: Results from a Danish national representative survey. *Landscape and Urban Planning*, 95(3), pp. 130-137.

Seaman, P., Jones, R. & Ellaway, A., 2010. It's not just about the park, it's about integration too: why people choose to use or not use urban greenspaces. *International Journal of Behavioral Nutrition and Physical Activity*, 7(1), p. 78.

Shackleton, C. M. & Blair, A., 2013. Perceptions and use of public green space is influenced by its relative abundance in two small towns in South Africa. *Landscape and Urban Planning*, Volume 113, pp. 104-112.

Shao, Y. & Liu, B., 2017. Place Attachment Assessment System in Contemporary Urbanism. *Procedia Engineering*, Volume 198, pp. 152-168.

Shi, Q. et al., 2020. Exploring the linkage between the supply and demand of cultural ecosystem services in Loess Plateau, China: a case study from Shigou Township. *Environmental Science and Pollution Research*, 27(11), pp. 12514-12526.

showme, n.d. *Springbok Park*. [Online]

Available at: <https://showme.co.za/pretoria/lifestyle/springbok-park-2/>  
[Accessed 14 November 2022].

Smith, T., 2011. Using critical systems thinking to foster an integrated approach to sustainability: A proposal for development practitioners. *Environment, Development and Sustainability*, Volume 13, pp. 1-17.

Snazzy Maps, 2022. *Build a Map*. [Online]

Available at: <https://snazzymaps.com/>  
[Accessed 28 October 2022].

South African Government, 2022. *About SA: South Africa's provinces*. [Online]

Available at: <https://www.gov.za/about-sa/south-africas-provinces>  
[Accessed 29 September 2022].

Stedman, R. C., 2003. Is It Really Just a Social Construction?: The Contribution of the Physical Environment to Sense of Place. *Society and Natural Resources*, 16(8), pp. 671-685.

Stokols, D. & Shumaker, S. A., 1981. People in places: a transactional view of settings. In: J. H. Harvey, ed. *Cognition, social behaviour and the environment*. New Jersey: Lawrence Erlbaum Associate Publishers, pp. 441-488.

Sultana, R. & Selim, S. A., 2021. Residents' perceptions of the role and management of green spaces to provide cultural ecosystem services in Dhaka, Bangladesh. *Ecology and Society*, 26(4), pp. 1-17.

Sun, Y., Xie, S. & Zhao, S., 2019. Valuing urban green spaces in mitigating climate change: A city-wide estimate of aboveground carbon stored in urban green spaces of China's Capital. *Global Change Biology*, 25(5), pp. 1717-1732.

The Worldwatch Institute, 2007. *State of the World 2007: Our Urban Future*, New York, London: W.W Norton & Company.

TripAdvisor, 2022. *TripAdvisor - Magnolia Dell Park*. [Online]

Available at: [https://www.tripadvisor.co.za/Attraction\\_Review-g312583-d7190546-Reviews-Magnolia\\_Dell\\_Park-Pretoria\\_Gauteng.html](https://www.tripadvisor.co.za/Attraction_Review-g312583-d7190546-Reviews-Magnolia_Dell_Park-Pretoria_Gauteng.html)  
[Accessed 11 August 2022].

TripAdvisor, 2022. *TripAdvisor - Springbok Park National Monument*. [Online]

Available at: [https://www.tripadvisor.co.za/Attraction\\_Review-g312583-d4662922-Reviews-Springbok\\_Park\\_National\\_Monument-Pretoria\\_Gauteng.html](https://www.tripadvisor.co.za/Attraction_Review-g312583-d4662922-Reviews-Springbok_Park_National_Monument-Pretoria_Gauteng.html)  
[Accessed 11 August 2022].

United Nations Development Programme, 2018. *The 2030 Agenda in Action – What does it mean?*. [Online]

Available at: <https://www.undp.org/content/undp/en/home/librarypage/sustainable-development-goals/the-2030-agenda-in-action--what-does-it-mean-.html>  
[Accessed 3 April 2021].

United Nations, 2015. *Transforming our world: the 2030 Agenda for Sustainable Development*. [Online]

Available at: <https://sdgs.un.org/2030agenda>  
[Accessed 14 June 2021].

United Nations, 2017. *SDG Indicators*. [Online]

Available at:

[https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202021%20refinement\\_Eng.pdf](https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%202021%20refinement_Eng.pdf)

[Accessed 16 June 2021].

van den Einde, C., 2015. *An Everyday Carnival: Designing for Freedom of Expression Within a Multifunctional Landscape at Loftus Versfeld Stadium*. Master: University of Pretoria.

van Wyk, J., 2012. *Planning Law*. 2nd ed. Cape Town: Juta and Company [Pty] Ltd (Juta's Property Law Library).

van Wyk, J., 2020. *Planning Law*. 3rd ed. Cape Town: Juta and Company [Pty] Ltd (Juta's Property Law Library).

Vincent, S. & O'Mahoney, J., 2018. Critical Realism and Qualitative Research: An Introductory Overview. In: *The SAGE Handbook of Qualitative Business and Management Research Methods: History and Traditions*. 55 City Road, London: SAGE Publications Ltd.

Wendel, H. E. W., Zarger, R. K. & Mihelcic, J. R., 2012. Accessibility and usability: Green space preferences, perceptions, and barriers in a rapidly urbanizing city in Latin America. *Landscape and Urban Planning*, 107(3), pp. 272-282.

Wester-Herber, M., 2004. Underlying concerns in land-use conflicts—the role of place-identity in risk perception. *Environmental Science & Policy*, 7(2), pp. 109-116.

Wu, J., 2014. Urban ecology and sustainability: The state-of-the-science and future directions. *Landscape and Urban Planning*, Volume 125, pp. 209-221.









Yucel, R., 2018. Scientists' Ontological and Epistemological Views about Science from the Perspective of Critical Realism. *Science & Education*, Volume 27, pp. 407-433.

Zachariadis, M., Scott, S. & Barrett, M., 2013. Methodological implications of critical realism for mixed-methods research. *MIS quarterly*, 37(3), pp. 855-879.

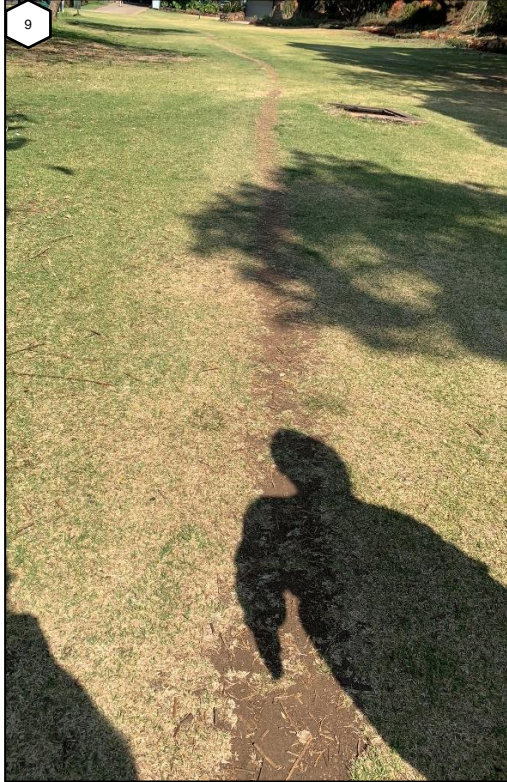
Zhao, J., 2011. *Towards sustainable cities in china : analysis and assessment of some chinese cities in 2008*. New York: Springer (SpringerBriefs in environmental science).

Žlender, V. & Gemin, S., 2020. Testing urban dwellers' sense of place towards leisure and recreational peri-urban green open spaces in two European cities. *Cities*, Volume 98, pp. 3-4.

# APPENDIX I – SITE VISIT IMAGES

Photos Taken at the Park Magnolia Dell Park	
Presence of, and quality of infrastructure:	
 <p>1</p>	 <p>2</p>
Evidence of sporting activities:	Fencing is missing at some areas of the perimeter:
 <p>3</p>	 <p>4</p>
Presence of, and quality of infrastructure:	
 <p>5</p>	 <p>6</p>
 <p>7</p>	 <p>8</p>

Footpath:



Presence of litter:



Park's information board:

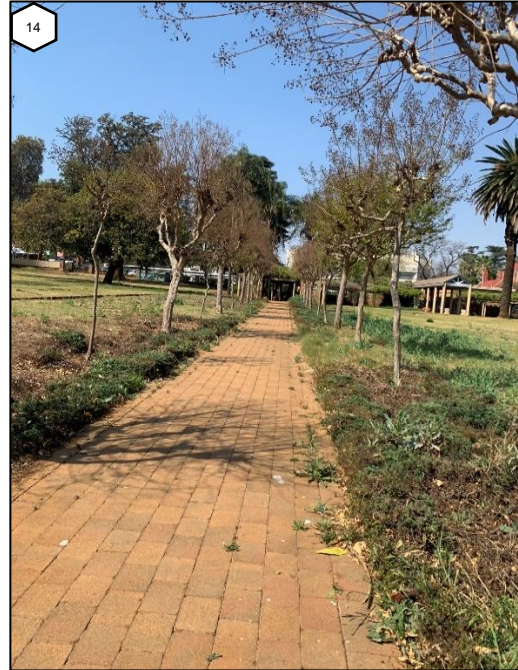


Presence of, and quality of infrastructure:



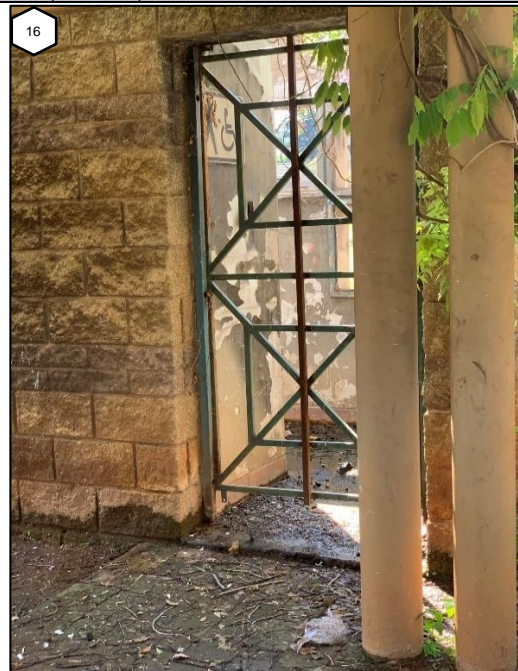
## Venning Park

Presence of, and quality of infrastructure:



Water waste present:

(State of) Inaccessible restroom facilities:





Empty water feature:		Fencing is missing at some areas of the perimeter:	
			
Indication of alcohol use, and litter (cigarette buds) at the park:			
			
Presence of, and quality of infrastructure:			
			

Presence of, and quality of infrastructure:



Presence of, and quality of infrastructure:



Presence of, and quality of infrastructure:	Park's information board:
<p>29</p> 	<p>30</p> 

### Springbok Park

Presence of, and quality of infrastructure:	
<p>31</p> 	<p>32</p> 

<p>Presence of, and quality of infrastructure:</p>	<p>Fencing is missing at some areas of the perimeter:</p>
<div> <p>33</p>  </div> <div> <p>34</p>  </div> <div> <p>35</p>  </div>	<div> <p>36</p>  </div>
<p>Level of cleanliness:</p>	
<div> <p>37</p>  </div>	<div> <p>38</p>  </div>
<p>Evidence of alcohol use at the park:</p>	<p>Presence of, and quality of infrastructure:</p>
<div> <p>39</p>  </div>	<div> <p>40</p>  </div>
<p>Presence of, and quality of infrastructure:</p>	<p>Presence of, and quality of infrastructure:</p>



Presence of, and quality of infrastructure:



Presence of, and quality of infrastructure:

Park's information board:



### Notes regarding the parks: Magnolia Dell Park

At the time of the site visit:

No evidence of possible alcohol abuse at the park was found, however it does not necessarily mean the lack thereof.

Excluding the ablution block, no other built infrastructure other than that of the private sector was present.

The lighting infrastructure appeared to be in an operable state.

Little to no litter was evident, however more at the water body, *Walkerspruit*.

The ablution facilities are inaccessible, no photographs could have been taken as one could not have looked (and accessed) into the public restroom.

The humanmade water feature appears to have been transformed into an area for skateboarding.

### Venning Park

At the time of the site visit:

The built infrastructure in the center of the park appears to be vandalized and abandoned.

Most of the lighting infrastructure appeared to be in an inoperable state:

Some litter was evident, particularly cigarette buds, and alcohol bottle caps and glass.

The ablution facilities are inaccessible and appeared inoperable.

### Springbok Park

At the time of the site visit:

The built gazebo (Image 35) appears to be of a working state. No other built infrastructure other than that of the private sector (the restaurant) was present.

Most of the lighting infrastructure appears to be in an inoperable state.

Litter was evident, and in comparison, more than Venning Park and much more than Magnolia Dell Park, however, definitely enough to impact perceived maintenance.

The ablution facilities were inaccessible, no photographs could have been taken as one could not have looked (and accessed) into the public restroom.

#### In General:

For all the parks, this in itself may be indicative of the cleanliness (via maintenance) of the parks, as well as possible anti-social behaviour, (similar to that explained by Seaman et al. (2010) induced by alcohol, or at least linked to alcohol use.

In addition, even though it is not permitted according to the information boards, and even though it is not permitted (See Gauteng Liquor Act, Act2/2003 Section 127(c)(d)) ample evidence of alcohol use, at the time of the site visit, is present at Venning and Springbok parks. If it is a regular occurrence or a one-time occurrence, this can only be determined through longitudinal studies, or regular site observations.

Moreover, this does not necessarily mean that Magnolia Dell Park does not experience alcohol use by persons. The mere fact that during the site visit there are no evidence of alcohol use, it does not mean there is no alcohol use by persons at the park at all. It may be due to maintenance, that evidence was removed. Recall the online reviews stating that parties, at least at that time, was a regular occurrence, however this is only applicable should these parties involve alcohol.

## APPENDIX II - CHECKLIST

Related questions in the questionnaire		Checklist			
Questions in Questionnaire (Briefly)	Influencing Subfactor(s) (UGSA)	Element(s)	Present in Park at the Time (Y/N/#)		
			Magnolia Dell	Venning Park	Springbok Park
I am content when I notice typical park infrastructure at the park.	Typical Park Infrastructure	Foot bridges	Y	N	Y
		Walkways	Y	Y	Y
		Footpaths	Y	Y	Y
		Lighting	Y	Y	Y
		Bins	Y	Y	Y
		Benches	Y	Y	Y
		Water fountains	N	Y (Not Operational at the time)	N
I am content when I notice security/safety infrastructure at the park.	Security/safety Infrastructure	Gates	Y (Not required for entry at the time)		
		Fencing	Y (Ineffective – lacking or damaged at the time)		
I am content when I notice the natural characteristics of the park.	Natural Infrastructure / characteristics	Trees	Y	Y	Y
		Water body	Y	N	Y
		Shade	Y	Y	Y
		Flowering	Y	Y	Y
		Grass	Y	Y	Y
		Groves	Y	N	Y
I am content when I notice sporting facilities.	Sporting Facilities	Playground Equipment (Seesaw, Swings, Slides)	Y	Y	Y
		Space for sports (i.e., soccer, rugby)	Y	Y	Y
		Outdoor gymnasiums	N	N	N
I am content when I notice recreational facilities.	Recreational facilities	Area for picnics	Y	Y	Y
		Area for braai / BBQ	Y	Y	Y
I am content when I notice amenities at the park.	Amenities	Restaurant	Y	N	Y
		Drinking fountains	Y	N	N
		Clean, working and accessible public restrooms	N (Restaurant excluded)	N	N (Restaurant excluded)

		<b>Clean and accessible restrooms at the restaurant</b>	<b>Y</b>	<b>N</b>	<b>Y</b>
<b>[For reference only]</b>	Official points of entry	[Number]	~6	~5	~8
This park is the perfect size for me.  <b>(Question posed subjectively)</b>	Park Size	Hectares	<b>3</b>	<b>3</b>	<b>~3.1</b>
I can reach and visit the park without any issues to enter the park.  The distance I need to travel to access the park is appropriate.	(Perceived) Access and Travel Distance	<b>Perceived Distance</b>	<b>Y</b>	<b>Y</b>	<b>Y</b>
		<b>Perceived Access</b>	<b>Y</b>	<b>Y</b>	<b>Y</b>
The park I visit is well maintained.	Maintenance quality / cleanliness	<b>No littering</b>	<b>N</b>	<b>N</b>	<b>N</b>
		<b>Good state of flora</b>	<b>N (partly depends on personal preference)</b>	<b>N (partly depends on personal preference)</b>	<b>N (partly depends on personal preference)</b>
		<b>Water waste (i.e., Sprinklers; drain, etc.)</b>	<b>N</b>	<b>Y</b>	<b>N</b>
		<b>Lighting (in terms of appearing to be in an operable state).</b>	<b>Y (Most)</b>	<b>Y (Few)</b>	<b>Y (Least)</b>
		<b>Good level of maintenance quality overall</b>	<b>Y (albeit depending on personal preference)</b>	<b>Y&gt;N (albeit depending on personal preference)</b>	<b>N (albeit depending on personal preference)</b>
I am content when I notice the presence of other park visitors at the park.  I generally perceive the park as a safe place.	Perceived Safety	<b>Presence of people</b>	<b>Y (at the time)</b>	<b>Y (at the time)</b>	<b>Y (at the time)</b>
		<b>General safety perception of the parks</b>	<b>Subjective (though possible to have a negative or positive safety perception of the parks)</b>		
<b>Relating to Questionnaire</b>	<b>Influencing Subfactor(s) (CES)</b>	<b>Element(s)</b>	<b>Possible at the parks?</b>		
The park I visit facilitate outdoor activities for recreation and leisure	<b>Recreation Value</b>	<b>Relaxation</b>	<b>Y</b>	<b>Y</b>	<b>Y</b>
		<b>Outdoor activities (i.e., Exercise)</b>	<b>Y</b>	<b>Y</b>	<b>Y</b>

		<b>Other (i.e., restaurant related, reading etc.)</b>	Y	Y	Y
		<b>Animal related activity</b>	Y	Y	Y
The park I visit are beautiful and aesthetically pleasing	<b>Aesthetic Value</b>	<b>Natural Scenery Stimulation</b>	Y	Y	Y
		<b>Artistic Inspiration</b>	Y	Y	Y
		<b>Visual Satisfaction</b>	Y	Y	Y
		<b>Aesthetic Pleasures</b>	Y	Y	Y
The park I visit provide me with opportunities for learning about the natural environment	<b>Educational Value</b>	<b>Scientific knowledge creation</b>	Y	Y	Y
		<b>Research</b>	Y	Y	Y
		<b>Education via natural environment</b>	Y	Y	Y
The park I visit preserves the cultural heritage of the Nation	<b>Cultural Heritage Value<sup>27</sup></b>	<b>Cultural remains</b>	Possible - (cultural heritage might be attached to the parks irrespective of tangible cultural elements)		
		<b>Cultural assets</b>			
		<b>Cultural monuments</b>			
The park I visit provides me with the opportunity to grow, for example, through self-reflection, worship or meditation.	<b>Spiritual Value</b>	<b>Self-reflection</b>	Y	Y	Y
		<b>Nature worship</b>	Y	Y	Y
		<b>Meditation</b>	Y	Y	Y
		<b>Spiritual stability</b>	Y	Y	Y
The park I visit provide or could provide a space for local community events	<b>Social Relations Value</b>	<b>Community formation</b>	Y	Y	Y
		<b>Community cohesion</b>	Y	Y	Y
		<b>Social interaction</b>	Y	Y	Y
		<b>Meeting people</b>	Y	Y	Y
		<b>Family and friends related</b>	Y	Y	Y
<b>Relating to Questionnaire</b>	<b>Influencing Subfactor(s) (SOP Components)</b>		<b>Possible at the parks?</b>		
I consider what the park means to me	<b>Place Meaning</b>		Y	Y	Y

<sup>27</sup> Recall that du Toit et al. (2018) explained forest animals and trees can have significant cultural and heritage value for communities as well (du Toit, et al., 2018). In addition, recall that Daniel et al. (2012) explained natural or semi-natural environmental characteristics are frequently linked to the identity of a person, a group of people, or a society (Daniel, et al., 2012). As such, the cultural heritage value subfactor is included, even though no cultural monuments or remains were, at the time, evident at the case study parks.

as something (Completely negative to completely positive):					
<p>I feel relaxed when I am at the park:</p> <p>I feel happy when I am at the park:</p> <p>The park is one of my favourite places to be:</p> <p>I find myself missing the park when I am away from it for too long:</p> <p>If I were to describe how I feel towards the park using only one word, the nature of the feeling will be:</p>	<b>Place Attachment</b>		Y	Y	Y

## APPENDIX III – RESEARCH QUESTIONNAIRE

### Section 1: Informed Consent

Research Questionnaire: Parks, Park Use, and Perception  
INFORMED CONSENT

Meteorology

Department of Geography,  
Geoinformatics and

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Mr C.L. Struwig (16106662)  
Email:

[u16106662@tuks.co.za](mailto:u16106662@tuks.co.za)

Cell: 084 203 0402

Dear Sir/Madam,

My name is CL Struwig. I am currently studying at the University of Pretoria doing Masters in Human Geography.

My research title is: Understanding intersections of sense of place and other influencing factors in decisions to utilise urban green spaces within and close to Hatfield, City of Tshwane, as the case study area.

The purpose of this study is to gain an understanding of the possible factors that influence persons' decisions to use urban green spaces, and how it translates into habits and patterns of use within and close to Hatfield, City of Tshwane. The information collected from this study can assist in formulating a better understanding on the aspects that we as people consider in deciding if we want to make use of a park. Furthermore, urban green space related policy will be evaluated against the gathered information, to determine if policy accommodates for or curbs the urban green space needs and wants of the people.

The research aims to assess the nature of intersections between sense of place and other influencing factors in decisions to utilise the urban green spaces, within and close to Hatfield, as the case study area. These influencing factors include cultural ecosystem services and urban green space attributes. To achieve the aim of the research, we set four research objectives:

1. To identify key policy and regulatory directives regarding urban green space use and planning within the City of Tshwane.
2. To capture and assess the nature of the influencing factors in decision making to utilise parks within the case study area, as examples of urban green spaces in the City of Tshwane.
3. To evaluate the nature of intersections between cultural ecosystem services, green space attributes, and sense of place, as influencing factors in decisions to utilise parks within the case study area.
4. To provide recommendations based on the findings of the study that could inform more inclusive urban green space utilisation and planning.

To achieve these objectives, we need to answer the following questions:

- What does the key policy and regulatory directives dictate regarding urban green spaces, and more specifically, regarding parks within and near Hatfield?
- What are the factors that influences our decision to make use of parks within and near Hatfield?
- Is there any correlation between these influencing factors, and if so, to what extent?
- How does urban green space-related policy compliment or curb the factors influencing our decision to make use of urban green spaces?

An online questionnaire will be used to collect information from park users, and persons that are aware of the park. The questionnaire consists out of 6 sections and is estimated to take approximately 10 - 15 minutes to complete. The data obtained from this study will be used for the purpose of my master's dissertation and will be stored at University of Pretoria and the results might be published in a scientific journal. Note that you, and your responses will remain completely anonymous.

Kindly note that:

1. In order to participate in this study, you acknowledge that you are at least 18 years of age or older.
2. Participation is voluntary; you may withdraw from participating in the study at any time without any negative consequences, and you do not have to provide a reason.
3. All information and data will be treated as confidential; anonymity is ensured to you; should you decide to withdraw, any data you have shared will be destroyed. Only myself (CL Struwig) and my supervisor (Dr N Davis) will have access to the research data. You are not going to be asked to provide your name or your address in this study.
4. There is no remuneration for taking part in this study and everybody will be treated with respect.
5. The results from this investigation will be used for the purpose of this study and may be published in an academic journal.
6. If you have any question or comments kindly contact myself at 084 203 0402 or my supervisor (Dr N. Davis at 012 420 2882 and/or email Dr N. Davis at [Nerhene.davis@up.ac.za](mailto:Nerhene.davis@up.ac.za)).
7. I understand my right to choose whether to participate in the project and that the information provided will be handled confidentially. I am aware that the results of the investigation may be used for the purpose of publication.
8. Note that Google Forms may ask you to sign into your Gmail account in order to answer this questionnaire. Even if you sign in, we still won't have access to any email addresses, as this questionnaire has been set up in such a way that it does not collect your email address.

In the question below, by selecting the option "I Voluntarily Consent, and Acknowledge the

Above Statements”, I, the research participant hereby voluntarily grants my permission for participation in the project as explained to me by CL Struwig.

By selecting the option “I Do Not Consent, nor Acknowledge the Above Statements”, I, the research participant does not give my consent, and/or do not grant my permission to participate.

Do you voluntarily consent, and acknowledge that you have read the above statements [Select One Option]?

- I Voluntarily Consent, and Acknowledge the Above Statements
- I Do Not Consent, nor Acknowledge the Above Statements

## Section 2: Demographic Factors

[Select One Option]

What generation cohort do you fall under?

- The Silent Generation (Born between 1928-1944)
- Baby Boomer Generation (Born between 1945-1964)
- Generation X (Born between 1965-1976)
- Generation Y / Millennial (born between 1977-1994)
- Generation Z (born between 1995-2012)

What is your current level of education?

- No Formal Education
- Primary school (Grade 1 - 7)
- High school (Grade 8 - 12)
- Certificate
- Diploma
- Undergraduate Degree
- Postgraduate Degree

Sex assigned at birth?

- Female
- Male
- Intersex
- Prefer not to say

What is your employment status?

- Employed full time
- Employed part time
- Student & employed full time
- Student & employed part time
- Student only
- Unemployed
- Other:

## Section 3: Park Use Questions

[Select One Option] – Unless stated otherwise.

Are you aware of, or have you ever been to parks within or close to the Hatfield area?

- Yes
- No
- Maybe

If you visit parks within and near the Hatfield area, how many times per month do you make use of the park(s)?

- 0 times per month
- 1 - 2 times per month
- 3 - 4 times per month
- 5 times per month
- More than 5 times per month
- Other:

If you do not visit parks, what would the main reason be? Select the option that you agree with the most. Only answer this question if your answer to the previous question was "0 times per month":

- Because of criminal activities
- Homeless people using the park
- Other people use the park that negatively affect me, e.g., noise, intimidation from other users.
- I don't visit parks
- The park is too far from my home
- It is too small and/or overcrowded
- I don't have time
- The park lacks important facilities
- The park lacks maintenance/cleanliness
- Litter and vandalism
- The park lacks sufficient parking area
- It is not easily accessible
- I don't feel safe in the park
- Other:

Out of the following parks, which park do you visit, or used to visit the most:

- Springbok Park
- Venning Park
- Magnolia Dell Park
- Other

What would you say are the reasons for visiting park? If you don't visit any of the parks, skip this question.

- To meet people
- To relax
- To read
- To take a break
- To exercise
- To spend time with family or friends
- To take the dog out
- To enjoy nature
- Other:

[Multiple Choice Question]

#### Section 4: Park Attributes Questions

[Likert Scale: 1 – Strongly Disagree to 5 – Strongly Agree]

I am content when I notice the presence of other park visitors at the park:

I am content when I notice typical park infrastructure at the park. For example, walkways, footpaths, lighting, bins, benches, etc.:

I am content when I notice security/safety infrastructure at the park. For example, gates, fencing, etc.:

I am content when I notice sporting facilities. For example, playground equipment, outdoor gymnasiums, area for sport activities such as soccer, etc.:

I am content when I notice recreational facilities. For example, space for picnic, a braai area, etc.:

I am content when I notice amenities at the park. For example, a restaurant, kiosk, drinking fountains, clean and accessible public restrooms, etc.:

I am content when I notice the natural characteristics of the park, such as trees, water bodies, shade, flowering, grass.:

The park I visit is the perfect size for me:

I can reach and visit the park without any issues to enter the park:

The distance I need to travel to access the park is appropriate:

I generally perceive the park as a safe place:

### Section 5: Cultural Ecosystem Services Questions

[Likert Scale: 1 – Strongly Disagree to 5 – Strongly Agree]

The park I visit facilitates outdoor activities for recreation and leisure:

The park I visit is beautiful and aesthetically pleasing:

The park I visit provides me with opportunities for learning about the natural environment:

The park I visit provides or could provide a space for local community events:

The park I visit preserves the cultural heritage of the Nation:

The park I visit provides me with the opportunity to grow, for example, through self-reflection, worship, or meditation:

### Section 6: Sense of Place Questions

[Likert Scale: 1 – Strongly Disagree to 5 – Strongly Agree] – unless stated otherwise.

I feel relaxed when I am at the park:

I feel happy when I am at the park:

The park is one of my favourite places to be:

I find myself missing the park when I am away from it for too long:

I consider what the park means to me as something:

[Likert Scale: 1 – Completely Negative to 5 – Completely Positive]

If I were to describe how I feel towards the park using only one word, the nature of the feeling will be:

[Likert Scale: 1 – Completely Negative to 5 – Completely Positive]

### **Section 7: Maintenance Questions**

The park I visit is well maintained:

[Likert Scale: 1 – Strongly Disagree to Strongly Agree]

I would like to see the park's level of maintenance to:

- Remain the same.
- Improve

[Select One Option]

### **Final Question**

Do you have any comments you might want to add?

[Open Ended Question]

## APPENDIX IV – TABLE OF SPSS VARIABLE AND QUESTIONNAIRE ITEMS

SPSS Variable	Item in Questionnaire
ParkVisitFrequency	<i>If you visit parks within or near the Hatfield area, how many times per month do you make use of the park(s)?</i>
ParkUsersPresence	<i>I am content when I notice the presence of other park visitors at the park.:</i>
ParkInfra	<i>I am content when I notice typical park infrastructure at the park. For example, walkways, footpaths, lighting, bins, benches, etc.:</i>
SecurityInfra	<i>I am content when I notice security/safety infrastructure at the park. For example, gates, fencing, etc.:</i>
SportFacilities	<i>I am content when I notice sporting facilities. For example, playground equipment, outdoor gymnasiums, area for sport activities such as soccer, etc.:</i>
RecreationFacilities	<i>I am content when I notice recreational facilities. For example, space for picnic, a braai area, etc.:</i>
Amenities	<i>I am content when I notice amenities at the park. For example a restaurant, kiosk, drinking fountains, clean and accessible public restrooms, etc.:</i>
NaturallInfra	<i>I am content when I notice the natural characteristics of the park, such as trees, water bodies, shade, flowering, grass.:</i>
PerfectSize	<i>The park I visit is the perfect size for me:</i>
NoEntryAccessIssues	<i>I can reach and visit the park without any issues to enter the park:</i>
DistanceAppropriate	<i>The distance I need to travel to access the park is appropriate:</i>
PerceiveParkSafeSpace	<i>I generally perceive the park as a safe place:</i>
Park_Maintenance	<i>The park I visit is well maintained:</i>
RecreationValue	<i>The park I visit facilitates outdoor activities for recreation and leisure:</i>
AestheticValue	<i>The park I visit is beautiful and aesthetically pleasing:</i>
EducationalValue	<i>The park I visit provides me with opportunities for learning about the natural environment:</i>
SocialRelationsValue	<i>The park I visit provides, or could provide a space for local community events:</i>

CulturalHeritageValue	<i>The park I visit preserves the cultural heritage of the Nation:</i>
SpiritualValue	<i>The park I visit provides me with the opportunity to grow, for example, through self-reflection, worship, or meditation:</i>
SOP_FeelRelaxed	<i>I feel relaxed when I am at the park</i>
SOP_FeelHappy	<i>I feel happy when I am at the park:</i>
SOP_FavPlaces	<i>The park is one of my favourite places to be:</i>
SOP_MissingAwayTooLong	<i>I find myself missing the park when I am away from it for too long:</i>
SOP_Meaning_Pos_Neg	<i>I consider what the park means to me as something:</i>
How_I_Feel_Toward_Park_Pos_Neg	<i>If I were to describe how I feel towards the park using only one word, the nature of the feeling will be:</i>

## APPENDIX V – CALCULATIONS FOR % COMPARISON

Park	Star Ratings of Case Study Parks Count					Total
	1 Star	2 Star	3 Star	4 Star	5 Star	
Magnolia Dell Park	54	98	391	652	1128	2323
Springbok Park	44	27	70	62	118	321
Venning Park	30	25	56	52	91	254

Least Common Denominator:

$$\begin{aligned}
 1) \quad & LCD\left(\frac{x}{2323}, \frac{x}{321}, \frac{x}{254}\right) \\
 2) \quad & = (2323, 321, 254) \\
 & = (23 \times 101 \times 3 \times 107 \times 2 \times 127) \\
 & = 189403482
 \end{aligned}$$

# Star Conversion (e.g., Magnolia Dell Park 3 Star Rating Count):

$$\begin{aligned}
 3) \quad & \frac{x}{189403482} = \frac{391}{2323} \\
 & x = 31879794 \\
 4) \quad & MD3Star\% = \frac{31879794}{18903482} \times 100 \\
 5) \quad & = 16.8316831683 \% \\
 6) \quad & \therefore 3 \text{ star ratings of Magnolia Dell in comparable \% form } \approx 16.8\%
 \end{aligned}$$

# APPENDIX VI – RESULTS OF SPSS CORRELATION TESTS

## 1. Between Park Use and Influencing Factors

### 1.1 Urban Green Space Attributes

The table below captures the results of the two-tailed Spearman's Rho test with regards to park visit frequency (park use) and urban green space attributes elements, showing statistical significance at the 0.01 level:

Table 7.1 Park Use and UGSA (N = 30)

Park Visit Frequency & Urban Green Space Attributes (N = 30)														
		ParkUsers Presence	Park Infra	Security Infra	Sport Facilities	Recreation Facilities	Amenities	Natural Infra	Perfect Size	NoEntry Access Issues	Distance Appropriate	PerceivePark SafeSpace	Park_Maintenance	
Spearman's rho	ParkVisit Frequency	Correlation Coefficient	0,141	-0,353	-0,226	-0,241	-0,092	-0,111	-0,158	.500**	.502**	0,204	.470**	.503**
		Sig. (2-tailed)	0,457	0,056	0,231	0,200	0,628	0,560	0,405	0,005	0,005	0,280	0,009	0,005
*. Correlation is significant at the 0.05 level (2-tailed).														
**. Correlation is significant at the 0.01 level (2-tailed).														

### 1.2 Cultural Ecosystem Services

The table below captures the results of the two-tailed Spearman's Rho test with regards to park visit frequency (park use) and cultural ecosystem services elements, showing statistical significance at the 0.05 level:

Table 7.2 Park Use and CES (N = 30)

Park Visit Frequency & Cultural Ecosystem Services (N = 30)								
			Recreation Value	Aesthetic Value	Educational Value	Social Relations Value	Cultural Heritage Value	Spiritual Value
Spearman's rho	ParkVisitFrequency	Correlation Coefficient	.429*	0,350	0,110	0,141	-0,022	0,219
		Sig. (2-tailed)	0,018	0,058	0,562	0,457	0,907	0,245
*. Correlation is significant at the 0.05 level (2-tailed).								
**. Correlation is significant at the 0.01 level (2-tailed).								

### 1.3 Sense of Place

The table below captures the results of the two-tailed Spearman's Rho test with regards to park visit frequency (park use) and sense of place components, showing statistical significance at both 0.01 and 0.05 levels:

Table 7.3 Park Use and SOP (N = 30)

Park Visit Frequency & Sense of Place (N = 30)								
			SOP_Feel Relaxed	SOP_Feel Happy	SOP_Fav Places	SOP_Missing ItAway TooLong	SOP_Meaning PosNeg	SOP_How IFeelToward ParkPosNeg
Spearman's rho	ParkVisitFrequency	Correlation Coefficient	0,063	0,175	.481**	.442	.535**	0,298
		Sig. (2-tailed)	0,741	0,355	0,007	0,015	0,002	0,110
**. Correlation is significant at the 0.01 level (2-tailed).								
*. Correlation is significant at the 0.05 level (2-tailed).								

## 2. Park Maintenance and Urban Green Space Attributes:

The following table captures the Spearman's Rho correlation test results between (perceived level of) park maintenance and the other urban green space attributes, showing statistical significance at both 0.01 and 0.05 levels:

Table 7.4 Maintenance and UGSA (N=30)

Maintenance & Other Urban Green Space Attributes (N = 30)											
	ParkUsers Presence	Park Infra	Security Infra	Sport Facilities	Recreation Facilities	Amenities	Natural Infra	Perfect Size	NoEntry Access Issues	Distance Appropriate	PerceivePark SafeSpace
Park_ Correlation	-0,008	-.403*	-0,305	-0,118	-0,265	-0,154	-.443*	0,327	0,261	0,127	.632**
Maintenance Sig. (2-tailed)	0,966	0,027	0,102	0,535	0,158	0,416	0,014	0,078	0,163	0,504	0,0002

\*\* . Correlation is significant at the 0.01 level (2-tailed).  
\* . Correlation is significant at the 0.05 level (2-tailed).

## 3. Between The Influencing Factors:

### 3.1 Sense of Place and Urban Green Space Attributes

The table below captures the results of the two-tailed Spearman's Rho test regarding the sense of place components and cultural ecosystem services elements, showing statistical significance at both 0.01 and 0.05 levels:

Table 7.5 SOP and UGSA (N = 30)

Sense of Place & Urban Green Space Attributes (N = 30)														
			ParkUsers Presence	Park Infra	Security Infra	Sport Facilities	Recreation Facilities	Amenities	Natural Infra	Perfect Size	NoEntry Access Issues	Distance Appropriate	Perceive Park SafeSpace	Park_ Maintenance
Spearman's rho	SOP_Feel Relaxed	Correlation Coefficient	0,095	0,000	0,235	-0,009	0,116	-0,004	0,079	0,239	.557*	0,191	0,255	0,156
		Sig. (2-tailed)	0,618	0,999	0,211	0,964	0,540	0,983	0,679	0,203	0,001	0,311	0,174	0,411
	SOP_Feel Happy	Correlation Coefficient	0,079	0,095	0,244	0,143	0,309	0,040	0,288	.425	.629*	0,173	0,200	0,040
		Sig. (2-tailed)	0,677	0,619	0,194	0,452	0,097	0,833	0,123	0,019	0,0002	0,360	0,289	0,832
	SOP_Fav Places	Correlation Coefficient	0,148	-0,171	0,191	-0,246	-0,044	-0,050	0,090	0,299	.582*	0,119	0,349	0,288
		Sig. (2-tailed)	0,434	0,367	0,313	0,190	0,817	0,793	0,637	0,108	0,001	0,531	0,058	0,123
	SOP_MissingIt AwayToo Long	Correlation Coefficient	0,245	-0,042	-0,007	-0,067	0,101	-0,050	0,026	0,299	.698*	0,319	0,332	0,272
		Sig. (2-tailed)	0,192	0,827	0,970	0,724	0,596	0,793	0,892	0,109	0,00002	0,086	0,073	0,147
	SOP_Meaning PosNeg	Correlation Coefficient	0,231	-0,141	0,090	-0,155	0,043	-0,078	0,019	.387	.699*	0,138	.383	0,352
		Sig. (2-tailed)	0,219	0,458	0,635	0,413	0,820	0,682	0,922	0,035	0,00002	0,468	0,037	0,057
	SOP_HowIFeel TowardPark PosNeg	Correlation Coefficient	0,194	0,101	0,053	-0,003	0,342	0,126	0,232	0,212	0,347	-0,050	0,207	0,068
		Sig. (2-tailed)	0,303	0,596	0,782	0,986	0,065	0,507	0,218	0,261	0,060	0,794	0,272	0,720

\*\* . Correlation is significant at the 0.01 level (2-tailed).  
\* . Correlation is significant at the 0.05 level (2-tailed).

### 3.2 Urban Green Space Attributes and Cultural Ecosystem Services

The table below captures the results of the two-tailed Spearman's Rho test regarding the urban green space attributes-, and cultural ecosystem services elements, showing statistical significance at both 0.01 and 0.05 levels:

Table 7.6 UGSA and CES (N = 30)

Urban Green Space Attributes & Cultural Ecosystem Services (N = 30)			Recreation Value	Aesthetic Value	Educational Value	Social Relations Value	Cultural Heritage Value	Spiritual Value
Spearman's rho	ParkUsersPresence	Correlation Coefficient	0,077	0,090	.439*	0,127	-0,058	0,220
		Sig. (2-tailed)	0,688	0,638	0,015	0,503	0,760	0,244
	ParkInfra	Correlation Coefficient	-0,260	-.365*	.364*	0,236	0,293	0,089
		Sig. (2-tailed)	0,165	0,047	0,048	0,210	0,116	0,642
	SecurityInfra	Correlation Coefficient	-0,079	-0,100	0,101	0,176	0,009	0,144
		Sig. (2-tailed)	0,677	0,598	0,594	0,353	0,963	0,449
	SportFacilities	Correlation Coefficient	-0,232	-0,260	-0,143	0,108	-0,083	0,245
		Sig. (2-tailed)	0,217	0,165	0,451	0,569	0,664	0,191
	RecreationFacilities	Correlation Coefficient	0,005	-0,253	0,036	0,121	0,026	.451*
		Sig. (2-tailed)	0,979	0,178	0,850	0,523	0,890	0,012
	Amenities	Correlation Coefficient	-0,215	-0,264	0,166	0,154	0,092	0,179
		Sig. (1-tailed)	0,254	0,159	0,381	0,416	0,630	0,343
	NaturalInfra	Correlation Coefficient	-0,062	-0,132	0,230	0,317	0,114	0,267
		Sig. (2-tailed)	0,746	0,486	0,221	0,088	0,547	0,154
	PerfectSize	Correlation Coefficient	.447*	0,316	0,353	.390*	0,184	0,334
		Sig. (1-tailed)	0,013	0,089	0,056	0,033	0,329	0,071
	NoEntryAccessIssues	Correlation Coefficient	.503**	.504**	0,255	0,188	0,200	.449*
		Sig. (2-tailed)	0,005	0,005	0,173	0,319	0,289	0,013
	DistanceAppropriate	Correlation Coefficient	0,143	-0,029	0,022	0,144	-0,040	.435*
		Sig. (2-tailed)	0,451	0,879	0,909	0,449	0,833	0,016
PerceiveParkSafe Space	Correlation Coefficient	.439*	0,311	0,101	0,268	-0,142	0,269	
	Sig. (2-tailed)	0,015	0,094	0,594	0,152	0,453	0,151	
Park_Maintenance	Correlation Coefficient	.383*	.457*	-0,006	-0,040	-0,132	0,037	
	Sig. (2-tailed)	0,037	0,011	0,974	0,834	0,488	0,845	

\*\* . Correlation is significant at the 0.01 level (2-tailed).  
\* . Correlation is significant at the 0.05 level (2-tailed).

### 3.3 Cultural Ecosystem Services and Sense of Place

The table below captures the results of the two-tailed Spearman's Rho test regarding the cultural ecosystem services elements and sense of place components, showing statistical significance at both 0.01 and 0.05 levels:

Table 7.7 CES and SOP (N = 30)

Cultural Ecosystem Services & Sense of Place (N = 30)			SOP_Feel Relaxed	SOP_Feel Happy	SOP_Fav Places	SOP_MissingIt AwayToo Long	SOP_Meaning PosNeg	SOP_HowIFeel TowardPark PosNeg
Spearman's rho	RecreationValue	Correlation Coefficient	.595**	.510**	.612**	.503**	.614**	.369*
		Sig. (2-tailed)	0,001	0,004	0,0003	0,005	0,0003	0,045
	AestheticValue	Correlation Coefficient	.500**	.484**	.646**	.513**	.625**	0,250
		Sig. (2-tailed)	0,005	0,007	0,0001	0,004	0,0002	0,183
	EducationalValue	Correlation Coefficient	0,135	.376*	0,208	0,272	.375*	0,267
		Sig. (2-tailed)	0,478	0,041	0,270	0,146	0,041	0,153
	SocialRelations Value	Correlation Coefficient	.465**	0,298	0,204	0,233	0,147	0,166
		Sig. (2-tailed)	0,010	0,110	0,280	0,216	0,439	0,380
	CulturalHeritage Value	Correlation Coefficient	0,228	0,254	0,204	.391*	0,297	0,330
		Sig. (2-tailed)	0,226	0,175	0,280	0,032	0,111	0,075
	SpiritualValue	Correlation Coefficient	.429*	.584**	.401*	.491**	.436*	.615**
		Sig. (2-tailed)	0,018	0,001	0,028	0,006	0,016	0,0003

\*\* . Correlation is significant at the 0.01 level (2-tailed).  
\* . Correlation is significant at the 0.05 level (2-tailed).

## APPENDIX VII – DATA CONVERSION AND CHANGES

The following table illustrates the changes made and conversions of the questionnaire data:

Table 8.1 Adaptation to the Data

Generation Cohort	Sex Assigned at Birth
(Gen X) ages 47 – 58 = 1 (Gen Y) ages 29 – 46 = 2 (Gen Z) ages 18 – 28 = 3	Female = 1 Male = 2
Current Level of Education	Employment
postgraduate degree = 7 undergraduate degree = 6 diploma = 5 certificate = 4 high school = 3 primary school = 2 no formal education = 1	Employed full time = 6 Employed part time = 5 Student & employed full time = 4 Student & employed part time = 3 Student only = 2 Unemployed = 1
Park Visit Frequency	
Responses from the participants	Yearly Conversion (Likert scale item 1-5)
"0 times per month"	0 times per year = 1
"Once a year" "about once or twice a year" "1-2 times a year" "3 times a year"	1 - 4 times per year = 2
No responses could have been classified here, as there were no responses provided that can fit in this category, for example, once every second month; etc.	5 - 8 times per year = 3
No responses could have been classified here, as there were no responses provided that can fit in this category, for example, once every month; etc.	9 - 12 times per year = 4
"1 - 2 times per month" is categorised under "+12 times per year".	+ 12 times per year = 5
Closed-ended Question - Reasons for Park Use:	
Two of the options provided to the respondent in answering the closed-ended question of "what would you say are the reasons for visiting park?" involve "to take a break" and "to relax". All the responses including both of these two options, is only considered as "to relax", as to relax is considered the same as "to take a break". Responses that include "to take a break" and "to relax" together, are considered as "to relax" only, to avoid duplication of responses.	

## APPENDIX VIII – ETHICAL CLEARANCE



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA

Faculty of Natural and Agricultural Sciences  
Ethics Committee  
E-mail: [ethics.nas@up.ac.za](mailto:ethics.nas@up.ac.za)

29 August 2022

### ETHICS SUBMISSION: LETTER OF APPROVAL

Mr CL Struwig  
Department of Geography Geoinformatics and Meteorology  
Faculty of Natural and Agricultural Science  
University of Pretoria

**Reference number: HUM026/0622**

**Project title: Understanding intersections of sense of place and other influencing factors in decisions to utilise urban green spaces within Hatfield and surrounding areas**

Dear Mr CL Struwig,

We are pleased to inform you that your submission conforms to the requirements of the Faculty of Natural and Agricultural Sciences Research Ethics Committee.

Please note the following about your ethics approval:

- Please use your reference number (HUM026/0622) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, monitor the conduct of your research, or suspend or withdraw ethics approval.
- Please note that ethical approval is granted for the duration of the research (e.g. Honours studies: 1 year, Masters studies: two years, and PhD studies: three years) and should be extended when the approval period lapses.
- The digital archiving of data is a requirement of the University of Pretoria. The data should be accessible in the event of an enquiry or further analysis of the data.

Ethics approval is subject to the following:

- The ethics approval is conditional on the research being conducted as stipulated by the details of all documents submitted to the Committee. In the event that a further need arises to change who the investigators are, the methods or any other aspect, such changes must be submitted as an Amendment for approval by the Committee.
- **If Applications using GM permits:** If the GM permit expires before the end of the study, please make an amendment to the application with the new GM permit before the old one expires
- **If Applications using Animals:** NAS ethics recommendation does not imply that Animal Ethics Committee (AEC) approval is granted. The application has been pre-screened and recommended for review by the AEC. Research may not proceed until AEC approval is granted.

Post approval submissions including application for ethics extension and amendments to the approved application should be submitted online via the Ethics work centre.

We wish you the best with your research.

Yours sincerely,



**Prof VJ Maharaj**  
Chairperson: NAS Ethics Committee