THE UNIVERSITY OF SHEFFIELD

Department Of Landscape

Water Play in Urban Open Spaces in Sheffield: Children's Experiences, Parental and Professional Understanding and Controls.

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This PhD Thesis dedicated to

my beloved wife and family

‘Blessing’ by Imtiaz Dharker

The skin cracks like a pod.
There never is enough water.

Imagine the drip of it,
the small splash, echo
in a tin mug,
the voice of a kindly god.

Sometimes, the sudden rush
of fortune. The municipal pipe bursts,
silver crashes to the ground
and the flow has found
a roar of tongues. From the huts,
a congregation: every man woman
child for streets around
butts in, with pots,
brass, copper, aluminium,
plastic buckets,
frantic hands,

and naked children
screaming in the liquid sun,
their highlights polished to perfection,
flashing light,
as the blessing sings
over their small bones.

Abstract

The purpose of this study is to explore what makes water features in different urban open spaces attractive to children and what opportunities or constraints influence children's ability to experience such water features. This thesis takes a qualitative triangulation approach to investigate children's perceptions and experiences of water and how children's experience of these spaces are perceived, facilitated or controlled by parents and professionals, and this study's findings are based on three urban open spaces in Sheffield with a different characteristics: water features in Sheffield city centre, particularly the Peace Gardens, Millhouses Park and Endcliffe Park.

Understanding children's experiences of the built environment in urban areas plays a key role on improving the quality of urban open space provision. How children's different spaces are considered and the opportunities and constraints that effect children's experiences has been established for many types of built environment. However, children's experiences of water have hardly been researched to the current date. Although children's attraction to water was observed on many occasions, evidence-based knowledge was extremely limited. Therefore, this research focuses on three dimensions: firstly, how children perceive and use different urban open spaces with water; secondly, how parents perceive and control water play; and lastly, how professionals facilitate and control the use of water features through their design and management.

This research uses surveys undertaken with children as a main method for understanding children's experiences from their perspective. Parent's who took their children to spaces were interviewed and, in order to understand parent who would not take their children to these sites, this thesis also surveyed the parents. Additional site

observations were used to create GIS-based behaviour mapping to illustrate children's spatial use of those urban open spaces with water features.

There are considerable differences about children's experiences and parental attitudes between those urban open spaces with water features, although most of the issues and concerns related to water are similar among those areas.

Discussions of results related to urban open spaces have identified strengths of different types of water features and issues and concerns related to them. This thesis establishes a number of potential themes for improving water play provision, especially natural water play.

Melih Bozkurt

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Chapter 1

Introduction

1.1 Study Background

According to the U.S. Census Bureau (2014) the global population reached 6 billion in 1999, and was projected to exceed 9 billion by 2044. World population is increasing literally every second. World's urban population exceeded 50 percent of all inhabitants by 2010 for the first time and it was estimated that it is going to be 70 percent by 2050 (European Environment Agency, 2010). The percentage of urban inhabitants is more than the world average in the Europe. According to the World Bank (2014) 76 percent of Europe and 74 percent of European Union's population lived in urban areas in 2012. The United Kingdom is more urbanized than most other European Union countries and the World Bank estimated the percentage of urban residents reached 80 percent of all residents by 2010 in the United Kingdom. The process of urbanization is dynamic, fast and continuing, especially in developing countries (Magigi & Drescher, 2010). Jenerette and David (2010) state that incorporation of a fast growing population and movements from rural areas to cities have made urbanization an increasingly global phenomenon.

Public spaces have been important aspects of public life throughout the history. From Greek *agora* to Roman *forums*, medieval Church yards to market places, and market towns; these were the areas where social cohesion developed, people met and talked about themselves and others, and shared the news (Carmona *et al.*, 2008; Gehl & Gemozoe, 2003). Since the 1950s, public spaces started to change and changes in urban environment have been continuous, due to changes in the economic structure (Low, 2006) and the global economy driving urban strategies (Madanipour, 1997); growth of population in cities and mobilization (Woolley, 2003); and the transformation of modern human (Madanipour, 2003) order of society (Gehl, 2007). Due to the changes in the funding and management of public spaces, fear of crime and issues of security, public spaces have become matters of private interest (Trancik, 1986; Goldberger, 1996; Shaftoe, 2008; Carmona *et al.*, 2008).

One of the most important public spaces in cities is urban open space. Many urban residents rely on urban open spaces for their recreational, social, educational, and health needs. Many researchers has explored and developed theories of human experience in urban open spaces (Whyte, 1980; Tibbalds, 1992; Gehl, 1996; Habraken 2000; Woolley, 2003; Carmona *et al.*, 2003; Carmona *et al.*, 2008). These spaces are precious to city people for improving the quality of their lives. They provide many benefits, such as economic benefits, environmental benefits, health benefits, social benefits and educational benefits, and recreation and cultural focus (Woolley, 2003; Carmona *et al.*, 2008).

According to UNICEF more than a one billion urban inhabitants are children, and projections illustrate that the number of children are likely to increase in the future (UNICEF, 2012). Understanding children's experiences in urban open spaces is the first step towards providing improved urban open spaces that meet their needs. Significant amount of works has also explored children's experiences in urban environments (Ward, 1977; Lynch, 1977; Hart, 1979; Moore, 1986; Moore, 1989; Chawla, 2002). Urban open spaces are the areas children need for the benefit of their physical and mental growth, improving their skills and extending their social barriers (NPFA, 2000;

Broadhead, 2006). However, it was identified that children's experiences in urban opens space are limited. In the past, an extensive literature has been developed, exploring the boundaries and controls of urban open spaces. Physical controls such as of undesired groups and intentionally placed obstacles to prevent unwelcomed activities are common (Kilian, 1998; Woolley *et al.*, 2011); physical boundaries, such as undermanaged and neglected environment, traffic and car domination, litter, and lack of maintenance are recurrent problems (Tibbalds, 2001; Lennard & Lennard, 1992); social controls such as police, ambassadors, and anti-social behaviour orders dominate these spaces (Flint & Nixon, 2006; Nayak, 2003); social issues, such as fear of alcoholics and drug users, fear of security, and parental worries have spread (Blakely, 1994; Woolley *et al.*, 1999b), and all of these have been identified as limiting factors for children's experiences. However, children's experiences of water in urban open spaces and the opportunities or constraints allowing children to experience these water features have hardly been researched.

As a life source water is the reason why the majority of the world's important cities are where they area now. Furthermore, water influences many landscape architects (Nasar & Lin, 2003). In contemporary landscape design many water features are used for mainly aesthetic purposes, to entertain and relax people. Children like water and find affordances (Gibson, 1979) to play with water at every opportunity and this can be seen through casual observations and personal experiences. Woolley *et al.* (1997) thought the presence of water was enjoyed by children and preferred to other landscape elements and objects in urban open spaces. This wider spectrum research has shown the importance of water features from children's perspectives. One of the early studies on children's perception of water identified that the presence of water is important for children (Zube *et al.*, 1983). Moreover, it is evident from the literature that water is an important play material, which can gather different children together and help bond disabled and able-bodied children, as well as providing unifying and enjoyable play opportunities (Stoneman *et al.*, 1983). Although the research developed an understanding, they were (for instance Kates & Katz, 1977) were mainly focused on

confined environments, such as play centres and kinder gardens. However, apart from a few families from advantaged backgrounds children's access to recreational water facilities is likely to be limited. Most of the children's experiences of water are reliant on urban open spaces with water features.

There are a limited number of studies focused on children's experiences of water in urban open spaces. In the late 1990s, research explored children's perceptions of rivers and river restoration (Tapsell, 1997). This indicated that children have several fears and concerns in and around rivers. Furthermore, Tapsell *et al.* (2001) researched children's perceptions and their play in and around river environments in the case of two London rivers. The results indicated that rivers had little importance in London children's outdoor play. A few years later another research study, mainly concentrating on photographs that children took around rivers, identified rivers are seen as polluted, littered and dangerous places, and most of the play was non-river related (Tunstall *et al.*, 2004).

Research knowledge about children's interaction with water in urban open spaces is extremely limited, even though children enjoy the presence of water and there are many water features in urban open spaces. The research knowledge is limited to children's interaction with water in confined spaces such as private gardens, day-care centres (Kates & Katz, 1977); swimming pools (Mogensen, 1987); diseases and illnesses (Evans *et al.*, 2003; Jones *et al.*, 2006); and children's interaction with rivers, in a few studies (Tapsell, 1997; Tapsell et al., 2001; Tunstall et al., 2004). There seems to be no evidence-based research undertaken about children's interaction with artificial water features. Furthermore, it seems that the way existing water features in urban open spaces, either natural or artificial, are facilitated and controlled by professionals has never been researched, although there is a rich literature about controls and boundaries.

As discussed above, this section has outlined the background to this research and the limited knowledge about children interaction with water. Therefore, this thesis will

focus on the exploration of children's experiences of water features in urban open spaces and how those experiences are facilitated and controlled by professionals and parents, in order to fill the gap in the literature.

1.2 Study Sites

Using the criteria established (discussed in Chapter 3 in detail) three study sites were chosen in Sheffield, United Kingdom with water features, in Sheffield city centre, Endcliffe Park and Millhouses Park. The characteristics of each study site were different from the others. For instance water features in Sheffield city centre are artificial features of a prestigious site, while artificial water features in Millhouses Park was specifically designed for children's interactions as a facility in a destination park. On the other hand, water flowing through the Endcliffe Park is a natural river (Porter Brook) which allows us to test the previous research findings in the literature about children's perceptions and play around rivers. Furthermore, it will allow for comparisons between artificial and natural water play in urban open spaces. This is an important opportunity for developing understanding about children's perception and parents' attitudes towards water play in different urban open spaces. The characteristics and history of study sites will be discussed further in Chapter 4.

1.3 Aims and Objectives

The aim of this research is to explore what makes water features in different urban open spaces attractive to children and what opportunities or constraints influence children's ability to experience these water features.

This aim is addressed through three objectives:

- To identify the diversity of user groups in terms of their age, ethnicity and gender.
- To explore children's perceptions and experiences of water features.
- To explore how children's experience of these spaces are perceived, facilitated or controlled by parents and professionals.

1.4 Research Questions

The research aimed to answer following research questions:

1. What is the diversity of children experiencing water features in different urban open spaces?
2. What is the children's frequency of visits to those spaces?
3. How do children access urban open spaces with water features?
4. How do children experience water in different urban open spaces?
5. What are the parents' perceptions about water and children's experiences of water in different urban open spaces?
6. What are the issues which constrain or permit children's experience?
7. Do professionals consider children's use of water in urban open spaces when they design and manage these spaces?

1.5 Thesis Outline

This chapter has outlined the research background and aim of research. Furthermore, it has also identified the research objectives and set out the questions to be answered in this thesis. The following chapters will involve extensive discussion of these issues.

The Chapter 2 reviews the relevant literature. This chapter briefly discusses theories and concepts of the development of public places and urban open spaces. Later discussions move on to children's experiences in urban open spaces and limitation that affect children's experiences of open space in urban areas. The last part of this chapter will review limited number of research undertaken about children's interaction with water to focus on the gap in the literature.

Chapter 3 discusses the process of this study. It takes the discussion from research design through methods: surveys, interviews and GIS-based behaviour mapping. This chapter also explains "how" and "why" each individual method was chosen for this particular study. The chapter attempts to clarify limitations of study, which will be explored in two such-categories; physical limitation and access limitations. Lastly explains how data was processed and analysed.

Chapter 4, short chapter, introduces the study sites by highlighting their important history and explains their current use. This chapter includes historical photographs from Sheffield City Council Local Studies Library service called "Picture Sheffield" to show the history of the study areas with water features and also includes current photographs of study sites.

This thesis takes traditional structure. Firstly, the results will be introduced and these findings will be discussed. Hence, Chapters 5, 6, and 7 presents the study results for different study sites in each chapter. Children's diversity in terms of age, gender and ethnicity; how they travel to those study sites; how proximity affects children's use of those spaces: frequency of use; children's interaction with water; children's perception

of their parents attitudes and parent's attitudes towards children's interaction with water; children's and parents' worries and concerns; and professionals concerns and opinions, will be explained in these chapters.

Chapter 8 critically discusses results among all study sites and reflects back to relevant literature as long as research knowledge allows. This chapter draws the principle findings of this study and discusses in conjunction with literature about children.

Chapter 9 concludes this thesis with first reflecting the research aims and objectives, briefly discussing the emerging findings and outlines how these concepts emerged from discussions can be taken forward to provide better water experience for children in urban open spaces. Later, Chapter 9 reviews the research process. Lastly, chapter outlines the recommendation for professionals, such as planners and managers in Sheffield city council. Due to fact that this study is the one of the early studies in this area of knowledge, it provides a base for future studies. Therefore, the last part of the chapter explores the scope for future research.

Chapter 2

Literature Review

2.1 Introduction

Human Experience in urban open spaces has attracted attention from researchers around the globe for decades. The following chapter examines the key debates about public spaces, urban open spaces, children's experiences in urban open spaces, and children's experiences of water in public urban open spaces. In order to a draw clear picture and develop understanding, this review will discuss the debates in different sections and sub-sections.

First of all, section 2.2 will establish the definition of public open space with a discussion of a variety of different ideas from academics. The following sub-section will identify the development of public open spaces through civil history. Discussions start with public spaces in Ancient Greek and the section will end by outlining the condition of public spaces in the early 20th century.

The recent past of public spaces will be discussed in sub-section 2.2.2., outlining the development of the public space from the end of Second World War to today, which is the period in which changes to human life have accelerated and been continuous.

In the last part of Section 2.2 theories about privatization of design, management and ownership of public space as a result of the liberal capitalist economy will be outlined in a relevant public space context.

Urban open spaces, as a primary concept, have been studied by a larger spectrum of researchers and practitioners. Urban open spaces will be defined in Section 2.3 and urban open space types, qualities and values will be reviewed in the sub-sections to develop understanding of the classification, needs and importance of urban open spaces. Discussions are shaped around children's experience from this section and onwards, wherever research knowledge allows.

Section 2.4 will outline the children's use and play in urban open spaces, with a discussion of relevant theories and many academic research studies, mainly from the United Kingdom, the United States, Europe and Australia. Children's play in urban open spaces and playgrounds, children's independent mobility, children's visits to town centres, their physical activity and how proximity of living to urban open spaces affects their use of urban open space will be the main subject of this section.

Section 2.5 will illustrate the limitations of children's experiences of public open spaces, in the light of physical and social limitation (Moore, 1989) that have been discussed in the context of controls and boundaries of urban open spaces regarding children's use.

The last section of this chapter will outline relevant research about children's interactions with water in urban open spaces. Although human experiences in urban open spaces have been researched by many scientists in many different aspects, in some areas research knowledge about children's experiences is still limited, especially in the case for children's interaction with water in public open spaces.

2.2 Public Places

Although the definition of public space does not sound very complicated, many researchers have discussed this, yet have been unable to find a simple straightforward definition. Agnew (2011) defined the term 'place' as "part of space" and the area, a unique meeting in space. Similarly, (Dovey, 2010) states that place is where objects of the built environment are in relationship to each other, giving an example of a street: *"The buildings, trees, cars, sidewalks, goods, people, signs, etc. all come together to become the street"* (p. 16). In this context public places can be explained as somewhere that members of public come together. The term 'public spaces' is generally related to parks and open spaces; however, there are public spaces which are free to access and are not necessarily open spaces (Banerjee, 2001). Carmona *et al.* (2008) make a distinction, defining public space in a broad sense:

> *"Public space (broadly defined) relates to all those parts of the built and natural environment, public and private, internal and external, urban and rural, where the public have free, although not necessarily unrestricted, access."* (p. 4)

This broad definition includes a wide variety of spaces, such as plaza, squares, streets, parks, urban or rural open spaces. Some of these spaces may be residential or commercial, public or privately owned; however, they need to have free public access to be counted as public places. Carmona *et al.* (2008) also defines the public place narrowly, excluding open countryside, and private and internal spaces: *"All those parts of the built and natural environment where the public has free access."* (p. 5). Therefore, the narrow description of public place involves streets, squares, and parks and open spaces, where the public have free access. This second definition excludes privately owned spaces where the public has a free right of entry, for instance shopping malls, and art galleries. Although there might be some issues of controls on places with private ownership (which will be discussed later in this chapter), they are still the places where the public come together. This thesis will focus on the narrow definition

of public spaces, although a broad definition will be used occasionally in parts, where relevant, such as in the section on privatization and ownership of public spaces.

2.2.1 History of public spaces

The roots of Western public places go back to ancient civilizations. Experience of public spaces in Europe has a long history. For instance, the Greek *agora,* meaning a gathering place, was the central location of urban public life in those civilizations (Shaftoe, 2008). Public spaces in the Ancient Greek polis, especially *agora*, were important places for society, the heart of the ancient Greek polis (Thompson, 1954). Such areas were used as places of social interaction and being the place of democracy, where people talked and voted on issues related to government (Carmona *et al.*, 2008). Moreover, public spaces in ancient cities also served as a market place to exchange and act as a connection point between various functions of the city (Gehl & Gemozoe, 2003).

In the course of time, the Greek *agora* was replaced with forums in the Roman Empire, which were also public spaces where all gatherings occurred described as combining "the function of the Greek acropolis and agora" (Carr *et al.*, 1992, p.53). According to Carmona *et al.* (2008), in Roman architecture urban spaces were advanced compared to Ancient Greek, and the first urban public spaces similar to today's spaces started to appear. For instance, larger forums included open, semi-open and indoor spaces, such as piazzas, basilicas and temples. Roman cities had downtown areas, which consisted of meeting spaces, marketing, shopping, sport events, and political debate. All of these structures were precisely unified with Roman cities (Ibid).

As time progressed, medieval towns grew up on once roman settlements. However, medieval towns were controlled by the Church and the areas in front of churches were the only planned public spaces (Carmona *et al.*, 2008). Marketplaces were also important meeting and greeting points of cities in medieval times (Masschaele, 2002). However, from the 11th century onwards, market towns started to appear (Medieval

Times, 2012) and in England reached 800 at the end of the 16th century (Carmona *et al.*, 2008). Therefore, social cohesion in public spaces in small towns, especially the market towns, became more vibrant in the medieval period (Masschaele, 2002).

In the renaissance, public spaces started to appear as symbols of the power of the rulers, with displays of arts, and sculptures in public places and on buildings. Carmona *et al.* (2008) argues that market places were excluded from central areas of renaissance cities, while it was replaced with arts, architecture and sculptures, such as grand piazzas, to replicate the ancient world. However, markets were not only places for buying and selling but also places where social cohesion developed, people met and talk about themselves and others, and shared the news.

Residential areas started to develop at the beginning of the 17th century in London. The first of its kind as a square, Covent Garden was built in 1631 (Carmona *et al.*, 2008). The authors argued that, although Covent Garden did not achieve its potential, other residential squares followed. These squares were fenced semi-private places, where stalls, sellers, and carts were not permitted. Leicester Square was one of the successful examples of an exclusionary residential square at the time. Carmona *et al.* (2008) state that, in the late 16th century, public parks, which were originally royal hunting grounds, started to be laid in different areas of London in the late 17th century. However, actual public access was not granted until early 19th century. In the period, starting from the 1840s, a parks movement started to develop in the United States (Low *et al.*, 2005). According to Low, the philosophy of the parks movement lay in the romantic idea that was believed to have natural healing potential. On the other hand, in 1865 a large proportion of public roads were shifted back to local authorities in the United Kingdom and towards the end of the century "London Building act 1894" forbid the use of fences, rails and similar boundaries, creating objects without permission (Minton, 2006). Free public access to those spaces had begun.

Towards the end of the 19th century a book called "To-morrow: A Peaceful Path to Real Reform" by Ebenezer Howard was published. In it, Howard (1898) proposed a

city, outside the polluted industrial cities of Victorian times. The land for garden city would be held in common ownership and purchased by private companies; and residential, commercial plots would be rented to inhabitants of the city (Kafkoula, 2013; Livesey, 2011). The cities would cover an area of c. 66000 acres and consisted of c. 250000 residents, and would be self-sufficient. Pollution and geographical growth would be limited, and these cities connected to rapid transport systems. The pioneering Garden City Association was first established in 1899, and enough founds were gained by 1902 for the first case study, and the land was bought in 1903(Livesey, 2011).

The first garden city was Letchworth. In terms of landscape architecture, the importance of garden cities is related to the parks and open spaces it consists of. Garden cities would include central parks and various public green spaces, which accommodated inhabitants' social and recreational needs. Kafkoula (2013) mentions that, although Garden Cities theory first appeared in the UK, it spread to Europe between the first and second world wars. In 1913 garden cities and the Town Planning Association was established; and in 1924 it became an International Federation for Town and Country Planning and Garden Cities (Domhardt, 2012). The Garden Cities Movement even spread to developing countries, such as Singapore, in 1960s (Yuen, 1996).

On the other hand, when we come to the early 20th century, streets and public spaces took their toll from modernism, which declared them unhealthy and unwanted in many cities (Gehl, 2007). The new trend was to offer people parklands with trees as a home setting and lawns as a meeting point to replace streets and public squares (Ibid). Americans took a slightly different approach in the same period. Traditional town design based around central public spaces was an important element of American Town planning from the 17th Century till the early 20th Century; however, this approach started to change from the 1920s due to technological developments (Hayden, 2006), which also affected many towns and cities round world later. According to Hayden (2006), advances in car manufacturing allowed Americans to move away from central city areas and live in suburban settlements; however, the big change in American life

started after the Second World War. In United States, the development industry, led by large building companies, leaned towards suburban towns, which were built on the outskirts of existing cities. The Lakewook, California, is one of the prime examples of these developments, which included successful shopping malls, and was opened in February 1952, offering goods to new residents and outsiders. After the success of the town shopping mall, the trend spread across the country, and many new developments included shopping malls. According to Hayden (2006), in the United States, the policy that allowed tax reduction to developers for the every income generated building, including offices, restaurant, hotels and shopping malls, was a huge success for the building industry. The era of shopping malls has accelerated and has affected the use of public spaces in many cities on both sides of Atlantic, as discussed in the following sections.

2.2.2 Public places in the recent past

As discussed above, the destiny of public places started to change in the post-World War II era in United States. Rowley (1998) indicated that the building industry was the dominant factor shaping cities after 1945, not only in the United States but also in Europe. In the 1950s, suburban living and shopping malls gained success and started to replace other types of public spaces, especially open spaces. As the towns in the suburban areas progressed and technology advances, especially automobile industry, both the 1950s and 1960s were the decades of car domination and motorway construction (Tibbalds, 1992). Public spaces had become less important, less used and dominated by cars. Danish architect Jan Gehl states:

> *"By the early 1960s, a situation had developed where new Modernistic planning concepts had more or less phased public life out of the new city districts, while in all the older parts of the cities, what remained of public life was harassed or simply squeezed out of streets and squares by traffic and parking."* (Gehl, 2007, p. 4)

In 1970 there were a considerable number of high-rise buildings in central New York, where William Whyte studies the life of plazas. Whyte (1980) started studying parks and open spaces of New York City with a research group, The Street Life Project; however, a majority of the parks and green spaces did not accommodate a large number of people. They discovered the potential of plazas. Since 1961, development companies were allowed to increase building height or floor space, if they provided public spaces, such as plazas (Rivlin, 2007; Whyte, 1980). Whyte studied the plazas in New York City, the world's most costly open spaces, during the 1970s. These were used by mostly office workers and patrons, for lunch and breaks and conversation, especially between 12pm and 2pm. After 6pm no major use was detected. Whyte's studies showed how the public use of urban open spaces have shifted from urban parks to plazas, this being most likely due to the working hours and pressured life styles of cities. Whyte (1980) constructed a study in Tokyo and found mainly similar results when compared with New York. This suggests that the use patterns of open spaces in large cities show similarities, although there are cultural differences.

During subsequent years, through the 1970s and 1980s, even more changes to industries, labour force and welfare of the citizens is recorded (Low, 2006). Low added that the traditional social order and social interaction in public spaces was weakened by these economic reconstructions. As a result of changes in the economic structure, state funding of public spaces was also affected. Katz (2006) indicated that funding for some public spaces, where social reproduction happens – in a way that governments request it - were more lucky than parks and open spaces. For instance, funding for prison expansion outran the budget for education and schools. In detail, 70% of prisons spaces in the 90s in the United States were built in the previous decade, while only 11% of the classroom spaces were built in 80s. As a result of the lack of public funding, the planning, design and management of most public spaces, especially open spaces, was passed to private enterprises, especially in the case of New York. Conservancies, partnership groups, friendship groups and similar non-profit organizations started to

appear to take responsibility from governors and take care of what were originally public spaces.

By the 1980s not only funding but also the design of public spaces, and urban design in general, decreased, becoming a visual and aesthetic concern only, due to market-driven urban strategies and changes in the lifestyles of the public n (Madanipour, 1997). Loukaitou-Sideris and Banerjee (1998) argued that urban design is a tool to model and create public spaces. Urban design is not independent of the economic system which the urban design operates in. In the capitalist economies, developers do their job for profit and are treated with capitalist instruments, such as mortgages and bankruptcy. Bentley (1999) argues that patrons are fundamentally concerned with the financial aspect of project, whereas, many designers have non-business values. However, according to Bentley, there is a constant battle between patrons, who have economic and political powers, and architects, who have knowledge and expertise.

On the other hand, a majority of the architect and urban designers might not constantly battle against the developers needs because they have families and children to feed and mortgages to pay. Bentley *et al.* (1985) also argues that decisions regarding design should be in the hands of the people with economic power, or basically patrons. Therefore, built environments, as not only aesthetic but also profitable and popular, has appeared in the different cities in different countries. In contemporary American cities, the urban design tool fulfilled the objectives of the socio-economic system. Post-modern urban design, similar to post-modern architecture, is not only market-driven and aesthetically concerned but also not dependent to context. Therefore, context dependent, well thought out and coherent public spaces of the modernist era had become the matter of the past. Post-modernist urban design became market-driven, exclusionary, and apolitical (Loukaitou-Sideris & Banerjee, 1998).

At the beginning of the 90s a "Zero Tolerance" strategy was formulated, which was influenced by "The Broken Windows Theory" (Wilson & Kelling, 1982), introduced in New York city to control the space and prevent beggars, graffiti artists, bikers,

homeless and youth using the public spaces (Smith, 1999). According to Minton (2006), by the end of 90s more than 70 cities in the United States had passed similar legislation to control public spaces and evacuate unwanted groups from public spaces. On the other hand, in the United Kingdom, the 90s were the years of regeneration of public spaces. The trend began with regeneration of industrial estates, especially London docklands, and many development projects were undertaken in the 90s (Ibid). Re-development of The Peace Gardens, Millennium Square, Winter Gardens and some other central areas in Sheffield were undertaken at the end of 1990s and the beginning of 2000s.

In 2000s public funding for public spaces decreased to a non-existent level, especially in the United States. For instance, the investment of $50 million a year from private organizations was donated to take care of New York's parks (Schwartz, 2002), whereas public investments in the parks and open spaces decreased to 0.5% of the annual local public budget of New York municipality (Katz, 2006). Parks and opens spaces in the United States were one of the areas most affected by budget cuts after the 2008 global crisis (Walls, 2014). According to Walls, the success of The Central Park conservancy encouraged other people to form a non-profit organization for other New York parks in these financial circumstances. Not only urban but also national parks have been affected by budget cuts. As a consequence of lower funding, the number of staff managing and maintaining national parks has diminished in the United States. A report published in the CNN summarised the relationship between budget cuts and national parks, saying that less staff would be available, parks would open for shorter periods and would be closed for several days a week due to a lack of management staff, while some facilities would be closed down and a limited number of camping grounds would be available (Dawson, 2013).

The situation has not been very different in the United Kingdom. Budget cuts have also affected the management of public spaces, especially parks and open spaces in the United Kingdom. According to the result of the Public Parks Assessment Survey, 19.8% of the total annual revenue expenditure deficits of 24 local authorities,

responding to specific question, were reduced between 1979 and 2001 (Urban Parks Forum, 2001). Furthermore, it was estimated that, in 2001, the total annual gross revenue expenditure deficit of all local authorities (475 in total) involved in surveys was between £126 and £128 million compared to 1979. Survey results indicated that 1979/80 and 1984/85 was the years when most striking budget cut happened and were followed by 1989/90 and 1994/95, when the second most dramatic reduction occurred in park authority's budget (Ibid). Budget cuts and a decline in park conditions has continued in the United Kingdom. According to a recent report, 86% of park managers in the United Kingdom have affected by budget cuts since 2010; and slightly less than a half of councils had discussed selling green spaces and open spaces (Neal, 2014). Neal anticipated that the future of many parks and open spaces is questionable and urgent action is required because there might be a rapid decline in park quality, especially those in most deprived areas of the country (Woods, 2014). Furthermore even the largest cities in the United Kingdom have been affected by recent government cuts, such as Liverpool, which lost £156 million, and Sheffield, which lost half of its budget (BBC News, 2014; Sheffield City Council, 2014b). Some friends groups have been formed, non-profit organizations raising funds for parks, when public investment is not enough in the United Kingdom. Since the beginning of the revenue cuts in 2010 there has been a 47% increase in the number of member in friends groups (Neal, 2014). For instance, Friends of Millhouses Park, Sheffield, organize fund-raising in the parks regularly. Their most important achievement was collecting money for an in-demand children's water splash park.

On a larger scale, Big Lottery Funds have invested money, raised through the National lottery, for open and green spaces projects in United Kingdom. For instance, the "Green spaces and sustainable communities" programme, which ran between 2000-2006, had £126m invested in it by the Big Lottery Fund. Furthermore, £123 million was invested in the "Children's Play" programme by the same institute (Big Lottery Fund, 2014). It might seem that a large amount of money has been paid out by the Big Lottery Fund, which might behave thought to compensated for budget cuts. However,

firstly, these funds are only available for the projects and the spaces chosen. Secondly, these funds are only available for a short period of time until the programme closes, but public spaces need constant management and maintenance. Thirdly, the availability of funds depends on the money raised by the National Lottery, and is thus dependent on the number of people who play lottery at any one time.

The recent history of public spaces has shown that many changes in lifestyle and social situation have affected the condition and use of public spaces. Gehl (2007) indicates that extensive changes in the social order of society in the second half of the 20th century have occurred due to advances in the economy. Changes in society, such as trends in living out of town, in gated communities and suburban areas, the growth in car use, the increase in the amount and use of shopping malls, and the increase in private ownership or management of public spaces, have all impacted on the use of public spaces. In particular, the physical appearance and condition of public spaces has been affected (Ibid). Similarly, Loukaitou-Sideris and Banerjee (1998) stressed that the global capitalist system had replaced modernism by the 1960s. They added that recently built projects are based on financial activities, encouraging consumption, creating apolitical spaces and separating users from unwanted socio-political issues; basically post-modern public spaces are "market-oriented", "controlled" and "protected".

Low *et al.* (2005) conclude from research on the history of public spaces over the last 15 years that globalization has impacts, positive as well as negative, on public spaces, even at the local levels. They stress the following:

> *"More immigrants, more diversity, new uses of park space, less public money for operations and maintenance, and greater sharing of management responsibility with private entities."* (p.3)

Carmona (2010a) categorized contemporary spaces into twenty different categories, from natural/semi-natural urban spaces to internal private spaces. The distinction

between these categories has become increasingly ambiguous due to privatization and public access to private spaces (Carmona, 2010a; Castello, 2013; Low, 2006).

Carmona *et al.* (2008) summarise that the complex socio-economic structures of global capitalism have influenced modern public spaces; however, contemporary public spaces has also been affected by their ancient roots, by different models of governance, by political decisions and primacy, by public and private funding and investment, and by market forces.

2.2.3 Privatization of public places

In the second half of the 20th century design, management and ownership of some public spaces have shifted to private companies. Guy (1998) called these private initiatives "profit seeking development agents" (p. 267), involving these companies gaining large profits through the sale or rent of public spaces. In that sense, in some streets, parks and open spaces that were formerly public spaces, have become a private interest (Goldberger, 1996). Trancik (1986) stated;

> *"We have transformed the city of collective spaces into a city of private icons."*

There are several reasons behind the privatization of public space. These can be summarised as political decisions; lack of governmental funding; security issues and fear of stranger danger; access; and changing society and culture. We can group them into two categories: privatization related to the shifting global economy and privatization related to lifestyle. The latter is also related to global liberalism to some extent.

First, the effects of a global liberal economy will be discussed. Privatization, in a broad sense, is an issue in our society, which is not only related to public spaces but is found in every part of our daily lives in the 21st century. Privatization is deeply tied to the liberal capitalist system, which exists in most of countries. Although global market liberalism was first established in the 19th century, after the World War II,

governments started to stimulate the global market economy and downsize state involvement and nowadays this has reached peak levels. As a consequence, the provision of goods and services has dropped dramatically (Banerjee, 2001). Minton (2006) argues that the role of city councils in the United Kingdom as "providers" was replaced with "enablers", which led to the management of public spaces by private companies. The end result, "private-public spaces", actually transfers the power from local authorities to private landlords and companies, which have the decision rights to access and exclude undesired types (Ibid p. 10).

Moreover, as was discussed above, due to shrinking governmental funds, individual non-profit initiatives have taken the responsibility for looking after public parks in many areas. Through this process, the right of decision-making is also transferred to organizations and private individuals, who pay for the fund-raising (Low, 2006). For instance, in New York, the City Parks Foundation and the Department of Parks established the "Partnership for Parks", which raised $50 million from the private sector for the management of the city parks (Katz, 2006). Although private fund-raising may temporarily fill the budget gap created by governments, it is not a permanent solution for all parks. Katz further discussed the situation that conservancies and fund-raising for the parks in poor neighbourhoods did not work as well as the park conservancies in the wealthy neighbourhood, as was the case with central park. Wealthy individuals continue to pay for the management and restoration of their local neighbourhood, but do not take responsibility of other areas. This is similar with some friends of parks groups. This situation is more likely to result in the degradation and neglect of public spaces in disadvantaged neighbourhoods. From a long-term perspective, parks in wealthy neighbourhoods might remain standing, while the rest might disappear.

Another form of privatization that is related to the management dimension is Business Improvement Districts (BIDs). BID is a scheme that first appeared in Canada and allows for the collection of additional taxes from business and property owners in the district area, which is used to provide services such as cleaning, security and marketing

of designated area (Carmona *et al.*, 2008). Low (2006) argues that within the BID scheme public space becomes private. For instance, the Thirty-Fourth Street BID in Manhattan has closed down to public access after 6pm to prevent undesirable activities taking place. BIDs keep the public out of the area at certain times of the day to prevent burglary, or alcoholic and homeless people regularly occupying the areas. A public right of all inhabitants to access the space at night is violated.

Not only are the management dimension of public spaces privatized, but also smaller contemporary public space is under pressure from global forces, which leads to global competition at street level (Carmona, 2010a; Jiménez-Domínguez, 2007). For instance, the chain cafés, pubs, and restaurants open in every corner show the true content of the argument. Kohn (2004) stressed that local authorities tend to let public space for commercial events and activities. Private interest and pressure on public sidewalks has increased. Most of the enterprises have expanded outside their boundaries onto sidewalks to create an open space experience for their customers and to occupy the space which belongs to all members of the public. They even hedge in the expended space, making true public space their private-public space. These are consumption spaces, and highly controlled. Although they are free to access and places where the public meet and socialize, individuals who are not consuming the goods on offer are not allowed in these spaces. For instance, through the sale of good in cafés and pubs indirect exclusion is performed.

On the other hand, Jiménez-Domínguez (2007) argues that local businesses create social cohesion and interaction between individuals, like the market places of the past. They are not only eating places. Even if they expand on pavements, it is temporary for a few hours a day; for instance, pick-up trucks turned into a temporary restaurant in a parking lot. These areas are not rented from local authorities, therefore they cannot be occupied long-term. An investigation into Mexican city, Guadalajara shows that local businesses, such as taco stands and street-corner restaurants, create "real space" out of pavements or empty parking lots (Ibid). These functions do not dominate the space, as it returns to its original purpose after a few hours in the mornings or at night. Jiménez-

Domínguez agrees that such businesses should not be there; however, they are temporary and create temporary neighbourhoods and social interaction. However, chain cafés keep rented pavement or other form of public space occupied all the time.

Katz (2006) questioned the line which should be drawn in relation to a definition of privatization;

> *"It starts innocently enough - "adopt a bench," sponsor a playground, pay for a tulips bulbs in the conservatory garden - but the trajectory from advertising on back boards to privately bankrolling the United Nations is all too smooth, and its long-term consequences have not been carefully addressed."* (p.119-120)

As mentioned at the beginning of this section, the second reason for the privatization of public space is changing lifestyles. In contemporary society it is not only spaces and places which are privatized but also people become part of private world, with the activities they undertake. Madanipour (2003) stressed that a house was used to be the centre of social interaction; however, it became a place of privacy from the 18th century onwards.

Changes in the social structure not only transformed the role of the house. Modern humans have also been transformed. Madanipour (2003) described the human mind as the most private part and *"core of the private sphere"* (p. 5), which *"extended to personal space of the body"* (p. 204). People became private in their private spheres in the modern world. People started to live more private, less socially interactive, being replaced by social media, and daily activities being undertaken there. The privatization of people, as well as public space, mostly related to fear of crime and issues with security in public spaces (Shaftoe, 2008). The attacks on the World Trade Centre raised the level of public fear in the public around the world. However, the history of security-related issues continued for many decades (Low *et al.*, 2005), even centuries back, when royal families built housing estates, which were totally fenced in and closed to the proletariat. According to Minton (2006), 90% of citizens in the United States

and 70% of the public in the United Kingdom believed that crime rates were climbing, although rates had shown a decline since 1995. Due to security concerns "gated-communities" of the past have returned. Security-orientated urbanism creates walled, watched, security guarded neighbourhoods and private public realms (Jiménez-Domínguez, 2007). These spaces create havens for their residents; however, outsiders are not allowed access. These neighbourhoods privatize open public spaces, mainly green spaces, lakes and unspoiled landscapes, and turning them into amenities such as golf courses, (Low, 2006), on land where once there was public and free access for all. Goldberger (1996) argued that the peak point of privatization of public places is gated-communities, where even the streets and sidewalks become private land where a small number of people live in the area. Global scale insecurity is established through the code of control and exclusion of undesirables by the gated-communities trend. Access restrictions are created by those gated-communities.

Another access related issue of privatization is related to plazas. As mentioned earlier, many plazas were built in order to increase the height or floor space of buildings in the United States (Whyte, 1980; Rivlin, 2007). Some of these plazas increase the privatization of public space because those spaces are mainly used as offices and access through the building for the general public may not always be possible. Carr *et al.* (1992) stressed that visual access may be achieved to some public spaces; however, absence of physical access limits the public use of spaces.

In this section privatization is mainly discussed in terms of the funding and management axis because the issues of security and 'stranger danger' are a significant;[1] and issues of boundaries and control will be discussed later in this chapter. To summarise, global market liberalism and changing society structure are the main reasons for privatization of public space.

[1] Security and 'stranger danger', and related issues such as detailed discussions of gated communities, are not directly related to content and therefore will to be incorporated into this PhD thesis. However, security issues will be discussed in Section 2.5.

Madanipour (2003) summarises the situation thus;

> *'A combination of the need for safe investment returns and safe public environments has led to the demand for total management of space, hence undermining its public dimension'* (p. 189)

2.3 Urban Open Spaces

According to the Oxford English Dictionary there are several different definitions of open space. The first one is the early use of open space, as defined as *"a space little obstructed by trees, buildings"*. The second definition is the contemporary use of the phrase *"a park, garden, etc., without buildings in the midst of an urban area; esp. an area designated as such by a municipal authority, government"*. The third definition is related to the open lands in the countryside; however, as we seek the definition of urban open spaces, a third definition emerges out of this consideration. Several authors have defined what urban open space is. According to Gold (1980), it is the land or water surface that is not occupied by buildings and cars in urban areas. Similarly Stiles (2013) suggested that, in a broader sense, urban open space is *"something wider and more all-encompassing, namely as the continuous matrix of all un-built land in urban areas"* (p. 9). Tankel (1963) argued that, not only un-built spaces in urban areas but also water on the land in urban areas is urban open space. According to definitions of an urban inhabitant, all the spaces we experience outside and around the buildings in urban areas count as urban open space. Public parks, private gardens, civic plazas, cemeteries, courtyards of private buildings, allotments, community gardens, university campuses, hospital grounds, seaside, lakes, and water fronts are all examples of urban open spaces. The differentiation of urban open space will be made in the following section.

2.3.1 Type of urban open spaces

The term open space is not directly related with ownership. There are public and private open spaces. However, Habraken (2000) stated;

> *"The privateness and publicness are not static conditions, [which] causes much confusion"* (p. 138)

Publicness and privateness is transitional, depending on the conditions; depending of the typology they are interchangeable. Although various typologies of urban open spaces can be found in the literature, four different typologies relevant to the context are discussed. According to ownership status Newman (1972) categorise open spaces as public, semi-public, semi-private and private open spaces. Public and private open spaces are straightforward definitions. Public open spaces include parks, plazas and any open space that belongs to local authority and has free access to every member of the public. Similarly, private open space is also quite a straightforward definition, such as personal house gardens. The other two categories are more fluid and harder to understand. This is the area where transition starts. Semi-private open spaces can be identified as spaces that can be used by particular people and access for ordinary members of the public is not permitted. An example of semi-private public space is courtyards of private blocks of flats. Lastly, semi-public spaces can be defined as a space which is used by special public groups where the access time might be limited. Therefore, schoolyards, hospital gardens and university campuses can be examples of semi-public spaces.

Carr *et al.* (1992) categorized the public spaces according to their functions. They suggest 11 types of public spaces, 10 of which were open spaces, such as public parks, square and plazas, memorials, markets, streets, playgrounds and community open spaces, along with greenways and parkways, found spaces/neighbourhood spaces, and waterfronts (p. 79). Their typology is fairly simplistic and can be understood. Only it is better to open "Found spaces/neighbourhood spaces", which are publicly accessible

open spaces that can be vacant or undeveloped. Street corners and land waiting to be developed can be in this category. They stressed that children and teenagers especially claim, use and enjoy these spaces.

Woolley (2003) investigated open spaces according to their location and suggests three types: domestic urban open spaces, neighbourhood urban open spaces and civic urban open spaces. The open spaces within close proximity of private homes are domestic urban open spaces. Examples of this include, housing areas and private gardens, which are generally adjacent to houses; community gardens, shared by small communities; and allotments, which can be considered as extensions of gardens or replacements for gardens. Woolley's second category, neighbourhood urban open spaces, is open public space in the local area. Woolley included public parks, playgrounds, playing fields and sports grounds, school playgrounds, streets, city farms and incidental and natural green spaces in this category. The last category is civic urban open spaces, which include commercial open spaces, health and educational open spaces, and transport and recreational open spaces. Woolley (2003) argued that the largest number of open spaces that can be seen in our cities are in this category; however, they are not as valued as other types. Squares, plazas, water features and office grounds are examples of commercial open spaces generally seen in city centres. Her argument is that a different variety of water features can be found in other open spaces. Therefore, water features can be included in one of the other two categories. However, they are more likely to be included in plazas and office grounds. Furthermore, hospital grounds, university campuses and roof gardens are also mentioned as belonging to civic urban open spaces.

Carmona (2010a) researched many different typologies of urban open spaces and divided public space, according to its use and ownership into twenty categories. Twelve of those categories include open spaces, such as natural/semi-natural urban spaces, civic spaces, public open spaces, left over spaces and undefined spaces, Public 'private' space, Private 'public' spaces, Visible private spaces, Interface spaces, User selecting spaces, Private open spaces and External private space (p. 169). It might be assumed that some of those categories are easier to understand. For instance, Carmona called

the spaces left for development after planning leftover spaces. Undefined spaces are identified as the space abundant to its fate or the space waiting to be redeveloped. Public 'private' spaces are privately owned but free to access for public use, although there might be controls, to some extent. Examples of this category might be church grounds, hospital gardens and business parks. On the other hand, spaces that are publicly owned but have limited public access are defined as private 'public' spaces. Only individuals who have permission can get access to private 'public' spaces, such as university campuses, housing estates and institution grounds. Other spaces can be summarized as visible private spaces – front gardens, allotments, interface spaces – private pavements, user selecting spaces – playgrounds, skate parks, private open spaces – private woodlands, and external private spaces – gated streets and private gardens.

The open spaces that were investigated in this thesis are "public open space" according to Newman (1972), or "neighbourhood open spaces" and "civic space", as one of the study sites is city centre location, in regard to Woolley's (2003) typology. These spaces are "public parks" in the Carr et al.'s (1992) classification and "Public open space", according to Carmona (2010a).

2.3.2 Qualities of urban open spaces

In our daily lives public space we use most is related to our daily activities. The neighbourhoods we live in, parks and open spaces around our houses, the streets we use to go to work, shopping, and school, yards, gardens or plazas of our office buildings are the public places we use most, as a part of our daily routine. According to Carmona *et al.* (2008) health, comfort, happiness and our basic daily life needs are influenced by the quality of these spaces. Tibbalds (2001) suggests:

> *"...objective must be the creation of a rich, vibrant, mixed-use environment that does not die at night or weekends and is visually stimulating and attractive to residents and visitors alike"* (p.87)

Moreover, he argues that the quality of open space is an evaluation tool for ordinary individuals to assess the work of professionals; planner, urban designers and landscape architects.

Carmona *et al.* (2008) investigate the qualities of public spaces and draw conclusions from literature. According to their suggestions the quality of public spaces can be grouped into three categories: tangible qualities, intangible qualities and desired qualities. *"Tangible"* or visible qualities of open spaces include security, collection of rubbish, traffic management, ease of access, and many other aspects. These qualities are generally associated with the management of public spaces. *"Intangible"* or invisible qualities can be summarised as inclusiveness, supporting diversity and participation, alongside several other qualities, which are generally associated with the design of these types of spaces. In the last category, *"Desirable qualities*", Carmona *et al.* (2008) list of qualities called *"Universal positive qualities for public space"* (p. 15) thus: cleanness and tidiness; accessibility; being attractive and comfortable; inclusiveness; vital and viable; functionality; distinctiveness; safety and security; being robust; and being green and unpolluted and fulfilling.

Gehl (1996) identified necessary social and optional use. Necessary use includes obligatory activities such as going to school and work, and waiting at bus stops. According to Gehl's research necessary activities happen, regardless of the qualities of open spaces, which have minimal impact on necessary activities. On the other hand, social activities are highly affected by the qualities of urban open spaces. Social activities include communal activities, meetings and basically "seeing and hearing" (p. 14). Social activities are several times more likely to happen, when optimal qualities of public places achieved. Moreover, optional activities boom, when the optimal qualities of urban open spaces are achieved. These activities require willingness to take part, such as sunbathing, taking a walk, having a French picnic, etc. Gehl (1996) stressed social activities benefit from the situation where necessary and optional activities are supported. Therefore, qualities of urban open spaces are important to increase all sorts

of activities in urban areas. However, they are particularly important for bringing people outside their homes to enjoy open spaces, meet with friends, chat and socialize.

2.3.3 Values of urban open spaces

In this section values of urban open spaces will be explored in five sub-sections; health values, social values, educational values, economic values and environmental values. These values will be discussed in the context of children's lives, to the extent that relevant literature is available.

Liverpool City Council (n.d) emphasise that parks and open spaces have a major effect on the neighbourhood, city and regional economies. Businesses around good quality public spaces are able to attract more customers and improve their trade capacity, which in turn improves the local economy, bringing more employment opportunities (National Urban Forestry, n.d.), significant reassurance for workers in buildings around open spaces (Parker, 1992; Randall *et al.*, 1992), and increased residential property prices (Kaplan, 1992; Patel, 1992; Tyrväinen, 1999), having an impact on house prices, according to the Greater London Authority (2003).

On the other hand, National Urban Forestry (n.d.) indicate that undertaking quality planning and management of urban open spaces provides a variety of benefits. However, urban development and its results have a negative effect on urban climates (Woolley, 2003). Urban open spaces have various benefits to inhabitants that can be summarized as follows: improving air quality by cooling air (reducing aspects of the "urban heat island effect") and absorbing atmospheric pollutants; decreasing CO2 levels; stabilising ground surfaces; preventing floods by decreasing the levels of run-off water; supporting urban wildlife; conserving endangered species; and helping to improve biodiversity and wild habitats (Tyrväinen, 1999; MacArthur, 2002; Woolley, 2003; Cabe Space, 2004).

Economic and environmental values of urban open spaces are not directly related to children. Therefore, these benefits will not be discussed further in the following sections. In order to draw a clear picture of the debates, health, social and educational values will be discussed below.

2.3.3.1 Health values of urban open spaces

Many researchers from the medical science and landscape have shown interest in the health values of urban open spaces. Due to concerns about the limited physical activity of urban children and subsequent health issues, the number of publications in this area has increased in recent years (Griffin *et al.*, 2004; Edwards *et al.*, 2010; Stamatakis *et al.*, 2010). The World Health Organization (WHO) identifies health as three fold: physical, mental and social wellbeing (World Health Organization, 1948).

Physical health values

Urban open spaces provide opportunities for a physically active life style. These are the areas that provide opportunities for inhabitants, especially children, to burn excess energy, play sports and chase games, and for adults to walk or run. Children's health benefits from urban open spaces are related with children's access to those spaces. However, children's access to urban open spaces independently has decreased (Hillman *et al.*, 1990; Johnston, 2008). Children's access to urban open spaces is limited due to parental worries, children's worries, and the social and physical boundaries of cities (Lennard & Lennard, 1992; Blakely, 1994; Woolley *et al.*, 1999b; Castonguay & Jutras, 2010).

Limited access to urban open spaces is one of the important causes of decreased physical activity levels in childhood, which is related to health problems, as indicated in many recent studies. For instance, Griffin *et al.* (2004) studied 199 children (mean age 11) in Dublin, recruited from 15 different schools. Researchers followed these children for a year and surveyed them. Results indicated the percentage of very

overweight children had increased three times since 1990. These findings illustrate the risk of weight gain and obesity for children in urban areas.

An Australian base study investigated the relationship between the time children spent outdoors and their physical activity, body mass index and being overweight. Cleland *et al.* (2008) study involved 548 children and their parents (as a pair) from 19 state elementary schools in Melbourne, and took place in two stages, in 2001 and 2004. The results suggest that there was a limited relation between time spent outdoors and physical activity levels among young children. However, the older elementary school children (10-12) who spent more time outdoors were physically more active and less likely to be overweight. Cleland *et al.* (2008) stated that children become less physically active as they get older, according to the literature. Their findings are particularly important and they suggest encouraging older elementary school children to spend more time outdoors, as an effective strategy to increase physical activity levels and contribute to decreased childhood overweight and obesity.

The researchers repeated the study a third time in 2006 and published the finding in 2010. Cleland *et al.* (2010) recruited 421 families originally involved in order to repeat the study in 2006. Research findings suggested that time spent outdoors excessively reduced over time among all age groups and genders. Moreover, children with more indoor tendencies spent less time outdoors over 5 years. Researchers indicated that this might be associated with children's choices and also might be related to limited access to outdoor spaces, which is 11% of the sample group. Furthermore, they indicated that social interaction opportunities with similar age groups, such as friends, siblings or cousins, were closely associated with younger children's time outdoors, and these children tended to be physically more active. Finally, parental encouragement to spend time outdoors is significantly related to the time girls spent outdoors. Cleland *et al.* (2010) concluded that different encouragement strategies should be adopted for different age groups and genders to encourage children to spend more time outdoors and be more active.

A United States based study by Johnston (2008) highlighted that obesity and related health and psychological problems have risen, especially for children coming from black and Hispanic backgrounds. These issues are highly associated with limited physical activity levels and cause devastating results in children's later life, such as hypertension, diabetes, cancer and premature death. Johnston (2008) mentioned that, in the last 30 years, child fatalities in road accidents have dramatically reduced, due to technical and medical improvements. However, another important factor was levels of walking and cycling to school, which have also reduced. First of all, physical activity levels reduced during the school journey, due to safety concerns. Secondly, some children do not attend their community schools and travel further away because parents think these schools have better academic achievements. In this second case most of the children are driven to school, which limits children's daily access to open spaces and physical activity.

In Calgary city, Canada Potestio *et al.* (2009) researched the relationship between spatial access to urban open spaces and childhood obesity. They examined preschool children (age 4-6) using data of their height, weight and postcodes. A GIS-based analysis revealed that there was no significant relation between access to urban open spaces and children's weight. Their findings support other studies (Cleland *et al.*, 2008; Edwards *et al.*, 2010) that have suggested there is no significant relation in early age groups. However, limited access to urban open spaces is significantly related with weight gain and obesity among older children because older children's physical activity levels reduce dramatically (Cleland *et al.*, 2008; Cleland *et al.*, 2010).

There appears to be only a few studies based in the United Kingdom which have investigated childhood obesity. For instance, Edwards *et al.* (2010) obtained data from Leeds Primary Care Trust about 33,594 children's height, weight and spatial data. The results suggest that there is a high risk of childhood obesity, with the risks being higher for older age groups. For instance, 13 year-old children were three times as likely to be obese compared to 3 year-old children. As indicated in other research, children's behaviour generally changes at the age of around 10 (Hillman *et al.*, 1990; Hillman &

Adams, 1992; Veitch *et al.*, 2008; Brockman *et al.*, 2011; Foster *et al.*, 2014) and these changes can cause decreased levels of physical activity among older children. Decreased physical activity levels increase their risk of being obese. On the other hand, Edwards *et al.* (2010) illustrated that boys were more likely to be obese compared to girls. Moreover, they found a relation between wealth and obesity. Children living in the wealthier areas of Leeds were more likely to be obese.

A lack of daily physical activity has also contributed to childhood obesity in urban areas (Rigby & Baillie, 2006). Levels of obesity and overweight children are also quite high in the UK. According to data collected by the Health and Social Care Information Centre in 2011, 9.5% of children aged 4-5 was obese (NHS, 2013). Moreover, latest figures (2012-13) from The National Child Measurement Programme (NCMP) suggest 9.3% of children aged 4-5 are obese and 13.0% overweight; while 18.9% of children age 10-11 are obese and 14.4% overweight (Public Health England, 2014). As can be seen from the figures, older children are more at risk of being obese or over weight. Increased risk of obesity was related to having a more inactive lifestyle and lack of exercise in later childhood, when the foundations of adult behaviour are laid (Kuh & Cooper, 1992). Children's free outdoor play is related to having quality parks nearby (Veitch *et al.*, 2006).

This discussion establishes that there is a strong relationship between access to open spaces and physical activity levels, as well as physical activity levels and health problems. Poorer environmental conditions in turn reduced access to open spaces, and cases of becoming overweight, obesity, asthma and allergies have increased in children as a result (Jackson, 2003; Hood, 2004a; Johnston, 2008; Stamatakis *et al.*, 2010).

Mental health values

The presence of urban open spaces and green spaces are vital for people to have physical activity and escape from their daily lives. Many researchers have identified that a lack of exposure to open and green spaces can also cause mental health issues,

stress and stress-related illnesses. However, the causes of these issues are more likely to be seen in adults and there appears to be a lack of research interest in the relationship between children's mental health and their use of urban open spaces. Therefore, in this section adult-centred research is mainly discussed.

Francis *et al.* (2012a) investigated the relationship between the use of public open spaces and mental health. The findings indicate that mental health is significantly related to the quality of public open spaces. However, there were no significant correlation between quantity of public open spaces and mental health. Furthermore, research revealed that tangible qualities of urban open spaces, such as water features and walk paths, are more likely to be associated with mental health than perceived qualities such as low crime and convenience. Therefore, urban open spaces with various and better amenities could play a more significant role in healing people with mental issues.

Another significant and recent study about the effects of exposure to green spaces on mental health was undertaken by Nutsford *et al.* (2013). They examined the relation between urban green spaces and anxiety/mood disorder treatments in Auckland, New Zealand. Spatial distributions of anxiety/mood disorder treatments were determined using Geographical Information System techniques and data from the Ministry of Health. They specifically selected patients in the age group 45-64, due to the fact that patients over 65 might have access issues and patients aged 15-44 might be at low risk. Results indicate that exposure to urban green spaces are beneficial for urban residents' mental health. Every 1% increase in the green spaces resulted win a 4% decrease in anxiety/mood disorder. Furthermore, results illustrate a 3% decrease in the treatment of disorders in every 100 m decrease in distance to the urban green space. People living closer to urban green spaces were at lower risk of developing anxiety/mood disorder.

Astell-Burt *et al.* (2013) studied the relation between the benefits of neighbourhood green spaces and mental health on adults over 45 in Australia. Their research involved 260,061 Australians living in New South Wales chosen from the Medicare Australia

database, a national provider of health insurance. Participants were contacted by telephone once between 2006 and 2009, and asked questions about health and social issues. The research indicated that there is a strong relation between neighbourhood green space provision and mental health in adults. Psychological distress, confidence intervals and physical inactivity were less observed in people who lived in the greenest neighbourhoods. Lower levels of psychological distress were associated with having more green spaces. However, physiological inactivity increases the risk of psychological distress and no mental health benefits of green spaces were observed among physically inactive people.

In Netherlands-based research, de de Vries *et al.* (2013) studied four different Dutch cities, sized about 125,000 inhabitants, with 20 neighbourhoods being selected from each city. In the mail questionnaires 1,641 valid responses were gathered and analysed. The results indicate that there is a strong relationship between stress and social cohesion, as well as social cohesion and green activity, and stress and green activity. They also observed the effects of the quality of greenery. Therefore, it was evident that exposure to green spaces has an impact on social cohesion, which in turns also effects stress and mental health.

As can be seen from these recent studies, there is a direct relation between street, attention deficit disorder, mental health, anxiety/mood disorder and exposure and proximity to urban open and green spaces, qualities of open spaces, and amenities provided. Open and green spaces have healing effects on mental and stress-related issues. Taylor *et al.* (2001) indicate that open spaces help to improve behaviours of children with attention deficit disorder. However, there is a lack of United Kingdom-based studies that investigate the relationship between urban open spaces and mental health.

2.3.3.2 Social values of urban open spaces

The relationship between urban open spaces and a sense of community has been an interest of many academics. Thompson (2002) states:

> *"One vital role that urban parks play is providing space for the expression of diversity, both personal and cultural; this raises issues of democratic provision for and access to public open space"* (p.59)

California State Parks (2005) classified social values of open spaces in three categories: strengthening communities; promoting social bonds; and supporting for youth. For the first two categories, provision of urban open spaces plays a vital role because open spaces and recreation grounds are the places where people can meet, which creates a lively and safe atmosphere. Public spaces are the bonding agent of the community. CABE (2002) states that 85% of the people, involved in a CABE study felt there was a relation between the quality of the built environment and their lives.

Recently Francis *et al.* (2012b) studied the relationship between urban open spaces and a sense of community in Perth, Western Australia. They measured the participants' frequency of use of public open spaces and the activities they were undertaking. The research suggests that a sense of community was significantly related with distance to parks and the quality of open spaces. These results indicated that quality of the space creates a sense of community in a way which is equally as important as size and number of urban open spaces in the area. Furthermore, open spaces were compared with other public spaces, such as schools and community centres, and for participants public open spaces were more important than schools and community centres for a sense of community.

On the other hand, children's access to urban open spaces is limited due to fear of crime and stranger danger (Blakely, 1994) (as discussed in Section 2.5). Francis *et al.* (2012b) also investigated the association between crime levels and a sense of community and results showed that there is a significant relationship between those

two variables. When the crime levels are high there was less neighbourhood attachment within society. Aarts *et al.* (2010) found in their study that children's outdoor play is associated with social cohesion in the neighbourhood for many children from different ages and gender. Veitch *et al.* (2006) found that, according to parents (40%), the presence of neighbours or friends plays a significant role in children's outdoor play. Children with siblings and friends are more likely to discover surrounding parks, streets and public open spaces. Moreover, children living in cul-de-sacs or courts often play together. Jacobs (1961) introduced the "eye's upon street" concept in her well renowned work, arguing that buildings must be aligned to streets to provide eyes upon streets and there should be constant pedestrian traffic on streets to provide watch protection. Similarly, California State Parks (2005) report that parks and open spaces reduce crime rates because of the presence of people undertaking different activities preventing other people attempting crime. The presence of individuals on the street and in open spaces is a natural method of the crime reduction. This is not a major surprise because bonded communities are more likely to look after their surroundings, each other's houses and belongings, and their neighbourhoods, and in turn children are more likely to be mobile and more likely to have more access to open spaces due to a reduced fear of crime.

As was discussed earlier, qualities of urban open spaces are important aspects that affect the quality of individuals' daily lives (Carmona *et al.*, 2008; Gehl, 1996; Tibbalds, 2001). Liverpool City Council (n.d) argued that social groups and activities take place in quality urban open spaces, such as friends groups, bowling clubs, outdoor activity groups, amongst hobby groups, arts groups, running clubs, physical health clubs, health walk groups, cyclist groups, and schools, and that children are the user group which most visits open spaces. It can also be argued that urban open spaces of poor quality can also create social cohesion. For instance, when a group of people come together to improve the quality open spaces, social interaction can take place. However, this sort of activity is arranged. They do not occur in daily life. As Gehl (1996)

mentioned, optional activities and social interaction is created in good quality urban open spaces in daily life.

2.3.3.3 Educational values of urban open spaces

Open spaces are extremely valuable for children because children need places to play, run, socialize and learn while keeping them physically active. Ginsburg (2007) argued that many children do not have a suitable environment for play because of poverty. However, even some children who live in better conditions might not be able to interact as they should because of limitations such as the fast and pressured lifestyle offered to them. Golinkoff *et al.* (2006) argue that either at home or in their classrooms children, as well as their teachers are programmed to memorize all important academic work or facts and play is seen as a time-waster. Kolb and Kolb (2010) indicate that, due to the fact that classroom education is continuously seen as a way of learning, play is confined to spaces such as playgrounds with forgotten learning functions. However, the separation of play and learning might have a negative effect on children's growth and development. Manwaring and Taylor (n.d.) mentioned that reducing playtimes in schools should concern the public and be voiced by the media because imaginary play in schools has benefits on learning. Moreover, different types of play contribute to the development of child through expanding the barriers, allowing them to explore and take risks in formal or informal play. Children gain a lot of creativity, imagination, fun and also gain physical, cognitive, emotional and dexterity development through imaginary play (Kolb & Kolb, 2010; Ginsburg, 2007; NPFA, 2000).

Haight and Black (2001) explored the role of play in development both neuro-ethnological and cultural aspects and suggested that play has a vital role in brain development and this is shared in many mammal species, even experiences gained during playtime would affect the brain anatomy. Moreover, animal-based studies suggest that play provides opportunities for improving problem-solving skills in the young as well as social and language skills (Manwaring & Taylor, n.d.)

The NPFA (2000) mentioned that children sense and explore their world during play, which helps development of gross motor and fine motor skills, concentration and observation skills. In times of play, children find problems around them and fix them. Play encourages children to ask questions of play partners or parents, and gives them opportunities to discover what is unknown to them. They learn from those questions and further develop their understanding of the world around them. Cele (2004) states that, while being able to examine, challenge and understand the city, the adult world fascinates children. Natural areas also fascinate children. Children's knowledge of natural surroundings, which would offer the chance to develop self-assurance outdoors, can be achieved by play in a woodland environment (Manwaring & Taylor, n.d.). Broadhead (2006) states the environment where children can relax and access and take their ownership of their own thinking and responsibility that allows them to develop their understanding of our world and their own experiences. Besides, when experiences of urban open space become more cooperative, children start to understand and learn each other's knowledge and experiences, which can be achieved in open spaces easily. Kolb and Kolb (2010) found in their research which explorers the effect of the play in *ludic* space on learning, that includes basic skills, such as hitting, fielding and running, and better understanding of position play and game strategy, as well as team work. Thus outdoor spaces provide children many casual learning opportunities, as well as the opportunity to learn to survive on their own, work as a team, learn about nature and many other things.

Greater London Authority (2003) investigated the spatial patterns of green spaces in London and its correlation with educational achievements. Results suggested that there is a positive relation between green spaces and educational achievement. For instance they found that a large majority of 10 years-old children who achieved less than level 4 lived in wards with less green spaces.

Golinkoff *et al.* (2006) argued that, in the 21st century, teaching children the fact that life is continuously changing is necessary. Parents and teachers should teach children flexible thinking and encourage creativity. Kolb and Kolb (2010) suggest that children

should be challenged in play spaces, which should be kept safe and supportive for experiential learning. Children should be free and in charge of their activity; in that way children learn and develop expertise, while they are exploring the environment.

2.4 Children and Urban Open Spaces

United Nations Convention on the Rights of the Child described children as a person under the age of 18. Half of the world's population live in urban areas and the state of the world's children report of 2012 indicated that the number of children in urban areas has already passed a billion (UNICEF, 2012). These children's play and recreational needs rely on urban open spaces. The literature about children's interactions with many different types of urban open spaces is rich. In this section, children's and urban open spaces will be discussed in terms of how it takes place within boundaries of public open spaces.

As discussed previously, the use of urban open space is valuable to children in various senses. Open spaces bring families and friends together to enjoy the parks and/or green spaces and create social cohesion. Madanipour (2003) argued;

> *"Public space is a place of simultaneity, a site for display and performance, a test of reality, an exploration of difference and identity, an arena for recognition, in which representation of difference can lead to an awareness of the self and others,…"* (p. 206)

The importance of open spaces is that urban open spaces are the places where children from different backgrounds and neighbourhoods meet, and broaden their awareness of differences. Shaftoe (2008) stressed that distinct attitudes, values and backgrounds are picked up and internalized in the urban open spaces which have critical roles, as they create a shared identity of a multicultural urban context and enhance the feeling of

being a citizen (Gaffikin *et al.*, 2010). Although being with totally unknown children at the same place may raise some safety concerns, it also increases opportunities to be unknown (anonymity). Woolley *et al.* (1997) indicates that anonymity allows children to escape from everyday life. Being with unknown people can give opportunities for children to escape from adult life. In addition, being with completely unknown people can give opportunities to children to socialize, learn from other children and recognize the differences between ethnic groups (Shaftoe, 2008). These social interactions between different communities can drop the walls of fear and isolation. "The State of The World's Children 2012" indicates that children playing together from a variety of backgrounds and ages create the infrastructure for equity in society (UNICEF, 2012).

As was discussed in the Section 2.3, parks and playgrounds are parts of public open spaces. Arguably, parks and playgrounds are spaces, where children are most likely to spend their outdoor time, and where they "play". Play has been described as *"The necessary outcome of childhood is adulthood and play in this respect an essential intermediary" (*p. 3) (Noschis, 1992).

According to Noschis, play is an imitation of and adult world. A more precise and extensively accepted description of play was produced by the National Playing Fields Association as '*play is freely chosen, personally directed, intrinsically motivated behaviour that actively engages the child"* (NPFA, 2000 p.6). Play in playgrounds is not only an aspect of outdoor play but covers a considerable portion of it. Hume *et al.* (n.d.) discovered in their study that children live on average 300 m from the closest open spaces and 45% of those spaces included at least one playground. Results indicated that playgrounds in public open spaces were positively associated with children's physical activities, at least for boys, from any age group. Although it is less associated with older boys, the presence of playgrounds still increase boys' physical activity.

Shaftoe (2008) concedes that, in the United Kingdom, play areas and play material in those spaces have not been changed in the last 50 years. Play spaces are fenced,

surfaces are covered with rubber to protect children, and fixed-structure equipment was provided. Woolley (2008) described these spaces as "Kit, fence and Carpet playgrounds" (p. 501). In those playgrounds kit of structured equipment used, fenced to keep children inside, and carpeted with rubber surfacing to protect children. As of late, play area configuration seems to have concentrated on kids' wellbeing, with the outcome being to a degree sterile and uninteresting play supplies (Veitch *et al.*, 2006). Moreover, children, especially those aged 8-12, did not find such play equipment interesting or challenging enough, and that it was principally intended for younger children (Veitch *et al.*, 2007). In the study, which compared the design values of children and adults for neighbourhood playground (Francis, 1988), children prefer challenging and loose elements that can be changed, as well as water. Nonetheless, adults preferred fixed traditional play equipment. It can be argued that the provision of play spaces in the last few decades was all about what adults wanted. However, according to Shaftoe (2008), in Europe, and recently in the United Kingdom, play spaces and play provision has been slowly changing. Shaftoe mentioned three main elements of a new play provision approach: townscape, mixed use and loose material. Parents prefer play spaces within close proximity to their home, therefore well used, lively spaces can be achieved when play spaces are integrated to townscapes. Mixed use refers to spaces that can provide opportunities to adults as well as children. In these spaces parents also enjoy themselves, talk with other parents, and sit and relax, while their children also enjoy playing and socialising. Lastly, Shaftoe advises that children's creativity and imagination can be enhanced through providing natural materials. Besides, Woolley (2008) pointed out that the elements that have been missing in the playground design in England; contact with nature; landform; moving parts; play equipment; the elements of fire, earth, air and water; and elements outside the control of the professionals (p. 505). Furthermore, recently Adedokun (2014) discusses the use of wood as play and playground material and advised several kinds of play equipment suitable to be made out of wood, such as graduated bar pyramids, adventure pyramids, shelter pyramids, monkey bridges, play houses, play tents and platform clusters. Although some of this equipment is specifically attractive to Nigerian children, a

similar principle can be applied to design specific play equipment out of local wood material. Such play equipment, made out of local wood and other natural loose play resources, can be used together to create environments that children can enjoy.

Veitch *et al.* (2006) studied parent's perceptions of children's access to open spaces and active free-play. Roughly 50% of parents indicated that playgrounds were designed for young children and older children found them boring. This is a difficult situation, especially for families who have more than one child, because they cannot go to parks and playgrounds, if both children are not agreed (Ibid). Additionally, factors such as traffic on access roads to open spaces, parks in close proximity that are not satisfactory for children, access to the desired park by motor vehicle are all barriers to use. Hence, proximity to public open spaces is an important factor.

Children's independent mobility also has an impact on their use of urban open spaces. As discussed above, play is not the act of interaction with structured equipment, but is an act of free choice in any environment. Outley and Floyd (2002) found in their study of 43 inner city children that leisure opportunities were highly arranged by parents and kin networks (extended family and friends), in a way that was important for children's socialization. Through the network parents shared responsibilities, supervision, and exchange of childcare.

However, recently King and Howard (2014) argued that children's free choice and free play dramatically decreases when the parents are involved in the activity. Mobile children use not only playgrounds or open spaces where their parents take them, but they are able to use open spaces of any kind. Opportunities to take responsibility for accessing areas where and when they want to allow children to develop their understanding of our world (Broadhead, 2006). Therefore, children's independent access to urban open spaces is an important element. An original study by Hillman *et al.* (1990) showed a tremendous decrease in children's independent mobility since 1971 in the United Kingdom. A comparison of a 1990 survey data with a 1971 one showed a substantial drop in children's licences (permission for independent activity) among all

age groups and activities, apart from the use of motor vehicles. This trend has continued, due to parents' worries regarding traffic danger (Johnston, 2008). Children's access to urban open spaces is more limited currently, compared to a few decades ago. Karsten and Vliet (2006) indicated in their Netherlands-based research that children's independent activities have reduced dramatically since 1950, although these children's daily travel commute has increased to 17 km. However, 14 km of this journey is undertaken by car.

Children start to become independent from the age of around 10 (Hillman *et al.*, 1990; Hillman & Adams, 1992; Veitch *et al.*, 2008; Brockman *et al.*, 2011; Foster *et al.*, 2014). Younger children are more dependent on parents. Veitch *et al.* (2006) studied children's out of school hours in a Melbourne-based study. They found that older children (aged 9-10) had a greater degree of independence compared to younger children (aged 6-8). It was identified that 70% of the parents of young children (aged 6-8) limiting their children's independent mobility, such as being not able to visit parks or ride a bicycle alone in their neighbourhood. Similarly, Björklid (2004) found in a study of 12 year-olds that these groups of children were more independent than younger children in terms of accessing open spaces. Most 12 year-olds were allowed to walk to school without adult supervision, and had licence within their neighbourhood.

Another public open spaces children use regularly is town centre open spaces. Woolley *et al.* (1999a) undertook a large-scale qualitative study of 1648 children from English towns on children's use of town and city centres. The research findings illustrated that over 70% of children visited their town centres at least once a week. These children appreciated activities taking place in town centres, using open spaces as meeting and gathering points. Children were excited by the crowds in town centres and used them as social interaction points. Children, especially older ones, would meet in the town and shop and attend events taking place there. However, the use of town centres was directly associated with their degree of independence and their parents' attitudes towards town centres, especially in the case for younger children.

Crawford; *et al.* (2008) researched children's access to public open spaces and their physical activity, and whether the former had an impact on the latter. The study was undertaken in Melbourne in 2004, where children aged 5-6 and 10-12 and their parents from different socio-economic status (SES) areas were involved. (Hume *et al.*, n.d.) discussed the results in more detail and indicated that, on average, the studied children lived in close proximity (300m) to the nearest public open spaces (another report from the same research). Again, on average, children had access to one recreational facility and two amenities. Boy's physical activity levels were associated with the presence of playgrounds. However, girl's physical activity levels, and therefore use, were associated with available amenities in public open spaces, such as trees for shade, water features and signature regarding dogs. Additionally, there was no difference in the quantity of playgrounds and recreational facilities in low and high SES areas. However, open spaces in high SES areas had more amenities. Moreover, 20% more public open spaces included walking and cycling paths, while 40% more public open spaces included trees for shading in high SES areas. Therefore, the study indicated that children in low SES areas had limited opportunities in public open spaces, due to the fact that those open spaces in low SES areas lacked recreation facilities and amenities.

Farley *et al.* (2007) researched the effects of safe open play space provision on children's use of open spaces, comparing two schools in similar neighbourhoods where a high percentage of African-American people live, in New Orleans, United States. Researchers opened the schoolyard when the school was not in operation and provided supervision for safe play. Research was undertaken involving two years of observation of attendance and physical activity, as well as using children's surveys. The results indicate that safe open play space provision in low-income area had increased (84%) the number of children outside, compared to the other study area. Furthermore, many of these children sought physical activities and non-directed play.

A Netherlands-based study undertaken by Aarts *et al.* (2010), explored the relationship between outdoor play and home and neighbourhood environment. Research involved 42 primary schools and 6,470 parents. The research showed that children's outdoor play is

associated with several physical and social environmental factors, such as parents' education levels; the presence of electronic devices in children's bedrooms; and the importance that parents paid to their children's outdoor play. Veitch *et al.* (2006) identified that boys with indoor tendencies watched TV or played video computer games, while girls with indoor tendencies drew or played with friends. Furthermore, much other research discussed in the earlier section (2.3.3) about health values of open spaces also looked at children's use of open spaces (Cleland *et al.*, 2008; Cleland *et al.*, 2010; Blakely, 1994; Kolb & Kolb, 2010; Potestio *et al.*, 2009).

Freestone and Nichols (2004) indicated that poor maintenance and management problems, changing lifestyles and trends, vandalism and fear of crime are the main reasons for restricted use of urban open spaces. The factors that limit children's use and play in urban open spaces will be discussed in the following section.

2.5 Control and Boundaries of Urban Opens Spaces

Types, qualities, values of urban open spaces and the relationship between children and open spaces were discussed in the previous sections. Karsten (2002) stressed that children were removed from public open spaces and spent their times either in their homes or private/semi-private play and leisure institutions or care centers. Removal of children to indoor spaces is related with parental fears and concerns. Veitch *et al.'s* (2006) crucial findings were that 74% of involved parents mentioned their children's active free play takes place in the private yards. This means that almost three fourths of the children did not use urban open spaces. Children's interaction with urban open spaces is limited due to access issues, under-management and over-management, privatized play space, restrictions to specific groups and many other reasons. In this section the factors that affect children's use of urban open spaces will be discussed. The restrictions can be identified as falling into 2 main categories: physical and social

(Moore, 1989). Also, these can be divided into 2 sub-categories of controls and boundaries.

2.5.1 Physical control and boundaries

2.5.1.1 Physical controls

Purposive physical controls of urban open spaces are generally design intentions to prevent some specific groups using urban open spaces. Kilian (1998) describes people in urban open spaces as being in one of three categories: *Inhabitants (controllers)*, *Visitors (controlled)* and *Strangers (undesirables).* Visitors' desire to use public space is generally achieved at the cost of the latter category. Moreover, according to Kilian, these are fluid categories, their borders uncertain, with a fine line between being a visitor and being a stranger or undesirable. Shaping the borders of these categories is in the hands of local authorities to some extent. For instance, designing the place without a space that would allow drug users and alcoholic people to hide can keep them out of spaces because these activities are not desirable in public. However, we can argue that these people are citizens and they have the same rights as others to use public spaces. Most elements of physical controls are decided and implemented by legal authorities. Therefore, as mentioned by Woolley *et al.* (2011), physical controls, as well as social controls, can be based on legal decisions.

Groups of people who are considered extreme by the public, such as bikers and skateboarders, are the most likely to be excluded from public spaces, Most of the literature concentrates on these groups because several social and physical concerns have been identified. Social concerns that skateboarding is seen as noisy, disturbing, makes other users anxious, and potentially causes collisions with innocent users of public spaces are identified in the literature (Woolley & Johns, 2001; Borden, 2001; Flusty, 2002; Németh, 2006). Physical concerns have been identified as mainly focused on damage to the urban fabric and furniture. This includes scratching surfaces, and leaving marks on walls, handrails and street furniture (Woolley & Johns, 2001; Borden,

2001; Flusty, 2002). Repairing the damage would be expensive for local authorities in a long term.

Legal authorities are concerned about making places safe and desirable to the public. Therefore, groups such as bikers and skateboarders are excluded from some urban open spaces using physical controls, due to the fact that, according to local authorities they create health and safety hazards and damage the urban fabric. Woolley *et al.* (2011) identified that some of these physical controls are put in place in the design stage and some other controls are put in place after completion of regeneration. The latter happens when unexpected use of urban open spaces occurs. Various shapes and sizes of elements were used in urban open spaces to prevent skateboarders using and damaging the urban furniture. Such prevention measures include rounded corners of walls, arm rests along seating, small L-shaped metal brackets screwed to the seating areas to distrupt the smoothness of the surface, vertical posts on handrails, uneven surfaces, and similar measures put in place to prevent stakeboarding and to physically control the areas (Woolley *et al.*, 2011). On the other hand, these measures also prevent attracting undesirables to the area.

2.5.1.2 Physical Boundaries

Children's use of urban open spaces relies on the provision of a quality environment for their needs. When the quality of the urban environment is increased, it is more likely to be visited (CABE Space, 2010). Lennard and Lennard (1992) indicated that the public realm can be an astonishing educational opportunity for children; however, children's requirements are generally overlooked and neglected by professionals such as architects, city councils and planners. When children's requirements are not met in public open spaces or where open spaces are run down and neglected, children's use of urban open spaces can be negatively affected. Tibbalds (2001) argued that public spaces have been under threat since the beginning of the 1990s and that the management of public spaces is as important as the design of the spaces. The collection of litter and fly-posts, organizing car parks, caring for homeless people, maintaining

buildings, looking after street furniture and trees all improve the better public realm experience.

In the literature it was identified that many different factors negatively affect children's use of urban open spaces. Car domination is one of the elements limiting this. Traditionally, public spaces were used for social meetings, the exchange of goods, celebrations, ceremonies, talking about their city and society and even executions (Lennard & Lennard, 1992; Gehl & Gemozoe, 2003). These activities provided people with a sense of security and being part of a civic crowd. As a result, the public realm was not recognized as a dangerous place, as may be the case today in some urban open spaces. Today most of the world's cities have become more crowded and the use of cars has increased. Tibbalds (2001) mentioned that

> *"Buildings and cities, have, to many, become little more than vehicles for making money."* (p. 1)

Tibbalds (2001) also argued that many cities in the world had lost their uniqueness, identity and distinctiveness, and became dominated by tower blocks and cars. Large growth in population in cities with mobilization made appreciable changes to the urban environment (Woolley, 2003). Gehl and Gemozoe (2003) add that some cities, like Venice, are well kept in a traditional way with meeting spaces, and that market and traffic places are perfectly balanced. However most cities in the world are out of balance and dominated by traffic. Taylor (2008) agrees that Britain has many car-dominated cities. Lennard and Lennard (1992) point out that unwelcoming streets and busy traffic are enemies of children's access to public open spaces. Children are not able to access public open spaces alone or with their friends because of parental fears. Johnston (2008) explains that children involved in 25 percent of fatal motor accidents in total in America. However, the number of children dying in motor accidents in America has reduced over the last 30 years with improvements in medical technologies, but a big proportion of the decrease is related to less children walking to various places. Most streets in urban areas are motor vehicle orientated and not designed for

pedestrians; therefore, it causes parental worries about potential traffic dangers. Opportunities for conducting unstructured play in empty lots, natural areas or other open spaces are long gone and streets are dangerous places because of heavy traffic (Castonguay & Jutras, 2010). Karsten and Vliet (2006) mentioned in their Netherland-based research that families are not willing to live in streets with heavy traffic and a lot of strangers.

Not only traffic domination but also many other management-related problems and security concerns also limit children's use of urban open spaces. Woolley *et al.* (1999b) found that, despite the fact that most of the children liked their town centres, when they described their towns a large proportion of children selected words such as 'busy', 'noisy', 'large' and 'dirty' and 'polluted'. At the analysis stage researchers categorised children's dislikes and fears. Children had dislikes for degraded public facilities, which are an indication of management problems, such as litter, graffiti, chewing gum stuck to pavements and non-functioning public fountains. In addition, Woolley *et al.* (1999b) identified that children (aged 10-12) had many fears about the use of town centres, and such social fears will be discussed in the Section 2.5.2. However, fears of problems like dirty dark underpasses are about physically rundown aspects of social space which effect inhabitants' interactions with open spaces, including children's.

Castonguay and Jutras (2010) indicated that, in Canada, children in poor neighbourhoods had more chance of playing outdoors and were allowed to play out for longer periods; however, the environment they played in was more likely to be poor quality and not to provide many opportunities. These types of environments are neglected spaces, as suggested by Carmona (2010b). Hood (2004b) argued that children's access to public places and play spaces are closely related with income inequalities. CABE Space (2010) investigated more than sixteen thousand individual green spaces and mentioned that park procurement in deprived areas was worse than in wealthy areas. Furthermore, according to the same report, the neighbourhoods where ethnic minorities lived were more likely to have less green spaces and even poorer quality ones. As was discussed above, although children access the outdoors, the spaces

are more likely to be of poor quality. On the other hand, people from high-income neighbourhoods are more likely to have access to mechanisms for demanding action from local authorities, due to their position in the society (Erkip, 1997). People living in disadvantaged neighbourhoods are less likely to stand up and demand that services should have provided for them. Fewer services are provided in such areas compared to wealthy areas, therefore children living in disadvantaged neighbourhoods are likely to need to travel greater distances to play and open spaces. Moreover, it is less likely that they could travel several miles to the better quality services. Veitch *et al.* (2006) mentioned that parents would like to take children to nearby parks if they existed; however, if quality parks do not exist in close proximity, parents were prepared to drive children to other desired locations. Castonguay and Jutras (2010) added that even parks and playgrounds do not provide a variety of choices that can be adapted to different weather conditions. Moreover, only a few are large enough to accommodate play activities, although parks and playgrounds are the only opportunity for children living in disadvantaged neighbourhoods. Low quality service provision in disadvantaged neighbourhoods is the biggest limitation of children's interaction with urban open spaces.

Another concern in the literature about children's interaction with urban open spaces is the privatization of open space activity, due to parents' fears of public spaces. Valentine and McKendrick (1997) indicated that a large proportion of children undertook their outdoor activities in private spaces, such as gardens and institutionalized play activity centres, rather than experiencing public spaces freely without adult supervision, which they should explore and communicate for cognitive, social and emotional development. Moreover, they add that parents rather substitute public open space interaction with private open space, due to concerns and anxieties. Increasing numbers of children experience open spaces in private environments, such as sports clubs, societies, and commercial indoor play spaces. For instance, McKendrick *et al.* (2000) discussed the increased use of "commercial playgrounds", which are mostly indoor paid for play facilities that advertise to parents as safe environment for play.

Furthermore, Hart (2002) pointed out the privatization of play spaces and the role of local authorities, such as ensuring public space provision, especially for those who are not able to pay for "play" and those whose access is restricted or refused. These activities are structured by adults and limit children's independent mobility and use of urban open spaces.

On the other hand physical boundaries that restrict children's experiences of urban open spaces is not all about fear or under-management of spaces but also in some cases is related to the design of these spaces. This is especially the case when the subject is one of the most vulnerable groups of users, disabled children. Matthews and Vujakovic (1995) state;

> *"Society is organized for the benefit of some at the expense of others."* (p.1069)

Policy makers, planners, designers and landscape architects sometimes do not seem to understand the situation of disabled people, as can be seen by the fact that benefits of urban opens spaces are often limited for disabled people (Seeland & Nicolè, 2006). Matthews and Vujakovic (1995) researched problems of wheelchair users, with 10 wheelchair users paired with 10 able-bodied geography students in Coventry, England. These groups undertook a mapping exercise from Coventry University to the central library, which revealed that wheelchair users travelled 300 metres more than non-disabled people because of *en route* obstacles. The research also involved mobility mapping and questionnaires. The general findings shed light on the truth that might sometimes be missed by able-bodied people.

First of all, wheelchair users' access to city centres may be limited, due to inaccessible public transport. This has a bigger impact on disabled children because they cannot access the city centre open spaces with private transport alone. Their access to city centres relies on parents or carers. Secondly, although disabled parking spaces are allocated to disabled people, those spaces are often in crowded and distant areas of car parks (Matthews & Vujakovic, 1995). Thirdly, and most importantly, wheelchair users

mobility and access to spaces is limited due to stairs, lack of the lack of provision of ramps, high kerbs, steep ramps, lack of resting places in long ramps or hills, poorly placed street furniture, uneven surfaces, busy roads, crowded pavements, lack of service provision, the height and placement of certain facilities (i.e. cash machines), the lack of hand rails on the ramps, drains placed in the way of dropped kerbs, cars parked in the way of access to ramps, a lack of public toilets for special needs, etc. (Matthews & Vujakovic, 1995). On the other hand, according to a report published by the National Foundation for Educational Research, there were 25000 visually impaired children age 0-16 in the United Kingdom in 2007 (Morris & Smith, 2008). A qualitative study showed that these visually impaired people faced many difficulties and worrying obstacles in the design of the built environment, especially in city centres (Butler & Bowlby, 1997). Therefore, a barrier-free environment is not only for the benefit of people with physical difficulties but also for the benefit of people with visual impairments. To improve the quality standards for disabled people the Disability Discrimination Act (ADD) of 1995 was put in place, and extended in 2005, which included The Disability Discrimination Order (DDO) 2006. The 2010 Equality Act legislation replaced the Disability Discrimination Act, and aimed to protect disabled people from discrimination beyond employment, as opposed to the Disability Discrimination Act, 1995 (Office for Disability Issues, 2011). However, the degree to which the requirements of such legislation have been applied to open spaces is a question to be answered in forthcoming years.

2.5.2 Social controls and boundaries

2.5.2.1 Social controls

Social control is implemented by policing activity, undertaken in many cities either by police forces, city centre ambassadors or private security companies employed by local authorities. On the one hand, these forces control the places and prevent forbidden

activities happening. For instance, one of the jobs of ambassadors and wardens in Manchester and Sheffield is to prevent skateboarding in specific city centre locations (Woolley *et al.*, 2011). This is a way of preventing activities by undesirables, when physical controls are not in place or not enough.

Furthermore, policing forces use some legal tools to control the situation. The Anti-Social Behaviour Order (ASBO) is one of those legal tools used by police forces to control anti-social behaviour. ASBOs were first introduced under the Crime and Disorder act 1998 and the use of ASBOs has significantly increased since 2003, after the Anti-Social Behaviour Act 2003 (Flint & Nixon, 2006; Minton, 2006). According to current UK law, children aged over 10 can be given ASBOs for behaviour, if they were thought to be causing "alarm, distress, and harassment". Examples of crimes need include; graffiti, noise pollution, disruptive behaviour, crime, prostitution and drug dealing (Antisocial Behaviour Order, 2014; About ASBOs, 2014; Elmbridge Borough Council, 2014). Local authorities, such as housing agencies and individuals in police forces have the power to use ASBOs (France, 2007). Definitions of these acts were purposively made wide by the government o they could be used in many different situations (Home Office, 2002).

A broad definition of act allows ASBOs to be used in wide range of context, depending on tolerance levels (Nixon *et al.*, 2003). This open-ended description of anti-social behaviour is questionable because they might interrupt children's activities and daily lives. It should be accepted that ASBOs are acceptable for punishing anti-social behaviour, such as drunkenness in public, stealing and drug dealing, but it is debateable whether it should be used against innocent children playing because this might be considered noisy or disruptive, depending on who evaluates it. ASBOs have the true potential for extended use, as they are not focused around criminal proof (France, 2007). Furthermore, Flint and Nixon (2006) mentioned that, in reality, young people have become the principal target. ASBOs might be a punishment for children and they can intrude on children's lives, depending on tolerance levels of authorities. Recent statistics about ASBOs showed that 44% of ASBOs were breached by youth

(age 10-17) and two thirds breached their ASBO conditions between the end of 1999 and the end of 2012 (Home Office, 2013). Arguably, a positive point in the report was that the numbers of ASBOs have been falling since 2005.

Although, there are concerns about ASBOs, the UK government worked on a crime and policing bill called IPNA (Injunction to Prevent Nuisance and Annoyance), which would expand the definition of ASBOs and replace it. However, this new bill was rejected at the beginning of 2014 by the House of Lords (The Guardian, 2014). The term 'anti-social behaviour' was going to be replaced with "nuisance and annoyance", a much wider definition. The concerns about the rejected bill were mainly related to its wider definition and future use on innocent people, such as playing children, carol singers, and street musicians.

On the other hand, the role of ambassadors, wardens and police forces are much wider than just watching people or children. Security staffs establish security, help people, render first aid if necessary and ensure better public space experience for users. Woolley *et al.* (1999a) revealed that children like out-of-town shopping centres because they feel safer and cleaner. Children want an appropriate presence of police or security guards and closed-circuit television (CCTV) cameras around. Children feel safer under surveillance and feel secure in confined spaces, such as shopping malls, that negatively affect children's use of urban open space. On the other hand, White (1993) argued that policing to prevent crime in shopping malls and central business district in Australia, excludes young people from public spaces. Security staff are not there to protect the young and vulnerable but to protect businesses, and prevent shoplifting and vandalism. A study undertaken in North East England in secondary schools by Nayak (2003) revealed that children appreciate the presence of police in their neighbourhood; however, children were not happy about police tactics, especially older children aged 14-15 who thought that authorities controlled their activities via police forces. More importantly, children were more likely to be stopped by the police in the areas, where the reputation for crime and violence is higher, even though reputation is worse than

the actual figures. Although children felt safer in the presence of police, children did not like to be controlled by police in North East England.

Although the presence of security guards and police is appreciated by some children, in most of cases it negatively affected children's interaction with urban open spaces. As mentioned above, children like shopping malls because they are secure; however, being in the shopping malls prevents them spending time in open spaces. For other children, the presence of police or security means being stopped, questioned and even taken in custody on streets or in open spaces, which also negatively affects children's perception of urban open spaces.

2.5.2.2 Social boundaries

Woolley et al. (1999b) discussed the fact that there are some social barriers that affects children's experiences of urban open spaces. Children mentioned large scale fears, such as drunks and drug users, fear of abductors and rapists, their belongings being stolen, fear of being involved in a fight, beggars and even concerns about sellers of the "Big Issue". These fears can limit children's interactions with urban open spaces; in turn those spaces will be neglected. Shaftoe (2008) stated:

> *"...many play and recreation areas in the UK have become increasingly sterile and useless as a result of adult and statutory authorities' fears about safety."* (p.38)

Blakely (1994) researched 42 parents from 5 elementary schools in New York and found that parents were frightened of stranger danger, kidnapping, raping and drug users. Most of the parents recognized the importance of children's interactions with open spaces and the consequences of a lack of interaction. Recent research supports the idea that parents are aware of the importance of children's interaction with open spaces (Larson *et al.*, 2013). However, according to Blakely (1994), as parents share similar worries, they limit children's access to neighbourhoods, parks and open spaces. Parents

mentioned that newspaper articles, television news and rumours about kidnappers, rapists and strangers make them feel "worried", "terrible" and "bad" for their children (Blakely, 1994). These exaggerated news and rumours make parents over-cautious about what could happen to their children.

In some instances, children and parents share similar fears about being in open spaces. Valentine (1996) studied parent of 8-11 years old children in a variety of different places in the United Kingdom. In interviews carried out with parents, through almost 400 questionnaires, and with a children's focus group used, they undertook an ethnological research study with police officers and interviewed teachers. The results show that 45% of the respondents referred to child abduction as a main concern; 34% considered traffic danger as their main concern; 63% indicated that they thought stranger danger was main problem. In a more recent study, 94% of parents indicated safety was a significant factor when deciding where their children play (Veitch *et al.*, 2006). Moreover, 58% of the parents feared strangers. They also found that parents feared teenagers, who hung around parks and open spaces. In low and mid-SES areas, concerns about teenagers are visible. Valentine's (1996) interviews with parents found that parents saw their children as "innocent", while other children were seen as unmanageable and dangerous. Interviewees mentioned that their children were more violent than themselves in the childhood and they feared for their safety. Furthermore, children were seen as creating problems in public places, such as vandalism and noise.

Another social boundary that affects children's experience of public open spaces is gender. Traditionally, boys are seen as stronger than girls. Many studies have indicated that boys' independent mobility is higher than girls (Hillman *et al.*, 1990; Hillman & Adams, 1992). It is anticipated by parents that boys can defend themselves from dangers and that girls are more vulnerable. Valentine and McKendrick (1997) indicated that boys are seen as outdoor children compared to girls, although their findings suggests that families' attitudes may be moving towards a less gender-oriented approach. Moreover, some families indicate that boys are at more risk in disadvantaged areas, as they are more likely to be involved in a gang activity or abused by gangs

operating in the neighbourhood. Due to fears of security and involvement in gangs, children's independent mobility can be reduced, regardless of gender (Valentine & McKendrick, 1997).

Another social issue that needs consideration is where families live and with whom they live. Conflict within the neighbourhood might be a reason for families trying to keep their children inside. Karsten and Vliet (2006) undertook research in Amsterdam and Rotterdam, Netherlands, and identified that some families do not find the children in their neighbourhoods as nice as they would like. Although they lived in more child-friendly neighbourhoods they did not allow children to experience the outdoors. For instance, one Moroccan family living in a nice neighbourhood mentioned that they did not let their children go out and play with others because Moroccan children dominated their area and the family thought that these children were not nice. They preferred their children to interact with Dutch children in school. Also a few parents considered moving to neighbourhoods mainly populated by Dutch citizens because they thought those areas were nicer and would be better for their children (Karsten & Vliet, 2006).

This section has outlined the factors that affect children's experiences of urban open spaces. As discussed above, some of the factors that heavily influence children's experience of urban open spaces are parental worries; heavy traffic; children's worries for their own safety; the presence of drug users and drunks; and management problems. Furthermore, there might be several other elements that are not directly related to physical and social controls and boundaries of urban open spaces, such as children's personal choices.

2.6 Children's Interaction with Water Features in Urban Open Spaces

Water is a life source for human beings. We experience water in many forms in our everyday lives, as rain, snow, humidity, lakes, rivers, streams, mist, and fog, for instance. Human beings need water sources to survive and many ancient civilizations settled near them for this reason. Even in the modern world, most famous cities, such as London, New York, Sydney, Venice and Istanbul, developed around water. Furthermore, water is an influential element for landscape designers (Nasar & Lin, 2003). In modern society, water features are used in many different places for aesthetic concerns, entertainment and to relax people. Water features can be found in plazas, squares, parks, and even in some neighbourhoods. Woolley (2003) explained that

> *"Water features are not necessarily a space within their own right but often an element within a space"* (p. 114)

Water features can be found in many forms in different open spaces. For instance in the form of cinema screens; dancing water features which perform computer controlled cartography; water features without a pool, called dry fountains; artificial waterfalls; water features specifically designed for children's play; and so on. However, most have been specifically built to make places look better. Famous water features include the fountains of Bellagio in Las Vegas, the Fountains of Rome, The Dubai Fountain, The Jet d'Eau in Switzerland and the Fountains of Wealth in Singapore.

Those water features in urban opens spaces appeal to urban children; and a child's interaction point with water is valuable. Shaftoe (2008) states that children continuously look for opportunities to play in every environment, although some are not specifically designed for play. He argued;

> *"This may be one way to partly get round the legal liability dilemma that some local authorities fear – designate a public structure as art or a water feature, rather than as a playful space."* (p.39)

Although most of the water features in urban open spaces are built with aesthetic concerns in mind, children find affordances, a concept developed by Gibson (1979). These are functional properties of a built environment that stimulate people, allowing and supporting human beings in undertaking activities, involving the potential of a space rather than what it was actually designed for. For instance, a water puddle after rain can offer paddling play; water jets can afford movement through and around them; and streams can allow for the playing pooh sticks, as well as swimming.

Even with casual observation it can be seen that children like water and find affordances to play with water at every opportunity. One of the early studies of children's water play was undertaken by Kates and Katz (1977) in a small day care centre in Worcester, with 24 children. Kates and Katz observed that water is an important part in children's play and they are curious about the properties of water and experiment with it. Children used water in their dramatic play. Zube *et al.* (1983) researched the scenic value across many different age groups and found that the presence of water is extremely important for children, as it improves the scenic value, but that it has little value for adults. These findings are also one of the early examples of the evidence-based research that investigates children's perception of water. In the next few years, another study was published with similar results, when Francis (1988) undertook a research project with children and adults to find the design values of and differences between these two groups. Water was a highly desired element by children and mentioned regularly; however, adults did not prioritize the water element, putting it very low on their list.

Moreover, Stoneman *et al.* (1983) investigated different play materials in preschool settings and concluded that water play can gather different children together and help the bonding of disabled and non-disabled children. Water provides unifying and

enjoyable play opportunities. Moreover, Aarts *et al.* (2010) found that the existence of water positively correlated with the use of outdoor environments by boys aged 4-6, although it did not show a significant difference to other age groups. However, Woolley (2003) mentioned that, apart from a few families coming from an advantaged background, most children did not have access to recreational water in their homes. Those children's experiences of recreational water relied on urban open spaces with water features.

Only a few studies show the relation of water and children in urban environments. One was Tapsell's (1997) research about children's perceptions of rivers and river restoration and their use of river environments in urban residential areas. Most of the children involved indicated that they visited water regularly, some every day and some several times a week. Although some children mentioned these areas alone, most of the children indicated going to these areas in the company of family or friends. Children mentioned various activities they undertook around rivers, such as waking dogs, golf, football, picnic, cycling, fishing, feeding ducks and watching wildlife. Children were uncomfortable about dog fouling and they found their local river to be polluted and dirty. Children indicated their concerns about wildlife preservation in the area (Ibid). Tapsell (1997) indicated that children find rivers dangerous but interesting places to visit and they support river restoration, concentrating on cleanliness and play opportunities.

A few years later Tapsell *et al.* (2001) investigated London children's perceptions and use of London's rivers, in two schools: Turkey Brook in Enfield, North London and Yeading Brook in Hillingdon, West London. Tapsell *et al.* (2001) found that rivers have little importance in London children's outdoor play. According to Tapsell, *et. al.,* 83% of the children involved in the study played in parks; 85% in the streets and 80% in gardens. However, only 22% played near the river and 18% had never visited the river before, even though they lived in close proximity. These findings indicate that most of the children did not interact with water in their outdoor play. According to Tapsell *et al.* (2001), in the pre-visit surveys, 46% of the children showed a dislike for

rivers due to fear of falling in or other dangers a further 36% dislike the rivers as they were polluted and dirty; and 13% found them boring. Although children become less concerned after visiting rivers, a large number of children still found rivers to be polluted and dirty in the post-visit surveys (ibid).

Although not undertaken in an urban setting, another interesting study about children's perception of water was published by Yamashita (2002), on the perception and evaluation of water elements in landscape by children and adults, using a photo-projective method (PPM) in Japan, where residents were given cameras to take picture of scenes and described the environment. The results indicate that the presence of water highly attracts children; however, the presence of water had a minor impact on adults' perception of the landscape. Moreover, adults attended to the features and flow rate of the water, whereas children paid attention to the quality of the water.

Children's perception and play in river environment also highlighted by Tunstall *et al.* (2004). Children were taken to two river sites and given opportunities for taking their photographs of river and play around river, and they were also asked to comment on their photos. Their results indicated that children found rivers as littered and polluted, dangerous. Additionally, large proportions of *"non-river based"* play and some *"river-based"* play was elicited. Tunstall *et al.* (2004) also identified that children appreciate rivers as being natural areas.

Another aspect of urban water is artificial water features. Woolley *et al.* (1997) mention that the presence of water is enjoyed by children and most of the children prefer water features rather than statues and sculptures. Children not only like them but also find affordances to interact with them, and this can even be seen by causal observation, although many of these were not created for water interaction. However, academic knowledge about children's use of artificial water features is extremely limited. An important and highly publicized example is the Princess Diana Memorial Fountains in Hyde Park, London. Despite the fact that academic discussion about the memorial is limited, the issues were widely discussed in newspaper reports. The

fountain was designed by Kathryn Gustafson and Neil Porter and won the design competition in 2002 (The Royal Parks, 2014), its design includes 545 pieces of Cornish granite. The fountain was officially opened on 6th July 2014, but just a few weeks after opening fountain was closed, due to health and safety concerns, after three people slipped and hurt themselves (Morris, 2004). Morris reports the concerns were related with low bridges and flowing water. The memorial was reopened when new safety rules stated that walking and running in the water path was forbidden, and new fences were installed and new supervisory staff employed. However, according to a BBC news report, the memorial has been closed several times for health and safety reasons, as well as breakdowns, since then (BBC News, 2005). At the beginning of January 2005, the memorial was closed for repair work to improve safety with new track, which cost a further £200.000 of taxpayers' money (Doward, 2005). The majority of closures and new safety improvements were made due to the fact that the fountains were used in an unanticipated way, especially by children. The interactive water play aspect of the fountains had probably never been considered by designers, as it was a memorial. However, children basically wanted to play and found affordances to play in the water features. As can be seen from this example, children find affordances to play with water in a way not predicted by planners and designers. Professional non-expectation of children's interaction cost much public money and time and caused injuries to the public.

It can be seen that children quite like the presence of water in urban open spaces where they play and relax. Although children enjoy the presence of water in open spaces and there are many water features in urban open spaces, research knowledge is limited to a few pieces of research about children's perception and use of rivers (Tapsell, 1997; Tapsell *et al.*, 2001; Tunstall *et al.*, 2004); landscape assessment (Zube *et al.*, 1983; Yamashita, 2002); on children's interaction with water in confined spaces, such as private gardens, preschools or swimming pools (Mogensen, 1987; Stoneman *et al.*, 1983); and on diseases related to children's interaction with water features (Evans *et al.*, 2003; Jones *et al.*, 2006). Therefore water, which is one of the prime objects

children interact with in urban open spaces, should be researched further. A study unifying children's experiences of water and their experience of urban spaces is needed. Furthermore, there appears that the facilitation and control of urban open spaces with water features has also not been researched by any means. Therefore, in order to understand children's experiences of water in urban open spaces, and how their interaction is facilitated or controlled by parents and professionals, this research takes an exploratory and empirical look at water features in urban open spaces.

2.7 Summary

This chapter has outlined relevant concepts that are closely related to public spaces, urban open spaces, children's use of urban open spaces, and children's interaction with water in urban open spaces.

In the first section of this chapter, the definition of public open spaces has been outlined, with a discussion of a variety of different ideas from academics. The narrow definition of public space by Carmona *et al.* (2008) has been established as the parameter that will be used throughout the thesis.

How public spaces developed through the history of civilization has long been discussed in the literature. The Section 2.2.1 reviews the theories of urban open space history. It identified the development of public spaces as old as the Ancient Greek *Agora*, showing the development of public space through Roman Forums, medieval public spaces; Renaissance public space as a symbol of rulers; the 17th century development of residential areas and the privatization of public space; how, in the18th century, the public was afforded to gain those privatized areas back; the "Garden City" movement of 19th century; how public spaces in the early 20th century were delivered; and what the current situation is with regards to public spaces currently.

The development of public space in the recent past has been reviewed previously in the Section 2.2.2. After World War II, suburban living gained success due to advances in car manufacturing and the number of car users. In the 1960s, the importance of public spaces diminished and cars and motorways dominated in cities (Tibbalds, 2001). Furthermore, the 1970s and 1980s showed even more changes to industry, the labour force and the welfare of citizens (Low, 2006). In the 80s funding of public spaces started to be reduced and this trend has continued through the 1990s and 2000s, and still continues. Replacement of governmental funding with non-profit organizations and conservancies was also highlighted.

It was identified that privatization of public space has accelerated in the second half of the 20th century. Theories of privatization of design, management and ownership of space through profit-oriented private initiatives have been discussed in a relevant public space context. Changes in the urban environment have been identified, such as changes in the economic structure (Low, 2006) and market driven urban strategies (Madanipour, 1997); the transformation of modern human, which has become private (Madanipour, 2003); and changes in the social order of society (Gehl, 2007). Some of the relevant concepts that have also been outlined were changes of public space through renting to private companies, or the management strategies of Business Improvement Districts.

Urban open space, as a primary concept, has been studied by a large spectrum of researchers and practitioners. Its types, qualities and values have also been reviewed to develop understanding. Different typologies of urban open spaces have been identified according to ownership status, functionality, locations and use (Newman, 1972; Carr *et al.*, 1992; Woolley, 2003; Carmona, 2010a). Our daily lives are influenced by the qualities of public spaces. Theories about the qualities of public spaces were established, such as tangible, intangible and desirable qualities (Carmona *et al.*, 2008). In the following section it was identified that there is a strong relation between access to urban open spaces and physical health issues, especially for older children.

Furthermore, the relationship between urban open spaces and mental health issues, and the social and educational values of urban open spaces, were highlighted.

This chapter has also tried to identify the relation between children and urban open spaces in Section 2.4. Play is an important aspect of childhood. Children's play in urban open spaces and playgrounds were discussed. It was outlined that fixed play equipment was intended for younger children and older children were not interested and many parents also identified the issue (Veitch *et al.*, 2006; Veitch *et al.*, 2007). Furthermore, children preferred loose elements to play with, whereas parents preferred fixed play equipment and private play spaces, due to safety concerns (McKendrick *et al.*, 2000; Francis, 1988). Another important concept revealed was the spatial distribution of and proximity to urban open space. Children's independent mobility and children's visits to town centres were some of the concepts discussed.

Physical and social restrictions (Moore, 1989) have been discussed in the context of controls and boundaries of urban open spaces regarding children's interactions in Section 2.5. Physical controls have been identified as purposive restrictions (Woolley *et al.*, 2011) and physical boundaries, which generally indicate design or management problems to some extent, such as car domination, obstacles on pavements, and litter (Tibbalds, 2001; Matthews & Vujakovic, 1995). Social controls are established for children's activities through policing activity (Nayak, 2003). This section has also identified social boundaries, such as parental fears of safety in relation to abductors, rapists and strangers (Blakely, 1994; Valentine, 1996; Veitch *et al.*, 2006) and children's fears of drunks and drug users (Woolley *et al.*, 1999b; Woolley *et al.*, 1999a).

In Section 2.6, it has been identified that landscape designers use water as an influential element in many locations for aesthetic reasons, entertainment and relaxation. These water features in urban open spaces appeal to city children and a child's interaction with water. This chapter has also outlined the relevant theories and research about children's interaction with water in urban areas. The presence of water is extremely important for children (Zube *et al.*, 1983) and water play is a bonding

agent between different children (Stoneman *et al.*, 1983). Francis (1988) indicated that water is a highly desired design element for children. Children prefer water features to sculptures (Woolley, 2003) and the presence of water is highly associated with young children's use of outdoor spaces (Aarts *et al.*, 2010).

The last section has also analysed the little research evidence identified in the literature about children's interaction with water (Tapsell, 1997; Tapsell *et al.*, 2001; Tunstall *et al.,* 2004). There seems to be a lack of research knowledge about children's interaction with water, especially in public urban open spaces and artificial water features. There is also a lack of research knowledge about how those issues identified in the literature affect children's interaction with water and how children's interaction is facilitated and controlled by parents and professionals. In order to create relevant evidence-based knowledge this research has conducted a study in this field and the process and progress of the study will be discussed in the following chapter.

Chapter 3

Methodology

3.1 Introduction

The literature review of Chapter 2 revealed the importance of urban open spaces for children and there is a lack of evidence-based research about children's experience of water. This research seeks to add new knowledge to this limited subject.

In this chapter, the Sections 3.1.1 and 3.1.2 remind the objectives and research questions. Research design and general methodology will be discussed in the Section 3.2. Additionally this section also identifies the criteria for study site selection. The Section 3.3 explores the ethics of the study.

The section 3.4 will take a look at research methods used in this study and discusses each method in detail. It will also discuss sample selection, details of data collection. The section 3.5 discusses the limitations of study, which will be discussed in detail among all study sites and all methods. The approach to data process and analysis will be discussed and justified in Section 3.6.

3.1.1 Research aims and objectives

The aim of this research is to explore what makes water features in different urban open spaces attractive to children and what opportunities or constraints influence children's ability to experience those water features.

Objectives:

- To identify the diversity of user groups in terms of their age, ethnicity and gender.
- To explore children's perceptions and experiences of water features.
- To explore how children's experience of these spaces are perceived, facilitated or controlled by parents and professionals.

3.1.2 Research Questions

The research aimed to answer the following research questions:

1. What is the diversity of children experiencing water features in different urban open spaces?
2. What is the children's frequency of visits to those spaces?
3. How do children access urban open spaces with water features?
4. How do children experience water in different urban open spaces?
5. What are the parents' perceptions about water and children's experience of water in different urban open spaces?
6. What are the issues which constrain or permit children's experience?
7. Do professionals consider children's use of water in urban open spaces when they design and manage these spaces?

3.2 Research Design

Debate regarding the relative merits of quantitative and qualitative approaches has a long history. Qualitative research use words rather than quantities in the data (Bryman, 2008), seeking for meanings and attributes, as compared to quantitative research, which seeks sums, measures and statistical facts (Berg & Lune, 2012).

Using the benefits of both approaches that quantitative methods would represent wider population, while qualitative methods provide enhanced results about people's life, experiences and social environments (Walter, 2010). The mixed method chosen means both approaches will balance and complement each method's gaps (DeCuir–Gunby, 2008) Distances between objects are observed by sailors and surveyors from different locations to make sure they are correctly located (Neuman, 2006). This process is called triangulation, as is adapting different research methods (Bryman, 2004). Triangulation is used as a term in the qualitative research literature as an aspect that enhances reliability and validity (O'Donoghue & Punch, 2003). Denzin (1970) suggested four different types of triangulation: data triangulation, investigator triangulation, theoretical triangulation and methodological triangulation. This research undertook methodological triangulation approach, although most of the techniques implemented and adapted were qualitative. Surveys with children and parents, qualitative interviews of parents and professionals, and observations were undertaken.

In order to understand children's experiences of water features, this research included children, as well as parents and professionals to explore how children's experiences are facilitated and controlled by those people. In terms of potential participant groups, the research approach was also triangular and attempts to explore all sides of the spectrum. Triangular approach tries to look to the issue from different angles to find the truth (Berg & Lune, 2012).

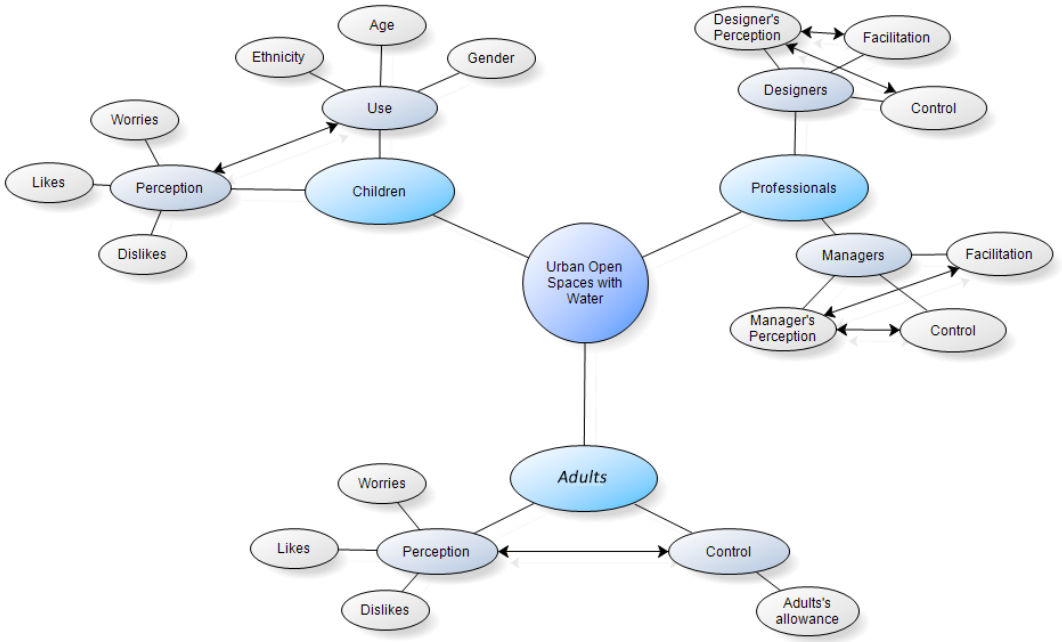


Figure 1: Mind map of triangulation of research subjects prior to the research being implemented

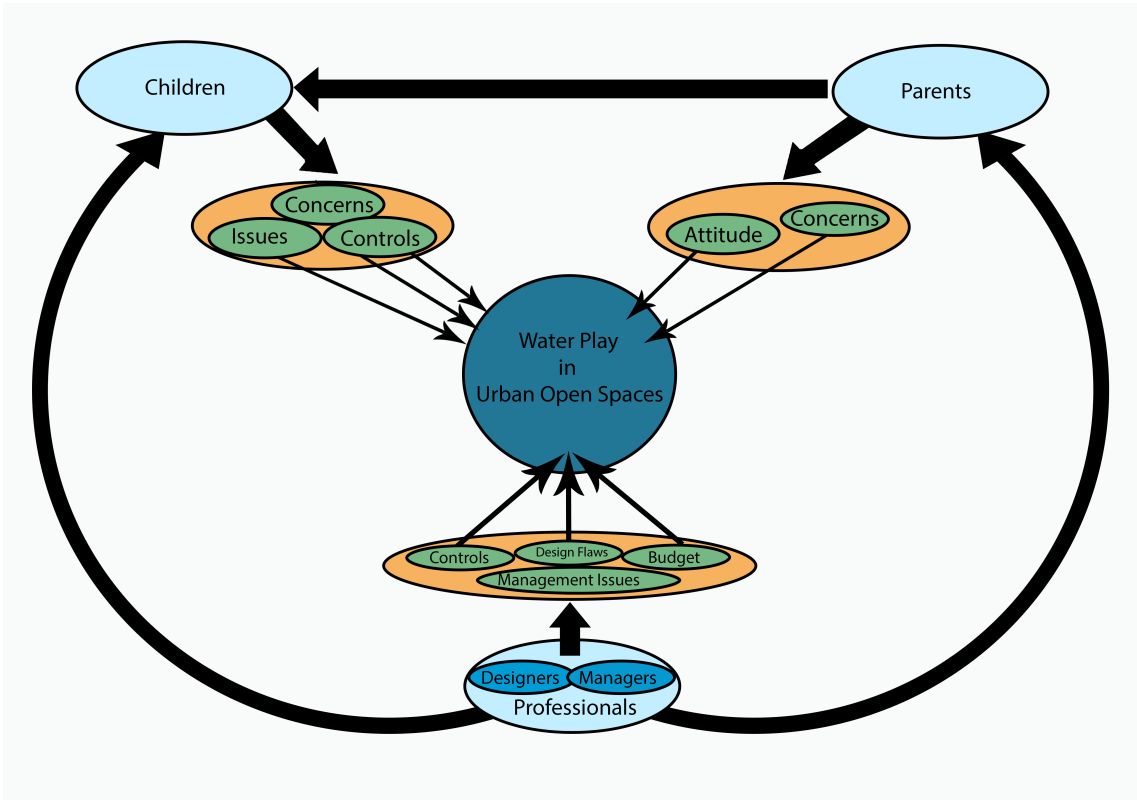


Figure 2: Mind map of relations of research subjects after research being implemented.

3.2.1 Study site selection

Study sites for this research were chosen using a series of criteria.

- Open spaces in the Sheffield urban area
- Open spaces different from each other in terms of children's experience of water
- Open spaces different from each other in terms of their design and location
- Having natural or artificial water features

Using the criteria, the following urban open spaces were chosen as study sites: the city centre water features, Endcliffe Park and Millhouses Park, both in Sheffield.

Marcus and Francis (1997) stated that city and town centres currently have much higher socio-economic activity than was the case in the 1950s. Since 2000, the city centre population in Sheffield showed a rapid rise and projections show that it will increase (Winkler, 2007; Walker, 2006). Moreover, Sheffield city centre population increased from 12.000 to 25.000 between 2005 and 2007 (LASOS, 2011). Nonetheless, as explained in chapter 2, (Woolley *et al.*, 1999a) found that 70 percent of children used designed city centre open spaces at least once a week, and this rate is much higher in big towns and cities. Even though some might be living in the suburbs, they still use city centre spaces. On the other hand, another characteristic of city centre water features is that it is not designed for children specifically. However, children found affordances in the fountains for having fun and play. Therefore, this project should have included at least one city centre location. In surveys, used so as not to influence participants, children were asked to tell us which water features they visited in the city centre. According to responses The Peace Gardens, Sheffield, was the most visited urban open space with water feature in Sheffield city centre; therefore studies were concentrated on this space.

On the other hand, a very large majority of UK citizens still live in the suburbs of the cities and, according to Hackett (2009), 80% of citizens in England live in suburbs. Sheffield is not an exception, with its popular suburban areas for family living. Two

well-known urban open spaces of Sheffield – Millhouses Park and Endcliffe Park – were selected as study sites. Both have different characteristics. Millhouses Park has been related with water since it was opened and recently it was provided with splash water play facilities. However, Endcliffe Park has been related with family activities, and has been family day out destination, with a natural stream running through it. Chapter 4 provides a detailed descriptions and history of study sites.

Another park with water features is Rivelin Paddling Pools, which would have been included in study; however, because of the closure of the facilities for refurbishment this facility could not be included in this research. The details will be explained in the limitations Section 3.5. All of those parks with water features are on the South and South West of the Sheffield urban area. These are the areas where generally wealthy families live. We explain the situation with a GIS base analysis from Bozkurt *et al.* (2012) on the North and North East of Sheffield, populated by a high proportion of ethnic minorities and disadvantaged people, is suffering from a lack of provision of local services, in terms of the provision of water features in parks. Although Northern parts of Sheffield accommodated large areas of open and green spaces, not enough amenities have been provided. This is most likely to be due to people living in the South and South West of the Sheffield coming from more educated backgrounds, know their rights and how to demand, have friend groups for their parks and have more access to demanding mechanism (Bozkurt *et al.*, 2012). Unfortunately, due to a lack of provision of services to this area, none of the parks in the North and North East of Sheffield have been chosen as a study area.

3.3 Research Ethics

In everyday life, many people ask children questions; however, doing research involving children can raise ethical concerns (Alderson, 2004). In order to eliminate such concerns, each method has to be undertaken ethically, as explained below. The

University of Sheffield clearly underlines that research involving surveys, observations of landscape and interviews must be approved ethically. This project has undergone the university's ethical review process. Research ethics review forms were completed, submitted to the research ethics committee and approved.

In addition, Children's rights are protected by law. The Convention on the Rights of Children (UNCRC) was agreed by United Nations (UN) in 1990 and the UK has been following the steps since 1991. Alderson (2004) mentions that research ethics are all about respecting children during the research. Children were accepted as experts of their own life, and their privacy was respected.

There were no foreseeable risks or discomforts that might have been associated with any of the methods used in this study. It was up to participants to decide the extent to which they wished to take part and they were free to withdraw at any time during interviews.

3.3.1 Anonymity and confidentiality

Anonymity can be defined in simple terms as keeping participants' identities secret or anonymised, while confidentially is defined as keeping identity-related and sensitive personal information secret (DuBois, 2006; Wiles, 2013). Every research project which involves human beings should take anonymity and confidentiality seriously. Alderson (2004) mentions that children also have as much right to confidentiality as adults. In addition, she advises maintaining privacy and confidentiality as much as possible, unless there is an urgent case about which parents or legal authorities need to be informed.

In this study in order to maintain privacy and children's and/or their parents' rights of confidentiality, several actions were taken. First of all, participants were allocated a coded number related to the site, so that, while quoting from interviews, participant numbers would be used. Secondly, photographs were taken while children were playing

during observation. Images allow researchers to conduct re-analysis of the situation (Flick, 2006). Field photographs are significant tools to remember the event in a way that as they happened during analysis and supporting your analysis of event with objective element. They are more powerful than describing the events and free from researchers subjectivity. During the observations, I have photographed essential events. Photograph were organized and stored in Nvivo. Field photographs were used in result chapters to support the finding and show to what have actually happened. Those photographs were taken from a distance to respect to the privacy of the children and parents. Therefore, no direct shots were taken.

In the delivery of the research in the field, parents were kindly asked, if they took their children to water facilities for play. Then, the aim of research summarized and kindly asked whether they wanted to participate. Information sheets were provided to participant to read and keep, if required. Furthermore, consent forms were giving to the participants to fill and sign. It was clearly mentioned that every participant was free to withdraw from research anytime they wanted.

All data is protected under the guidance of Data Protection Act 1998. Consent forms and information sheets are kept locked in a specific cupboard in the researcher's office. Collected data are kept in two different places, on researchers own laptop, with an admission password, and on a password protected external hard disk at home. The researcher and the supervisor were the only people who had access to the collected raw data.

3.4 Research Methods

3.4.1 Questionnaire surveys

Surveys are a way of collecting systematic information, which includes demographics, feelings, socio-economics, habits, assumptions and perceptions of groups of people (Bell, 2010; De Vaus, 2002). Surveys are treated as quantitative methods by many researchers. This is due to the fact that most surveys try to establish statistical facts about issues researched, such as market surveys. However, a survey is rapid, versatile and convenient for respondents and cost efficient methods of collecting information from large samples in the social sciences (Bryman, 2008; May, 2001; Walter, 2010). Surveys can be used to obtain both qualitative and quantitative information. In order to reach a larger number of children in a shorter time period and have detailed anonymous information, surveys were adopted in this research. Bryman (2008) suggests that, in the situations where age, ethnicity, gender or social background of the researcher interferes with participants or others concerned, interviews produce more biased data. He adds that participants are more likely to provide more information about sensitive subjects in surveys. This is due to the anonymous nature of surveys.

In this research, surveys aimed to explore the attitudes and feelings of a larger number of children living in close proximity to study sites (see Section 3.4.1.2 for criteria), involving interaction with water features. This research tried to understand children's daily lives in urban open spaces with water features. Survey questions included 'Have you ever been?', 'When?' 'How often?' 'How did you get there?' Questions were used to reveal basic characteristics using simple percentages and mostly included open-ended questions to understand why children do or do not go to water features; what they do there, why they like it or what they don't like about it; and what they would like to see there, and why (See Appendix A children's full set of survey questions). However, there is a disadvantages are involved when open-ended questions are used. For instance different participant might give different degree of details, participants might take loose direction and might give general or irrelevant answers, and lastly larger times

might be needed for participants to think thoroughly about questions. All of the questions in the surveys were addressed to understanding the research objectives, such as the diversity of children, their perception and use of water features, and their perception of parental attitudes.

3.4.1.1 Sample selection

In order to carry out random sampling, a sample structure, such as a student name list, is needed. It would be difficult to get such confidential information from school, due to additional ethical concerns involved. Therefore, a non-probability, purposive sampling approach, which is mostly used by qualitative researchers, was adapted to this research. This involves selecting a sample methodically dependent on the expertise in the target population and the objectives of the study (Walter, 2010; De Vaus, 2002). In purposive sampling, cases are chosen with exact functions in mind (Neuman, 2006). As will be described below, schools were chosen, based on the criteria, which was on purpose to reach children who would be using those spaces. After schools had been chosen, letters were sent to the head teachers of the selected schools. The roles of the head teachers at this stage were leading us to classes available to undertake surveys. Letters were sent to class teachers and families to request their permissions.

3.4.1.2 School and nursery selection

Human activity levels are directly related to proximity to urban open spaces (Giles-Corti & Donovan, 2002b; Giles-Corti & Donovan, 2002a; Roovers *et al.*, 2002). Therefore schools, which are in close distance to study areas were aimed to being chosen because those schools were more likely to involve children living in close proximity to urban open spaces in questions and far away from others. Two primary and one secondary school were proposed to be involved within the mile around the selected urban open spaces. In total 8 primary and 4 secondary schools were contacted. As will be explained in the limitations (Section 3.5) only three schools agreed to be involved in this study and all were primary schools. Those schools were within one-

mile distance from the study sites. Therefore the study continued without methodological change.

Nurseries were chosen using the methods applied to school selection because again they were more likely to consist of local children. Most of the nurseries refused to be involved in this study, explaining that they had already helped several researchers, or that some research was still being undertaken in their nurseries. Moreover, some of the nurseries refused the invitation without giving any reason. As was the case with schools, three nurseries within the mile radius to the study sites, each close to different site, agreed to be involved in the study.

3.4.1.3 Sample Range

Children's Surveys

Due to technical difficulties involved in delivering electronic surveys in some schools, classic pen and paper surveys were employed instead. Therefore, children who could read and write properly were the target group. Moreover, year 7s (Y7) would have been very busy and school would not want them to be involved in this study as they are in transition to secondary school. Qualitative research generally uses smaller sample sizes than quantitative research because saturation is more important than sample size (Mason, 2010). Therefore, the aim for primary schools was to involve 2 classes of year 4 (Y4) students and 2 classes of year 6 (Y6) students because the Y4s and Y6s consisted of students aged between 8 and 11, which covers most primary school aged students. In 2 schools 2 classes of Y4s and 2 classes of Y6s were involved in the study. However, School number 2 did not have enough Y6s; hence a Y5 class was substituted.

Furthermore, the original aim was to cover Y7 and Y11 children in secondary school. However, as will be discussed in the limitations section, secondary schools could not been involved in to this study.

On the other hand, for the nursery age children this research relay on their parents opinion because working with younger children, who are not able to read or write need adapting or developing different methodology for them. In the given time frame of this study adopting and developing different methodologies for younger children was not feasible. Therefore, this research has accepted the limitation of understanding about nursery age children, which would also create an opportunity for future research. However, this research has used behaviour mapping technique specifically developed for observation of children's water play. Behaviour mapping undertaken covered the young children's experiences of different water features in urban open spaces.

Parental Surveys

Parental surveys were introduced to examine parental attitude towards children's interaction with water. Interviews were also undertaken the same aim and brought a good understanding about parental attitudes towards children's interaction. However, most of the parents interviewed brought their children to spaces to make their children interact with water. Due to the fact that interviews with parents in the study sites gathered mostly positive attitudes and did not reach people who would not be happy about children's interaction with water features, parental surveys in the schools and nurseries played an important role in getting ideas from people, who might have negative or cautious attitudes towards children's interaction with water in urban open spaces. Surveys of parents with children in the same classes sampled were undertaken, which allows for a comparison between children's perceptions and parents' perceptions.

3.4.1.4 Distribution and collection of surveys

After contacting head teachers in schools and managers in nurseries, drop off dates for surveys were arranged initially for each school or nursery. Boxes, which included surveys, photographs of study sites that needed to be hanged during surveys and information letter for class teachers, were prepared for each class. In order to ensure the quality of the surveys, class teachers were informed by a letter that explained the

role of class teacher while the surveys being undertaken. In-school survey boxes were given to head teachers, who transferred them to class teachers. Class teachers undertook the surveys in a one-hour class and sent parental surveys to parents via the children. Surveys were returned to head teacher by teachers within same boxes and they were collected from head teachers on the arranged date.

I first contacted nursery managers by letter then phoned them to follow up. Most of the nurseries contacted chose not to be involved in this study (see Section 3.5 for details). In total, 3 nurseries from different areas of the city agreed to be involved. Surveys were placed at the sites where parents could easily see them and pick them up. Return boxes were placed directly next to the survey boxes and under the poster explaining the research. As this was not an obligatory survey, parents picked them up out of choice.

3.4.2 Interviews

Interviews are able to reproduce the internal realities of people's life stories, experiences, beliefs, values, ambitions and perceptions (May, 2001; Silverman, 2005). Particularly in this research, observations were important to understand children's experience of water in urban open spaces. However, to complete our understanding about how this experience facilitated and controlled by parents and professionals, interviews were necessary. Interviews provide oral histories. A semi-structured interview approach was adapted to this research. Structured interviews are strict, in that the interviewer was not allowed to add or remove questions, while unstructured interviews are flexible, and the interviewer is able to respond to the interviewee and generally enable longer interviews due to their flexible nature. Therefore, both structured and unstructured interviews would not be suitable for the purpose of research. However, semi-structured interviews are more flexible, more adjustable, questions can be clarified, and interviewers may add or delete questions, where it is necessary (Berg & Lune, 2012). Having a structure to follow but the flexibility to add

question when necessary to get rich insights to interviewees' stories was the approach needed for urban open space research.

The first set of interviews were undertaken with parent(s) who took their children to the study site in order to explore how children's experience of water was controlled by parents. Qualitative research has no boundaries or rules for the calculation of sample size and it can be different for the research being undertaken, but saturation should be achieved (Walter, 2010; Denzin, 2012; Becker, 2012; Bryman, 2012; Charmaz, 2012; Flick, 2012). A non-probability sampling approach was adapted to select a sample size. It was anticipated that 30 interviewees would have provided enough responses, in order to reach saturation. Therefore 30 parents at each site giving 90 interviews in total was the aim. In this way, parental interviews would create a valuable qualitative data set and involve the saturation. It was proposed that, if saturation was not achieved, more interviews would be undertaken.

Participants were selected at random; however, the selection criteria involved differences, depending on the site characteristics. For instance, in Endcliffe Park I asked the first person who came to area, and every first person, as soon as I had finished one interview near the stepping-stones. On the other hand, as the Millhouses Park water play area a small space and families spend their time in it, standing in one location and asking to the parents either coming or leaving the water play was not feasible. Therefore, interviews were undertaken, while circulating in the area. In Millhouses Park I walked around the circuit in the water play area and asked people sitting and watching their children. Once I finished one interview asked to the every other person sitting in the next bench or standing on the circuit. On the other hand, I had problems accessing parent in The Peace Gardens (see Section 3.5.2 for details). After access issues were solved, every parent who agreed to be involved when circulating in the area was interviewed.

A second type of interviews was undertaken with head designers and managers of study sites. Interviews with professionals provided an insight into whether children's

experience of water is considered in the design and management stage and how these spaces are facilitated and controlled by professionals. Interviews with managers and designers have been used in previous studies. One of the early works that took this approach was Rutledge (1975), and recently Woolley *et al.* (2011) also used a similar methodological approach and added useful values to their study. These interviews would help to explore differences in approaches between managers and designers, and identify children's needs. In addition, interviews with professionals would help to explore legal, social or physical boundaries of water features in urban open spaces.

I contacted professionals and they kindly accepted to take part in this research. However, Endcliffe Park and Millhouses Park as a whole were designed many decades ago, so practitioners involved in their design could not be included in the study. In the end, the city centre management team leader, Endcliffe and Millhouses Parks managers, The Peace Gardens design team leader and the designer of water splash in Millhouses Park were included in the study.

3.4.3 Observations

In order to understand the social, functional aspects of space, to understand boundaries that restrict or allow children's experience of space, it was proposed to undertake observations in the study sites.

Observations are important to see the difference between research data created and the reality of what occurs in such spaces. Bell (2010) underline that important data can be generated through interviews; however, they cannot show what actually happens, only people's perception of what happens. Observations allow the researcher to witness the event first hand. Furthermore, this practice can help to understand the perspectives of young children and adolescents on the use of water features in urban open spaces, groups who have not been covered by other methods.

This study involves a structured non-participant observational approach so that the observer maintains a distance from the observed events in order to avoid influencing them. This is a way of observing events as they happen. Flick (2009) advises that non-participant observations should be applied to public spaces, where the number of members cannot be limited or defined, as is the case in urban open spaces. Furthermore, non-participant observation is a much better technique and enhances the answers gained from young children (Dunn, 2005) because participating in their activities would interrupt what they really do in that specific activity. This research brings together these two approaches and observes children in public open spaces; therefore the use of non-participant observations would be beneficial for this research.

3.4.3.1 Behaviour mapping

A 'just sit and watch' non-participant observation approach was not really a productive method for the type of the issue being researched. Observation structure is one of the most important steps of the whole procedure. What is really going to be observed, where and in what conditions it is observed, and so on, should be set out in advance.

In order to understand the relation between the built environment and children's use of it, the research used behaviour mapping. Marušić (2011) mentions observations and behaviour mapping as a combined method for exploring relationships between the built environment and human behaviour. Observing and recording behaviour is a method that has been used since the 1950s (Bell, 2010). Early examples of behaviour recording did not include mapping exercises and mainly recoded the behaviour of people in the confined spaces. Early examples of behaviour mapping took place in 70s and since then behaviour mapping is one of the most used observational approaches by urban open space specialists (Moore & Cosco, 2010; Cosco *et al.*, 2010; Marušić, 2011).

Moore and Cosco (2010), in their important work "Using behaviour mapping to investigate healthy outdoor environments for children and families", explained the steps

of preparation for behaviour mapping observations. This research used their guidance for creating framework of observations. According to Moore and Cosco (2010) observing a whole landscape in the considered research area is not necessary. Rather, the most used parts of research areas should be established in advance. As this research tries to explore very specific areas (water features), it only concentrates on areas where children could interact with water features.

Moore and Cosco (2010) state;

> *"Behaviour mapping is a relatively simple, versatile, objective research method processed with GIS that yields a relational database for performing statistical analyses and the ability to represent environment and behaviour data graphically"* (p. 65)

To understand human behaviour in the built environment different techniques have been developed by different researchers (Cosco *et al.*, 2010; Marušić, 2011; McKenzie, 2006a; Mckenzie, 2006b; Malone & Tranter, 2003). McKenzie developed a system called observing play and leisure activity in youth (SOPLAY) then developed an observation system for recording physical activity in children (SOPARC). They are very similar techniques, fundamentally; however, SOPLAY is interested in types of play, while SOPARC is more interested in the types of physical activity undertaken. SOPLAY uses play activity codes, such as baseball, basketball, gymnastics, swimming, while SOPARC uses codes in five main headings, such as fitness-related, sport-related, active game-related, and sedentary-related. The SOPLAY system is mostly concerned with exploring school gardens, so 'games', which were mentioned above, means more structured ball games. It is not expected that ball games in water features in this research will be witnessed, so SOPLAY codes cannot be used for behaviour mapping. SOPARC is more related to parks and urban open spaces, so some of its codes may be related to this research and could be used. It was expected that SOPARC codes such as jumping, chasing games, lying down, and standing would be used. However, they

needed to be adapted into children's experiences of water features for the purpose of this study.

Malone and Tranter's (2003) work concentrated more deeply on play behaviour in school grounds, focusing on cognitive play and outdoor environmental learning. In their 3-year long project, 50 children from 5 different primary schools were involved. They included two different aspects of behaviour: social interaction and play behaviour. The former involved codes such as solitary play; parallel play; associated play; co-operative play; and small group play. Play behaviour involved codes such as self-focus, observing others, imaginative activity and changing activities. This research was more concerned with the types of activities children engaged in or around water features rather than children's water play behaviours. Most of the codes Malone and Tranter (2003) used were not relevant for this research but some codes could have been adopted.

On the other hand, researchers interested in the effects of urban open space design on human behaviour have also used behaviour mapping. For instance, Marušić's (2011) work is a good example of behaviour mapping in urban open spaces. The research concentrated on Edinburgh (UK) and Ljubljana (Slovenia) and tried to understand patterns in selected parks. The research involved 4 parks, 11 squares, 1 square-like street and 1 park-like square in both cities in total. Depending on the size of the urban open space, each location was divided into sub-areas. Furthermore, four different time slots were determined, between 10.00 and 19.00. This research explored general human behaviour; therefore it has used a wide range of codes that could be undertaken in urban open spaces, such as walking, sitting, pushing a pram, sitting with a pram, walking a dog, walking children, and many different daily human activities. Most of these codes were not appropriate for use in the current research (See Appendix E for full set of codes used).

The first and most important part of the new behaviour-mapping tool was to determine behaviour/activity codes. Although adapting some of the activity codes used by

different researchers was possible, it was required to develop new set of codes related to water. Therefore, behaviours which would be witnessed in study areas would be hypothesized and new codes established. First of all, I considered the behaviours, which I borrowed from other studies. Afterwards, I created a new set of behaviours related to active and passive water interaction found in observations. Activity codes that involve active interaction and passive interaction were developed. Non-water related activities also added to the tool, such as walking through the space. In particular this behaviour was witnessed and easier to observer in The Peace Gardens. After the observations started unexpected activities were witnessed. Therefore, behaviours such as "feeding animals" were added to the behaviour theme list on the mapping tool.

The second aspect of the new behaviour-mapping tool was determining age codes. This research aimed to understand different age groups use of urban open spaces with water features; more specifically, to establish the difference between older and younger users. Therefore age categorization needed to be arranged as a behaviour mapping tool. Age categories have been used in a various different ways in different studies. McKenzie (2006) used 4 main categories for age; children (0-12), teens (13-20), adults (21-59), seniors (60-over). These age categories are only useful for exploring general human behaviour patterns in urban open spaces, but when studies focus on specific groups, such as children or elderly people, categorization is not useful, due to a lack of detailed age categories. The other systematic observation guide SOPLAY, mentioned above, does not include any age groupings because it is developed for use in school gardens. Floyd et al. (2011) split children into three categories, such as 0-5 (young children); 6-12 (middle children); and 13-18 (older children and adolescents). Although their categorization makes sense to some extent, they are too detailed for studies focusing on children in public spaces.

Table 1: Activity themes for behaviour mapping		
Physical activity based codes	**Non-physical activity based codes**	**Non-Water-Related codes**
Running /Walking in/under	Lying Down Around Water	Passing Through The Space
Jumping in the Water	Standing Around Water	
Chasing Games	Sitting on a Bench	
Playing in Water with	Sitting on a Wall	
Walking around Water	Sitting on a Grass	
Feeding Animals	Observing Water Features	

None of these age categorizations are useful for this study. However, in the literature it is found that children gain independence at around the age of 10 (Hillman *et al.*, 1990; Hillman & Adams, 1992; Veitch *et al.*, 2008; Brockman *et al.*, 2011; Foster *et al.*, 2014). Children were divided into two categories in this research, namely possibly dependent children (age between 0 and 9) and possibly independent children (10 years old or older). These two age categories were adapted to behaviour mapping as; younger children (Aged 0-9) and older children (Aged 10-18). Observations are a subjective method; there are no certain ways of deciding every child's age in an open space. Therefore, personal experiences have used to decide whether child has belonged to one of these groups. There might be some margin for error; however, use of only two categories more likely to reduce this margin.

First of all, as mentioned above, this categorization aimed to isolate the period of change in children's experiences as they became more independent. Moreover, it is easier to tell whether a child is 5 years old or 13 years old. There still might be some confusion between similar age groups, such as 9 and 10. However, having 2 age groups reduces the chance of confusion. For instance, Floyd et. al.'s (2011) categorization '5-6s' might be confused as well as '12-13s'. Although risk of confusion has overcome, the first age group (aged 0-9) still includes relative diversity of children from toddlers to nursery age children and young primary school children to slightly older primary school age children. This might be limiting the understanding the diversity within this group.

The third aspect of the development of the tool was ethnicity codes. Although different researchers have used different ethnicity codes for their research, it was appropriate to use United Kingdom Census 2001 ethnicity guidelines, which is very detailed, for this UK-based research. However, determining the detailed ethnicity of children in a multicultural country like the United Kingdom is extremely difficult during observation, such as distinguishing whether a child has a Black Caribbean or Black African heritage, or both, or another heritage alongside one or more of these. Therefore, only the main headings of the United Kingdom Census 2001 ethnic categories were included in the behaviour-mapping tool design, namely White, Asian, Black, Mixed, and Chinese or other. This categorization is less complex, easy to detect and more suitable for open space research.

The tool was designed for recoding behaviours by hand. Therefore, to be able to record different behaviours, behaviour symbols were designed. For instance a circle was used for the activity code called "running/walking in/under water". In order to record gender differences, filled shapes were proposed to represent males observed, while hollow shapes were proposed for females. Age parameters were designed to be recorded as Code 1, which involves children aged 0 to 9 and Code 2, children aged 10-18. Lastly, ethnic background was recorded using the first letter of the ethnicity to which it was considered a participant belonged (see example of Behaviour-mapping tool in Appendix F).

After determining the behaviour-mapping codes (namely behaviour, age, gender and ethnicity) an observation schedule, an important element of structured observations (Bryman, 2008), was created. The observation schedule for this research was planned for a year, due to the need to observe urban open spaces in different seasons and weather conditions, in order to generate important findings. School holidays were chosen as observation times, due to the hypothesis that more children would be using these spaces over these periods. In the UK schools operate a 3-term year, each with a half term holiday of a week. At the end of each term there is a holiday before the next term starts and these are the Christmas, Easter and summer holidays. Christmas and

Easter holidays may be from a week to two weeks and the summer holiday is usually six or seven weeks long. Observation were planned to be undertaken on one day in each school vacation in Autumn half term, Christmas break, Spring half term, Easter Holiday, Summer Half term and for a week at each study site in summer holiday, unless the spaces were closed for events or due to weather conditions. Observations started at the beginning of the summer school vacation 2012 and were repeated at every possible opportunity in school vacations at every site for a year. Observations were completed in August 2013.

Pilot observations were carried out, in order to determine the most appropriate times for undertaking them. The busiest times were afternoons and most of the people started to leave the space around 17:00 in summer and 15:00 in winter, as the sun sets earlier. It was decided to include 3 hours observation sessions between 14:00 to 17:00 in summer and 12:00 to 15:00 in winter times. Observing the space for 3 hour in spaces' peak times might limit the findings. However, it is cost- and time-effective, especially when it is considered that only one researcher undertook the research. Observations were done in 15-minute rounds in each space. The Peace Gardens, as a small urban open space, carried a risk of participants being recorded more than once in each round. I paid extra attention to avoid this outcome.

At larger study sites, it is required to divide the whole site into sections, which makes observations more manageable and enables the collection of better data. The Peace Gardens is a fair sized space, and it is easy to observe whole site from almost any location surrounding the space. However, Endcliffe Park and Millhouses Park are relatively large urban open spaces and they needed to be divided into sections and sub-sections. Therefore, Endcliffe Park was divided into 4 Sections and 8 sub-sections for better observations. Millhouses Park divided into 4 sections.

A "round" of the behaviour mapping exercises is the coverage of area within a specific time period. It should be determined by the characteristics of the study site. Shorter observation rounds should be undertaken in small and crowded spaces. However,

rounds can be extended into longer periods of time in larger or less used spaces. Observations were undertaken in 15-minute rounds in The Peace Gardens; however, Millhouses and Endcliffe Park observations were undertaken in hourly rounds. In Millhouses Park and Endcliffe Park one section of the study site was covered in every 15 minutes. Therefore, in each observation day each section of larger study sites has observed three times for 15 minutes. But whole large sites have observed for 3 hours in total.

Moreover, observations also included a section or round starting time, area conditions, temperature, and weather conditions, such as sunny, part cloudy, cloudy, light rain and heavy rain. These parameters made behaviour maps useful tools for recording children's behaviours at different time of the day and in different weather conditions.

3.4.3.2 Field Photography

Cameras are able to capture the activities that might be too fast and complex for the human eye and also images allow researchers to conduct re-analysis of the situation (Flick, 2006). Field photographs are significant tools for recording events as they happen during analysis and support analysis with an objective element. They are more powerful than describing events and free from researcher subjectivity. Although some might argue that photographs are taken by the researcher, so subjectivity is involved to some extent. Even though one would like to capture an issue as a photograph, the viewer might focus on another point or pick up something different from the image. During the observations, I photographed essential events, namely the study sites, to show how busy they are; muddy play spaces; children playing in water in a different manner than others; or sometimes I photographed events as they happened, as a reminder of what happened for the analysis stage. The photographs were organized and stored in Nvivo. Field photographs are used in the results chapters to support the findings and show to what actually happened.

3.5 Limitations of Study

During the research, there were number of elements that affected the course of the study. These elements limited either process or findings of the research. I personally prefer to categories these limitations into two elements: physical and access limitations.

3.5.1 Physical limitations

Most of the limitations in this study were access-based; however, weather was one of the physical limitations of this study. As mentioned above, field research was planned for between summer 2012 and summer 2013. Field studies could not start as planned due to high levels of rainfall. Apart from some days in August, summer 2012 was not suitable for undertaking either interviews or observations at study sites. In fact, the 2012 summer was the coolest summer in the United Kingdom since 1998, according to the Met Office and it was 0.4^{o}C lower than the 1981-2010 average (Met Office, 2012). Moreover, rainfall was exceptionally high, at 371mm, which was greater than 2007 (358mm) and the second highest rainfall in the city since 1910. Furthermore, it was the wettest June in England and Wales since 1766 (Met Office, 2012).

I managed to start interviews and observations at the end of the July and continued as the weather allowed in August 2012. However, I could not finish the summer observations and carry out parent interviews before the end of the summer 2012 because of the severe weather conditions. The study timeline needed to be reconfigured and observations were completed in summer 2013, which was exceptionally sunny, and 0.8^{o}C above the 1981-2010 average (Met Office, 2013).

The second physical limitation of data collection was non-use of electronic surveys. Originally, this research was designed to undertake electronic surveys in schools. Mawdsley (2006) states that the internet is effective, economical and a quick way to collect data. Alderson (2004) agrees that it is non-costly and offers extensive access to data. However, after direct contact and negotiation with the schools it was obvious

that some were not prepared or well equipped for the surveys to be undertaken online. According to most school preferences, it was decided to undertake surveys with a classical pen and paper technique. However, from the distribution of surveys to collection, the process took about three months. First of all, school wanted to have surveys conducted at different times. Secondly, some schools returned the surveys later than they had agreed due to the Christmas break. Thirdly, because of the low involvement rates one school and several nurseries asked for more time to get more people involved. All this could have been achieved within a week using e-surveys.

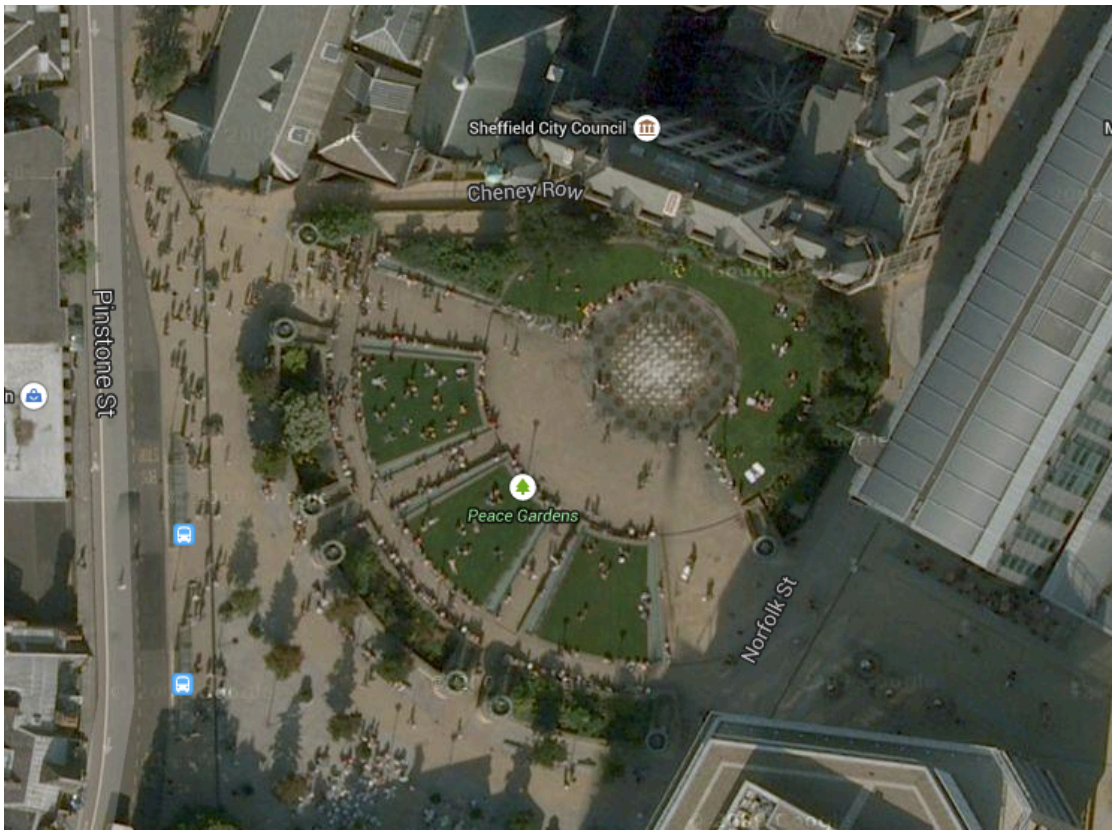
3.5.2 Access limitations

3.5.2.1 Access to the Peace Gardens

The Peace Gardens was one of the important study sites of this research because, as mentioned earlier, children like the city centre and it is a central location that many children from different backgrounds can access. In addition, parental interviews were designed to reach parents who took their children to The Peace Gardens. To be able to undertake research at the site, approval from the city centre management was required. The author contacted this team with official letters from the university. However, after a series of discussions with the city centre management team, permission for undertaking interviews with parents in the Peace Gardens was not granted. The management team mentioned that they were unhappy with someone approaching parents in the space, as it was meant to be kept as an area free of canvassers. Moreover, they suspected that undertaking interviews with parents would cause health and safety issues, as undertaking interviews would prevent parents watching their children when they were playing in the water. The city centre management team advised that the interviews should be undertaken in Pinstone Street, which is at the side of the Peace Gardens, by asking parents if their children had been playing in the water.

I tried to undertake the surveys in the manner advised but this suggestion was not feasible due to following reasons;

First of all, the Peace Gardens is an open space with 5 different entrances. Therefore, catching people who had been to the space with their children and finding out whether these children have been playing in the water was not feasible, either through waiting at one of the entrances or walking to another. Secondly, most of the people were busy as they left the space because their car park ticket might have run out or their bus might have been about to come, etc. Most wanted to spend a maximum amount of time in the gardens and then rush to do other necessary activities.



Map 1: The Peace Gardens Aerial Photograph, Google Maps [Online]

Thirdly, undertaking interviews on the side street with many bus stops caused health and safety issues, which was not anticipated by the city centre management team. The people who agreed to participate in the research were anxious, as we were standing close to a very busy road and high frequency bus stops, and most of their children were

running around. Under the circumstances people concentrated on their children rather than what I was asking them. This resulted in minimal, short interviews. As a result of these factors, such as the Peace Gardens being a large space, people being busy, and health and safety issues, the response rates were quite low. Only one in every ten people agreed to participate in the research.

Subsequently my supervisor, Helen Woolley, contacted to the team to discuss the situation, because undertaking the interviews in The Peace Gardens was an important part of the research. However, despite her attempts to explain that the research was not for commercial use but academic research, the city centre management team's decision remained unchanged. In 2012, due to severe weather conditions and low participation rates, only a small amount of interviews were undertaken.

In 2013 permission was granted after my supervisor's further attempts to reach other parts of the city council to resolve the issue. The planning department was very interested in the research and through them permission was granted from the city centre management team. In total 9 interviews were undertaken outside of the Peace Gardens before the permission and 21 interviews were undertaken in the Peace Gardens after permissions were granted.

3.5.2.2 Access to schools

Official letters were sent to the 12 different schools (8 primary; 4 secondary) in the first place to explain why the research was important; how they could help; and how their confidentiality would be protected. Although the researcher's email and telephone number were included in the letters, none of the schools replied. In the second attempt, emails were sent to the schools. Some decided not to take part in the research and replied by email. Although communications started almost 6 months in advance, head teachers said that they had already prepared their curriculum for the next year and they did not want to disturb it.

On the other hand, still a considerable number of schools had not returned their responses by the end of May 2012. These schools were phoned. I wanted to personally contact head teachers to follow up on my letters and emails. However, I only managed to speak to six head teachers. For other schools, I have only managed their secretariats. Only 3 out of 12 schools agreed on surveys being carried out in their schools in the following semester and all of these schools were primary. The number of schools was considerably lower than anticipated when designing the research. However, those schools were in different areas of the city and each one was close to one of the study areas and in the target zone, originally used as selection criteria. I decided to continue undertaking the research with the remaining three schools. However, having no secondary school involved in the research restricted the age range of the research.

If I had not managed to engage schools that were within close proximity of different study areas and if all of the schools had not been primary schools, I would have changed the research design. Moreover, as the study involved observations, in order to witness children's interaction with water at first hand, having a slightly reduced amount of schools in the study should not, it was decided, affect the results. Moreover, surveys were returned with a large number of responses.

3.5.2.3 Access to nurseries

The process of contacting nursery managers involved quite a similar procedure to contacting school head teachers, with letters sent; however, none replied. After a month of waiting, follow up e-mails were sent and I phoned the nurseries a week later. Six of the nurseries contacted directly rejected involvement in the study without giving a reason. Some other nurseries mentioned either that some research was already being undertaken in their nurseries or that they helped many researchers to date and children's parents were not willing to involve any more. These reasons were understandable because every year many Master's and PhD students undertake research about children in Sheffield.

Only three nurseries agreed to be involved into this study. Again as was the case with the schools, these nurseries were from different parts of the city and in close proximity to the study sites. Nursery 1, which was the closest nursery to the city centre, actually accepted children from across the city. Having such a small number of nurseries was not a significant problem because parental surveys in nurseries were analysed together with parental surveys in schools.

3.5.2.4 Access to Rivelin Valley paddling pools

Rivelin Valley paddling pools were one of the study sites in the original research design identified to help understand children's interactions with water in different areas. However, in the spring of 2012 Sheffield city council decided to shut down the facilities for renovation. The refurbishment involved the closure of the paddling pools, turning them into water splash areas, which had become a very well-known feature in Millhouses Park. The city council announced that the new facilities would be opened in August 2012. I changed my fieldwork timetable to cover the new Rivelin water facilities at the end of August. However, due to severe rainfall and colder temperatures, the facilities could not be completed before the end of the summer. Later, the city council announced that they had postponed the opening until the following summer. Therefore, I decided to dismiss Rivelin Park Paddling pools, recently named as Rivelin Valley Water Play, from my research, due to the fact that I needed to undertake yearlong observations in each study site. Moreover, the closure of the facilities would not affect research validity in terms of experiences explored, as the research involved a three study sites with both artificial and natural water features.

3.6 Data Process and Analysis

3.6.1 Data coding and analysis

Dey (1993) defined data analysis as *"It is a process of resolving data into its constituent components, to reveal its characteristic elements and structure*" (p.31).

Coding the qualitative data is one of the most important stages of qualitative research. Coding is reducing and analytically organizing the information, and it also involves breaking down data to convenient pieces to make relevant information easier to perceive (Neuman, 2006; Lockyer, 2004). Coding might directly affect the result of the project, depending on how you index, code and analyse your data. Coding is the first stage of qualitative analysis and it is all about preparing your data for analysis.

Coding mainly involves an analysis of text or narrative data which includes interviews, stories, case studies, open-ended questions of surveys and so on (Taylor-powell & Renner, 2003). Although some of those methods mentioned above do not involve direct text, transcriptions, such as interview transcriptions, make them narrative data. In this research, transcriptions of interviews with parents and professionals; open-ended questions in surveys of parents and children; and observation notes, were coded as narrative data.

Narrative data coding involves a considerable amount of reading. Bryman (2008) suggests reading the text as a whole and, similarly, Taylor-powell and Renner (2003) also advise reading the data several times before starting to code them. Neuman (2006) suggests using three stages in the coding process, which was adapted for this research. Firstly, open coding, which involves reading and searching for major themes. At this stage coding is deductive and generally comes from the research questions. The second stage is axial coding, which investigates initial codes created, finding emerging themes and hierarchically organizing the themes. At this stage coding is inductive. The third stage is selective coding, which begins after concepts are developed to certain level. Selective coding involves looking for the cases that might illustrate findings, and comparing the cases found. This systematic approach to coding was undertaken and coded data was stored as an Nvivo dataset.

3.6.1.1 Children and parental surveys

As mentioned above, both surveys had multiple-choice and open-ended questions. All the analyses were conducted using Nvivo 10 software. Nvivo is an interface that simplifies the workflow and storage. Nvivo 10 helped organize the data in a logical way, in order to understand and interpret it correctly. Although Nvivo is qualitative-based, it is able to calculate simple percentages using codes created for the multiple-choice questions. However, to be able to achieve basic calculations data were coded. In order to analyse multiple-choice questions, first of all given answers were coded into coding frame and then frequencies of those codes were calculated.

On the other hand, open-ended questions were also analysed in Nvivo 10. As was advised by Neuman (2006), three stage coding method was applied. First of all, data was read several times and major themes rising coded. In the second stage created codes were investigated, emerging themes found and code hierarchically organized to create coding frame. In the third stage selective coding was used to find cases supporting emerging themes to support discussions. Several different analytical techniques, which include auto-coding, matrix coding analysis, tree maps, and cluster analysis were also used in Nvivo to create deeper understanding. For instance matrix-coding analysis was one of those analytic methods used many times. The matrix-coding query cross analysis the given codes with specified demographical data such as postcode, age, ethnicity, and gender. It represents results in tables with numbers, weighted or un-weighted row and column percentages.

3.6.1.2 Parental and professional interviews

Interviews were an important part of the research, first piloted without an audio recording device but with verbatim note-taking, which was a difficult task. Thereafter, participants were audio-recorded. Only the participants who did not give their consent to be audio-recorded were interviewed using the pen and paper technique. Audio-recordings were transcripts using open source transcription software called ExpressScribe.

Audio recordings were input and saved as a word file and transferred to Nvivo. First of all, responses were coded according to question numbers for easier workflow. For instance all responses given for the question one coded into same code. This made calculation of simple percentages for multiple-choice question possible in Nvivo. Furthermore, this also helped to understand issues rising in the open ended questions. All open-ended answers were hand coded as themes according to Neuman's (2006) advice of three-stage coding. After all stage were undertaken again several analytical techniques, such as matric coding, word frequency, three maps, and cluster analysis were applied to the coding scheme, in order to understand issues deeply.

3.6.1.3 Site observations

Site observations were digitized, using ArcMap 10 software, which is a part of the ArcGIS software package. Specific locations where the participants were observed were input onto maps, and information belonging to participants was input into attribute tables, which are similar to Microsoft Excel files. Attribute values such as ethnicity, age, gender, active or passive interaction, and temperature were chosen from the table and behaviour maps were created.

Observation photos were also stored systematically, depending on the observation year, the season and the time of day, in Nvivo. In the analysis, photographs helped the researcher to remember what was really happening in the area.

3.6.1.4 Analysis of Census 2001 and Census 2011

The Census data used in this thesis was obtained as raw statistical data from the Office for National Statistics (2011). The raw data was analysed using ArcGIS software, which allows spatial analysis of data, such as the spatial distribution of children's ethnic backgrounds; of deprivation and poverty; and of car ownership. At the beginning of the project, Census 2001 data was used because Census 2011 had not been undertaken. Until 2013, the Census 2011 data was not publicly available therefore

Census 2001 was used for analysis. However, all the data was updated to Census 2011 after it became available.

3.7 Summary

This chapter has outlined the research methodology. This research undertook a mixed methods triangulation approach; however, surveys were prepared in a qualitative manner, with mainly open-ended questions. The first section highlighted the research aims and objectives, and the research questions. The Section 3.2 outlined the research design process and the criteria for study site selection. The third section of this chapter discussed research ethics, anonymity and confidentiality. Section 3.4 outlined and discussed the research methods used in this research: surveys with children; surveys with parents; interviews with parents at the study sites; interviews with managers and designers of study sites; and yearlong observations of the sites. This section has also identified data collection. There were some limitations to this study, as highlighted in Section 3.5; some of these limitations were overcome through continuous communication with authorities. Lastly, Section 3.6 underlines how data was coded and analysed in detail.

This research has involved 237 children and 104 parents (71 in schools, and 33 in nurseries) in survey responses, and 85 usable interviews with parents. Almost equal percentages of males and females were undertaken children's surveys. On the other hand, 69% of the participants of parents' interview were female, 31% of them male. Additionally, 83% of the parents' surveys were undertaken by females, 17% of them were male. Moreover, four deep interviews with professionals were undertaken. Furthermore, during the observations, 5217 children were observed among all study sites. All the data were analysed and, in Chapters 5, 6 and 7 which follow, the results are presented.

Chapter 4

Study Site Characteristics

In this chapter the history and characteristics of the study sites and the water features in those areas will be discussed. In the past, water at Endcliffe Park included a boating lake and bathing pool; Millhouses Park also always has been a water related location. Furthermore, Charter Square had water features, which were filled and closed. Currently in Sheffield a small number of places include water features that are suitable for children's interaction. The main spaces are The Peace Garden, Endcliffe Park, Millhouses Park water splash, and Rivelin paddling pools. Apart from water features in Sheffield city centre, such as the Peace Gardens, all other spaces are in the South/South West, which are wealthy areas of Sheffield (Bozkurt *et al.*, 2012). Therefore, it should be noted that the distribution of water facilities suitable for children's interaction is not diversely available and not equally distributed across the city.

4.1 Sheffield City Centre

In Sheffield city centre a variety of water features are available at different sites. All of these water features were developed in the last 2 decades. The major water features in

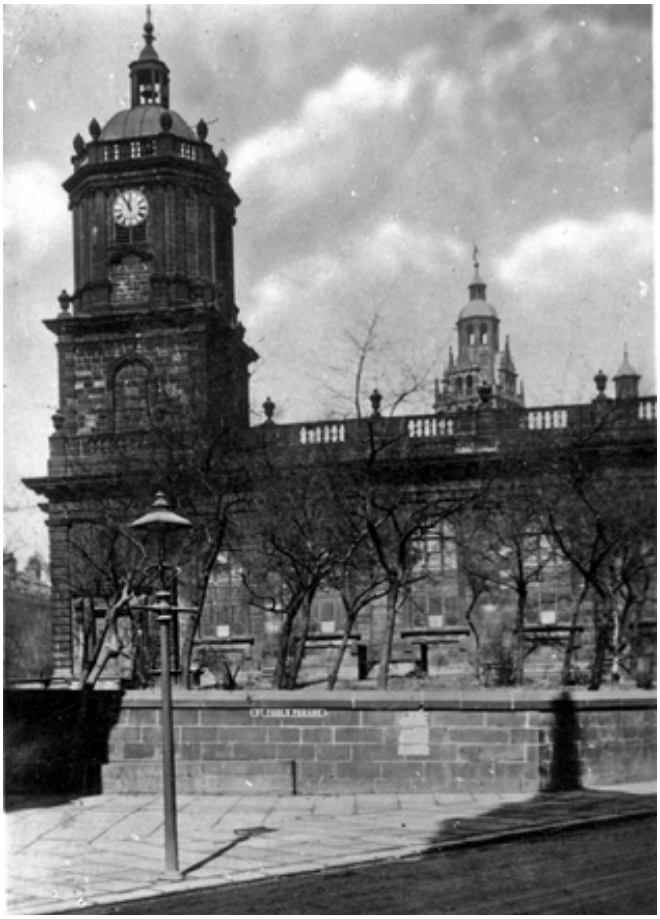
Sheffield city centre are in The Peace Garden; Millennium Square, which is adjacent to Peace Gardens; cascade pools in the Sheaf Square, which is an award winning open space in front of Sheffield Train Station; Barker's Pool, in front of Sheffield City Hall and Howards Street. The Peace Gardens were chosen as an observation study site, as the majority of children indicated that they visit it (discussed further in Chapter 5).

Photograph 1: Sheaf Square – Sheffield Train Station (taken by Brendan De Souza, 2011).

Photograph 2: Barker's Pool, Sheffield City Hall at the back (Sheffield City Council, 2014a)

4.1.1 The Peace Gardens

As Sheffield City Council declares, the land the Peace Gardens sits was originally a churchyard belonging to St. Paul's church (Sheffield City Council, 2013). The church was built in the early 1700s and in 1938 the Church of England declared the plans for no further use. The church was demolished, but because of the Second World War, plans to build a Town Hall extension had to stop. After the war, the space was designed as a temporary garden, which was first named St. Paul's Gardens; however, Sheffield citizens called it the Peace Gardens to remind them of the peaceful times after the war. In 1985 the name became official (Sheffield City Council, 2013).



Photograph 3: St. Paul's Church and Sheffield town hall behind, 1933 (Ref: s04326, Picture Sheffield, 2013).

Over a time the Peace Gardens became neglected. According to interviews with the city centre manager, the previous Peace Gardens was surrounded by walls, very dark

at night, and not suitable for gatherings, a place where people with social problems met. It was very underused. There was a small narrow path which people walked along and sat on benches placed there and looked at flowers. It was just a place for elderly people to sit for a while when they went to the town centre.

Photograph 4: The Peace Gardens before refurbishment, 1980-89 (Ref: u05950, Picture Sheffield, 2013).

Sheffield town center's decline was related to several issues. First of all, it was related to the poor state of the physical environment; and secondly, to the discontinuity of the public realm (Allies & Morrison, 1995). The former describes the state of buildings around this space, and especially of the Peace Gardens itself. The offices just behind the Peace Gardens, also known as the 'egg box' town hall extension, and Arundel Gate, blocked pedestrian access from bus station and railway station to the town centre. Thirdly, newly-opened, out-of-town shopping centres played an important role in the collapse of the city centre (Walker, 2006). At the beginning of new millennium the idea of renewing the town centre emerged. Regeneration of the Peace Gardens was at the heart of the project.

Photograph 5: The Peace Gardens in September 2013 (taken by the author).

The funds were obtained from an EU regional regeneration fund, National Lottery funds and other contributors. The practitioner highly involved in the design procedure of the Peace Gardens stated that public consultation was first undertaken in November 1995. Work began in 1998 and in 2001-2002 Peace Gardens had its current shape, which cost £5 million (Woolley *et al.*, 2011). After this first phase the town hall extension was still in place and blocking the back of the space in a south-north direction. After its removal the Peace Garden literally became the heart of the city. The Peace Garden involves several water features. The design team leader of the space also mentioned that water canals symbolize the rivers of Sheffield and the Goodwin fountains[2] symbolize the Crucible. Waterfalls symbolize the pouring of molten steel into pots. Basically, all water features were designed with two important elements of

[2] Goodwin Fountains are the dry fountains at the centre of the Peace Garden, which consist of 89 individual jets. The fountains were dedicated to Sir. Stuart and Lady Goodwin were the heads of a wealthy family who donated large amounts of money to charity, and paid for fountains at the head of Fargate, in 1961. When the old fountains were demolished, they were replaced by the new one in the Peace Garden (Sheffield City Council, 2013).

Sheffield in mind: water and steel. This reflects the heritage of the city. According to the designer, the Goodwin fountains were designed with children in mind; however, neither of the other water features in the park, nor the Goodwin fountains, were specifically designed for children. The design team did not expect such water interaction by children.

4.2 Millhouses Park

Millhouses Park was home to Ecclesall Mill. The Ecclesall family first appears in the records in the early 13th century (Friends of Millhouses Park, 2013). Ecclesall Mill has been renovated several times; later, in the early 1940s, it was completely closed (Sewell, 1996). 7th Earl Fitzwilliam (1872 –1943) and Marquess of Zetland donated some of land to Sheffield City Council and the council acquired some land in the area to lay it into a park in1909 (Sheffield Design & Property, 2000). However, it did not officially convert into a park for several years, and when it first opened it included a yachting pool, 9 tennis courts, 2 bowling greens, a green and cricket facilities (Sheffield Local Studies Library, 2002).

In 1929 a swimming pool[3] was opened in the Millhouses Park. However, unfortunately, because of an outdated filtration system it was closed down in 1967 (Sheffield Design & Property, 2000). According to the same report, in 1970, the pool area was converted into a lido for people of any age group. It included many terraces, with paddling pools for different users. The lido was quite famous. However, it was closed down in 1989 after a decline in the local authority budget reduced the quality of the facilities and the pools were filled and leveled due to security issues in 1991 (Sheffield Design & Property, 2000). The third important water feature in the area, which was a children's

[3] The swimming pool was the largest in the United Kingdom at the time and the highest attendance recorded was 142000 visitors in a single season (Sheffield Design & Property, 2000).

paddling pool fed by the River Sheaf, was also closed down in late 1990s as a result of neglect.

Photograph 6: Millhouses Park swimming pool (Picture Courtesy of The Star - Sheffield, 1965)

In 1986 proposals to sell part of the land for the development of indoor and outdoor sports and a water recreation centre were abandoned because of public opposition due to access, noise and disruption issues (Sewell, 1996; Sheffield Design & Property, 2000). The public wanted the park to remain a public amenity rather than become a private recreation centre that could subsequently become another development plot. As can be seen, Millhouses Park always had water features to some extent. A Friends of Millhouses Park group demanded public water features in the park. According to the designer of the water splash facilities, it is a wealthy area and the Friends group had access to the demand mechanism. Practitioner explained that this group raised fund through events and Sheffield City Council agreed to take responsibility for the maintenance of the site from the local water authority, giving one of the Mill buildings

to the water authority in return. Yorkshire Water agreed to supply water for the splash park at a discounted rate.

Photograph 7: Millhouses Park Lido (1960-1979) (Ref: u04221 and s28880, Picture Sheffield, 2013).

Moreover, lottery funds became available and a proposal was put forward to build a new water feature in Millhouses Park. Firstly the water splash was built, which is an important aspect for children and for this study. Later, old paddling pools were converted into fish passes. Both the designer and manager of the space agreed that Millhouses Park has always been related to water and the recent water splash development (water play area) proved to be successful. As mentioned by the designer of facility, the water path was designed to teach children about recycling water. Thus, fresh water is pumped from equipment at the beginning of the water path, so that water runs through the path, through several dams and pieces of equipment and, at the end of the path, goes into the drains, where it goes back into the tank. Collected water is recycled to be used in toilets and for the leaking boating lake.

Millhouses Park is a day out attraction park for families across the whole of Sheffield, with its many play areas, such as a cricket pitch, an outdoor gym, a skate park, a playground, a café, a bowling green and tennis courts, as well as water features.

Photograph 8: Millhouses Park Water Splash in 2012 (taken by the Author).

4.3 Endcliffe Park

Endcliffe Park is a one of the heritage parks of Sheffield, which is listed on English Heritage's national register. Endcliffe Park is currently part of sequence of parks, which serves as a green link and connects near city centre locations to the edge of the Peak District. The stream, Porter Brook, sources from southwest Sheffield, on the boundaries of the peak district, and joins the River Sheaf under the railway station (Friends of Potter Valley, 2013). Before the industrial revolution 20 mill dams and wheels operated on Porter Brook for many centuries. 3 of those dams and wheel were within the boundaries of the current Endcliffe Park; however, after the industrial revolution, factories moved to the lower Don Valley (Sewell, 1996). Dams of the Nether Spurgear

Wheel and the Holme Wheel are still in Endcliffe Park. However, Endcliffe Wheel dam, which was there from the opening of the park, coming from the east side of the park, has been filled.

Photograph 9: Two girls fishing in the first Endcliffe Park pond (Ref: s11884, Picture Sheffield, 2013).

To create a healthy environment for the middle class residents that moved to the area after most of the factories had been removed, most of the land was bought by the city council in 1885, which was followed by another 9 acres procured by Quinn's Jubilee Committee in 1887; and last acquisition was made in 1927 (Sewell, 1996; Hindmarch, 2005). Hindmarch added that, after 1929, the park was referred to as Endcliffe Park, formerly called Endcliffe Woods. When the park was first built all of these dams were in the park. Spurgear wheel was stocked with birds; Homle dam was used as a boating lake and Endcliffe Dam was used as a bathing pool between 1903 and 1938 (Hindmarch, 2005; Friends of Potter Valley, 2013). Endcliffe Park was home to the famous brass band concert bandstand, which was removed in 1957, and the Sheffield Show, which was later moved to Hillsborough Park (Sewell, 1996).

Endcliffe Park was designed along the Porter Brook, with woodlands and woodland walks, a large grassland area which serves as an unstructured play and picnic area,

stepping-stones, a children's playground and a café. The park still keeps its characteristics from the past. The history of children's interaction with water in Endcliffe Park is as old as the history of the park. Hindmarch in his book *Sheffield's Parks and Green Spaces* includes some photographs that give clues to the history of children's interaction with water in the park. One of the photographs shows children on stepping-stones and the other shows two girls fishing for insects in the water in one of the lakes, which is the former Nether Spurgear Wheel Dam.

Photograph 10: Children playing around stepping-stones in warm summer day (Ref: s11923, Picture Sheffield, 2013).

4.4 Conclusions

This chapter has discussed the history of three urban open spaces and their relation with water. As discussed in the previous sections Millhouses Park has always been related with water features; however, all of those water features has closed down and filled due to financial difficulties and budget cuts. Similarly ponds in Endcliffe Park

had interactive water aspect such as boating and swimming in the past; however, they now serve as duck pond. Moreover, Charter square water features in Sheffield city centre has been filled up. However, all three spaces still related with different water features that attract children.

Chapter 5

Study Site I

Sheffield City Centre

5.1 Introduction

In order to understand children's interaction with water in town centres, Sheffield city centre was chosen as a study site that would be compared to other study sites, urban open spaces outside the city centre area. In this chapter, results related to Sheffield city centre will be discussed, which will be informed by the survey of children; site interviews with parents; parents' surveys; observations; and behaviour maps. Discussions will be supported with some GIS analysis in some cases.

Children were asked several general questions about their visit to Sheffield city centre then asked specific questions about their interaction with water in the city centre (See Appendix A). First of all, children's diversity in study sites, in terms of age, ethnicity and gender, will be discussed in Section 5.2. Children's frequency of visits, how they travel, and who they go to Sheffield city centre with, will be discussed in Section 5.3. Children's visits to water features; the diversity of children interacting with water

features; the types of children's interactions with water; the things children like; the types of water features children and parents would like to see; children's perceptions of their parents' attitudes towards children's interaction with water; and parents' attitudes regarding children's interactions with water, will all be discussed in Chapter 5.4. Results about the issues this study identified will be explained in Chapter 5.5 and lastly the chapter will be summarized in Section 5.6.

Although there are many water features in Sheffield city centre, observation cited in this chapter were undertaken in Peace Gardens and Millennium Square, due to fact that these two sites were 2 of 3 most visited water-related sites in the city centre, according to surveys. In order to observe as many children as possible during site observations, these two locations were chosen. Thus whenever any data is used from observations and behaviour maps it refers to the Peace Gardens. The popularity of the sites will be discussed in Section 5.4.

5.2 Diversity of Children Visiting City Centre

The majority of children involved in the surveys visited Sheffield city centre (88%), while 10% of children said that they have never been to Sheffield city centre and 2% of the participants did not answer the question.

Furthermore, the number of children who never visited Sheffield city centre dramatically decreased by age (see Table 2), with around a 13 times decrease between the ages of 8 and 11.

Table 2: Children who never visited Sheffield city centre by age in percentages

Aged 8	Aged 9	Aged 10	Aged 11
58%	29%	8%	4%

5.2.1 Differences by gender

Figure 3 shows that almost equal percentages of female children (51%) and male children (49%) visited Sheffield city centre. As was mentioned previously, sample was consisting of almost equal numbers of males and females.

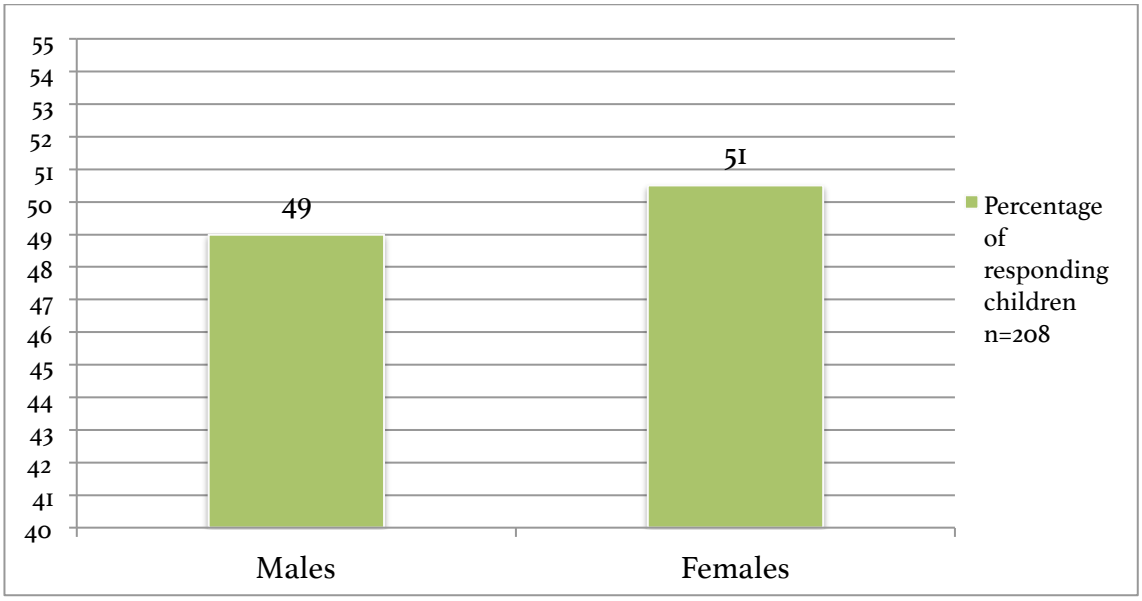


Figure 3: Children visiting Sheffield city centre by gender from children's survey results

5.2.2 Differences by age

The age range of the children was recorded in the children's surveys. As mentioned in Chapter 3, 3 different year groups (Y4s, Y5s and Y6s) with children aged 8, 9, 10 and 11 years old were surveyed. The data was grouped into two categories (aged 8-9 and aged 10-11) to match the data with the observations. According to the results a greater percentages of younger children (aged 8-9) visited Sheffield city centre, compared to the older age group (Figure 4).

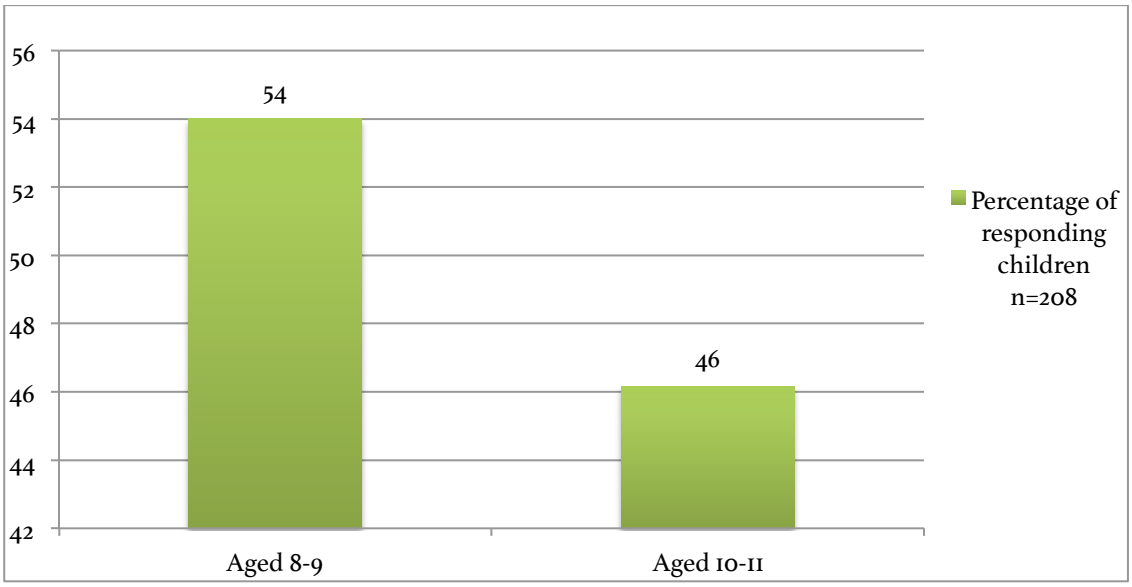


Figure 4: Children visiting Sheffield city centre by age from children's survey results

5.2.3 Differences by Ethnicity

The third factor analysed in order to understand the diversity of children visiting Sheffield city centre was ethnicity. After the survey results were obtained, detailed ethnic sub-categories were created, under 5 headings, to match the data with observations.

Figure 5 shows the ethnic diversity of children visiting Sheffield city centre from survey data and ethnicity distribution of children attending to surveys. These two criteria showed similarities apart from that slightly more percentages of white children visited space compared to general distribution. According to the survey, 54% of children were from a white ethnic background, such as White British, White Irish and other White ethnicities, including many European nationalities. Additionally, 10% of the children were of Asian heritage, such as Pakistani, Indian and other Asian. The percentage of children from a Black ethnic background was 3%; mixed ethnicity, such as White and Black Caribbean, White and Black African, and White and Asian was 9%; while Chinese or other minor ethnic backgrounds was 2%. In the survey 16% of children were categorized under the "missing data" category because they either did not choose their

ethnicity or they had not chosen more than one ethnicity. Lastly, 6% of the children ticked the "prefer not to say" box.

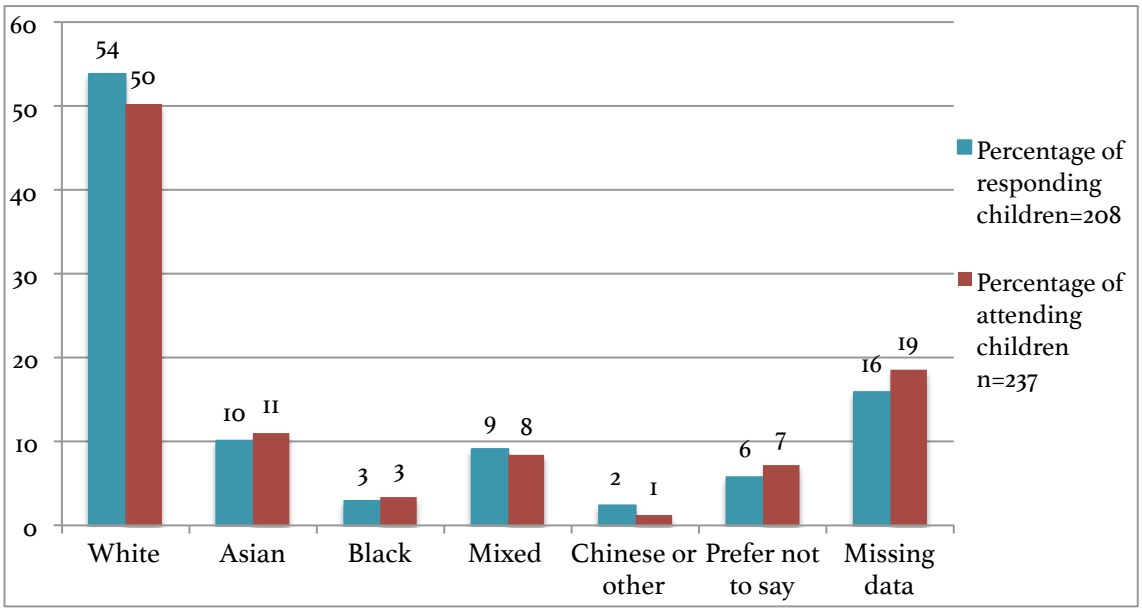


Figure 5: Children visiting Sheffield city centre by ethnicity from children's survey results.

However, results from survey data seem to overlap with patterns of Census 2011 data, where the order of major ethnicities was as follows: White, Asian, Mixed, Black and other minor ethnicities. These will be discussed in Chapter 8 (Discussions) in detail, among all study sites, and cross-referenced to Census 2011.

5.3 Children's Visits to Sheffield City Centre

5.3.1 Children's frequency of visits

According to children's survey results the largest percentage (28%) of children mentioned that they visited Sheffield city centre once a month. 21% of respondents visited less than monthly and 10% had never come to Sheffield city centre. A smaller percentage (4%) paid daily visits; 9% more than once a week; 16% weekly; and 12% fortnightly. Although the percentage of children who paid fewer visits to the Sheffield

City Centre seems quite high, when it is aggregated, 70% of the children visited Sheffield city centre at least once a month.

Examining the relationship between frequency of visit and children's home locations, it is important to understand whether or not proximity to space increases children's frequency of visits to Sheffield city centre. To understand this relation, an Nvivo feature, called the Matrix coding query, was used. Matrix coding cross-analyses the codes created in Nvivo with selected socio-demographic data. It is a powerful feature, which allows us to understand relations between different variables. In the analysis postcode locations used according to the assumption that children attending those schools likely to live around schools because schools have catchment areas and majority of children attending those schools likely to live in those catchment areas. Furthermore, distance from school location to the Peace Gardens as follows; School in S2 1.3 miles, school in S11 1.8 miles and school in S7 3.3 miles. Map 2 shows the postcode boundaries of Sheffield and the location of The Peace Gardens. However, in order to protect confidentiality and privacy of the schools involved in the surveys, exact school locations or the their catchment areas cannot be represented on the map. Therefore, Matrix coding was conducted between frequency of visit and home location children mentioned. In order to represent figures clearly, less common postcodes were excluded from the figures. Only the postcodes where surveys were undertaken and a majority of the children involved in surveys lived (S2, S7 and S11) are shown in Figure 6.

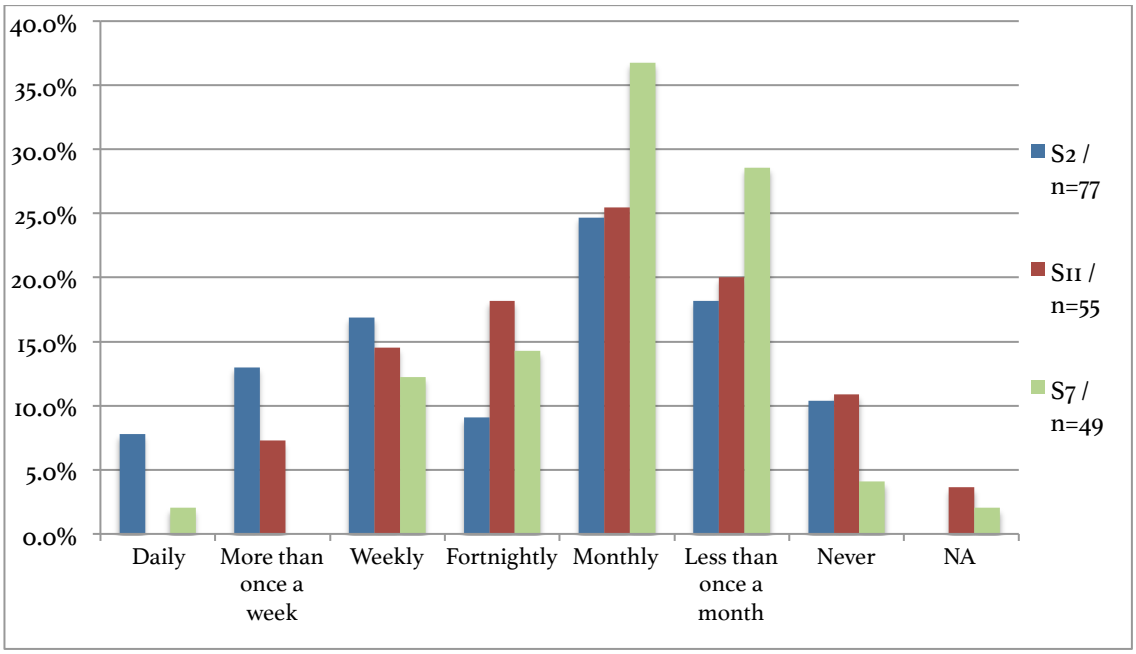
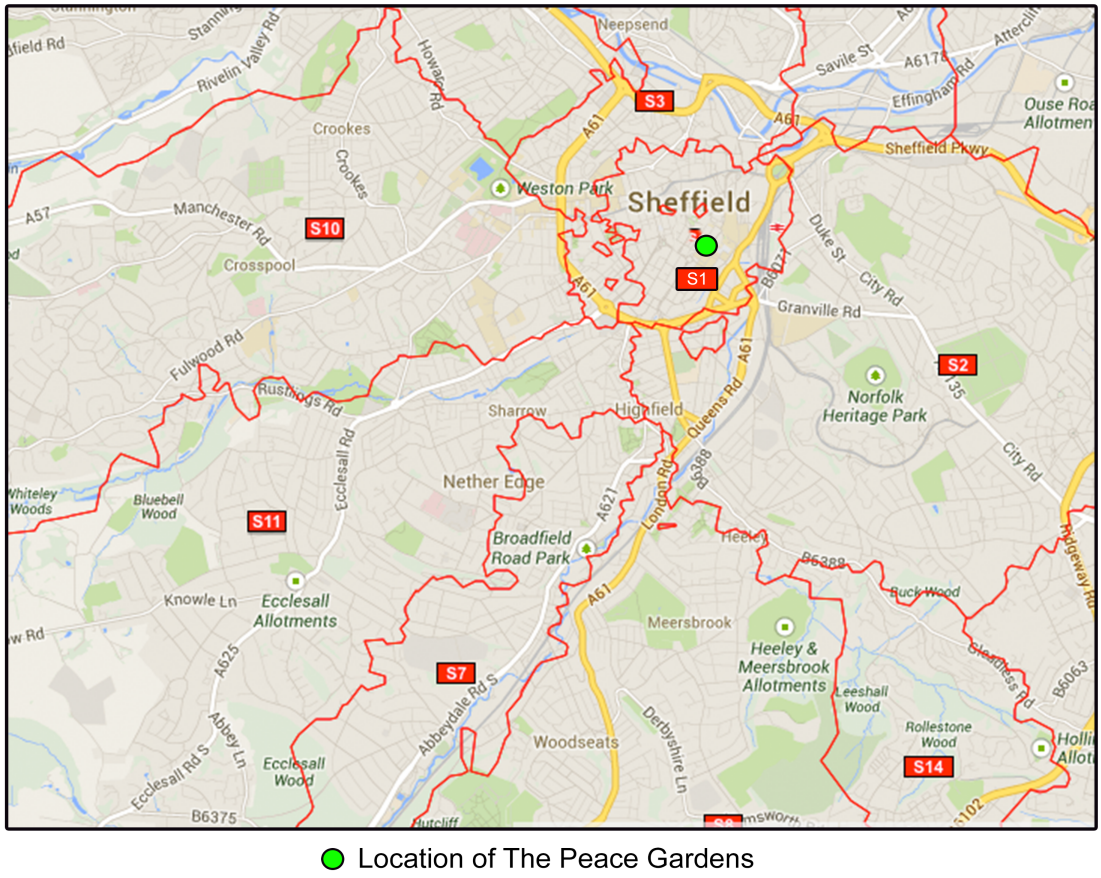


Figure 6: Frequency of visit to Sheffield city centre by home location



Map 2: The borders of Sheffield Postcode areas and location of the Peace Gardens (Free Map Tools, 2013)

It can be seen from Figure 6 that there is a trend of increasing visits from distant areas where the frequency decreases. Weekly or more frequent visits to Sheffield city centre were highest among children who lived in S2. Visits from children domiciled in S7 peaked in the Monthly region, followed by less than monthly visits. Graphical patterns of visits from S11 were similar to S7. Therefore, it can be said that proximity plays a role in the frequency of children's visits to Sheffield city centre, because children living closer to the centre visited it more frequently, compared to children, who lived further away. Furthermore, during site visits, the same children were observed coming to the Peace Gardens repeatedly. Although it does not give us location-related information, it confirms that there some children were very regular users of this amenity.

5.3.2 When Children visited Sheffield City Centre

In the survey children were asked when they visited Sheffield city centre and they were allowed to tick more than one box as they might do this at different times. Consequently, the results in this section of analysis do not add up to 100%. It can be seen from Figure 7 that most of the children visited Sheffield city centre when they are more available, such as during school holidays (74%), and on Saturdays (63%) and Sundays (51%). The percentage of participating children who said 'after school' was 20%. Special events were one of the most important ways that children were attracted to city centre, as 41% of children visited for this reason. Lastly 12% of the children visited Sheffield city centre for other reasons, which was mainly not specified.

Matrix coding query between when children visited to city centre and location they lived showed that the majority of after school visits were from the S2 area (14%), which was followed by the S11 and S7 areas (Figure 8). Again a positive correlation was found between the proximity of home to the space and the frequency of use.

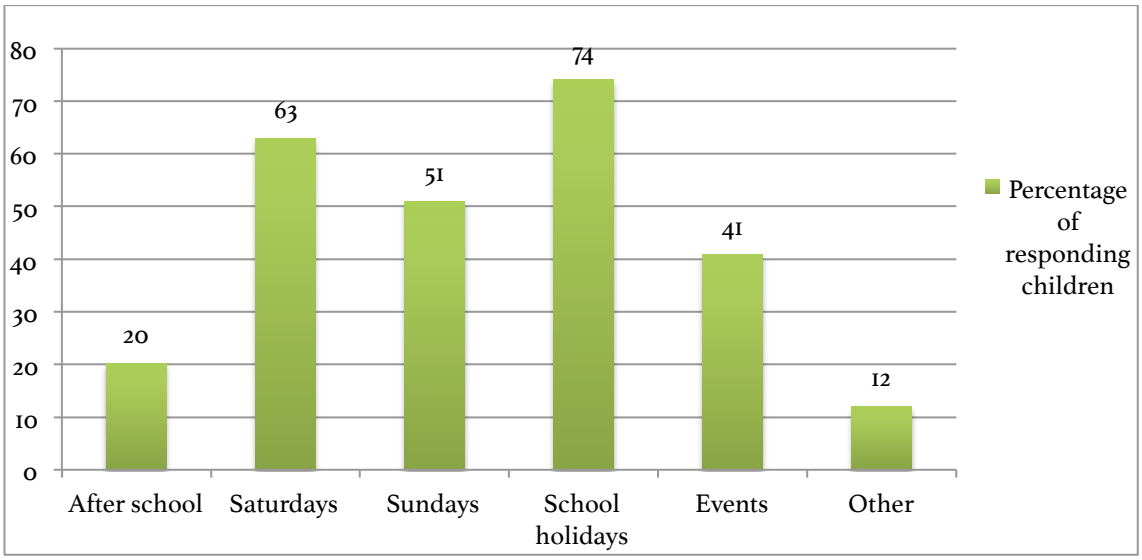


Figure 7: When children visited Sheffield city centre

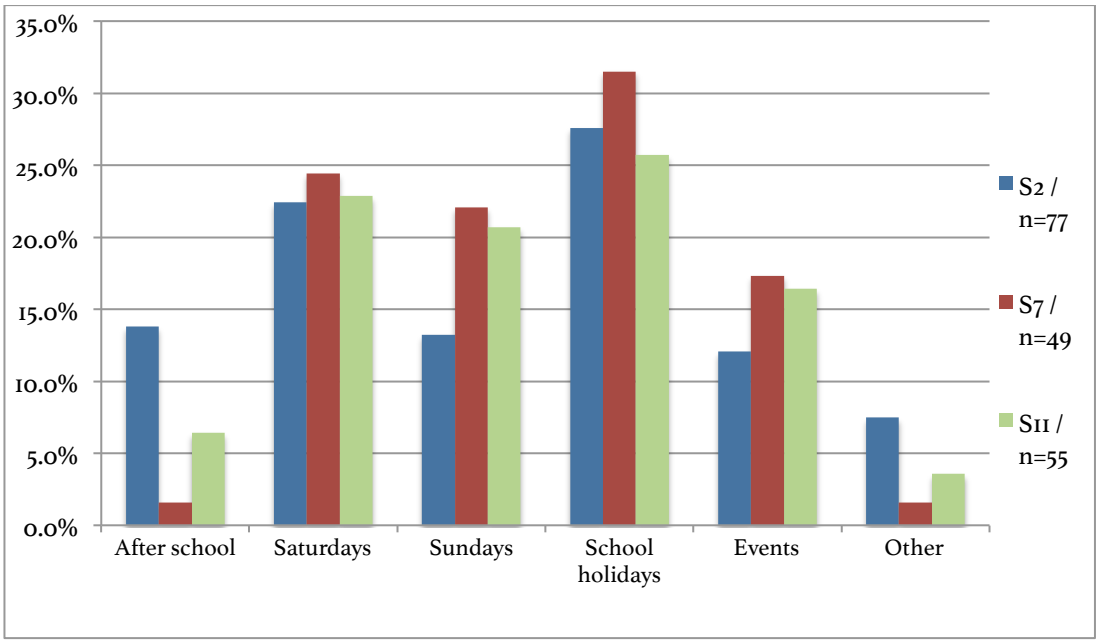


Figure 8: When children visited Sheffield city centre by home location

5.3.3 How children accessed to Sheffield city centre

Another parameter that was examined to understand children's visits to the city centre in terms of the types of transport children used to visit study sites. The highest percentage of children travelled by car (61%), followed by bus (55%), on foot (34%) and by tram (14%). Lastly 9% cycled to city centre. Some children ticked bus and car together, which means that they sometimes travelled in by the car, probably with

parents, and they sometimes took the bus, possibly alone or with friends. This might also relate to parents willingness to drive to the city centre, due to car parking issues.

In order to understand the relationship between locations and types of transport, each group, such as walking and cycling, was distributed into local postcodes. It can be seen from Figure 9 that there was a positive correlation between proximity of home to space and transport method, since the percentage of children who travelled by car increased with the distance to Sheffield city centre. The percentage of children who walked to Sheffield town centre was highest for the S2 postcode (37%), followed by S11 (23%) and S7 (15%). The percentage of children cycling to town was higher in the S2 area compared to other postcodes. The results for tram use were not surprising because S2 is the only postcode area of these three where trams operate. However, there some children may have used two or more transport methods to travel to the Peace Gardens.

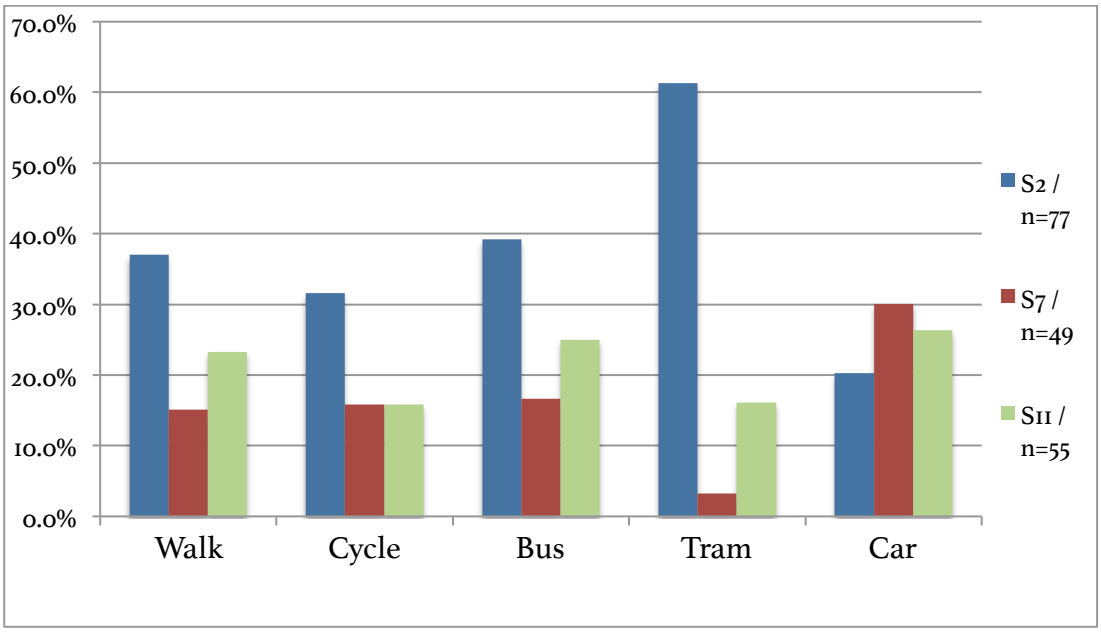


Figure 9: Types of transport used by children visiting Sheffield city centre by home location

5.3.4 Who accompanied children to Sheffield city centre

The people children go to visit to Sheffield city centre with is part of the analysis. In the survey, the majority of children visited the city centre with parents (91%), followed

by brothers or sisters (39%) and other family members (28%). The percentage of children who went to the city centre with friends was 17%, while 5% went with other people box and 2% visited alone.

Most of the children seem to be family-dependent for their visit to Sheffield city centre; this is possibly due to having a large number of younger children in the sample. Further age-related matrix-coding analysis was undertaken to understand whether this might be the case.

Table 3: Who children go to city centre with, based on children's survey results

	Aged 8-9	Aged 10-11
Parents	52%	48%
Brother or Sisters	57%	43%
Other Family Members	46%	54%
Friends	49%	51%
Alone	0.0%	100.0%
Other	82%	18%

It can be seen from the Table 3 that all of the children, who went to the town centre alone were aged 10 or 11, although number of children in this groups was small. In addition the amount of children who went to the town centre with friends and/or other family members was higher in the 10-11 age group. The amount going to town with parents and brother or sisters was higher in the 8-9 age group. Furthermore, the number of children who went to city centre alone or with friends gradual increased by age (**Error! Reference source not found.**4). In addition to this in order to nderstand children's visits, the proportion of children visited city centre spaces alone and/or with friends was distributed to age groups in Table 4. As children become older

more went to Sheffield city centre alone or with friends, with a near 3 times increase between the ages of 8 and 11. However, when data was collapsed to single ages, data seems to be fluctuating. This more likely to be related with having smaller numbers of age 9 and age 11 children in the sample. Especially, sample only limited number of age 11 children.

Table 4: Children visiting Sheffield City Centre alone or with friends

Aged 8	Aged 9	Aged 10	Aged 11
12%	16%	24%	33%
30%	19%	35%	16%
0.0%	0.0%	60%	40%

In the beginning of this chapter age diversity of children, who had never visited Sheffield city centre, has been given (Table 2). Results indicate that there was a relationship between age and parental guidance to children when they were in urban open spaces in the city centre. As they get older, percentage of children who never visited Sheffield city centre rapidly declined. The results overlaid the theory (Hillman & Adams, 1992; Hillman *et al.*, 1990; Foster *et al.*, 2014). These will be discussed in Chapter 8 in detail.

5.4 Children's Interaction with Water in Sheffield City Centre

In the following part, frequency, diversity and experiences of children visiting water features and how parents perceive this interaction will be discussed. The results were informed by data obtained from the children's survey, parental interviews, parents' surveys and observations.

5.4.1 Frequency and diversity of children's visit to water features

79% of children who responded interacted with the water features in city centre, while 21% mentioned that they did not interact with the water features. This shows that most of the children who went to city centre interacted with the water to some extent.

Research questionnaires concentrated on which water features children would use in the city centre – as there were several water features there - rather than other activities they would undertake in city centre. According to the results, the most popular water features in the city centre were the recent developments made in last two decades. Children indicated that they went to The Peace Gardens, as mentioned at least three times more often than the other spaces: Millennium Square, Sheaf Square (Railway Station), and Barker's Pool (see Chapter 4 for photographs). The least popular water feature in city centre area was the Howard Street water feature, which is in front of Sheffield Hallam University. The Peace Gardens and Millennium Square are popular because, first of all, they are recently refurbished, and secondly children can easily interact with water at these sites because they are open water features as oppose to pool in Barker's Pool, for instance.

Parents were asked to tell us where they took their children to interact with water features in Sheffield city centre. The results were quite similar to the children's results. For instance, although children's second most popular choice was Millennium Square, both in interviews and survey parents' second most popular choice was Barker's pool. There are several reasons for this. Firstly, many parents thought Millennium Square and The Peace Gardens were the same place because they did not know that Millennium Square has a special name dedicated to it, which was evident in surveys and interviews. Secondly, parents might have a negative attitude towards children's interaction with water. Therefore, it seems like some parents took children to Barker's Pool just to throw a coin into the pool and make a wish. The water feature in Sheaf Square was parents' third popular choice. Parents also mentioned Millennium Square, though only a minority; the Winter Gardens, Hallam University and Leopold Square.

In general, where children said they went to interact with water features and where parents said they took their children for this purpose were very similar.

5.4.1.1 Frequency of children's visits to water features

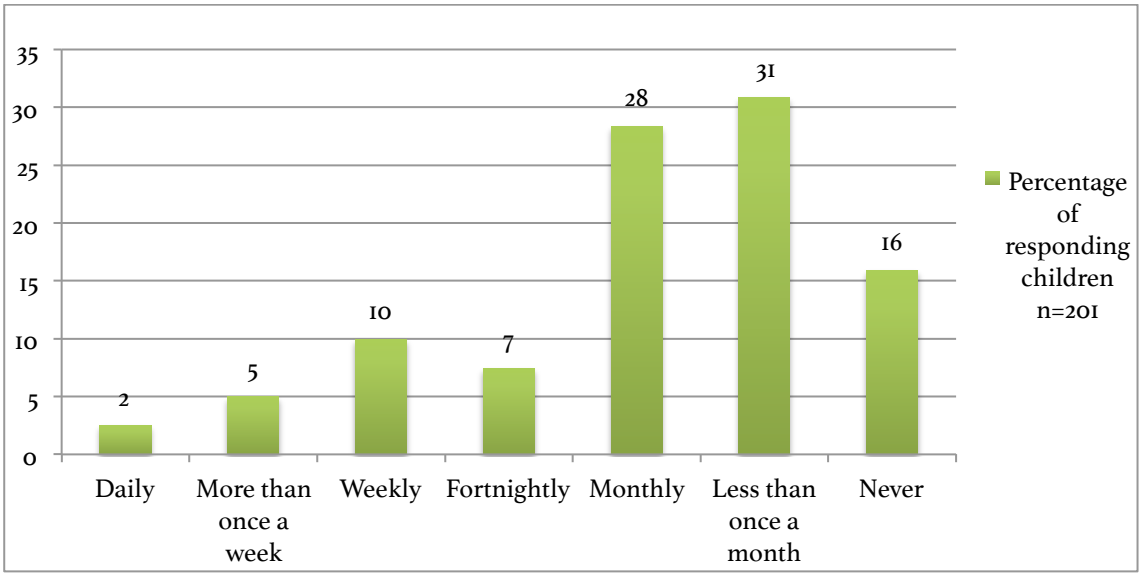


Figure 10: Children's frequency of visits to water features in Sheffield city centre

Results suggest that children visit water features less frequently compared to their visit to the city centre. 31% of the children surveyed indicated less than monthly visits (Figure 10). Moreover, 28% of the children mentioned monthly visits to the city centre, which was followed by weekly (10%) and daily (2%).

In the following section, discussions about children's diversity in The Peace Gardens will include observational data and behaviour maps. During the site visits a total of 3395 children were observed and recorded.

5.4.1.2 Children interacted with water by gender

The survey shows that female children interacted with water features slightly more than male children. Table 5 shows the percentage of males and females, who went to

water features. As can be seem 52% percent of children interacted with water features were, while 48% of the males did this. During the site studies the number of female children recorded to be present at The Peace Gardens was considerably more than the number of male children. This can easily be seen from the gender diversity map (see Behaviour Map 1, p.133). During these site visits 57% of the children recorded as present were female, while the percentage of males, 43%. As can be seen from the behaviour map considerably more pink dots appear in the fountains and around in Millennium Square. Therefore, it can be said that female children take part in active interaction more than males in these spaces.

Table 5: Children interacting or not interacting with water by gender

	Male	Female
Children interacted with water features in Sheffield city	48%	52%
Children did not interacted with water features in Sheffield	58%	42%

5.4.1.3 Children interacted with water by age

According to survey results, 57% of the children who interacted with water features in Sheffield city centre were aged 8-9, while 43% were aged 10-11. However, limited numbers of age groups were involved in surveys. Therefore, in order to realise age diversity, observational data was analysed and behaviour maps were created. Behaviour maps involved all children aged between 0 and 18.

During the site visits, 51% children were aged between 0 and 9 and 49% of aged between 10 and 18 (see Behaviour Map 2, p.134). Although a higher number of older children were observed, both data sets seem to support the view that the Peace Gardens were more tempting for younger children.

5.4.1.4 Children interacted with water by ethnicity

According to the surveys, the most common ethnicity of children interacting with water was White, which reflects the fact that 84% of the population of Sheffield is from a White ethnic background, according to Census 2011. This was followed by Asian (15%) and Mixed (13%) backgrounds. The lowest percentage of groups detected were Black (4%) and Chinese or any other ethnicity (4%). These results seem to reflect the findings from the analysis of children's ethnic origins using Census 2011 data for Sheffield. According to the Census analysis, a majority of children in Sheffield come from White families, followed by Asian, Mixed, Black, and Chinese and other minor ethnicities.

5.4.2 How children interact with water features

Two types of interaction were identified in the spaces; active and passive. Active interaction activities involve physical contact and need doing, spending time and energy. These activities might be undertaken in water, running through water, putting feet into water, or through playing with water and water equipment. Passive interaction includes the activities which do not contain direct physical contact with water. Passive interaction involves activities such as meeting friends, having a picnic near water, and watching water. 65% of children had active interaction with water in the places they mentioned in Sheffield city centre (mainly Peace Gardens) and 44% involved passive interaction, to some extent. The percentage of children engaging in both active interaction and passive interaction was 9%. The children's preferences regarding activities mostly changed, depending on the weather and seasons. Children mentioned that in summer they actively interacted with water features, such as by running through the water features. However, in winter they only looked at them.

Photograph 11: Young child interacting with water (July 2013 - taken by the author)

The most favourite active interaction in Sheffield city centre was running through the water features, which was followed by splashing around and putting feet and hands into the water. Details of all active and passive activities can be seen in Table 6.

The favourite passive interaction with water was watching. A majority of children mentioned that they liked watching water features, especially in the Peace Gardens. The second favourite was eating and picnicking around water.

> *"I just look at them" or "Look at it"*

Many children used these phrases. This particular phrase shows that their only interaction with water was looking at it, which was categorized as passive interaction. In the group of children who just watched the water features in Sheffield city centre, one particular child, a 10-year-old male, was quite imaginative.

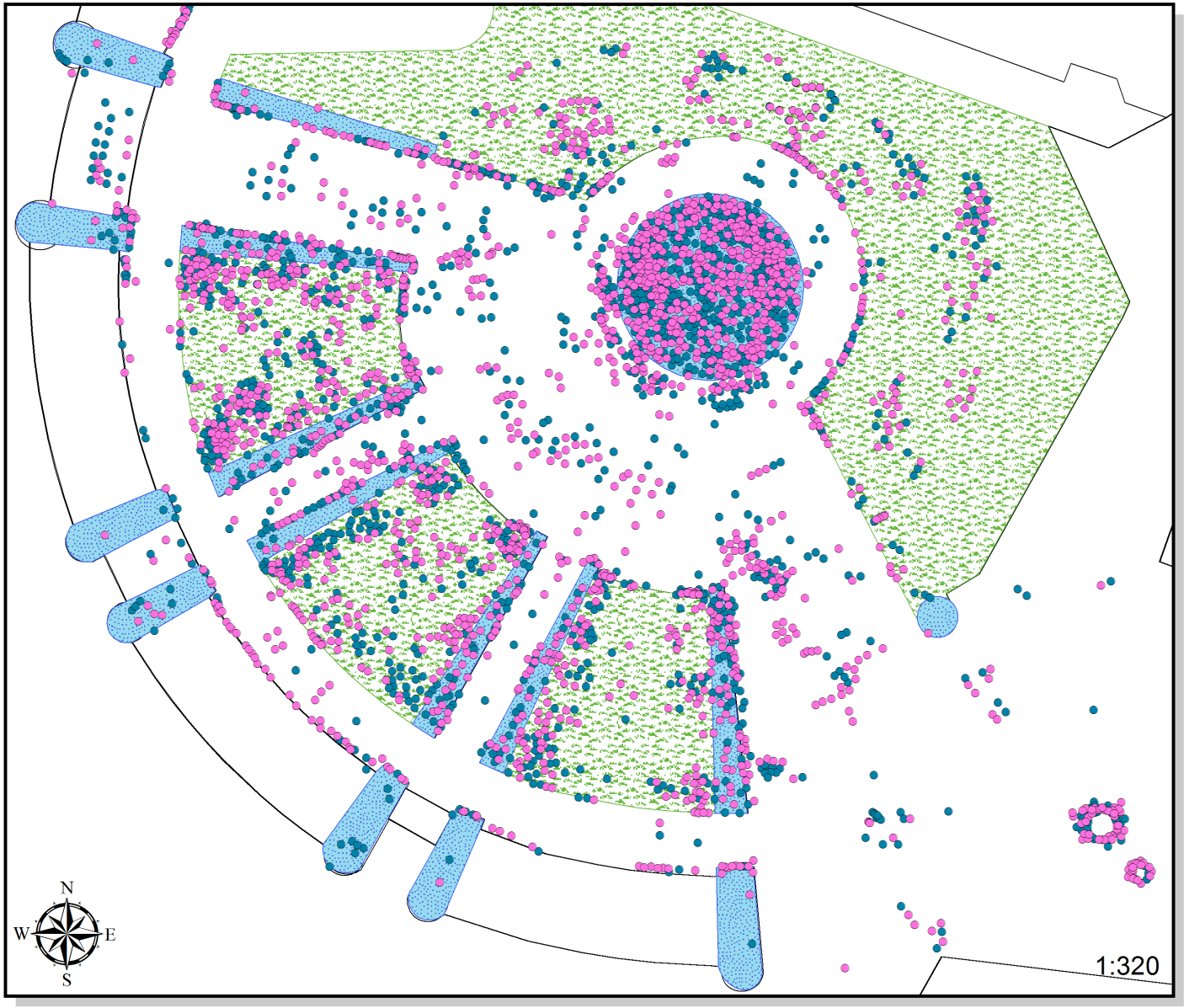
"I look at them and think of rivers" (10, male, White British)

Table 6: Children's active and passive interactions with water		
	Active Interaction	**Passive Interaction**
1	Playing in the water	Watching water Features
2	Running around water	Taking pictures of water features
3	Going through water	Having picnics around water
4	Putting hands into the water	Sitting around water features
5	Splash play	Put coins into water
6	Jumping in the water	Chatting with friends
7	Touching water balls	Relaxing by water features
8	Sliding down the water balls	Reading books
9		Listening to music by water features
10		Watch other children playing in water
11		Meeting with friends by water features

The other popular passive interactions in the Peace Gardens were as follows; eating or having a picnic, reading a book, listening to music, looking at water or people around, and relaxing. For example, a 10-year-old female mentioned:

"Eat my lunch and play with my sisters. Read my book, listen to music and look at the water features."

This clearly shows that she enjoys being in The Peace Gardens and does lots of passive activities there. One of the least favourite activities was throwing coins in to water. Only 1% children mentioned they did this at Barker's Pool.

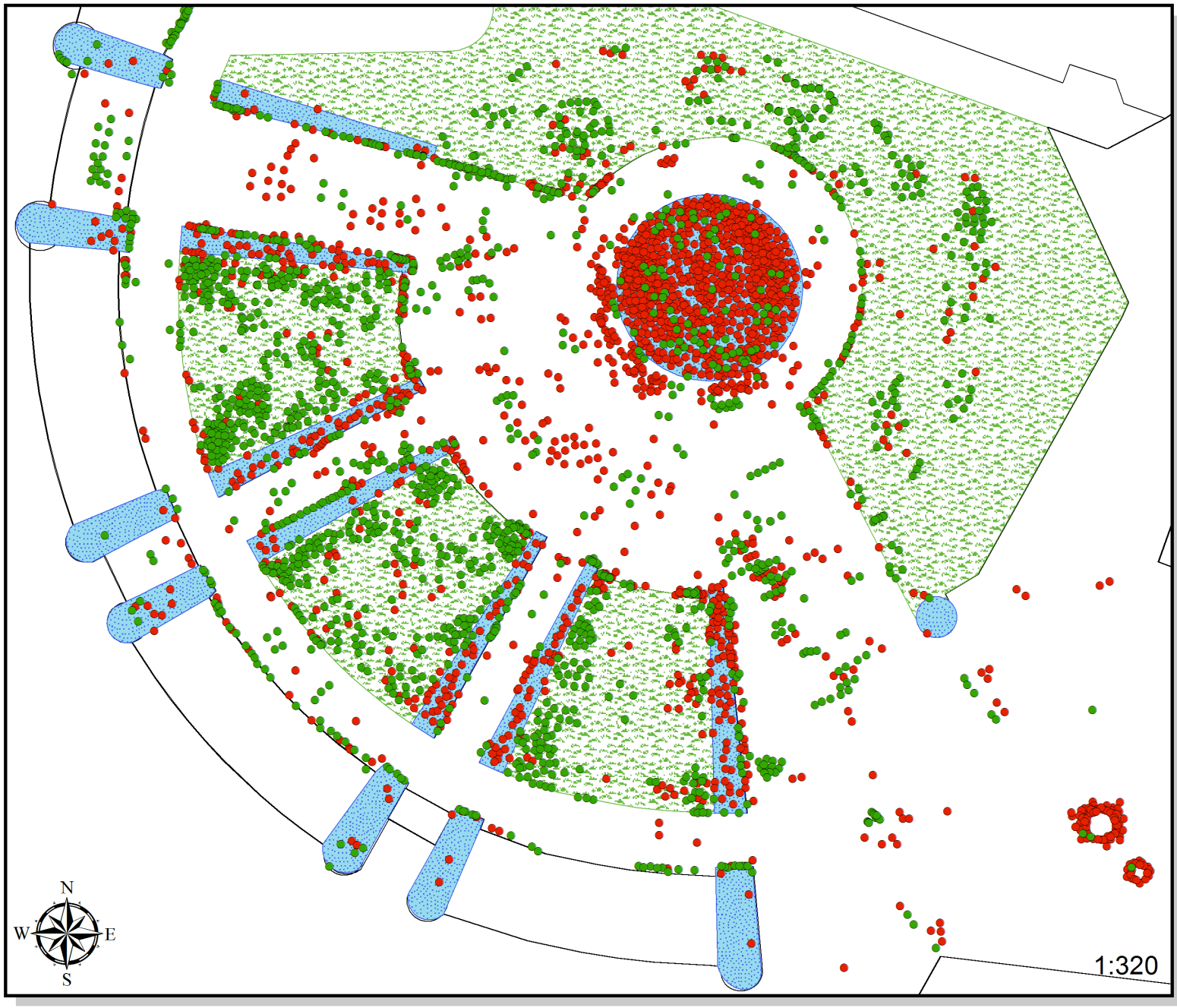


Legend

- Female
- Male
- Water surface
- Grass surface

Behaviour Map 1

Gender Diversity in the Peace Gardens



Legend

- Age group 1 (0-9)
- Age group 2 (10-18)
- Water surface
- Grass surface

Behaviour Map 2

Age Diversity in
the Peace Gardens

Furthermore, during observations number of disabled children was observed. Especially children with physical difficulties had to just watch the water features. Additionally, some children did not even have interaction with water features in Sheffield city centre: 3% of those surveyed indicated that they just walked pass it.

Photograph 12: Children running around water in winter (February 2013 – taken by the author)

The activities that children undertake in different weather conditions in the Peace Garden were informed by observations. Nikolopoulou and Lykoudis (2006) found that Sheffield's yearly average temperature was 13.3^{O} C. Similarly, Met Office (2014) found Sheffield's maximum average temperature was 13.4 ^{O} C between 1981 and 2010. As these statistics are the average of 29 years, this data has been used to create temperature related behaviour maps. Behaviour Map 3 (see p.137) shows the children in the space when temperature was below and above the Sheffield average. It is quite clear that, when the temperature was warmer, the number of visitors were 4 times higher, compared to the number of visitors on cooler days. When the weather was cooler (below 13.4^{O} C) children had a tendency to observe fountains from a close

distance or sit on a wall next to the canals. Only a few children were observed having active interaction with water in those days. Children's interaction types below and above 13.4^{O}C was compared in Behaviour Map 4 (see p.138). Not only are the number of active interactions reduced but also the number of passive interactions when temperatures are below the Sheffield average. Moreover, the number of children just passing by, using The Peace Gardens as a short cut without any interaction, increases dramatically as the weather gets cooler. During the site visits it was observed that some children were just passing by the Peace Garden but on warm and sunny days, they sat down on a seat or on the grass and chatted for at least 10 minutes before moving away. Therefore, when the weather is good, children seem to be more tempted to have a rest in The Peace Gardens, even though it is for a short time. Spatial distribution of activities observed in the Peace Gardens can be seen on Behaviour Map 6 (p.140).

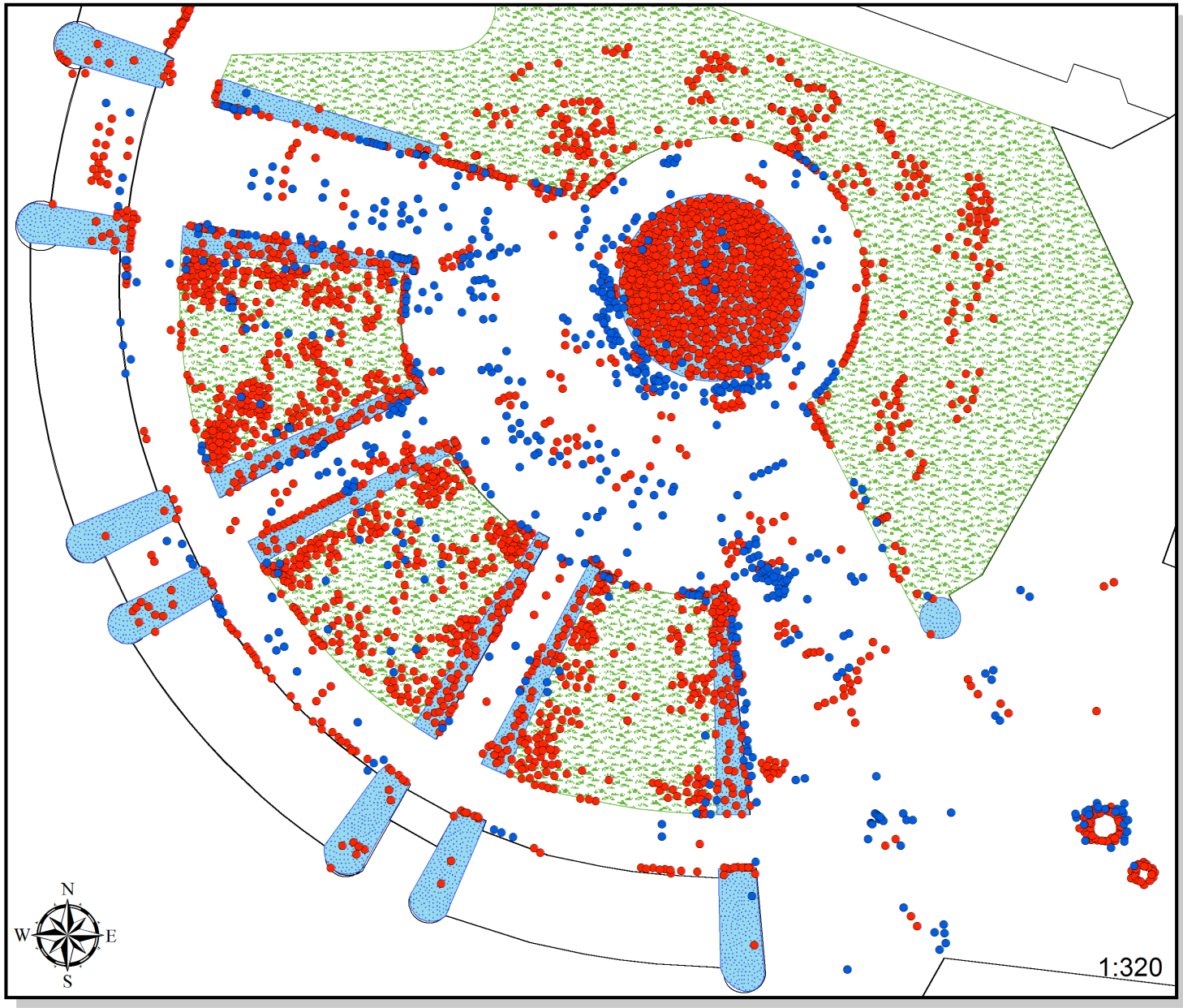
In order to examine how interaction types changed by age, percentages of children having only passive interaction distributed by age are given below.

Table 7: Percentages of children who had passive interaction with water by age

	Aged 8-9	Aged 10-11
Passive Interaction	16%	29%

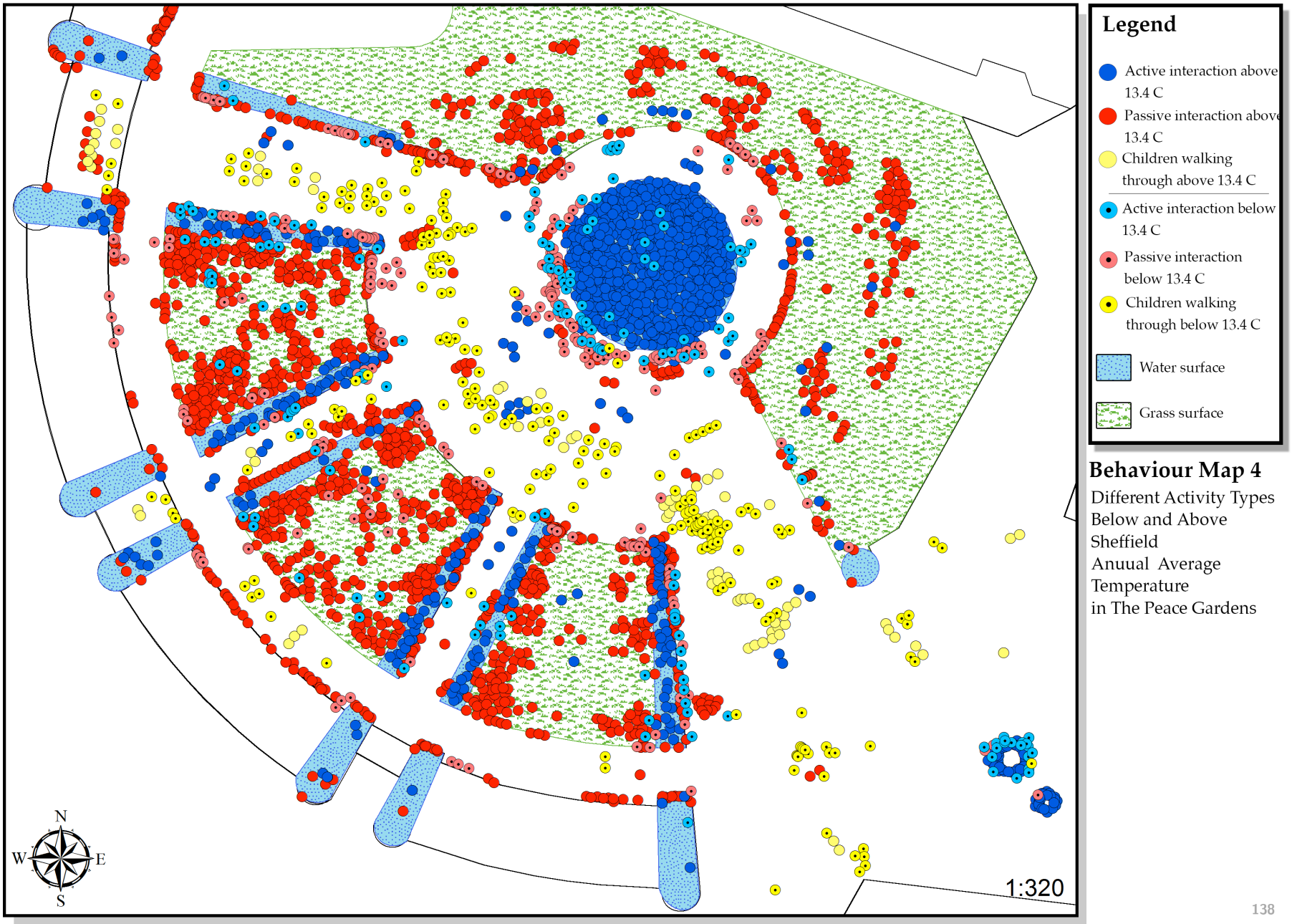
It can be clearly seen in this table that, although a limited number of 11-year-old children were in the sample, the change in behaviour was evident. The percentage of children aged 8-9 who had passive interaction with water was 16%, while 29% of the children aged 10-11 had passive interaction.

This shows that children's preferences in terms of water-related activities change over time, as they get older. This seems to be supported by the observations, which showed that the majority of children interacting with water features actively were in age group 1, aged up to 9 (see Behaviour Map 5, p.139).



Behaviour Map 3

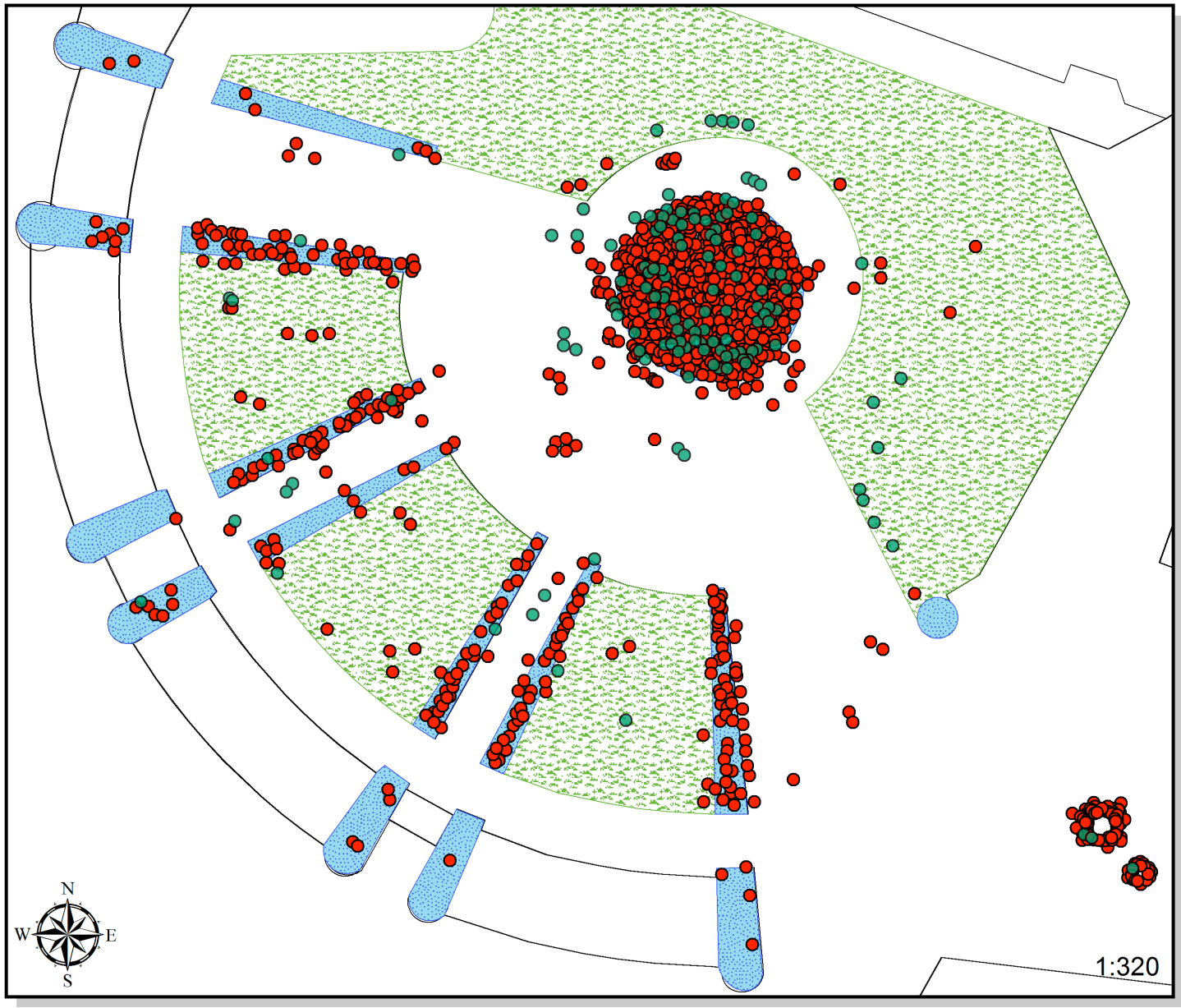
Spatial Distribution of Activities in the Peace Gardens When Temperatures are Below and Above Sheffield Annual Average



Behaviour Map 4

Different Activity Types Below and Above Sheffield Anuual Average Temperature in The Peace Gardens

138

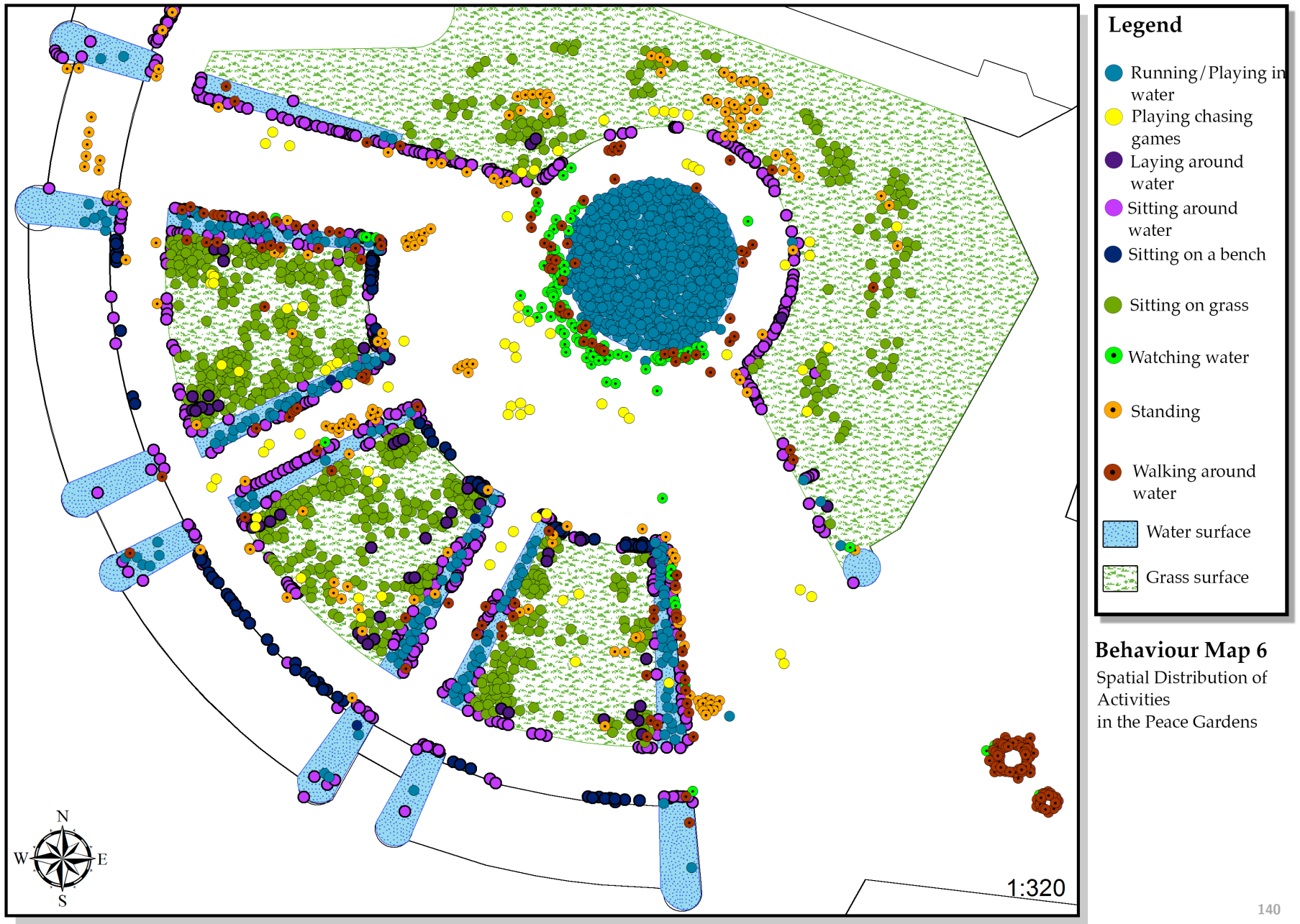


Legend

- Active interaction in Age group 1 (0-9)
- Active interaction in Age group 2 (10-18)

Behaviour Map 5

Children Who Actively Interacted with Water in The Peace Gardens by Age



Behaviour Map 6
Spatial Distribution of Activities
in the Peace Gardens

140

Surveys also indicated changes in behaviour as children get older. For instance, one 10 years old male child stated that he went to the Peace Gardens but it was aimed at children younger than 10 years old. In addition, he mentioned that water features were pleasant to look at it and fun for little children.

On the other hand, some children mentioned that the water features were good for children so they did not mention anything they liked. Moreover, a 10-year-old male noted *"The water features in the city centre are great for children".*

Further examples of the case are also available. For instance, A 10-year-old male, Other-Asian mentioned that he liked the water features in Sheffield city centre and went to the Peace Gardens because it was clean and had fresh water and he used to run into fountains. However, he emphasized that at that time he only went to the Peace Gardens to have picnics and for biking. He no longer went to play in the water.

On the other hand, behaviour maps also reveal that younger children (aged 0-9) were the ones mostly interested in playing with water. Most children in this age group were recorded in the fountains or playing in and around canals (see Behaviour Map 2, p.134). Only a small number of children recorded sitting on grass patches. It was observed that most of these children came with their families and might not be allowed to get into the water. Although small numbers of older children aged 10 or over recorded having active interaction with water features, most children in the second age group had a passive interaction. As can be clearly seen from the behaviour maps, the favourite activity undertaken by older children was sitting on grass or on a wall next to the water features. Behaviour maps revealed that the middle of the grass patches are generally empty compared to the edges around the water canals in the Peace Gardens, because those areas are away from water and not preferred and used by children. The small number of children recorded in the middle parts of the grass areas were recorded in the busy hours of the day, when they mandatorily sat in the middle parts, as they could not find space closer to the water edge. First of all, some of these children were regular visitors of the space, and sat next to water several times and only in the middle

of the grass areas when they weren't able to find place next to water. Secondly, generally no children were observed sitting in the middle of the grass areas, while places next to the water features were available.

5.4.3 Why children like water features in Sheffield city centre

In order to understand what children like about water features in Sheffield city centre, respondents were asked to say 3 things they liked about water features. In response to the question a range of responses was elicited; the most frequently used words were 'fun', 'nice', 'play', 'look', 'wet', and 'cool'.

A majority of the children (61%) who responded to this question fell into the "It is nice to play with" category. Some included: "like getting soaked", "like getting wet", "like splash in to", "like playing with water", "like running through", "Like to play with water balls", and "play with your friends". However, for some children these activities were weather related. For instance, a 10-year-old female, White British, mentioned that:

> *"In the summer I paddle, in other seasons I watch."* (10, female, White British)

As discussed above, observations revealed that only a small number of children had active interactions with water in cooler weather conditions and limited the number of children who had passive interaction.

The second most popular category thematically coded was "it is nice looking and nice to look at", mentioned by 47% of the children. The phrases mentioned given were 'pleasant', 'beautiful', 'interesting to watch', 'look nice', 'make the town look nice', 'very decorative', 'like watching children having fun in water'. A number of these children also mentioned that they liked to play with it or liked getting wet or in other parts of the survey they stated they actively interact with water.

The third popular choice (38%) for liking the water features was because "it is fun", and similar phrases such as 'it is cheerful', 'fun to mess about', 'have fun with your friends'.

Photograph 13: Children in the water in the Peace Gardens (July 2013 - taken by the author)

A significant percentage of children indicated that water features were good because it cooled them down in hot summer weather (22%). Some children cooled down by getting into the water features (getting wet, get splashed, running through the water, etc.), while some others were only allowed to put their hands in the water by their parents. Most of the children who thought water had a cooling effect were allowed to enter the fountains by their parents. However, one particular 11-year-old White-British male child mentioned his parents did not like him going to water features but he still went into the fountains and thought that it had a cooling effect. The city centre is the only place where he interacts with water and he had never been to either Endcliffe Park or Millhouses Park. Due to a lack of visits to other urban open spaces with water features, he might be interacting with water in city centre, although his parents were

not happy with this. Some other parent's attitude towards children's interaction with water features was cautious or negative. These will be discussed in Section 5.4.4.

The children surveyed also mentioned that water features are relaxing and peaceful (14%); that they are clean (6%); and that they like the sound they make (4%). Only a small number of respondents indicated themes such as; "It is nice when lit up", "It is interesting", "like taking pictures", "It is public; free".

Table 8: Top 3 aspects children liked about water by gender

	Male	Female
It is nice to play with	41	43
It is nice to watch	31	33
It is fun	28	24

The matrix coding was done to understand the relationship between the three most commonly mentioned aspects children liked, by gender and age (Table 8 and Table 9). According to the matrix-coding, similar percentages of males and females mentioned those aspects (Table 8). The percentage of males, who found it fun was very similar with the percentage of females. Therefore, gender seems to have no effect on what children liked about water features in Sheffield city centre.

It can be seen from Table 9 that 68% of Year 4 children mentioned that they liked playing with water. However, this percentage decreased to 62% in Year 5 children and fell to 51% in the Year 6 group. It is apparent from the table that there was a significant decrease between Year 4 and Year 6.

On the other hand, the percentage of children who liked the appearance of the water feature was 40% among year 4 children, while it was 56% among the Year 6 children.

This analysis also supports the view that children's interaction with water features in Sheffield city centre change by age, supporting the case made in Section 5.4.2 that children's interaction with water features moves from active to passive interaction as they get older.

Table 9: Top 3 aspects children liked about water by year group (age)

	Year 4 (Aged 8-9)	Year 5 (Aged 9-10)	Year 6 (Aged 10-11)
It is nice to play with	68%	62%	51%
It is nice to watch	40%	50%	56%
It is fun	40%	50%	33%

5.4.4 Parents' attitude to children's interaction with water, and how this is perceived by children

Parents' attitude to children's interaction with water is a factor that might affect children's interaction with water in Sheffield city centre. In order to gain a deeper understanding of the issue, both groups were asked the same question. Children were asked about their parents' attitudes towards their interaction with water in Sheffield city centre; parents were asked to explain what they thought about children's interaction with water (see Appendix A, B and C).

Parents' interviews showed that the majority of parents were happy and perceive children's interaction with water features positively. There was only one parent with cautious in the city centre. The parental survey revealed that not all of the parents had a positive attitude towards children's interaction with water features. Parental findings were grouped into four different categories: positive, negative, cautious, and parents' did not interested in their children's water interaction. On the other hand, children's

responses were grouped into four different categories: positive attitude, negative attitude, cautious parents and children not aware of their parents' attitude. In the following parts these findings will be discussed.

5.4.4.1 Positive Attitude

Firstly, 70% of children perceived their parents' attitude towards their interaction with water to be positive. Most of these children said that their parents either encouraged them to play in the water or they played in water with their parents. The majority respondents used words such as 'fun', 'happy', 'do not mind' and 'fine'. Some children gave detailed responses, such as:

> *"Think my mom and dad like me playing in the water" (8, male, White British)*

> *"Happy because we are finally playing together" (10, male, Pakistani)*

> *"My parents think my interaction with water is fun" (10, male, Pakistani)*

> *"They think that it is good for me and they should improve the gardens" (8, female, White and Black Caribbean)*

> *"They think that I do like it and they will bring me here again" (8, female, Not Available (NA))*

> *"They like it because I see my friends" (10, female, White and Black Caribbean)*

Some children's responses showed that some parents were not only happy to let children play in urban spaces with water but they were also quite aware of the importance of being outdoors and exercising physically. Responses showed that some parents' had consciously positive attitudes towards children's interaction with water features rather than just an unconsidered positive attitude. Parents' attitudes towards their interaction with water in Sheffield city centre were expressed such as:

"To exercise and have some fun" (9, male, White and Black Caribbean)

"It's just great to get outdoors" (11, female, White British)

"I think it helps my imagination and gives me inspiration" (10, male, White British)

Some others mentioned their parents' assurance about the water quality and some parents prepared for events, so they had positive attitudes to children's interactions with water:

"They think that it is really good because the water is clean" (10, female, other Black)

"They think it's clean and well looked after" (10, female, White British)

"They don't mind me getting wet because they bring a towel or spare clothes" (9, female, NA)

As mentioned above, the majority (93%) of the interviewed parents perceived children's interactions with water to be a positive thing. The percentage was high because interviews were conducted in the Peace Gardens where people intentionally took their children. However, not every family took their children to the city centre for water features. Survey data produced more realistic and similar results to children's perception of their parents' attitudes, saying 80% of the parents were happy with their children's interaction with water in Sheffield city centre. Although parents wrote paragraphs to express their ideas, the common words used to explain their positive attitudes were 'good', 'fun', 'love', 'great', and 'enjoy'. Parents found children's interaction with water positive because it was a reason for going to city centre, appeared to be safe and was free entertainment. Furthermore, anything that kept children away from TV was appreciated by parents.

"It is excellent, anything that can get them outside and away from the television. It gets them physically active as well. So I think it is very good."

(40-44, male, White British)

Secondly, it appears that parents used water features as a reward to keep children under control during shopping trips. Interestingly, a few of these parents admitted leaving their children in the Peace Gardens to play with water while they shopped; and one child mentioned the same situation.

Water features in Sheffield city centre are structured pools; however, it is not structured play equipment so it gives children a lot of freedom in the way they interact with water. Children play together; they share play in the water or share their equipment to play with. Furthermore, it was found that some parents' attitudes towards children's interaction with water was positive because they thought it was good for children's skills development and was exceptionally good for their social development. Moreover, parents agreed that shared experiences gave them a chance to learn from other people. For instance, in the most basic form they learnt not to splash people if they did not want this. These sharing experiences put many children from different ethnicities together and they learn to respect others, which contributes to the multicultural urban context. Freedom of play in water is more likely to be a stimulating experience for children, particularly for disabled or handicapped children, who were witnessed in the study sites.

"I think that is really good for their development and I think they really enjoy it; get a lot of pleasure out of it. It is lovely to watch people enjoying themselves. I think it is important, I think it is good for the city...Its just pure pleasure for them. I think... I just think it's so lovely for them just to play, just to be completely relaxed and not have any worries. I suppose they have got a lot of freedom, it is safe, it is nice. Parents feel that children are safe. It is lovely. It is kind of like being on holiday."

(45-49, female, White British)

"I think it is really nice. I think it is a good set up here. Positive experience. She loves it. Good for social development. Social development is good. Sharing time with other children. Getting confident with water in that particular feature. You can see on her face she is enjoying it. She is happy. Exercise as well."

(40-44, female, White British)

"Because if you see them you see that it is nice. They are smiling, really interested and they can play with other kids. They learn a lot from other people: that they are not supposed to splash them and stuff."

(30-34, female, Other White)

However, quite a few parents mentioned that, although their attitude was positive, children lose interest in water features as they get older, so they do not visit the water features as often as they used to, supporting the findings discussed in Section 5.4.2.

"They like going to Peace Gardens, but rarely visit now they are older."

(40-44, female, White British)

5.4.4.2 Cautious attitude

On the other hand, 18% of children found their parents' attitude towards their interaction with water features in urban open spaces to be cautions. According to these children, their parents thought children's interaction was good and positive as long as within the frame of some rules. It appeared that having no spare clothes or towel to get dried with was a common worry which restricted children's interaction with water. One child stated:

"My parents don't mind it but they don't like it when I get wet when I haven't got any spare clothes." (8, female, White British)

Water quality was another factor that made some parents cautious. According to children, their parents are sometimes worried about water cleanliness and the level of

chemicals in the water. For instance, one child said that her parents were happy about her interactions but sometimes questioned the water's cleanliness.

Furthermore, some parents, according to children's responses, did not allow active interaction. These children were only allowed to experience the water passively. These types of activities were coded under the cautious parent category because, although it involved passive interaction, children still had some interaction with water features.

> *"My parents think it's nice that I like looking at the water features but they always tell me to be careful." (10, female, White British)*

In this case parents have a tendency to prevent a child from active interaction but encourage passive interaction, such as looking. Although children only watched the water features, parents still warned them to be careful.

> *"They think that it is ok as long as I don't get wet." (10, female, other Mixed)*

In this case it looked like the child was not allowed to go into the water and get wet. She was only allowed to watch from a distance, and only went to the Peace Gardens to view water features. She added that she liked running through fountains but she did not like to walk barefoot or go home wet. This shows that her parents went to the water features unprepared or did not want her to get wet. She also mentioned that her parents became annoyed if she got wet in the parks too.

Besides, 4% of the parents surveyed mentioned they were cautious about their children's interactions with water features. However, the themes indicated by parents were quite similar to the themes stated by children. Parents would try to prevent their children from interacting with water in some circumstances due to doubts about the quality of the water and the level of chemicals such as chlorine in the water. Moreover, some parents were not sure about the safety of water features in addition to the safety of the areas, due to stranger danger.

"Kids enjoy it, but have to be aware of how cold it is, the cleanliness of water (kids quite often drink the water) and of those people around us that we don't know."

(30-34, female, White British)

"I think it is good for them. It is good for socialising in this area as well, providing it supervised. What worries me is people there, people who shouldn't be there watching children: that I am always worried about that. Yeah, it is good for the children, as long as it is safe and like you said being supervised and having parents with them all the time. I wouldn't just sit and leave him. I have to be with him where I can see him."

(35-39, female, White British)

There was a quite big difference between how children perceived their parents cautious attitude (18%) and how parents represented it (4%).The children's views, in this instance, are more likely to be true because parents might be cautious and tell their children to be careful, be safe, and have spare clothes. Although what children and parents articulated about cautiousness was similar, a big difference was the issue of spare clothes or towels, which was never discussed by parents but was a common theme cited by children as a problem that prevented playing in the water. Therefore, it can be summarised that most of the parents did not let their children have active interaction with water when they did not have spare clothes or towels, and that this was not seen as prevention by parents, although was seen in this way by children.

5.4.4.3 Negative attitude

The number of children who thought that their parents' attitude to their interaction with water features was negative was three times smaller than the previous category (6%). This was the category of children's perceptions of parents never allowing them to interact with water. They thought that their parents did not like them going into the water and getting wet. Some thought that their parents would get angry about their

interaction with water. Children's descriptions of parents in this category included the following;

> *"They don't like us going in the water because our clothes get wet" (10, male, White British)*
>
> *"My mum will not let me" (11, female, NA)*
>
> *"Angry about me getting wet" (8, female, White British)*
>
> *"My mum doesn't really like me going in because I've got ear problems. I really want to go in; I have to put cotton wool in my ears." (11, male, NA)*

As can be seen from these quotations some of the parents were not happy about children's interactions with water for health reasons. This was a situation mentioned by parents in the interviews and survey several times.

The percentage of parents who had a negative attitude towards their children's interaction with water (11%) was higher than the children's perceptions of this attitude. Although some of these parents' children like water features, they said they did not take them to the city centre for water play. These parents were prepared to go further, for instance to the Peak District or Magna, which is a science adventure centre with an entry charge that includes interactive water, seen as "proper water play" by some parents. Children's interaction with water was not approved among these parents because, first of all, water features in the city centre are perceived to be inappropriate place for water play and just there for decoration.

> *"I don't know but it is not designed for children to play in is it really? It is designed for show. I always think it is probably a bit dangerous really, you know, sliding around and getting cold. So I think that is for looking at rather than playing in. The Millhouses one is for playing in."*
>
> *(40-44, female, White British)*

On the other hand, not living in close proximity to the city centre was another reason for having a negative attitude towards water features because most of these parents (apart from 2) did not live close to the city centre. Some indicated that they presumed children living close to the city centre were the most likely to interact with water in the space. These parents indicated that they would not go to the city centre just for their children to interact with water. Some parents preferred to go to more natural areas, which they thought was more suitable for water-involved activities. They were even prepared to go much further away than the city centre, as this comment shows:

> *"I have seen children in the summer playing in the fountains. It looked like they were enjoying themselves. I assumed the kids lived near the city centre, as it would be unlikely we would travel to the city centre to play with water."*
>
> *(30-34, female, White British)*

> *"It's minimal. Why would I take my child to a city centre to experience water? We would go to a water park (Magna) or a pool."*
>
> *(40-44, female, White British)*

5.4.4.4 Parents did not interested in their children's water play

The percentage of parents who coded under the "parents do not interested in their children's water play" category was 5%. The participants had no opinion or did not really mention any positive or negative attitudes, sometimes saying their children were too old or did not like it.

5% of the children said they are not aware of their parents' attitudes towards their interaction with water. Most of these children's typical answers were "Don't know".

5.5 Issues Identified

In the following part, issues and concerns mentioned by children and parents, issues discovered during observation and issues mentioned by professionals will be discussed.

Four main categories of reasons that children did not like the water features in Sheffield city centre were identified: management problems; anti-social behaviour; design flaws; and personal reasons. All of these categories consist of several similar child codes (sub-categories). Some of these sub-categories contain sub-sub-categories to explore details of the category. Model 1 shows the relationship between these categories.

5.5.1 Management Problems

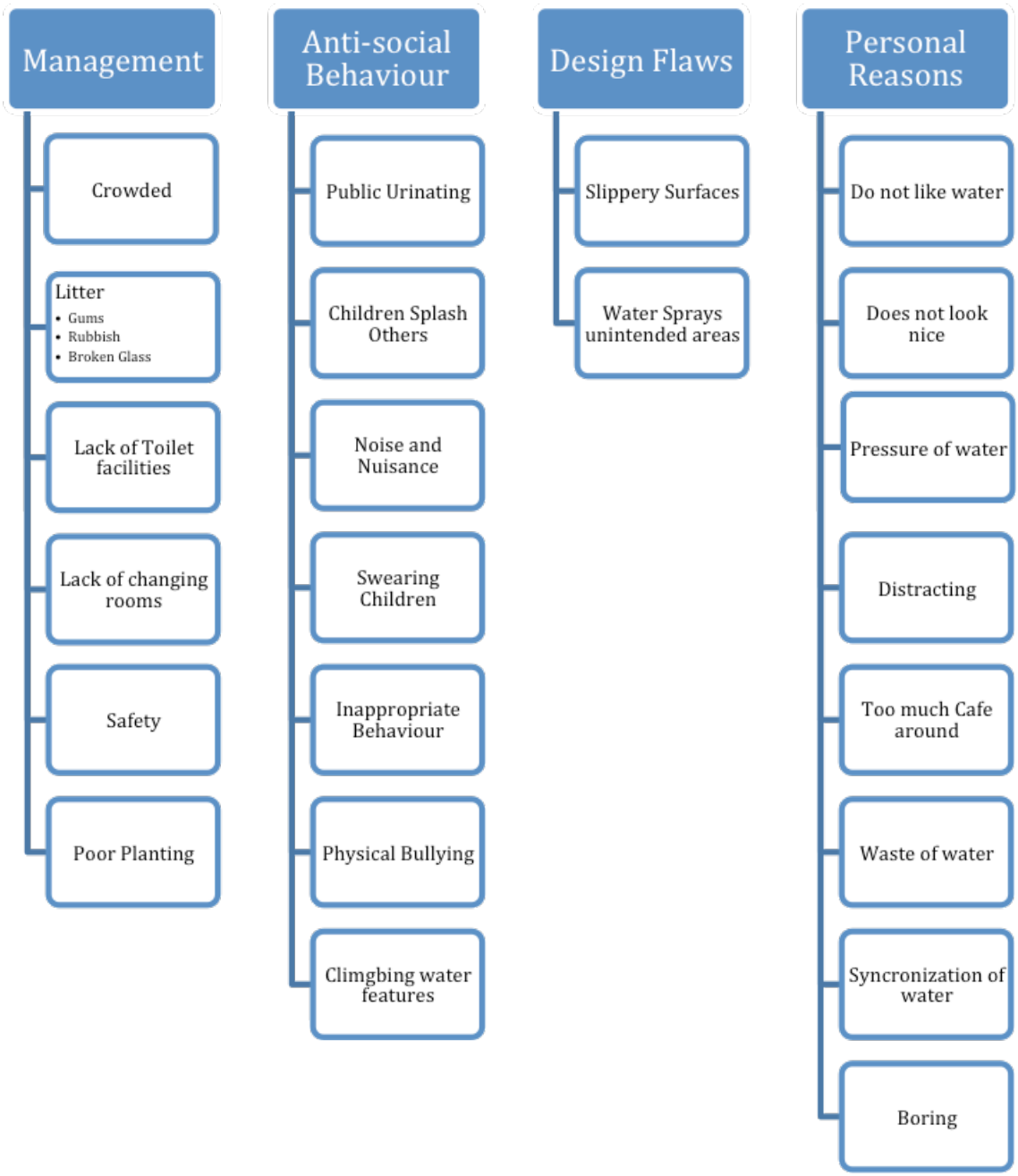
In total 52% of the respondent children mentioned management problems to some extent. Crowded spaces, cold water, having rubbish in the vicinity, broken glass, having no toilet in the area and safety concerns are some of them.

The most cited management problem by children was overcrowding. Children said that they did not like the space when it became too crowded; while some did not like the space because it was crowded all the time. These spaces are quite popular among children of many different age groups because it is the most accessible space of all. During the site visits the Peace Gardens had over 400 child visitors within 3 hours of observations on a warm summer day. Therefore, on a warm, sunny day thousands of adults and children might easily visit it. Although the city centre management team mentioned putting in some measures, such as turning water down or completely off, to avoid the space become too crowded, it was observed that it seemed that it was not working. Even if water features were turned down many children were observed in the area just sitting, chatting, meeting with friends or simply waiting for the water features to be turned up again. The measures the city centre management team puts in place might not work to reduce crowds. The feelings about overcrowding were not just expressed by one particular group of children but by a range of children who actively and/or passively interacted with water. Unlike the children not many parents were concerned about this issue. Only one parent pointed out that it sometimes became crowded and hard to watch their children in the space.

Children's second common management problem was litter (8%). According to the surveys, the majority of children were concerned about litter, getting dirty easily, spaces being dirty, and cigarette stubs and/or gum on the floor, while a minority of children (1%) were concerned about broken glass. One child mentioned that:

> *"If you are running with bare feet you might stand on glass." (10, female, White British)*

During the site visit it was observed that one child was injured because of broken glass in the water features. Ambassadors rendered first aid. The Child's injury was minor and the ambassadors tried to find any rubbish, perhaps broken glass pieces, in the fountains. Later on, the fountain was turned off for proper cleaning. The whole fountain area was cleared of children. After the injured child had gone, an ambassador was asked to give more details but she could not as she had not reported the incident at that point, and therefore could not announce it publicly. However, she confirmed that it was not a regular occurrence. The day before there was a stage, which was one of the main stages of an event called the "Tramlines Festival". The festival involved a lot of drinking. She assumed that broken glass left on the floor might have caused the injury. As can be seen from the observed incident, children's worries about the place were not irrelevant.



Model 1: Issues and concerns mentioned by children.

Toilets were another concern of children in the management problem category. Moreover, parents in the survey and interviews also mentioned the toilet issue. There is no free toilet facility in Sheffield city centre. The only option would be the toilets under the Sheffield Town Hall, which cost 20p to use. However, at the beginning of summer 2013 these toilets were shut down by Sheffield City Council until further notice and a few weeks later the toilets were shut down permanently, which might have

a negative impact on children's city centre use. During observations in summer 2013, Sheffield city council provided toilets only during events such as "Tramlines Festival", and "Sheffield by the Seaside". During the site visit, it was observed that some parents made their children urinate in the bushes in the Peace Gardens. At other times children and parents had to use shop and café toilets in the area. However, they are not free to the public as people are required to buy something to use toilet facilities in these outlets.

Photograph 14: City centre ambassadors render first aid to injured child (July 2013 – taken by the author)

> *"It would be useful if there was some loos nearby because these are temporary aren't they (She meant the ones put in the space for tramlines festival, which took place the day before interview. The temporary loos were removed from space in the same afternoon). That would be nice."*
>
> *(30-34, female, White British)*

Therefore, children's concerns about (free) toilet facilities are understandable. As mentioned, it was said that some children urinated in the water features and some parents made their children urinate in the bushes. Two of the participating children said:

A 10-year-old male noted that he did not like it when people urinated in the fountains. Furthermore, he wanted to see regular guards just next to the water features to stop people doing naughty and dirty things. As he was one of the most regular visitors to the space, he might have observed many children urinating before reporting them in the survey.

An 11-year-old male liked playing in the water, relaxing and having a good time as well as getting wet. However, he also reported that he sometimes did not like The Peace Gardens because of *"children weeing in the water place"*

Photograph 15: Notice of Town Hall toilet closure (July 2013 – taken by the author)

The problem of public urinating is related to having no public toilets nearby. On a warm and crowded summer day, if the number of children who urinate in the water features is high this might raise health concerns related to water quality.

Another problem for the children was having no changing facilities (3%). For instance, a 9-year-old female said that she played in the water because it was fun but she did not like walking back home wet and cold. During the site visits it was observed that many parents had to change children's clothes in public. After playing with water they have to take off their clothes in the middle of an open public space. Although parents did not see having no changing facilities as concern, 8% of the parents in surveys and 7% of the parents in interviews said they would like to have changing facilities when asked what kind of changes they would like to see in Sheffield city centre.

Not many children were concerned with safety, water quality, water depth or height, and stranger danger, suggesting that children perceive the Peace Gardens as a safe environment. However, parents were worried about safety issues, especially water safety. Water born infections, water depth and water quality were stated as concerns by several parents. Water depth was a concern because it might result in drowning. However, the Peace Gardens does not have deep-water features. It only has canals that are about 50cm deep and could only be dangerous to toddlers. During the site visit it was observed that, on a busy and warm day, static water in the canals quickly changed colour and became quite dirty. To prevent water diseases, Sheffield City Council use swimming pool standard water in the features. City centre manager explained;

> *"Obviously, all the water is maintained to swimming pool standards. It is all chlorinated. We maintain the water quality that way."*

Using higher doses of chlorine might prevent water bugs or the transmission of water born disease, but a small number of parents were worried about chlorine levels. As is the case with all other chemicals, a higher dose of chlorine might be dangerous, so

preventing children from being exposed to chemical substances is an understandable concern.

5.5.2 Design flaws

The children identified two different design flaws in the Peace Gardens. One was a slippery surface in the fountains and the other was water being sprayed around on a windy day. In an interview the City Centre manager explained that no incidents had been reported back to the Team regarding the issue. The design team leader of the Peace Gardens indicated that they used a small number (19-20 in total) of small granite circles around the Goodwin Fountains, design team leader stated why:

> *"The artist who worked on the paving design, Tracy Hayes, had a bit of a dialogue about this because my recollection is that she sort of wanted to have, if you like, a jewel like spot of polished stones as part of the artistic design. There was a debate about whether it was okay.... Most of the stone in there has a rough texture but it is just those circles. The decision was taken at the time that having a very small quantity of polished stone was ok: I think they are about 6" – 150mm diameter circles."*

Although the rest of the space is limestone, which is not a slippery stone even if it is wet, the small numbers of granite circles cause slips. Children running in and out of the fountains with bare feet could easily slip when stepping on one of those granite circles. This design flaw has never been identified or reported to city centre management team before because possibly no serious incident has happened. However, the concerns were raised by 14% of children in the surveys and 6% of parents. Children slipping and injuring themselves was the biggest design/management-related concern of parents.

Lastly, 3% of children mentioned the spray effect of the water features and the fact that you might get wet when walking past. It is classified as a design flaw because they might have been designed in a way that they could never spray in this way. On

the other hand, it is also a management issue at this stage because the city centre management team is supposed to turn them off when it is windy. It was observed once that the fountains in Barker's Pool were spraying beyond the pool all over the space but they were still open and water levels high.

5.5.3 Personal Choices

This section discusses children's personal choices about why they did not like The Peace Gardens other than having a problem or issue related to design or management of space. In total, 11% of the responding children said they thought the water features in Sheffield city centre were boring, and that they do not like water or going in the water, as there was not enough equipment to play with, or because it was a waste of water, that they were distracting, or because the water pressure was too strong for them. One particular child mentioned that there were too many café around the Peace Gardens. These aspects are related to personal taste, so no action can be suggested.

5.5.4 Human oriented concerns

Firstly, children mentioned variety of anti-social behaviours. The most common was physical bulling (8%) in and around water features. Children reported that everyone rushed, especially when it was hot, and people pushed each other. Moreover, some children pushed other children into the water on purpose.

"I don't like when you are playing and people knock you over in the water."

Furthermore, parents were also concerned about physical bullying (11%). Children reported some incidents and parents were worried about what might happen in the fountain area, such as older children knocking younger children over, potentially causing injured as a result. One female parent stated:

"Perhaps older, bigger children could get a bit boisterous and knock smaller children over and injure them."

(40-44, female, White British)

The percentage of children who complained about the noise in the Peace Gardens was 4%. Screaming, shouting and making very loud noises irritated a small number of children who were resting or trying to read there. 66% of the children who complained about this were aged 10 years or over, while 50% were 11 years old. As discussed in Section 5.4.2 most of the children undertaking passive interaction were older children and they were more likely to complain about noise levels. This also seems to support the argument about children's transition from active interaction to passive interaction as they get older.

Other behaviour problems stated include splashing children or people regardless of their willingness to interact with water; swearing by children and adults; people treating water features badly; and children climbing on the water features. Furthermore, some complained about children urinating in the water features, as discussed earlier, which was also coded under anti-social behaviour category.

The parents' most common human-related concerns were inappropriate clothing (4%), followed by lack of supervision (3%), people smoking (1%) and accidents (1%). Parents were concerned about inappropriate clothing because some children ran in and out of the water features half naked or completely naked. The observation revealed that this was mostly due to unprepared parents because some parents just took children's clothing off and sent them into the water features. As there are no changing facilities, some children took all their clothes off before playing in the fountains, so that the clothes stayed dry. Parents were worried on behalf of these children because they thought there were many strange people. One parent stated:

> *"There should be signs at the water fountains saying unless in appropriate clothes, do not enter. Too many bad people watch or get the chance to see naked children."*
>
> *(40-44, female, White British)*

Whether there were strangers waiting to see children naked cannot be proven, of course, and it might be urban paranoia. This issue will be discussed in Chapter 8, in a relevant context.

The second most common human-related concern was lack of supervision. One parent even admitted leaving their children to play with water while they shopped. However, during the site visit not many unsupervised children were observed. Most of the unsupervised children were 10 years old or older, which should reduce the worries, as older children are more able to look after themselves and more able to think of others.

People smoking and accidents were less common concerns of parents. Accidents do happen and there were City Centre Ambassadors watching the space most of the time, who should be able to react to any accident and injuries within a short time.

5.5.5 Issues identified by professionals

Some issues identified and dealt with by professionals were different from the issues mentioned by children. As stated in Chapter 4, the design principle of the Peace Gardens was never to create an interactive water play area but to express local identity, history in the form of water, steel and limestone from the Pennines. The design team leader said:

> *"...It wasn't intended to be interactive and was never meant to be a lido. That is what it has become really."*

It was not specifically created for children but it was designed with children in mind. However, in the first years after its opening the design and management team were faced with a huge task which they had never expected. Concerns related to the safety of design and a slight design flaw issue was raised. After the official opening, it was realized that some children's feet were getting stuck in nozzle holes and there were some reported injuries related to tripping on the nozzles themselves. The design team leader explained:

> *"In the early days when children were running through the fountains, the types of nozzles that were introduced to jet the water up had to be changed because they were a, earrm, the design of the nozzle... meant that as the water blasted through them, they sucked air into them and they - the nozzle - moved upwards slightly and we had a few issues with tripping."*

As a result of concerns raised, the City Centre Management Team fed back to the design team, which had to make some changes. First of all, the nozzles were changed to ones that stayed in the holes. Secondly, holes were redesigned with smaller apertures, to prevent children's feet becoming trapped in them. The design team leader admitted that Sheffield professionals learnt a lot from this experience.

The second issue identified by the management team was the cleaning of the fountains and the Peace Gardens. As interactive water play, especially when involving children running barefoot, was not expected, so that the first cleaning regimes introduced did not include cleaning of the fountains except over long intervals. However, some children got injured by broken glass or left over bottles used for water flights. So a new cleaning regime had to be introduced. The city centre manager:

> *"We introduced changes to cleaning regimes. We now regularly sweep out in ordering to stop that occurring. Just things like that really. Obviously, we have daily inspections, checking for glass, that is another problem with being an open location, and it is open 24 hours a day. You know we can't close the doors on*

it.... So we have to do a safety sweep every morning. We check for broken glass in the wheel and things like that."

Although the City Centre manager mentioned that the space was cleaned every morning and carefully checked for glass, some children and parents were still concerned about issue. As mentioned, during the observations a glass cut happened to one child. However, the frequency of this type of accident occurring has decreased since the Peace Gardens first opened and is now rare.

Professionals take water quality seriously and the water quality seems to be maintained to swimming pool standards. However, still 9% of the respondent parents in surveys were concerned about water quality, chemical (chlorine) levels or water-borne diseases in the water.

The City Centre manager identified the issues above and found solutions to provide better public experiences. As it is an open space, there are still some issues, such as having no toilet and slippery surfaces. The latter was one of the most common issues given by children but not many cases were reported back to city council and the management team was not aware of this problem, as nobody has had a major injury from slipping in the fountains. The city centre manager admitted that there are still some problems.

"So I suppose there are some issues there, once our staff leave the site."

During the observations it was witnessed that children sometimes cycled through the fountains, when no ambassadors were around. However, normally the city centre ambassadors don't allow cycling or skate boarding in the space or in the fountains because of the risk of collisions. During the observations it was witnessed that the ambassadors warned several skate-boarding and cycling children to dismount their boards and bicycles in the Peace Gardens and they were closely observed by the ambassadors until they left the space.

5.6 Chapter Summary

In order to understand children's experiences of water features in Sheffield city centre and how these experiences are facilitated and controlled by professionals and parents, a survey of children, a survey of parents, interviews with parents, interviews with professionals and observations were conducted. Observations were primarily important for witnessing the events as they happened. In this way, the aim was to reduce the gap between data and real life. In general observations supported what children and parents mentioned and revealed more detailed insights.

The majority of children involved visited the city centre regularly. The number of females visiting was more than number of males and this is also supported by observations. Younger children aged 0 to 9 were more frequent users of the Peace Gardens compared to children over the age of 10. Children's ethnic backgrounds showed similarities with the Census data.

Analysis revealed that children's frequency of visits was related to the proximity to Sheffield city centre. Most of the children indicated that their visits were either monthly or less than monthly. Some children visited the space more frequently and analysis showed that more frequent visitors, such as children who visited daily or more than once a week, tended to be from the S2 area, which is in close proximity.

Most of the children visited Sheffield city centre during the weekends, during event days and in the holidays. Moreover, mostly children who lived close to Sheffield city centre visited the space after schools and on a daily basis.

According to the analysis the highest percentage of children visited by car, followed by bus, and walking. The percentage of children cycling to the city centre was almost 9%. Moreover, using the bus and/or tram together for the journey had the highest percentage. Therefore, it can be said that people visiting Sheffield city centre for children's water play mostly used public transport, although some used cars and other

types of transports time to time, though the car was the least used type among the children who lived in close proximity to Sheffield city centre. Children living in the S2 area use mostly a combination of tram and bus, followed by walking and cycling.

One of the most important findings is that children gain more independence after age of 10. Children under 10 visited the city centre with parents, brothers and sisters. However, after the age of 10, more children visited the city centre with their friends or other family members, such as cousins. 100% of the children who visited the space alone were aged 10 or over.

Less children interacted with water features in the city centre compared to the number of children who visited Sheffield city centre. Marginally less than 10% of the children visiting the city centre did not interact with water features. The Peace Gardens, Millennium square and train stations were identified as children's favourite places with water features. Apart from these spaces, Winter Gardens, Leopold Square and Barker's pool were the other commonly mentioned places. Children's visits to the water features were less frequent than their visits to Sheffield city centre. Most of the children and parents said they visited the space less than monthly, the second most common category being monthly.

Observations gave a good insight into the rationales for using Peace Gardens. Children's interaction with water is a weather-related activity. Only a small number of active interactions with water and the number of passive interactions on cooler days (below 13.4^{O} C) were considerably less compared to warmer days. 4 times more users were observed on warmer days. Furthermore, the number of children passing by reduced dramatically on warmer days. Even children passing by would sit next to the water and have rest at least for a few minutes on warm days.

Two types of interaction with water were identified. First of all, active interaction, which involves activities such as running through fountains, playing in the water, and touching water. The favourite active interaction in Sheffield city centre involved

running through water features, followed by splashing around and putting feet and hands into the water. Secondly, passive interaction, which involves activities like observing water, sitting next to water, lying down next to water, reading, having picnics or listening water were common. The favourite passive interaction involved looking at water features.

Children's interest in actively interacting with water changes with age. As they get older, fewer children actively play with water; children move to passive interaction. This result is found in the survey and supported by observations. The highest percentage of older children preferred meeting with their friends in urban open spaces with water features, having their lunch, sitting on the grass, or on a bench or the wall to chat with friends or listen to music, or reading.

Children liked the water features in Sheffield city centre because they liked the play aspect, its appearance, and the fact that it is fun, clean, relaxing and peaceful. Again, matrix-coding analysis shows that the percentage of children who enjoyed playing in water features decreased with age, while the percentage of children who like to look at the water features increased with age, and also supports the data showing that this is accompanied by a shift from active to passive interaction as children get older.

Most of the children find their parents' attitudes to their interaction with water features to be positive and this is supported by the survey and interviews. According to parents, interaction with water features is important because it is a stimulating experience and teaches children to play and share together; it also helps them develop some skills related with water, as well as developing social and communication skills. Water features teach children to respect others, such as learning not to splash people who do not want to be splashed; and they help children to gain confidence with water without the risk of drowning. These experiences bring many children from different ethnicities together and they learn to respect others, creating a multicultural urban context and a shared public identity.

A small number of parents were cautious about children's interaction with water compared to what children perceived. However, there were more parents with a negative attitude to children's interaction with water than children thought. These parents were prepared to travel further to take children to places with water rather than taking them to Sheffield city centre, perceiving the city centre to be an inappropriate place to interact with water. Furthermore a small number of parents thought that the Peace Gardens water feature was purely decorative.

Several issues were identified in relation to children's interaction with water features in Sheffield city centre. There are management issues, such as inappropriate behaviour by children or parents, noise levels, crowded spaces, litter, broken glass, a lack of toilet and changing facilities and some safety concerns. In particular, having no public toilets in the area was an issue mentioned by children and parents. Children reported that some children urinated in the fountains, while children were observed urinating in the bushes several times during site visits.

There are some design flaws that concerned children, most importantly slippery surfaces in the fountains. Furthermore, human-orientated concerns were identified, such as stranger danger, inappropriate clothing, lack of supervision, and people smoking. Children were not as concerned about these issues compared to the parents. On the other hand, some issues were identified by professionals in the first years after official opening. As interaction with water on the scale seen was not expected, and as some of the equipment proved to be inappropriate for such use, the design team redesigned some aspects of the feature. New cleaning regimes were introduced to prevent children from receiving glass cuts and the water was maintained at swimming pool standard. However, the management team did not know about some of the issues children and parents stated because they had not fed back to them; however, they did admit that there were problems when staff left the site.

In general large numbers of children liked interacting with water features in Sheffield city centre, although it is weather-related activity and there are some issues which need

to be solved for providing better experiences for children. Furthermore, most parents perceived children's interaction with water features as a positive thing, although they had some concerns. These concerns also need to be addressed and solved by Sheffield City Council to encourage parents to take children to the city centre. Professionals did not expect water interaction on this scale but they have progressed. Although they control children experiences with water, they try to supply the best water interaction experience as much as they are able in Sheffield city centre. However, they have not researched user experiences but only provide solutions to problems fed back to them. Therefore, they are not aware of some of the outstanding issues.

Chapter 6

Study Site II

Millhouses Park

6.1 Introduction

In this chapter children's experiences of water in Millhouses Park and how these experiences are facilitated and controlled by parents and professionals is discussed. Millhouses Park offers a variety of water experiences for children, such as a boating lake, a structured water play area and a natural alternative, The River Sheaf. Millhouses Park was chosen as a study site in order to understand children's experience in structured water play areas in the suburbs of the city because natural settings were tested in another park, Endcliffe Park, in similar conditions. Secondly, Millhouses Park is one of the popular water play areas in Sheffield and it has always been related to water in the past (see Chapter 4). In this chapter results related with Millhouses Park will be discussed, which was informed by children's surveys, site interviews with parents, parents' surveys, observations and behaviour maps. Discussions will be supported with GIS analysis in some cases.

Children were asked several general questions about their visit to Millhouses Park in the first section of the surveys in the part related to Millhouses Park, while they were asked specific questions about their interactions with water in Millhouses Park in the second section (see Appendix A).

First of all, children's diversity, in terms of age, ethnicity and gender will be discussed in 6.2. Children's visits to Millhouses Park will be discussed in Section 6.3. Children's visits to water features; the diversity of children interacting with water features; the types of children's interactions with water; things children like; children's perceptions of their parents' attitude towards children's interaction with water; and parents' attitudes towards children's interaction with water, will all be discussed in Section 6.4. Discussions about the issues this study identified will be given in the Section 6.5, and lastly a summary of children's interactions with water features in Millhouses Park and how it is facilitated and controlled by parents and professionals will be made in Section 6.6.

6.2 Diversity of Children in Millhouses Park

According to the children's survey results, 67% of the children had been to Millhouses Park at least once, while 23% of the children have never been there and 10% of the children did not answer the question.

6.2.1 Differences by gender

Male children visited Millhouses Park more than females (Figure 11). The percentage of male child visitors was 53%, higher than the percentage of females (47%), though this distribution is quite close to parity. Higher numbers of male visitors at this site are discussed in Chapter 8.

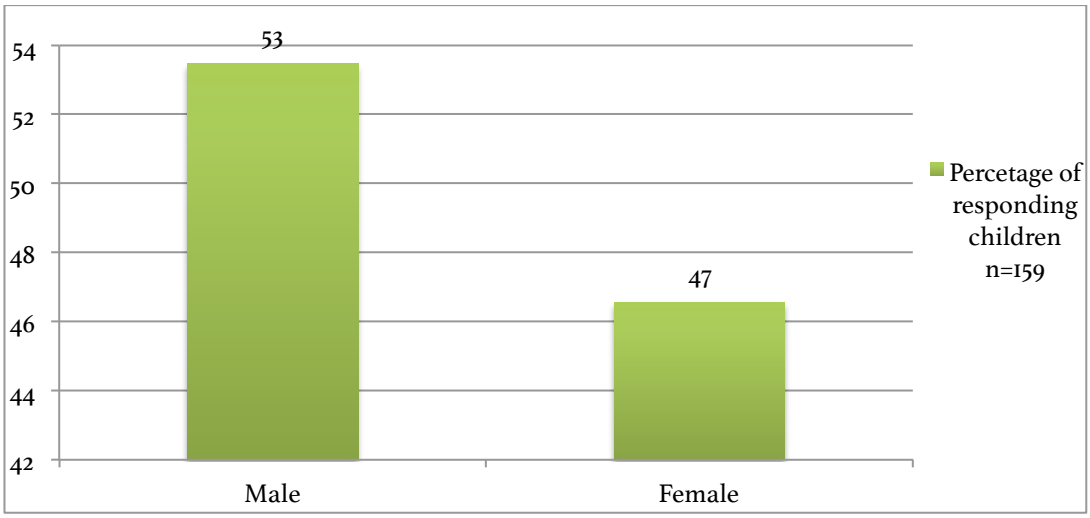


Figure 11: Children visiting Millhouses Park by gender

6.2.2 Differences by age

According to survey results younger children visited Millhouses Park more than older children. The percentage of children aged 8 to 9 was 54% and the percentage of children 10-11 years of age was 46% (Figure 12). Children aged up to 9 were more likely to visit Millhouses Park, potentially due to fact that the equipment in the Millhouses Park is more appealing to younger children.

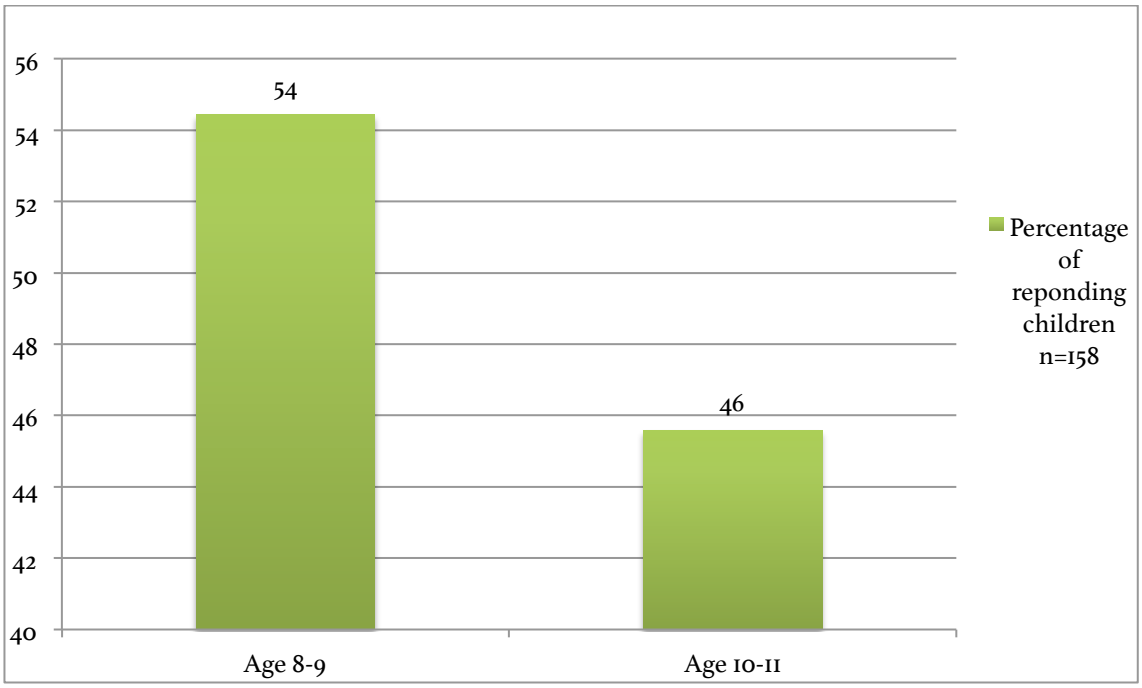


Figure 12: Children visiting Millhouses Park distributed by age

6.2.3 Differences by ethnicity

Results indicate that 53% of the children visiting Millhouses Park were from white ethnic backgrounds, such as white British, white Irish or other white. This was marginally over than general proportion of White children in the sample. 10% of visiting children were Asian, which included Pakistani, Indian and other Asian origins. 8% of the children were from mixed ethnic backgrounds, such as white and black Caribbean, white and black African, white and Asian and other mixed ethnic origins. 3% of the children were of Black ethnic origin and 2% from Chinese or other ethnic minorities. As can be seen from Figure 13, 8% of respondents preferred not to tell their ethnic backgrounds, while 16% of the participants were coded as missing data because they did not tick any boxes, provided no answers to the questions, or ticked more than one boxes. In this category slightly less children mentioned visiting Millhouses Park compared to general sample (Figure 13). Results reflected the area according, to Census 2011. However, the percentage of white children recorded was lower, which is more likely to be related to having a high percentage of children not providing their ethnic background data.

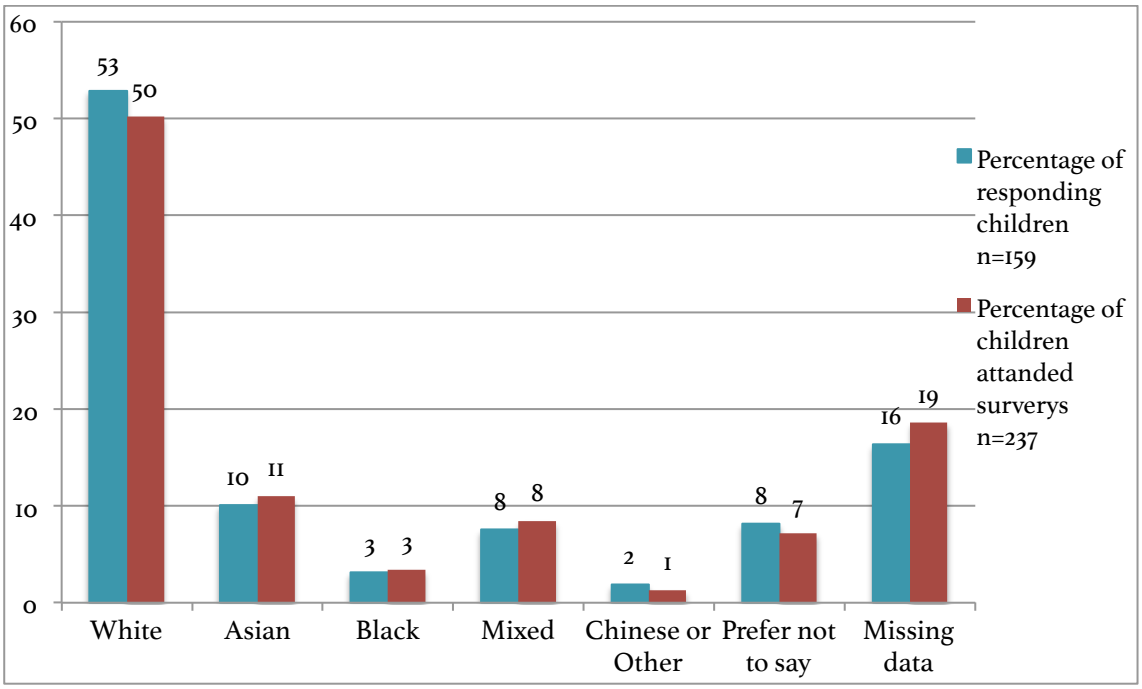


Figure 13: Children visiting Millhouses Park by ethnicity

6.3 Children's visits to Millhouses Park

6.3.1 Children's frequency of visits

The majority of children visited Millhouses Park monthly or less frequently. As can be seen from Figure 14, the largest proportion of children (25%) paid monthly visits, followed by less than monthly (23%). The frequency of visits was quite low with weekly visitors at 9%, children visiting more than once a week at 7% and those making daily visits at 6%.

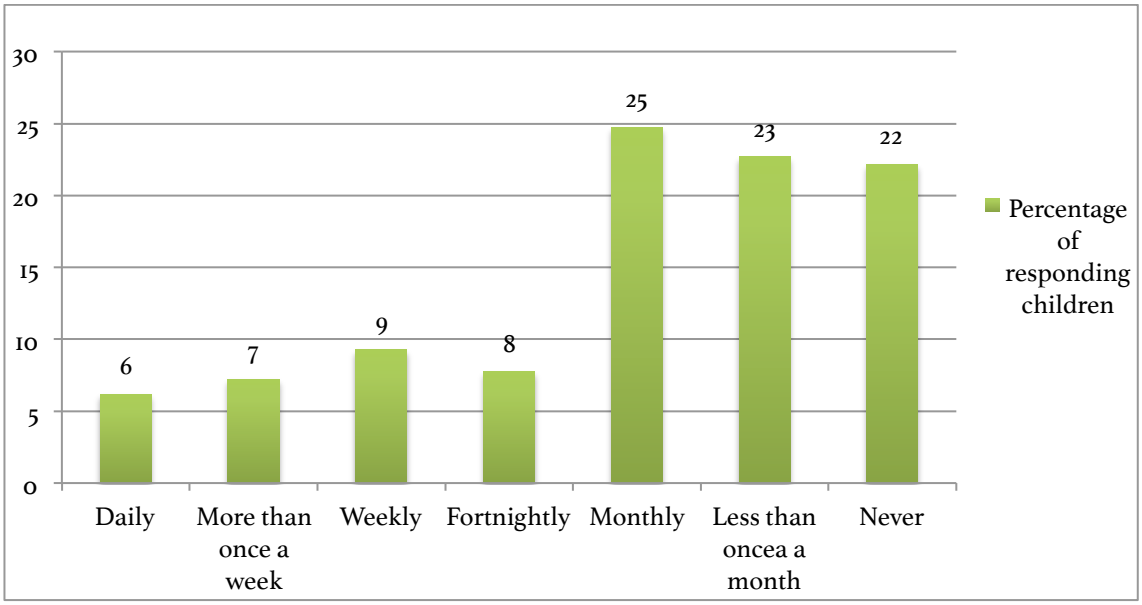


Figure 14: Frequency of children's visits to Millhouses Park

Millhouses Park is quite far from some parts of Sheffield and a high proportion of children in the sample had never visited Millhouses Park, which is related with proximity. In order to understand the relationship between facility location and home location matrix-coding analysis was carried out. However, as there was only limited number of children from other postcodes, only the postcodes where the majority of children participated are shown in the figures.

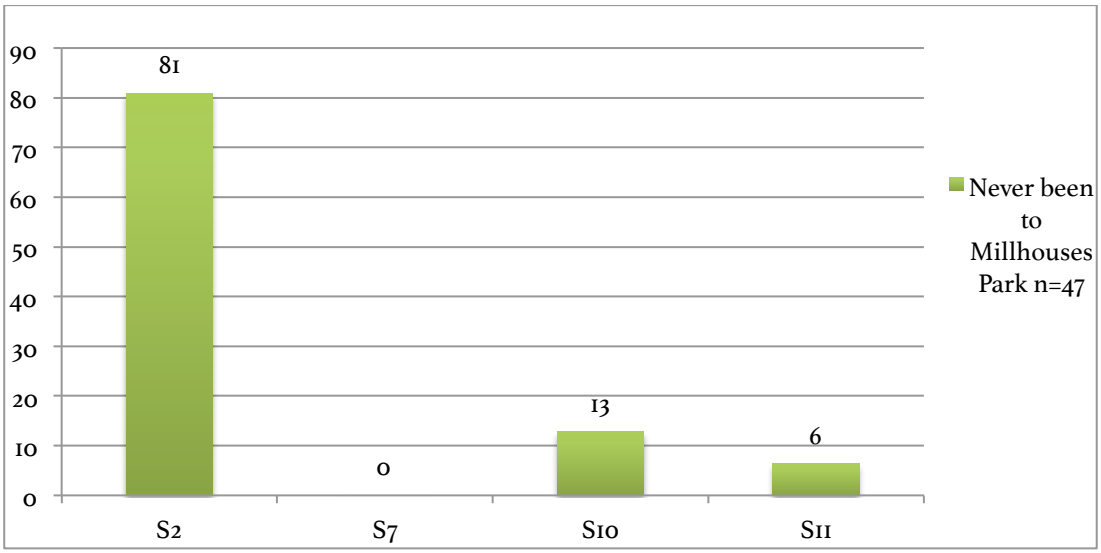
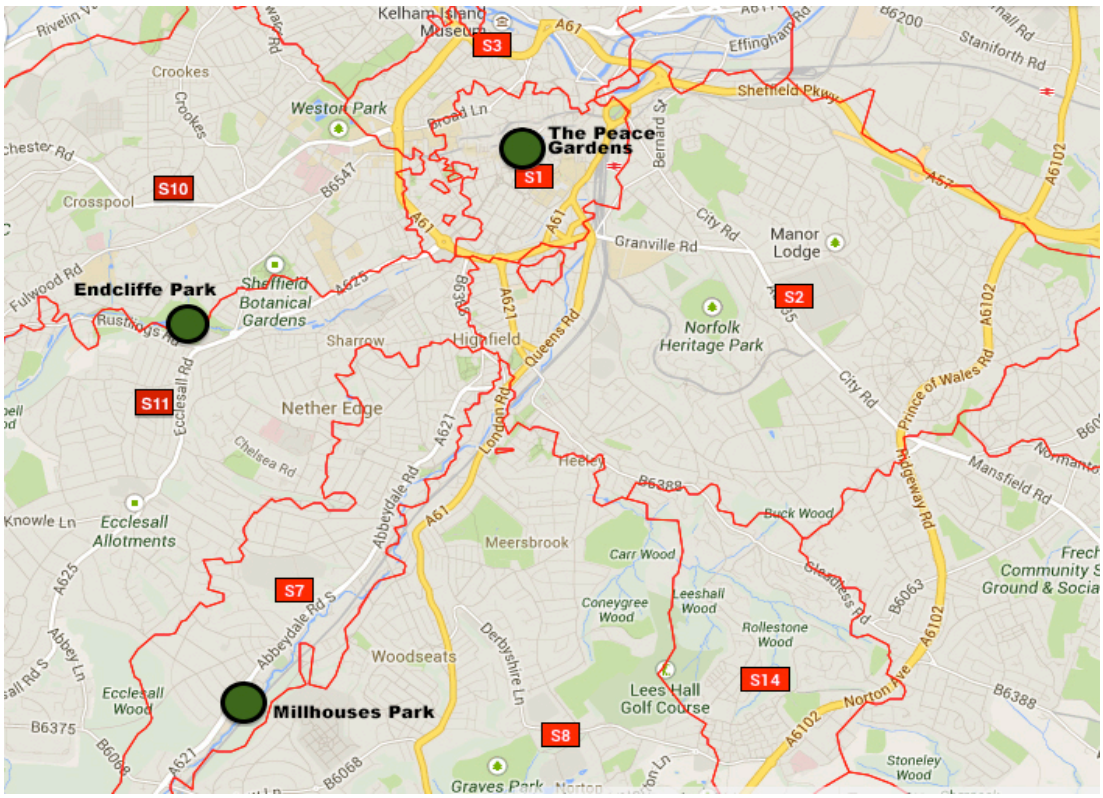


Figure 15: Children who had never visited Millhouses Park by home location

Evidence from the surveys clearly suggests that there is a strong relationship between the location of Millhouses Park and home proximity. When distance is increased, the percentage of children from S2 who had never been to Millhouses Park increases, with 80.9%. In contrast, all of the participating children who participated from S7 and S8 postcode areas had been in Millhouses Park. Although the S10 postcode area is quite far west of the city, it is more likely that children who live in S10 might be closer to the space than those from the S2 postcode area.

Frequency of visits by postcode have been recorded and the results suggest that there was a strong relationship between children's frequency of visits to Millhouses Park and the location where they lived. As explained in Chapter 5, in the analysis postcode locations used according to the assumption that children attending those schools likely to live around schools because schools have catchment areas and majority of children attending those schools likely to live in those catchment areas. Furthermore, distance from school location to Millhouses Park as follows; School in S2 4.1 miles, school in S11 2.3 miles and school in S7 0.9 miles. Map 2 shows the postcode boundaries of Sheffield and the location of The Peace Gardens. However, in order to protect confidentiality and privacy of the schools involved in the surveys, exact school locations or the their catchment areas cannot be represented on the map

It can be clearly seen from Figure 16 that, for daily, more than once a weekly, weekly and fortnightly visits there were quite high percentages of children from the S7 postcode area compared to S2 and S11. The percentage of children from the S2 area increased radically for monthly and less than monthly frequency of visits and peaked at the 'never visit' variable. On the other hand, the percentage of children from S11 area peaked in the 'monthly' visit variable and slightly decreased in the 'less than monthly' range. Results indicate that the frequency of visits likely to increases as the proximity to open space increases, and the percentage of children who has never visited the Millhouses Park is as high as 39% in the S2 postcode area, which is approximately 5 miles away from the facility.



Map 3: Sheffield Postcode map and locations of study areas (Free Map Tools, 2013)

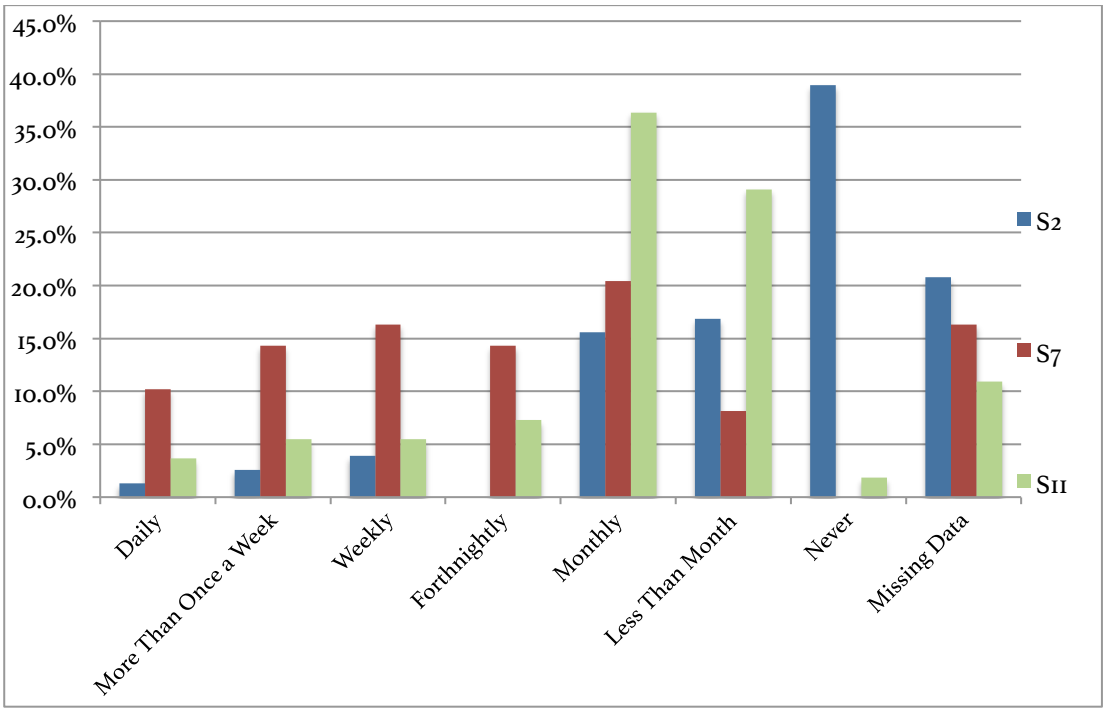


Figure 16: Frequency of children's visits to Millhouses Park by home location

6.3.2 When children visit Millhouses Park

In the surveys children were asked to identify when they visited Millhouses Park and were allowed to tick more than one option, because they might be going to Millhouses Park at different times. Therefore this section of results does not add up to 100%, as might be expected. School holidays (76%) were the times when children mostly paid visits to the park, followed by Saturdays (58%) and Sundays (52%). As can be seen from Figure 17, the majority of children visited Millhouses Park in holiday periods or at weekends.

In the interests of understanding the relationship between when children visited Millhouses Park and their home location, analysis was conducted on these variables, summarized in the Figure 18, and the results suggest that there was a positive relationship between them. More than twice as many visits were observed by children from S7 compared to S2 and S11 postcodes on after school visits. The percentage of visits dramatically increased for all three postcodes on Saturdays and Sundays, a higher percentage of children were from S7. Quite a large percentage of children from S2 and

S11 said they visited Millhouses Park in school holidays, at 35% and 31%, respectively. The percentage of children from S7 who visited during school holidays was roughly 8% less than for children from S2 and 5% less for children from S11.

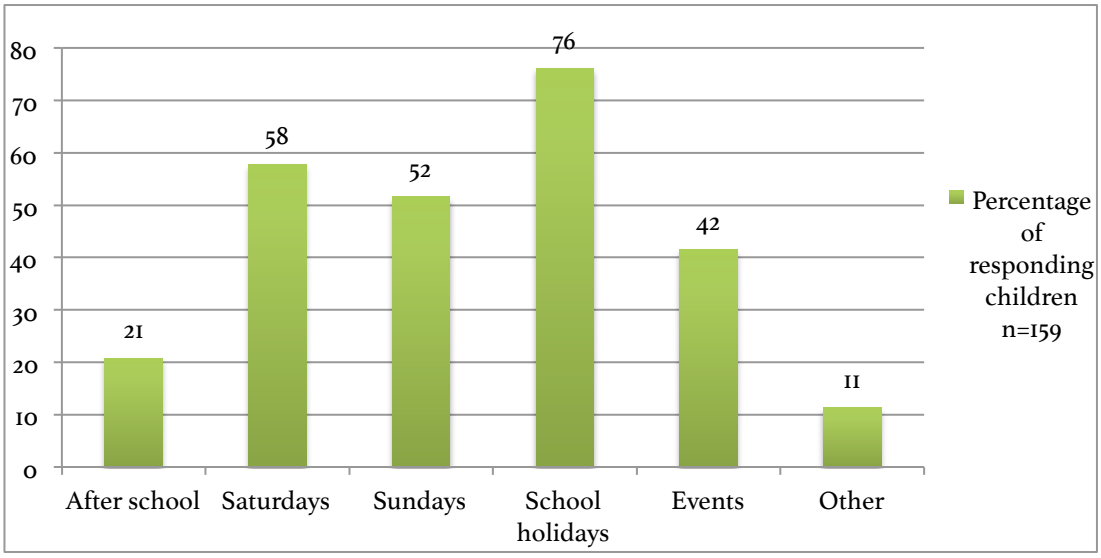


Figure 17: When children visited Millhouses Park

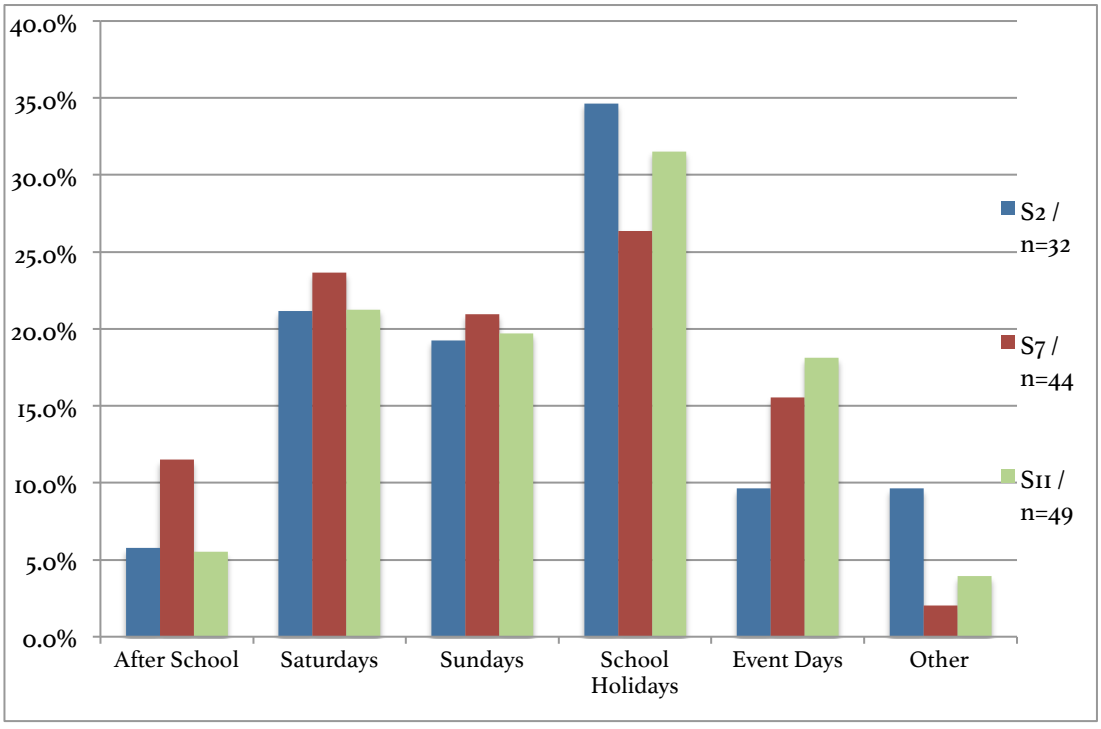


Figure 18: When they visited Millhouses Park by home location

6.3.3 How children access Millhouses Park

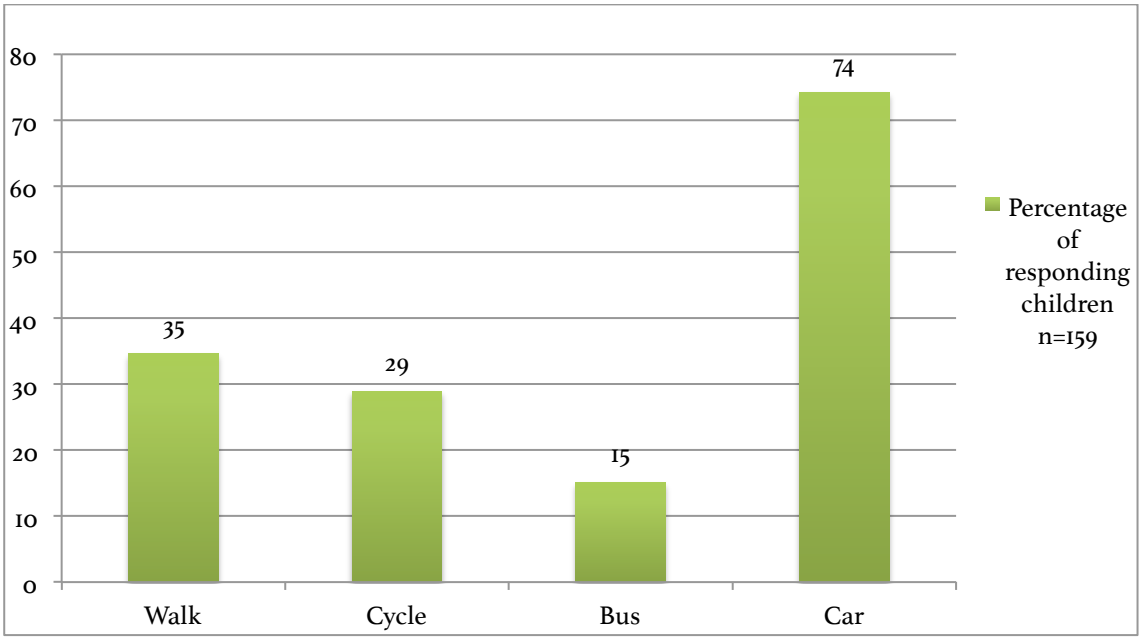


Figure 19: Type of transport used to visit Millhouses Park

Another parameter that was examined to understand children's visits to Millhouses Park was the type of transport children used. Figure 19 illustrates that the majority of children said they travelled by car (74%), followed by walking (35%) and cycling (29%). The least popular answer was visiting by bus.

The choice of transport and location where children live might be presumed to be related to each other. In order to gain an understanding of this relationship, each transport type to area, such as walking, cycling, bus, car, distributed to postcodes. Figure 20 illustrates that the use of car reached maximum levels as distance to urban open space increased. Children, who lived further away from Millhouses Park, used the car or bus to visit. For instance, 69% of the children living in the S2 area used cars for visiting Millhouses Park, whereas only 29% from S7 travel by car. The bus was used by children from S2 and S11. Children who lived closer to the Millhouses Park used more environmentally friendly transport methods, such as walking or cycling. For instance, the most common method of transport to Millhouses Park was walking for children from S7, at 41.8% The highest proportion cycling to the facility were also from S7 (29%), followed by S11 (17%) and S2 (11%).

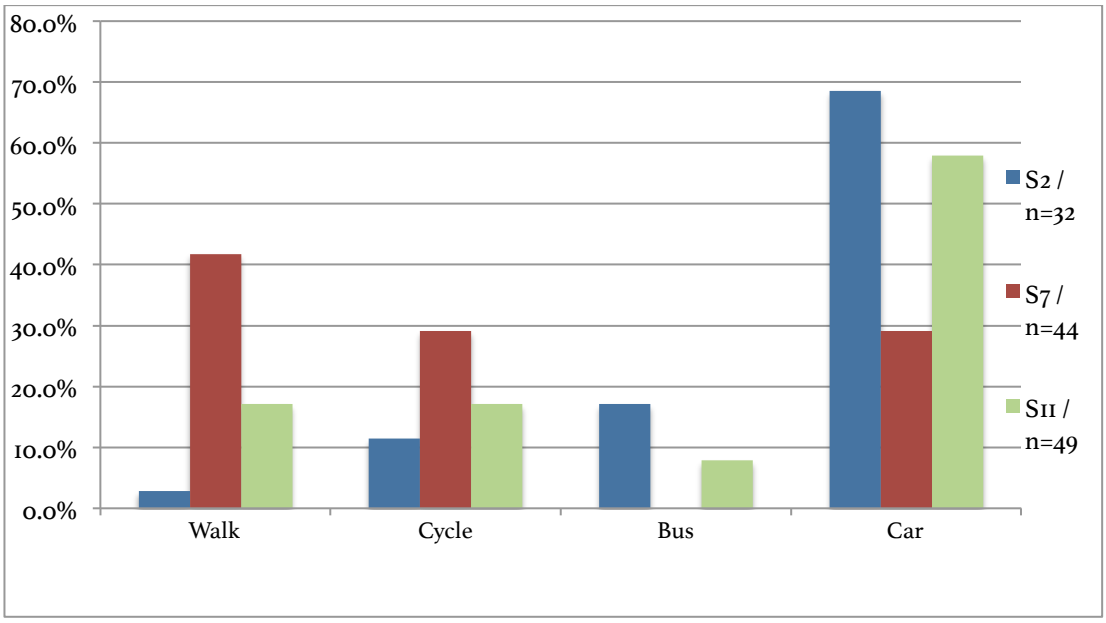


Figure 20: Transport used to visit to Millhouses Park by home location

6.3.4 Who accompanied children to Millhouses Park

Who goes with children during their visit to the urban open spaces is a part of understanding of children's visit to urban open spaces. In order to gain information about how children visited Millhouses Park, children were asked to choose who they went to the Millhouses Park with. The majority of respondents indicated visiting with parents (86%), followed by siblings (53%). The percentage of children who visit Millhouses Park with their friends was 47%, and 40% of the children visited Millhouses Park with other family members. The children who chose other option was 2%, while only 1% mentioned visiting Millhouses Park alone (Figure 21).

The percentage of children visiting Millhouses Park alone was quite low. First of all, as stated previously, the number of children visiting Millhouses Park aged between 0 and 9 was greater than for children aged 10 and over. This might have influenced who accompanied them on visits. Secondly, Millhouses Park is a family park that accommodates a variety of activities for all family members. In the interviews, some families mentioned that they enjoyed visiting Millhouses Park and because there were

activities for all family members. A majority also said that Millhouses Park was a very good place for family days out with children.

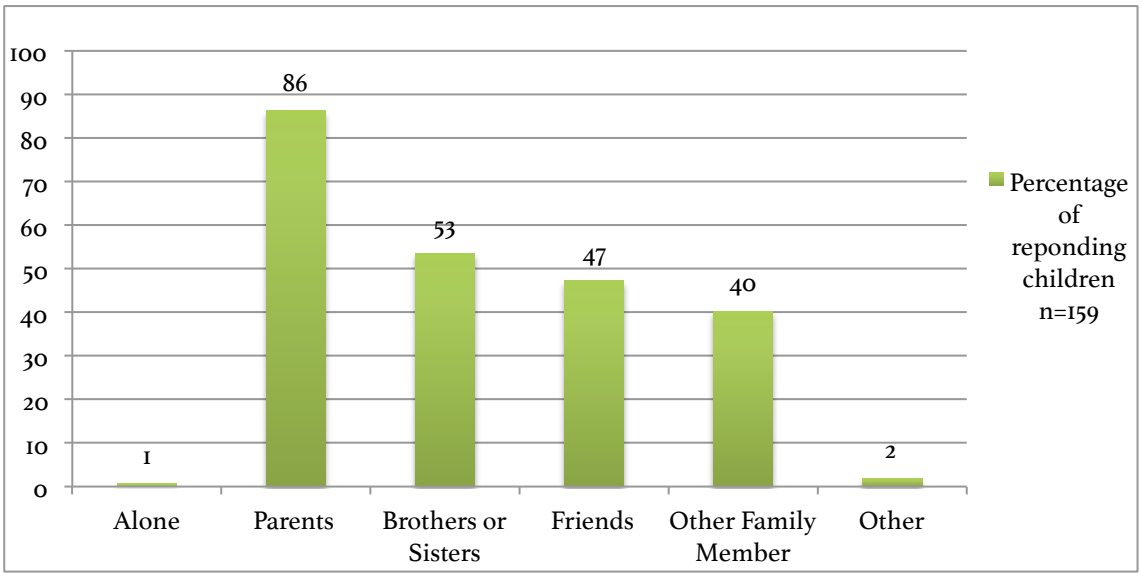


Figure 21: Who accompanied children to Millhouses Park

In order to understand if age makes a difference to who children were accompanied by to Millhouses Park, analysis of these two variables was undertaken (Figure 22). No significant difference was observed between the age variables. The percentage of children aged 8-9 was slightly higher in the following variables: siblings, other family members and friends. Marginally, a higher percentage of children aged 10-11 visited Millhouses Park with parents than children aged 8-9. All of the children visiting Millhouses Park alone were aged 10-11. Furthermore, 67% of the children who chose "other" were older children.

Another parameter was employed to gain further understanding of this issue (Figure 23). According to the results there was a clear relationship between proximity to space and being accompanied by adults. Although most children from all areas visited Millhouses Park with their parents, almost 10% more children from S2 area visited Millhouses Park with their parents compared to children from other areas. However, the lowest percentage of children visiting with friends were from S2, whereas a considerably higher percentage of children from S7 and S11 did this. Interestingly, one

child visiting Millhouses Park alone was not from one of these postcodes. Although this seems to conflict with other findings, it can be ignored because only 1% of children visited the space alone. Therefore, it can be said that, when proximity to space is decreased, children are likely to be more dependent on their parents enabling them to visit such parks and only a small percentages of children visit these spaces with their friends.

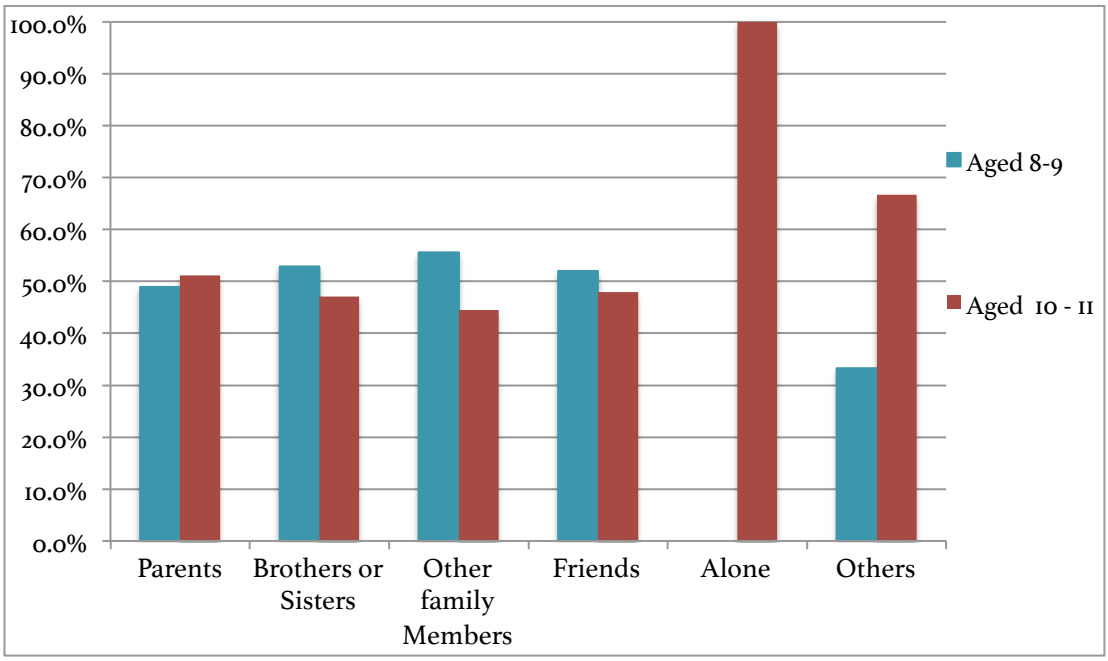


Figure 22: Who accompanied children to Millhouses Park in relation to children's age.

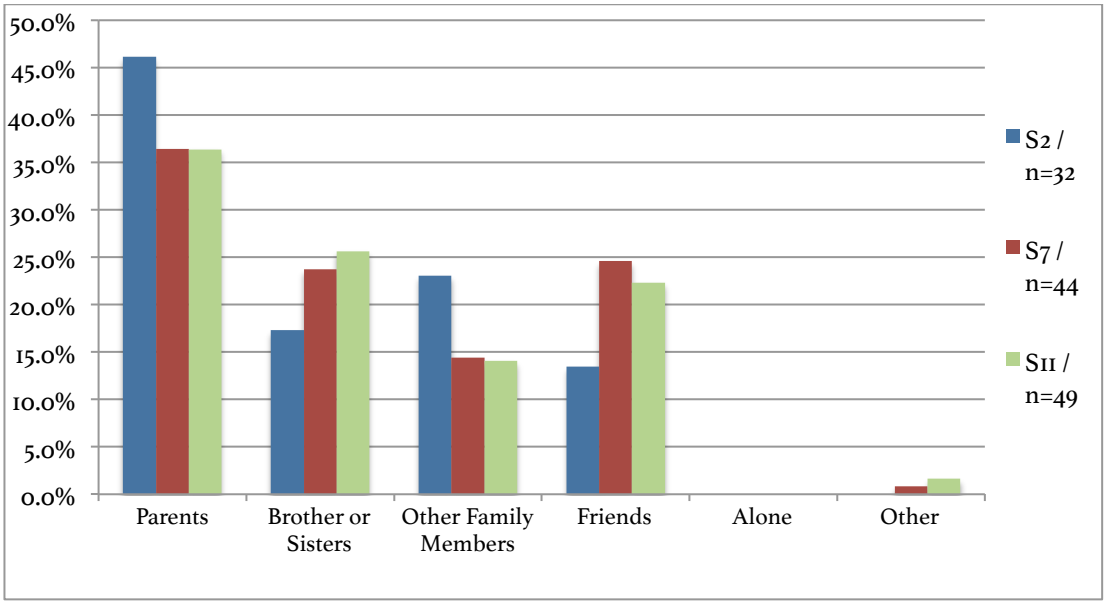


Figure 23: Who accompanied children to Millhouses Park by home location

6.4 Children's Interaction with Water in Millhouses Park

In the following part, children's interaction with water features in Millhouses Park and how parents perceived this interaction will be discussed, informed by the children's survey, parents' interviews, parents' surveys and observations.

6.4.1 What activities children pursued in Millhouses Park

These parks have only certain water features and limited spaces. Therefore, children were asked to identify what they did in these parks and the places where they undertook water-related, activities, amongst other things.

Children's responses were varied and revealed a total of 14 different types of activity (Table 10). 55% said they played in the park or playground in Millhouses Park. This category was most the frequently mentioned activity in the surveys.

The second most common activity was "playing in the water park" (34%). It can be seen from the results that only slightly more than a third of children mentioned the water park, although it is one of the newest features in the park. The third most common activity (24%) was "playing sports in the park" followed by "Skate-scooter park" (16%). Another water related activity – "Boating in the lake" – was the fifth most common activity (15%), which might be related to the fact that boating in the lake is not a free activity. In total, 52% of the respondent children mentioned water-related activities.

Table 10: All activities children undertook in Millhouses Park	
Activities	**Percentages**
Play in the park or playground	55%
Playing in the water park	34%
Playing sports in the park	24%
Skate/Scooter park	16%
Boating in the lake	14%
Riding bike	9%
Eating in café	9%
Walking – running – dog walking	6%
Having picnics	2%
Watching things	1%
Outdoor Gym	1%
Stepping stones	1%
Driving model boats	1%
Paddling in river	1%

6.4.2 Frequency and diversity of children's visits with water features in Millhouses Park

The percentage of children who mentioned visiting water features was 80%, while 20% said they did not visit any water features.

6.4.2.1 Frequency of children's visits to water features

Information on children's frequency of visits to water features in Millhouses was informed by children's surveys. The finding suggests that quite a large percentage of

children interacted with water less frequently (Figure 24). According to the results, 32.6% of the children paid monthly visits, 32% visited less than monthly, and 11% never visited.

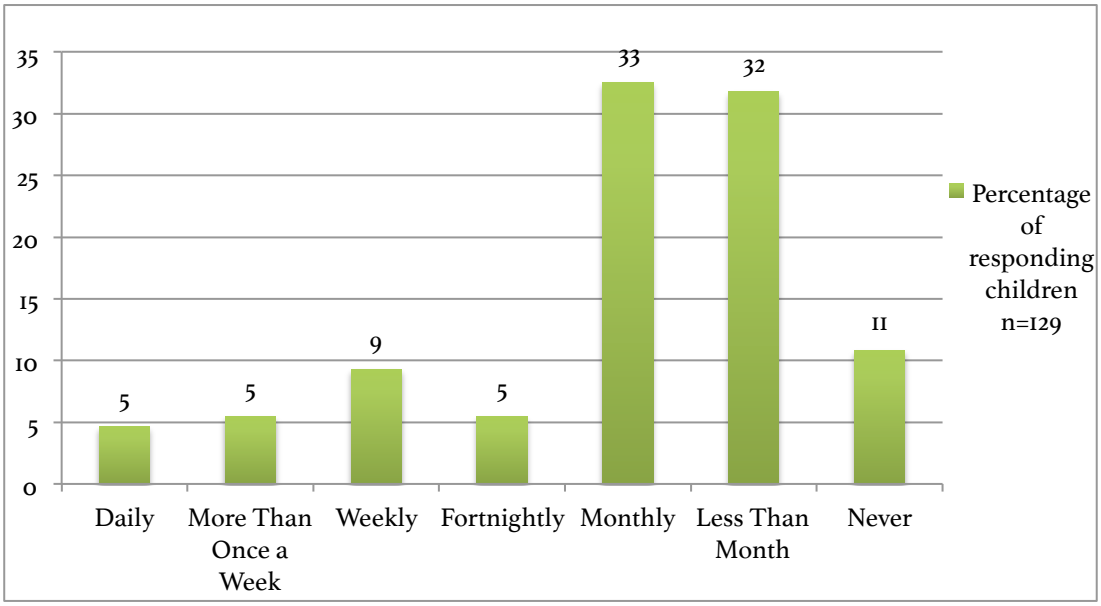


Figure 24: Frequency of children's visits to water in Millhouses Park

Children were asked which water features they interacted with in Millhouses Park. The most visited water feature was the "Water Park" (72%). During the interviews it was found that some people drove long distances to the park for access to the water features in the summertime. The second most used water feature was the boating lake, which is open at similar times to the water park. As a result of frost on the lake during winter, boating facilities only operate from spring to late autumn. Only a small number of children mentioned interaction with river as a water facility in the Millhouses Park. The stream in Millhouses Park was the least visited water feature. This might be due to having designated water play area in Millhouses Park, which might be assumed by parents to be safer than the river.

6.4.2.2 Children interacting with water by gender

The distribution of visits to water features by gender reveals that females paid more visits to water features than males. The Table 11 shows that equal percentages of

males and females visited water features in Endcliffe Park. However, larger proportion of males did not interact with water compared to females.

Table 11: Children interacting or not interacting with water features in Millhouses Park by gender

	Male	**Female**
Children who interacted with water features in Millhouses Park	50%	50%
Children who did not interacted with water features in Millhouses Park	60%	40%

Many different aspects of children's interaction in different sections of the Park were observed and recorded. During the site visits the total number of children observed was 1357. The number of male children recorded in Millhouses Park was considerably more than the number of female children, as shown in the gender diversity behaviour map (see Behaviour Map 7, p.192). During these site visits, 49% were female, 51% male. There seems to be a difference between to data sets but it might be related to the preferences of children involved in the surveys, or the times of observation. Understanding difference by gender will be developed further in Chapter 8.

6.4.2.3 Children interacting with water by age

According to the surveys, 52% of the children were aged 8-9 and 48% aged 10-11. As was mentioned earlier, a limited number of age groups were involved in the surveys and this is not enough for understanding the entire diversity of the cohort, so observational data was also used. During site visits 93% of the observed children were aged between 0 and 9 and only 7% between 10 and 18 (See Behaviour Map 8, p.193). There was a significant difference between the numbers of users from the two age groups. Moreover, significantly more children from younger age groups were detected, compared to what the surveys show. As mentioned above, surveys involved a limited number of age groups and one of the main observation locations in Millhouses Park,

water play park, was designed for children up to seven. The majority of children observed at this site were toddlers and young children. Therefore, observational findings seems to better represent age diversity, suggesting that the water features in Millhouses Park appealed more to younger children. This was exactly how parents felt about the water features in the park. Parents complained about having no dedicated area for older children or even for toddlers to experience the water features in the park. These findings will be discussed in the following section.

6.4.2.4 Children interacting with water by ethnicity

According to the results, the largest percentage of children interacting with water came from White ethnicities, which reflects the fact that 84% of Sheffield has a White ethnic background, according to Census 2011. White children were followed by Asians (14%), Mixed (8%), Black (3%) and Chinese (3%). These results seem to reflect the analysis of children's ethnic diversity in Sheffield using Census 2011 data because people from White and Asian backgrounds populate the neighbourhood where the park sits.

6.4.3 How children interact with water in Millhouses Park

The Millhouses Park survey results revealed that there was a substantial difference between active and passive activities. 95% of the total responses addressed active interaction, while only 8% of the children mentioned any kind of passive interaction. The percentage of children who talked of doing active and passive activities together was 3%. Furthermore, observation findings support the survey findings that a large majority of the activities recorded in the observation involved active interactions with water in Millhouses Park (See Behaviour Map 9, p.194).

In Millhouses Park children's relationship with water is quite different than in the other two case study areas, as it has a designated water play area and boating lake. The first reason Millhouses Park enable more active interaction with water is that it includes a structured water play area, where most of the people take their children in

summer specifically to enjoy water. Parental interviews support the case. Secondly, in June 2007, one 14-year-old boy died in Millhouses when the river flooded. Due to some parent's worries, some children's water interaction has been limited to the structured water play area in Millhouses Park, which are limited to active interaction. As mentioned above, observations revealed that a large majority of the children interacting with water were young. The structured water play area might not be very enjoyable or relaxing in terms of watching children running up and down the water park, due to the fact that not many children passively interacted with water in the area, either observed or detected in surveys. The percentage of children aged 10-18 and having active interaction in Millhouses Park was 4%.

The most commonly occurring active interaction in Millhouses Park was playing in the water park (64%), mentioned more than 3 times more than the next most popular activity, boating in the lake. This was also confirmed by observation, where more than twice as much activity was recorded in the water play area compared to the boating lake. The third most common active interaction was water fights (7%). The less common active interaction activities in the Millhouses Park were playing in the stream, throwing stones in the water, putting feet in the water, fishing and playing Pooh sticks.

"Play on the water park." (9, male, White British)

"Play and have water fights." (10, male, White British)

"I like to jump on the block to make water shoot up." (9, male, White British)

"I paddle in the water park." (8, female, White British)

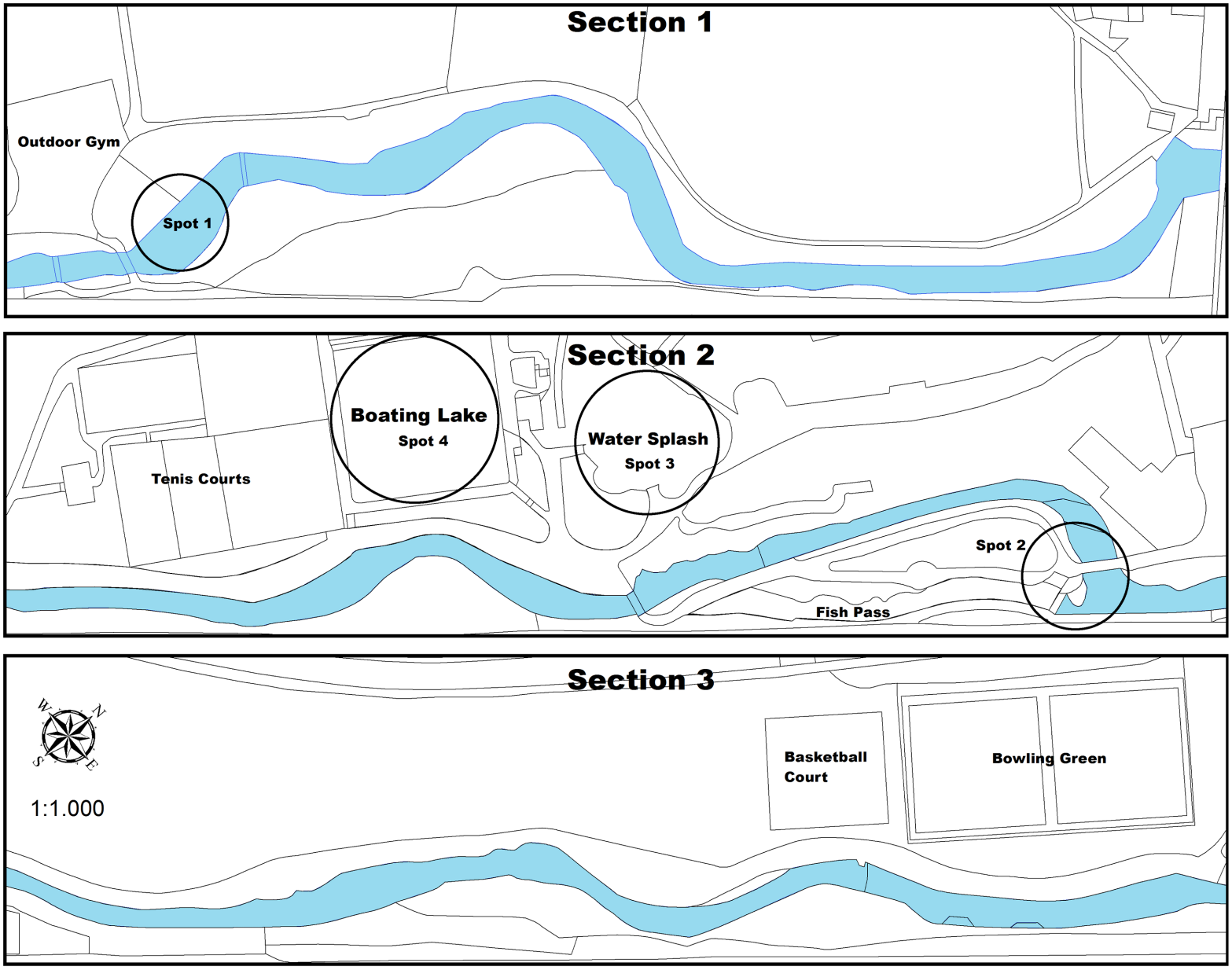
"Splash around and get wet." (10, female, White British)

"Go on the boats and start driving them." (10, male, White British)

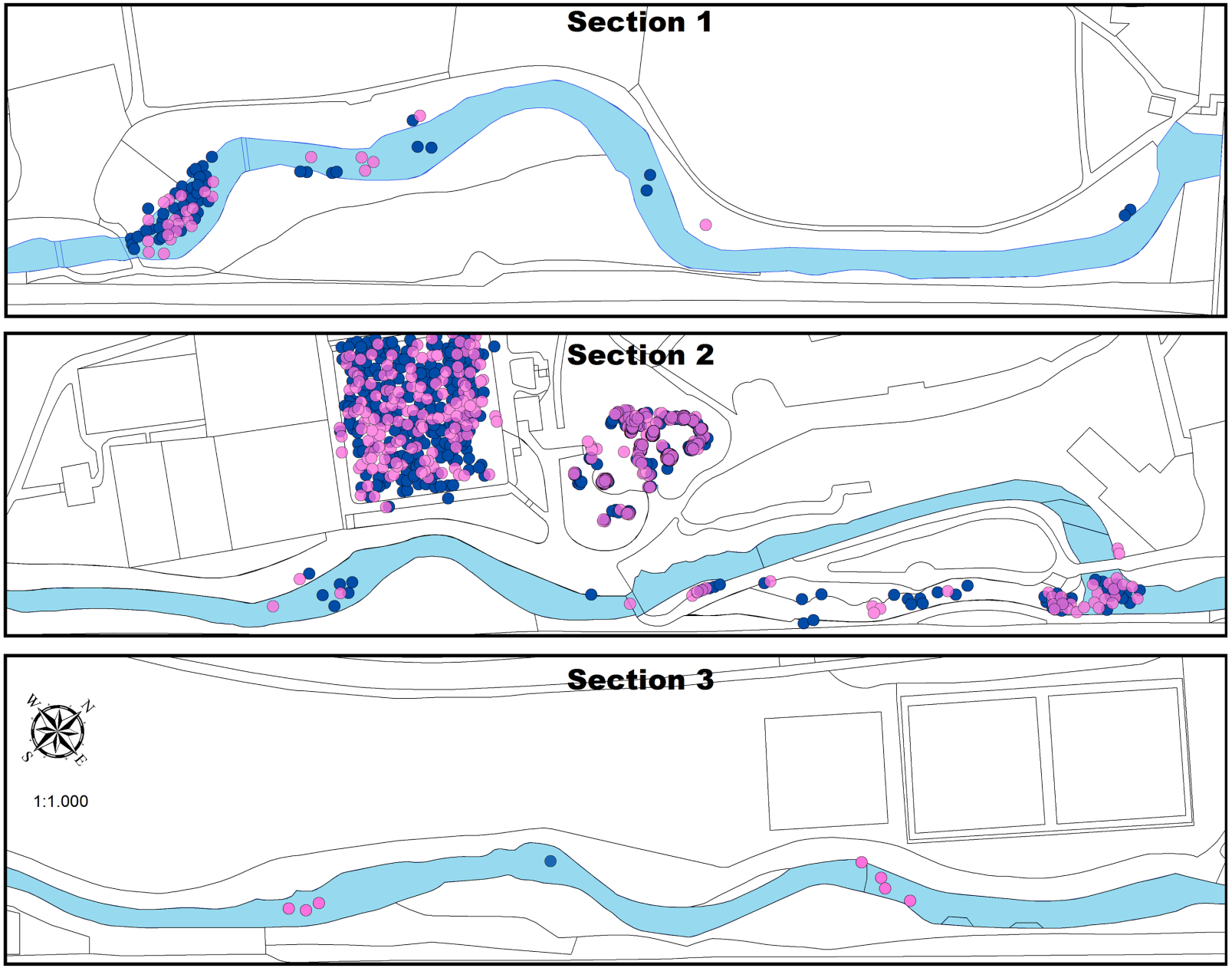
"Play on the boats and the water." (10, female, White British)

As mentioned above, only a small percentage of children interacted with water passively (8%) in Millhouses Park. Most of the passive interaction involved children watching water, while only 1 child mentioned "hanging around the water".

The difference in the number of users and the activities they undertook in Millhouses Park in different circumstances was obtained from observations. During the observations four spots where children interact with water were identified; the water splash park; the boating lake; stones on the waterfall at the end of the fish pass and shallow parts of the river near to the first bridge and outdoor gym (Map 4). In particular, splash facilities and the boating lake were the most well-known locations of active interaction with water; however, the other two locations were identified in this research as locations involving interaction with natural water. Those two spots where children interact with water are important because children prefer them to the recently build fish pass or the other side of the river. There are number of possible reasons why children liked these spots. First of all, one of those spots is very shallow, so children could get into the water and walk in the water as much as they liked. Shallow water might have reduced the health and safety concerns of the parents. A number of parents were observed letting children enter the stream and watching them from shore during site visits to this spot. The important point is that all of the parents looked relaxed and free from any worries about children being in the water. Furthermore, some of these parents and families were having picnics while children played in the shallow part of the river. Secondly, as the water was shallow, children were free to walk, run, play and have fun in the water; picked stones up in the water; threw stones into the water; played imaginary games; and played together. Thirdly, the second spot (spot 2 on Map 4) offers variety. There are a number of big stones that might be used as a stepping-stones in the waterfalls. Children walk down to waterfalls in the water or on the stepping-stones. When they reach the bottom of the waterfalls they simply climb on the river wall and get back to the pavement. On several occasions even parents were walking in the water down to the falls with their children, having fun with them. At the bottom of the fall water becomes deeper extremely quickly over a short distance.



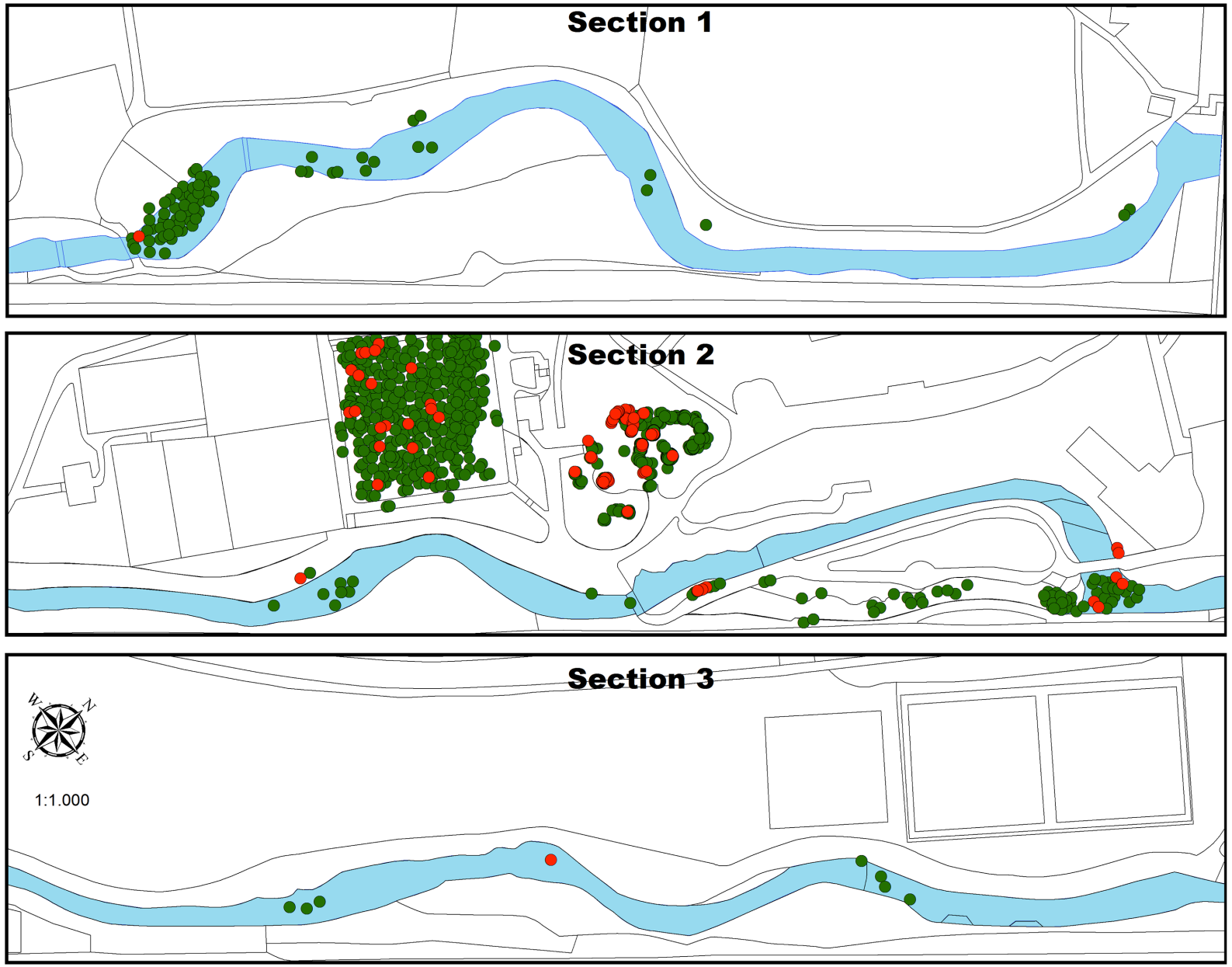
Map 4
Spots where Children Higly Interacted with Water Highly in Millhouses Park



Behaviour Map 7

Gender Diversity in Millhouses Park

192

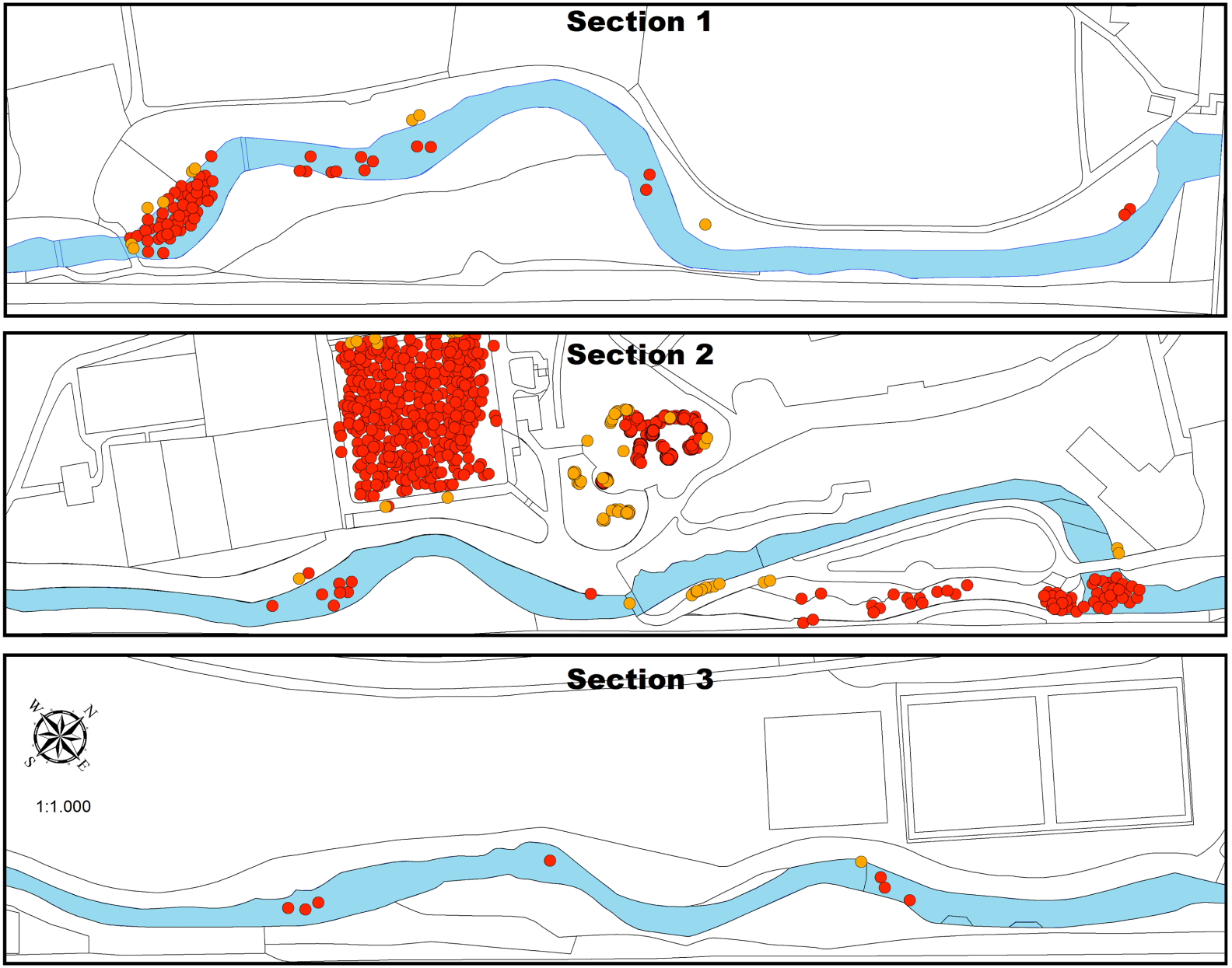


Legend

- Age group 1 (0-9)
- Age group 2 (10-18)

Behaviour Map 8

Age Diversity in Millhouses Park



Legend

- Active Interaction
- Passive Interaction

Behaviour Map 9

Spatial Distribution of Active and Passive Interaction in Millhouses Park

194

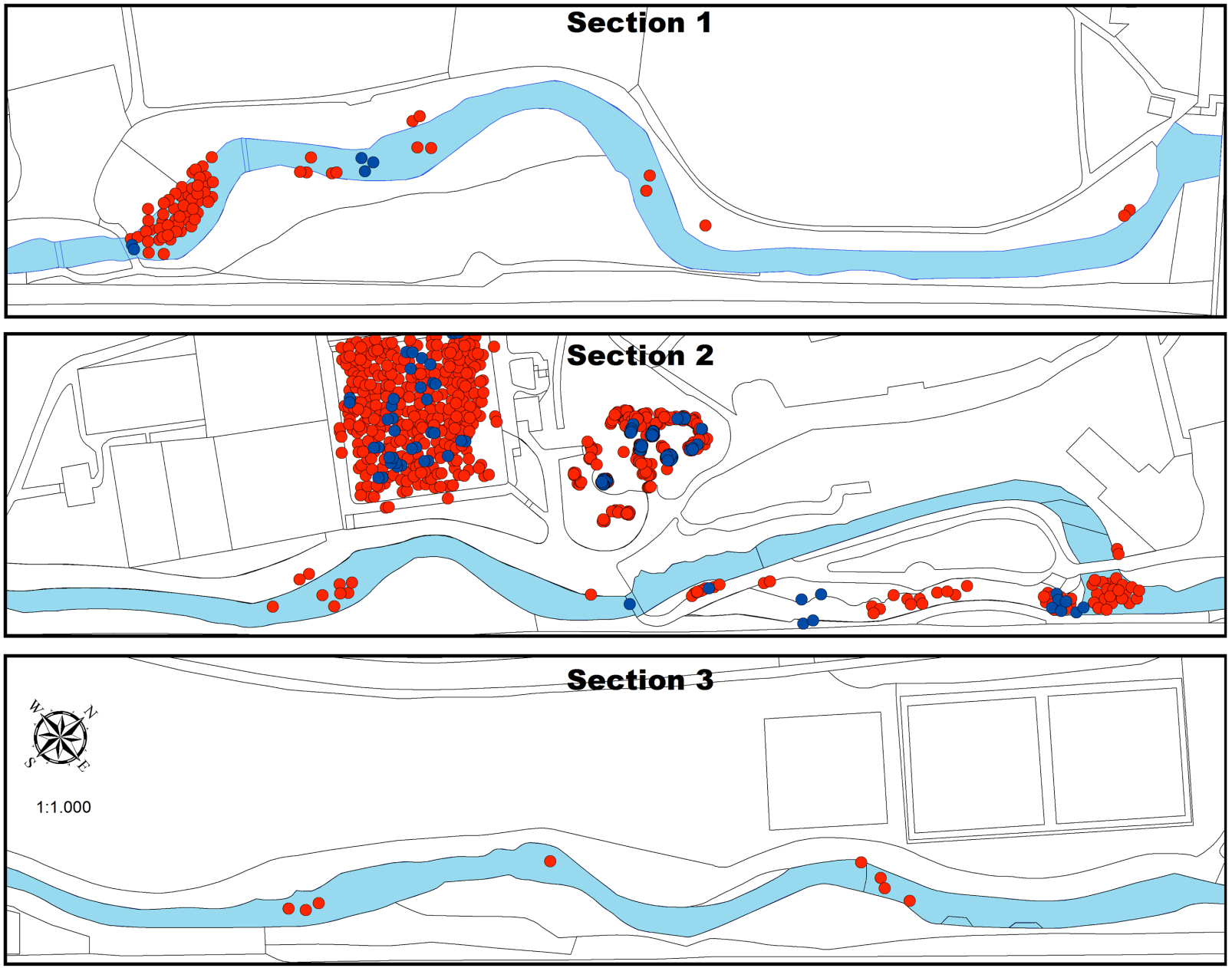
Rather than seeing this as a health and safety issue, on rare occasions some parents and children saw this as an opportunity to swim. Most of the children observed in the second spot were older children, even though some could be included in age group 1. It was obvious from the observations that interaction with natural water gives children a freedom to interact, whatever style they want. However, the percentage of children interacting with water in these spots was small, compared to the structured water play area.

Photograph 16: One of a small number of children interacting with water in autumn (October 2012 - taken by the author)

However, all of those interactions either with natural water, in the splash facilities or when boating in the lake, were related to the weather to some extent. In order to

understand the relationship between weather and interaction with water, behaviour maps were created.

Millhouses Park is a very large urban open space and is roughly 0.7 miles long. Therefore, maps related to Millhouses Park, prepared to a 1:1000 scale in three sections, are presented, in order to cover the entire area of the park. Behaviour Map 10 (p.197) shows spatial distribution of children in the space when the temperature was below and above the annual maximum average (13.4 ^{O} C - (Met Office, 2014). It is quite clear that, when the temperature was warmer, the number of visitors was almost 9 times higher, compared to cooler days. As mentioned before, the number of children visiting Millhouses Park increased during the school holidays, and observations were undertaken in school holidays; on cooler days only a small number of children were observed. Therefore children who mentioned going to parks in school holidays most likely means that they went there in the spring and summer school holidays, when temperatures tend to be higher. When the weather was cooler children tended to touch water in the water park but did not get into the water. Only a few children were observed while having active interaction with water in those days. They were wearing waterproof clothing, including hats and gloves. Although it was not in massive numbers, this shows that a number of parents were prepared to take children to water features even in late autumn when under comfortable outdoor temperatures. A comparison of children's active and passive interaction in warm and cool weather conditions is shown in Behaviour Map 11 (p.198). Levels of both active and passive interaction rose with the warmer weather in Millhouses Park, although only a small number of passive interactions were observed.

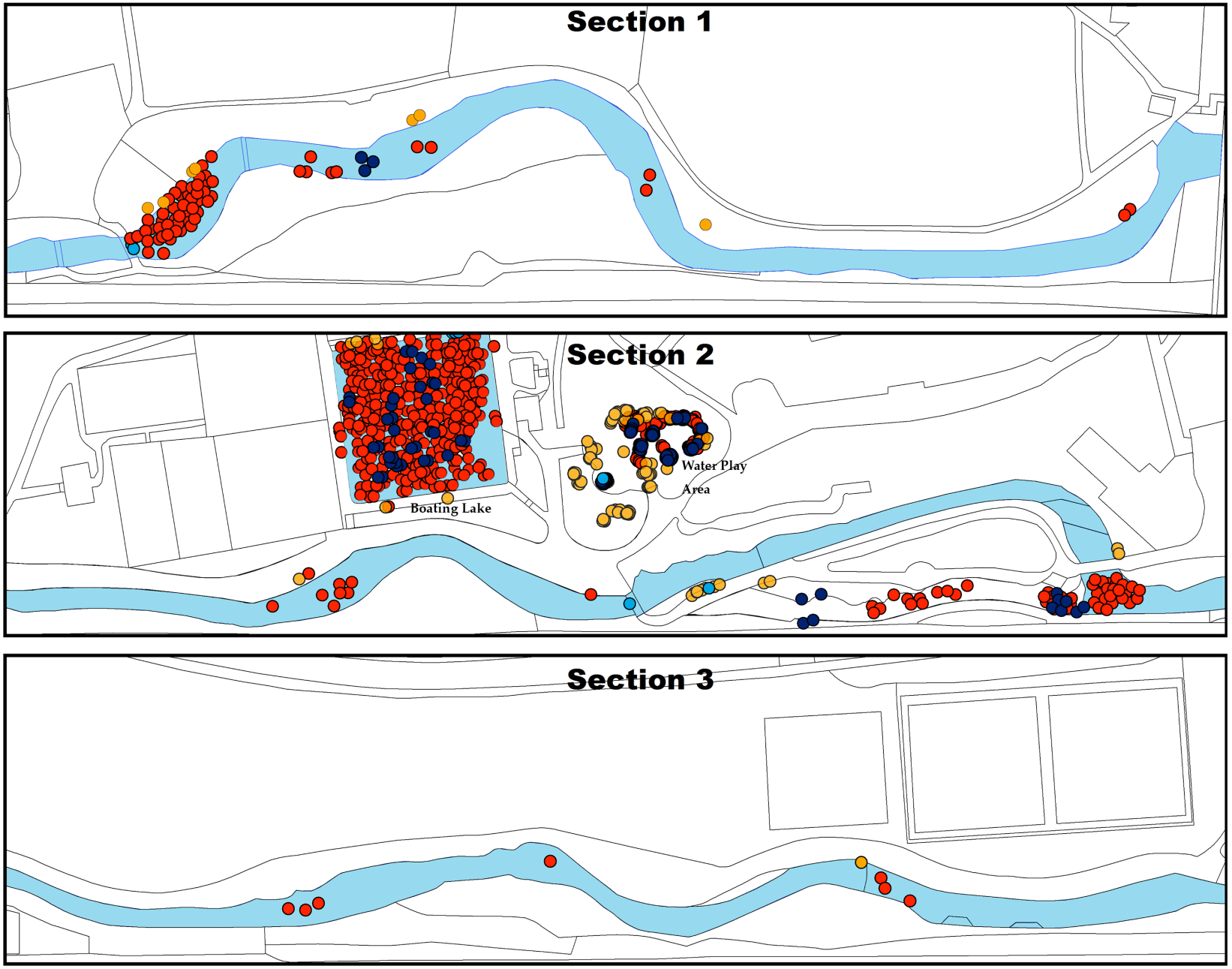


Legend

- Activities above 13.4 C
- Activities below 13.4 C

Behaviour Map 10

Distribution of Activities in Millhouses Park When Temperatures are Below and Above Sheffield annual Average



Behaviour Map 11

Active and Passive Interaction in Millhouses Park When Temperatures are Below and Above Sheffield Annual Average

Photograph 17: Group of children playing in the water park in autumn (October 2012), a few days before closure of park (taken by the author)

In colder weather conditions, especially from late autumn to spring, water-related activities reduced dramatically in Millhouses Park because of the closure of the splash facilities and boating lake and raised levels of water in the stream. As a result no water related activities were observed in the colder winter months in Millhouses Park, apart from a few children watching the flow of the water on the bridges and sailing model boats in the lake, if it was not frozen.

Table 12: Relationship between age and interaction

	Aged 8-9	**Aged 10-11**
Active interaction	94%	91%
Passive interaction	6%	9%

Table 12 shows the relationship between children's interaction with water and age. It can be clearly seen that, as children get older, they lose interest in active interaction. 94% of children aged 8-9 interacted with water actively, while 91% of children aged 10-11 interacted actively. Active interaction reduces almost 4% in the 10-11 group, compared to the 8-9 group. However, still a large percentage of older children actively interacted with water. This was confirmed with observations, where the majority of children aged 10-18 had active interactions. Designer of water play facility and parents accepted that the water features provided in Millhouses Park were not designed for older age groups; however, observations and interviews with parents revealed that children aged 10 or 11 were still interacting with the water features if they went there as a family. In other spaces children moved and did many other things around water; however, in constructed water play areas like Millhouses Park, they are limited to playing with it in predefined ways.

Table 13: Relationship between gender and interaction

	Male	**Female**
Active interaction	96%	89%
Passive interaction	4%	11%

Interestingly, Table 13 illustrates that more females (11%) interacted passively in Millhouses Park compared to males (4%). During the observations it was also observed that slightly more females had passive interaction.

This section summarises the findings about the areas where children interacted with water, how they interacted with it and what kinds of activities they engaged in in Millhouses Park. It is fascinating to find that there are different areas, where some parents allowed their children to interact with the natural stream; however, numbers were limited. The results clearly show that having a structured water play area

dominating the Park can limit children's interaction with water into play with equipment only alongside parental worries, as mentioned in Section 6.5.

6.4.4 Why children like water in Millhouses Park

In order to understand what children liked about the water features in Millhouses Park, children were asked to give three things they liked (see Appendix A). They used many different words but, 'fun', 'play', 'boats', 'cool', 'good' and 'clean' were the most commonly used, in descending order. Initial coding was conducted to identify common ideas about what children liked about water features in Millhouses Park and then ideas were grouped and classified into thematic codes.

According to the results, 40% of the children responding to this question mentioned that they liked having fun in the Millhouses Park water features. These facilities are somewhere children directly go to interact and have fun with water. Parents' interviews revealed that families went there in the summertime to enjoy a warm day of fun with water. As a consequence of the way they were designed, children can learn how water is recycled, and how water pumps and dams work.

> *"It's a lot of fun." (9, female, White British)*

> *"When you are bored it's somewhere fun to go and have fun." (10, female, White and Black Caribbean)*

> *"They are fun to play in." (8, female, White British)*

"Interaction with water" was jointly the most mentioned (40%) theme in the surveys. Some children mentioned the way they interacted with water, while others named the water features they liked, such as the stepping squirt, the tab, and Archimedes screw. All these different names of water features were coded under the "Interaction with

water" theme because all reflect children's interaction with equipment in water play facilities in different ways.

Most of these children in this category mentioned the water splash aspect of the park, while some of the children mentioned that they liked the natural water and playing in it:

"Planking stones in water." (11, male, White British)

"It has water to play with." (8, female, White British)

"The mini water park." (10, male, Pakistani)

"You can play in it, really good." (11, male, Pakistani)

"You can interact with it." (11, male, other Mixed)

"You can get other people wet." (10, female, White British)

"Jump in the water." (10, male, Pakistani)

"The water feature is made for people to play there." (8, female, White British)

Photograph 18: Children playing in water-splash park in summer, above; and older Asian children playing with equipment in the water splash park below (July 2012 - both taken by the author)

The third most common reason children gave for liking the water features was "Like health and safety", which was mentioned by 20% of total responses to this question. Thematically, four different codes were classified under this category, such as "It is clean – fresh", "It is safe", "Adult supervision and allowance" and "Child friendly". These categories basically reflect the above findings about water-parks with children's words. Children liked it because it was considered clean and safe and their parents allowed them to play in the water-park, while parents might be concerned in other spaces, with water features such as streams or lakes. Parents' surveys revealed that 71% of the parents interviewed and 67% of the parents involved in surveys had no concerns regarding the water-splash park. The rest of the parents had concerns that will be discussed in Section 6.5. Some children explained why they liked water features which allowed being in the water, either in a park or stream. This shows how closely parents' approval of being in water and children's interaction and their likes about water were related.

"That we are allowed in the water" (11, female, NA)

"You're allowed to go onto the river." (10, male, White British)

The percentage of children who liked boating in Millhouses Park was 12%. Children like these facilities because they liked boating, it is fun to peddle boats, and there were many different kinds of boats. One of the children underlined one of the important points about Millhouses Park as follows:

"You can go on a boat which you won't be able to do in another park." (10, male, White British)

The boating lake is one of the facilities at Millhouses Park that is not available in many parks in Sheffield. There used to be a boating facilities in Endcliffe Park, but it is now serves as a duck pond. As discussed earlier, a boating was the second most

common water-related activity in the surveys and observations. The other reasons why children liked Millhouses Park are summarized in Table 14.

Table 14: Other reasons children liked Millhouses Park

Activity	Percentage of children
It is cool, exciting, amazing	11%
It cools you down	10%
Running river	6%
It looks good	5%
Like exploring	4%
Being child-friendly	4%
It is peaceful, relaxing	4%
It has nice sound	4%
Like variety	4%
Watching	2%
Like how big it is	3%
It is open space	2%
Makes you fit and healthy	2%
It is interesting to visit	1%
Water is warm	1%

6.4.5 Parents' attitude to children's interaction with water and how this is perceived by children

Parent's attitude towards children's interaction with water was a major factor affecting children's interaction with water features in Millhouses Park. To gain insights into this issue, both parents and children were asked a range of questions (see Appendix A, B and C). Children's and parents' responses were grouped into three different themes:

positive attitudes, negative attitudes, and cautious attitudes. In this part of the surveys no children were unaware of their parents' attitudes, as opposed to other study sites.

Besides, parents' interviews and surveys identified that the majority of parents involved in this study were happy about their children's interaction with water features in Millhouses Park. There was no parent who had a negative attitude. In the interviews, only one parent identified with a cautious attitude and the rest of the parents had a positive attitude. Surveys were also unable to identify any parent with a negative attitude; however, some parents with a cautious attitude was detected in surveys, despite the fact that the majority of the parents still had a positive attitude towards their children's interaction with water in Millhouses Park. These themes will be discussed below in detail.

6.4.5.1 Positive Attitudes

80% children surveyed perceived their parents' attitudes towards their interaction with water features in Millhouses Park as positive, describing their parents' attitude towards the water features and children's interaction with it in Millhouses Park with some common words such as 'happy, 'good', 'fun', 'fine', in ascending order. On the other hand, some children gave detailed responses, as shown below.

"They let my play in the water." (8, female, White British)

"They like me to play in the water." (8, female, NA)

"My parents like me to enjoy myself." (11, female, White British)

"They think it is nice for kids to play there." (10, female, White British)

"I'm allowed to go in." (11, female, NA)

"Really good; it is open." (10, female, Pakistani)

"Good fun, get outside, fresh air." (11, female, White British)

It can be seen from children's responses that some parents were slightly concerned with health and safety aspects of the water features, although their attitude was still positive and did not affect children's interaction. Children mentioned that they thought their parents' attitudes towards water features was positive because Millhouses Park is a safe and secure space.

"They think it is safe because it doesn't come, like, that heavy." (10, female, White British)

"They like it because it is so close to my house and is safe and fun." (10, female, NA)

"They think it's fine because it's safe." (8, female, White British)

"It's clean and safe." (10, female, White British)

Furthermore, some of those children mentioned that their parents' attitude was not only positive but also that their parents interacted with them in the water features in Millhouses Park, so play often turned into an interactive family time together:

"We get lost of fresh air and we have fun." (10, female, White British)

"My mum likes to play with me." (9, female, prefer not to say)

"Fun because my mum and dad play with me." (8, female, White British)

Photograph 19: Dad having fun with daughter in water-splash facilities in autumn (October 2012 - taken by the author)

According to the adult surveys, the percentage of parents who had positive attitudes towards children's interaction with water in Millhouses Park was slightly higher than children's perceptions, with 83% of the parents involved in surveys having a positive attitude. However, according to the interviews, the percentage of parents who had a positive attitude (97%) was considerably higher than children's perception of this.

Word frequency analysis was performed and the results turned into a word cloud (Figure 25). The more times a word was mentioned, the larger word appeared: 'good', 'interaction'', 'love', and 'fun' were some of the words parents used to describe their children's interaction with water features in Millhouses Park.

Figure 25: Word cloud of parents' positive words from survey and interviews

Parents perceived children's interaction with water in Millhouses Park as a positive experience because, first of all, their children had fun in the Water features. Parents used phrases such as "children love it" or "children have fun". Secondly, some parents mentioned that Millhouses Park water facilities were a good environment to keep children cool and have a fantastic family day out on a warm summer's day. Moreover, for parents, children's interaction with water was a good way for them to learn and develop social skills. They said it encouraged them to explore and gave them confidence with water; allowed them to learn new things from the mechanisms in the splash facilities; was good for their imagination because they investigate new things in the water park; and helped them learn to work together, such as to keep mechanisms moving. Social development in a water-splash park might be especially useful as it attracts people from diverse ethnic backgrounds. Lastly, according to parents, their

attitude towards interaction with water was positive because it is good way of exercise, and an opportunity to get fresh air.

> *"I think it is a great opportunity because I think, I mean, with our children we spend a lot of our time in the countryside, so actually they get a lot of experiences of open spaces and stuff like that and rivers and streams and natural things. I think a lot of children may not get that opportunity and so playing with water is just a fundamental element of childhood really. I think you know, for us, they do get that but it is just... (inaudible word). They always will play with water every single day, if they can. They love it. It is easy."*
>
> *(40-44, female, White British)*

> *"I think it is really good because some children need that kind of tactile feeling and may respond to physical experiences, due to, maybe, just your bog standard playground in.... frames and things. So I think it is a more holistic experience for kids...."*
>
> *(30-34, male, White British)*

One of the parents involved in the surveys mentioned that they used to go to Millhouses Park when their children were young. However, they went less frequently once they were older. This case also supports the data showing children's loss of interest in water features, at least active interaction, as they get older.

> *"We used to go more regularly to the park when the children were small. Having water play is fantastic in warm weather, and children love being able to splash and use paddle boats on the lake."*
>
> *(40-44, male, White British)*

6.4.5.2 Cautious attitudes

8% of the children indicated their parents had cautious attitude to their water play. According to children, the biggest worry for parents was falling into the boating lake. Children stated that their parents asked them to "stay near to them", "stand back" and "not to mess about". A few children indicated that their parents were worried about them slipping in the area and about the weather. One of the children mentioned he was allowed in the water play area but not in the stream.

The percentage of cautious parents was much higher than children's anticipation in surveys. 17% of the parents gave answers, in which children's experiences of water depended on some conditions, the most important being water safety. These parents were not sure about the physical safety of children and the water quality. These parents mentioned that they would let children play if spaces were designed properly and designated to be safe, and as long as the water was clean and visibly free of dangerous objects, such as pieces of glass and sharp objects. Their worries are understandable because, although fresh tap water is used in the water splash area, as water travels through the park, it gets dirty and muddy. Moreover, there were a couple of issues about some areas of the park that caused some safety concern, as discussed in Section 6.5. One parent said that she would love her children to go into the water but she was worried about pollution:

> *"They would like to go in the river but we are wary of pollution so don't encourage it. Because of this they are too constrained almost. I would love them to be able to go in the water. They don't play with the water every visit."*
>
> *(40-44, female, White British)*

6.4.5.3 Negative attitudes

Only 4% of the children thought that their parents' attitude towards water features in Millhouses Park was negative. This is the lowest percentage of negative attitudes among the three case study areas. Children mentioned the phrases like "They don't like

me in the water", "angry", "They don't like it because it is cold and wet". Interestingly, one child thought that their parents thought the water features were unhygienic, even though structured play areas use clean tab water, for the safety of children, as confirmed in designer and manager interviews. However, as mentioned above, as water cycles through the park it gets muddy. Some of the children might have misinterpreted their parents' attitudes and might have perceived caution as a negative attitude because neither in the interviews nor in the surveys did the parents state any negative thought about children's interaction with water features in Millhouses Park.

6.5 Issues Identified

In the following section, issues and concerns informed by children's and parents' surveys, parental interviews, professional interviews and observations will be discussed.

6.5.1 Management issues

The largest percentage (75%) of the responses collected from children indicated management problems to some extent. On the other hand, parents were not concerned about management as much as children, as 25% of the parents in the surveys and only a few people in the interviews mentioned any.

The largest proportion of children's concerns and a large majority parents' concerns about Millhouses Park were related to "health and safety" issues in the park. Actually 39% of the children's responses were related to Health and safety issues, which included many different hazards. Concerns raised by children were collected into 5 sub-themes and parents' concerns collected into 6 sub-themes. All the issues identified by parents and children shared similar concerns. Water quality; safety around water; slippery surfaces; water born diseases; sharp and dangerous objects in the water; security; and having no protection on boats were the common issues raised by both children and parents.

The most cited health and safety issue was dirty water (17%). Children mentioned that water have leaves and dead flies in it and sometimes smelled during the site visits. It was observed that, although fresh tap water was used and pumped from the splash mechanisms, as water goes through the park it gets dirty and muddy. When water arrives at the end of the park where it goes down the grill for recycling in flash toilets, it becomes entirely dirty and the water quality at these stages of the park is questionable. This might be why one of the most common concerns of the parents was water quality. Parents also complained about water being dirty, having lots of leaves and rubbish in it, and water being muddy. One parent even raised a concern about water born disease, which is also related to water being dirty.

> *"If they have been soaked, I would always shower them when they get home as the water is mucky."*
>
> *(40-44, female, White British)*

> *"Sometimes water looks dirty. Lots of leaves/rubbish."*
>
> *(30-34, female, White British)*

On the other hand, a minority of the parents were concerned about the water quality in the stream.

> *"The pollution: I was unaware of this until a scouts' boat race was set up in Millhouse Park a few years ago. They had a sign warning people to wash their hands after being in the water and to wear wellies because of "dangerous pollution". I was very shocked and it has made me worry ever since about all Sheffield's rivers."*
>
> *(40-44, female, White British)*

Photograph 20: Dirty still water at the end of the waterbed (October 2012 – taken by the author)

3% of the children were concerned about deep water in Millhouses Park. Obviously, the children's concerns about deep water were related to the boating lake. Some of the children admitted that they were afraid of falling in, while other children worried about younger children and toddlers falling in and drowning. Parents also raised concerns about the boating lake, such as the risk of falling in. However, parents were more practical about the issue and acknowledged that it was not as deep as children perceived. One parent mentioned:

> *"I am more worried about my son falling into mill ponds but he needs to learn these things. Would not like to have only shallow features..."*
>
> *(50-54, female, Other White)*

Concerns about having no protection on boats was raised by children. However, although the boating lake was one of the oldest aspects of the park, no serious incident had been reported.

Another issue related to health and safety was some surfaces being slippery. This was raised by children (10%) and a minority of parents (2%). Children claimed the waterpark was slippery and this claim is supported by observations. During the summer observations, water was spread to many different areas of the park which should not be wet, such as pavements. The surfaces, which were not designed for water, became slippery, and a few children were seen to slip on the surfaces.

Furthermore, some parts of the grass surfaces became muddy and slippery because of water being spread around. Children running on the grass surfaces stepped on the mud sometimes slipped, or made the area slippery for others. Although children were concerned about the issue, the parent indicated the issue was not a concern as such but just advice for future developments.

Photograph 21: Big muddy area and temporary solution on the left, and problem with muddy area and water features on the right (August 2013 - taken by the author)

Sharp or dangerous objects under the water are one of the other health and safety related concerns. Only a minority of children (3%) and parents (2%) addressed this issue because it is related to playing in the river, which only a small number of children were found to do in surveys and observations.

> *"You could cut yourself in the river." (10, male, White British)*

In the management issues theme the second most referenced category was "river flooding" (17%). After the flooding in June 2007, which resulted in the death of a 14-year-old boy, it seems that children worried about flooding in Millhouse Park; though they did not mention the incident in their responses, they did state concerns about flooding with phrases such as "there are many floods", "the flooding" "floods", "sometimes river floods". Parents were not as concerned as children about flooding with only one mentioned it. This parent indicated that she was a bit concerned about

riverbanks, fast currents and flooding in the rivers, because of what happened in June 2007.

The third most common issue related to management was water facilities being small, busy and overcrowded (12%). Children said they do not like the water features when they became overcrowded and some children indicated that they did not like the water park because it was small and did not have enough facilities. It was obvious during the observations that the water play area and boating lake became really crowded on warm summer days, since at the peak times roughly 10 or more children were often seen trying to play on the same piece of equipment and they even queued for the equipment that could only be operated by one child. Moreover, queues were also quite common for the boating facilities.

The rest of the issues coded under "management issues" included not having many activities related to water (2%); odorous water (1%); and having no changing facilities (1%). Although a minority of children or parents indicated the issue of latter, from the observations it was clear that some change children's clothes in front of everyone even though there were toilets just around the corner, which might be the reason why not many people were concerned about changing facilities. Furthermore, there is an issue about visibility in the park, although only a few parents mentioned this. The bushes in the middle of the water play area are on top of little hill and they are quite high. Therefore, they obscure the vision of parents and they cannot watch their children if children go to other side of the park.

> *"I think, my concern at the moment, I know Jay has mentioned already but this is too high. I think you need to have good visibility all around. So you can sit down in there, if you are with friends, you can sit and relax and look to see your child, see where they are and what is going on."*
>
> *(40-44, female, White British)*

Photograph 22: Bushes in the middle of the park reduce visibility (August 2013 - taken by the author)

6.5.2 Personal Choices

The issues mentioned under this category were children's personal choices about why they do not like Millhouses Park. 18% of the children indicate that water can get cold in splash facilities. Furthermore, some children added that they became cold after going to the splash facilities. This might be a seasonal issue in autumn and spring. Secondly, 6% of the children did not like the water features because they found the water levels were insufficient. As the facilities are designed for children of up to age 7, they can be less attractive to older children. A minority of children (3%) did not like being wet. The rest of the reasons were the water was too shallow for them and there were no swimming opportunities, such as a pool. On the other hand, a small proportion of children found the water features were too big or thought it wasted water.

6.5.3 Human oriented issues

A number of human-orientated issues were identified but the number of complaints was quite low compared to the city centre sites. According to the children's surveys, the percentage of anti-social behaviour was 3%. Themes mentioned in this category include people who did not care about the safety of their own or other people's children, physical bullying, noise and nuisance. Children did not give details about the anti-social behaviours but when space become crowded children might push each other, creating some noise.

The most common human-orientated issue, according to parents, was supervision. In the interviews, 8% of the parents, and 4% of the parents in surveys, commented on this. These parents were self-consciously aware of the dangers that might be related to water features. They were worried about the children not being sufficiently closely supervised in or around the water features. They highlighted the fact that children should not be allowed to move away from water features, and parents should supervise them carefully.

> *"No not really, apart from you occasionally get the parents that let their child wonder off on their own which isn't good with the water features close by."*
>
> *(30-34, female, White British)*

Parents concerns about the issue are understandable, as discussed above; even children addressed the dangers involved around the water features, such as deep water in the boating lake, slippery surfaces and water quality.

The second human-orientated issue was children dressing or changing clothes in public, but only by 2% of parents surveyed. During the site visits a number of children running around naked were observed. Some were allowed to go by their parents and some escaped while parent were trying to change their clothes. Having no changing facilities in the water-splash park might have played a role in this.

6.5.4 Issues identified by professionals

Millhouses Park manager shared some concerns with parents and children. For instance, one of the shower-type pieces of water equipment in the water play facility was spraying water quite far away, which resulted in water being spilt on surface that caused children to slip or grass areas getting muddy. According to the manager, these problems were solved with the redesign of water spray heads. However, during the summer visits, which were 6 months after the management interviews, the persistence of issue was observed. As was discussed earlier, children and families were still complaining about this. The management team put an artificial grass carpet on one location that became quite muddy (Photograph 21, on the left) in the summer because the water features next to the area tended to squirt water on the earth as children played with it. The issue was also observed during the site visits the year before, in 2012. I presume this issue has persisted since the water park was opened, as this part of the park has never been redesigned completely. However, it seems likely that, at least for now, the management team will only provide temporary solutions to this problem. Furthermore, no solution was provided for the small areas that also became muddy.

Another issue mentioned by the manager was a lack of management staff. Although the number of staff he had was just about right for now, in the summer school holidays, due to an increased number of visitors, the management team struggled. The manager stated that they had to empty rubbish bins three times a day, in addition to all the checks they needed to do in the water park and other parts of Millhouses Park. Government cuts have affected city councils all around the country, and he mentioned that he would not have more management staff in the foreseeable future. Due to the lack of management staff, the manager opposed attracting more children to Millhouses Park. He indicated that he would promote local parks in other parts of the city, rather than attracting more children to Millhouses Park, just because it was successful.

The designer of the water splash park mentioned that the aim was trying to create a miniature landscape with little hills and water flowing like a riverbed and that was why

the designer came up with swelling shapes. Consultation was conducted with community members of the park and the designer felt the community wanted something more educational, saying that the issues began to be raised during implementation process. First of all, there was a wish for water to be recycled and used to top up the leaking boating lake and toilets provided by Sheffield city council. However, the company which supplied the water equipment was not familiar with the regulations and could not manage it, so the city council had to employ separate consultants for the recycling system, but they proved to be inexperienced with the type of recycling required:

> *"They weren't good at the committed work either. So it ended up being a lot of work on-site to get it to work; and actually a lot of teething problems. Although it seems quite simple, it is quite complex. We had to - we couldn't take the water - the regulations wouldn't allow us to take water directly from mains to the equipment. We had to have storage tanks first filled up. So we got a big storage tank in a little stone building on the site and that took a lot of plumbing to get it all right... Once it was installed the pump kept silting up and breaking down. And recycling into the toilets, that system did not work for ages. It has taken probably 18 months to sort out the teething problems. I mean it carried on working but it was just only using water the once. So there were a problem with it."*

The biggest issue the design team faced was implementation of the water park design and its recycling system. The designer admits that not employing a mechanical engineer for the job was a big mistake for the project team and it would have been better and quicker if one mechanical engineer had designed the whole system.

> *"It was very complex and the client hadn't wanted to employ directly a mechanical engineer to do the plumbing side. They wanted the company installing it to do that side of it. And in that respect I think that was a mistake."*

The other issues with implementation side of the project was dealing with contractors and not having enough staff at the site. The letter illustrates a common management problem management shared by all sites, as shown above.

The biggest issue of all with the water splash facility was the use of water. The issue occurred in both designer and manager interviews Millhouses Park. Although the water authority agreed to supply water to the park at lower rates, still Sheffield needs to pay for water used per litre, and not surprisingly a large amount of water is used on a warm summer's day. The designer admitted that the water-splash facilities cost more money than they had thought because of changes in legislation and they had not realized this until they reached the end of the process. Moreover, according to the designer, recently Sheffield city council has been struggling to run the water-splash facility in Millhouses Park due to budget cuts.

> *"It is the most expensive landscape feature you can have without having a water body. It all depends on the local authority's budget. So what tends to happen is, with a local authority like Sheffield, they can probably afford one in the city centre. Parks are now struggling to pay for Millhouses because of budget cuts; so it's down to cost."*

As can be seen, having and running artificial water features costs a large amount of money over and above the costs of building the space. Although the exact value of running water features are not stated, people in Sheffield and other Sheffield parks subsidise Millhouses Park.

6.6 Chapter Summary

In order to understand children's experiences of water features in Millhouses Park and how these experiences were facilitated and controlled by professionals and parents; surveys with children; surveys with parents; interviews with parents; interviews with professionals; and observations were conducted. Observations were primarily important

to witness the events and in this study site it proved to be useful. In general, observations supported what children and parents said and revealed more detailed insight.

Quite a large percentage of children involved have been in Millhouses Park at least once and slightly less than 25% of the children have never been to Millhouses Park. Over 70% of children who had never been to Millhouses Park lived in S2. When the distance between Millhouses Park and the children's home location decreased the percentage of children who had never visited Millhouses Park reduced. Evidence from the surveys clearly suggests that there was a strong relationship between the location of Millhouses Park and children's home locations.

Relatively more males visited Millhouses Park compared to the percentage of females. The percentage of children aged 0-9 is more than the percentage of children aged 10-18, to some extent. Children's ethnic diversity matched the Sheffield Census results, especially in the immediate neighbourhood, which was highly populated by people of White ethnic and Asian backgrounds.

A large proportion of children responding to the surveys visited Millhouses Park either monthly or less than monthly. Matrix coding analysis between location and frequency variables suggests that there was also strong correlation between the location, being close to the space, and frequency of use.

The highest proportion of children visited Millhouses Park in the school holidays, followed by Saturdays and Sundays. Quite a large percentage of children who lived far from Millhouses Park, tended only to be able to go to Millhouses Park in the school holidays. On Saturdays and Sundays the proportion of visit from far distances increases. The surveys indicated that twice as many after school visits occurred from S7, which is in closest proximity to the space, compared to S2 and S11.

A considerable proportion of children visited Millhouses Park (almost 75%), which was about twice as many as walked, the second most common choice in the surveys. Interestingly, quite a healthy percentage of children cycled there. The use of buses to visit Millhouses Park was the least favourite choice among children. The use of buses increased and the use of the car peaked in the furthest away places, such as S2.

The large majority of children visited Millhouses Park with their families because it was nice destination for family days out, according to parents. The percentage visiting Millhouses Park alone was less than 1%. Slightly less than half of the children also visited Millhouses Park with friends, the percentage being higher in the closer neighbourhoods. No clear relation between age and whom children visit Millhouses Park with was detected. The percentage of children aged under 10 and over 10 was similar among all the choices. This also supports the idea that Millhouses Park is a family day out destination, where children of all ages go with their families.

Children were asked to tell what kind of activities they engaged in in Millhouses Park, and they indicated playing in the playground; playing in the water park; play sports; riding bikes; eating in the café; walk or walking dog; have picnics; watching things; outdoor gym; stepping stones; driving model boats; and paddling in the river.

Slightly more than 80% of the children visited water features in Millhouses Park. A large majority of children visited water features monthly or less than monthly. Females were more interested in water features than males. The percentage of females visiting water features was higher than the percentage of males. However, during the observation, slightly higher numbers of males were observed compared to females. Observations revealed that a number of children aged 0-9 were more interested in water features, and the number of those children substantially more than the number of children aged 10-18.

The ethnic diversity of children visiting Millhouses Park and of children visiting water features in the park was similar and matched the Census results.

Although two types of interaction were identified in Millhouses Park, there was a substantial difference between children's active and passive interaction with water in surveys and observations. Only slightly less than 2% of the children undertook only passive interactions in Millhouses Park.

Quite a large proportion of children's interaction with water features in Millhouses Park was active. Playing in the water park; boating in the lake; having water fights; playing in the stream; throwing stones into the water; and putting feet into water, are some of the activities identified. In Millhouses Park, children's relation with water was quite different than in other two case study areas, as it had a designated boating lake and water play area, having more active interaction with water where people took their children in summer specifically in order to enjoy water.

During the site observations 4 different spots where most of the children interacted with water was obtained. These spaces were shallow parts of the river near the outdoor gym; the stepping stones and the water fall at the end of the fish pass; the water-splash area; and the boating lake. However, a majority of those children interacting with water were in either the water splash area or the boating lake, where children's interaction is quite structured. On the other hand, children's interaction in the other 2 spots allowed the freedom of playing in natural water, and interacting with it however they liked.

Observations revealed that water interaction activities in Millhouses Park were weather related. On days when the temperature was below average, only a few children, who come prepared with water proof clothing, hat and gloves, could interact with water for a long time. The rest of the children had a tendency to touch water, feel that was cold but not get into the water or interact with it for a long time. However, children were interested in the water park, even when it was turned off for winter, trying to operate the features. Although a number of children were interested in water in colder weather, when temperatures were below average, especially from late autumn to spring, water-related activities reduced dramatically in Millhouses Park because of the closure of the

splash facilities and boating lake and raised levels of the water in the stream. No water-related activities were observed during these seasons in Millhouses Park, apart from a few children watching the flow of the water on the bridges and sailing model boats in the lake, if it was not frozen.

In the Millhouses Park children lost interest in active interaction with water as they got older. The percentage of children who had active interaction in Millhouses reduced by 4% in the second age group (10-18). However, a significant amount of the older children still actively interacted with water, as confirmed through observations, where the majority of these children had active interaction. Although Designer of the facilities and parents accepted that the water features provided in Millhouses Park were not designed for older age groups, children aged 10 or 11 were still interested in them, if they went as a family. This is likely to be due to the park having only a structured water play area,` which is not really suitable for passive interaction.

Interestingly females were more interested in passive interaction in Millhouses Park compared to males. Slightly more than 10% had passive interaction with water in Millhouses Park, while males only had 4%. During the observations, it was also observed that slightly more females were interested in passive interaction.

Although a number of children interacted with the natural stream, the results clearly show that the structured water-play area dominated the Park, joined with parental worries mentioned above, limiting children's interaction with water into play with equipment only. It is fascinating to find that there were different areas where some parents allowed their children to interact with the natural stream; however, numbers were limited.

Children liked Millhouses Park because it was fun cool, good, child-friendly, involved fresh water and was clean and safe. They liked interaction with water and play; they liked boats and they were allowed to interact with water.

The majority of parents' attitude towards children's interaction with water features in Millhouses was positive and quite a large percentage of children perceived this. Considerably fewer children perceived their parents having a cautious attitude towards their interaction with water features in Millhouses Park than the percentage of parents who said they had a cautious attitude. There was a small percentage of children who perceived their parents' attitude to be negative, although none of the parents had negative attitude towards children's interaction with water. This might be due to the children thinking their parents' caution was a negative attitude.

Management problems were the biggest concern of children and parents. Health and safety concerns were the most common type, including water quality; safety around water; slippery surfaces; water-born diseases; sharp objects under the water; security; and having no protection on the boats. In particular, water quality was an issue. Although fresh water was squirted out of the equipment and used, still the water became dirty as it travelled through the water splash area. It gets muddy, containing many particles and leaves. The rest of the major management concerns were flooding; facilities being busy and overcrowded; and anti-social behaviour. It was identified that some children did not like the water features in Millhouses Park for personal reasons, such as the water being cold; getting cold after play; being wet; not having enough water; or having shallow water. Parents had somewhat more human-orientated concerns, such as adult supervision and children's attire in the water play area.

For the designer of the water splash facilities, the main issue was how expensive the water park was to build; and implementing the water recycling system. The manager of the space indicated that they had just enough people to manage the space, so it was just about right and he did not want to attract higher numbers of children into the space. Although the manager said that they had redesigned the parts of water features that caused slippery surfaces, observations revealed that some of the problems persisted.

However, the biggest issue about the water-splash park was its expense. Both designer and manager admitted that the water features were too expensive to run, although the water authority gave water for water play at a reduced rate. Sheffield city council still has to pay the water authority for every litre of water used. According to the designer, Sheffield city council is struggling to keep it running. As can be seen, having and running artificial water features has high costs over and above the building costs of the space. Although the exact cost of running these water features is unknown, people in Sheffield and other Sheffield parks pay for Millhouses Park.

Chapter 7

Study Site III

Endcliffe Park

7.1 Introduction

In this chapter children's experiences of water in Endcliffe Park and how these experiences are perceived, facilitated and controlled by parents and professionals will be discussed. Endcliffe Park offers a natural water experience for children, namely a natural stream running in the hearth of the park, and thus it is differentiated from other study sites. Endcliffe Park has been chosen as a study site in order to understand children's experience of natural water, which is situated in one of most popular of Sheffield's parks. In this chapter results related to Endcliffe Park will be discussed using children's surveys, site interviews with parents, parents' surveys, observations and behaviour maps; and discussions will be supported with GIS and Nvivo analysis in some cases.

In the first section children were asked several general questions about their visit to Endcliffe Park then in the second section of the questionnaires they were asked specific questions about their interaction with water in Endcliffe Park (see Appendix A). To begin with children's diversity in Endcliffe Park, in terms of age, ethnicity and gender will be discussed in Section 7.2. Children's visits to Endcliffe Park will be discussed in Section 7.3. Children's visits to water features; the diversity of children interacting with water feature; the types of children's interactions with water; things children like; children's perception of their parents' attitudes towards children's interactions with water; and parents' attitude towards children's interaction with water, will be discussed in Section 7.4. Discussions about the issues identified at this study site will bill be presented in Section 7.5; and lastly a summary of findings in relation to children's water play in Endcliffe Park will be made in Section 7.6.

7.2 Diversity of Children in Endcliffe Park

According to children's survey results, 71% of children had visited Endcliffe Park at least once, while 24% had never been to Endcliffe Park. 5% of the children involved did not answer the question.

7.2.1 Differences by gender

Figure 25 illustrates that, from the responses, it can be seen that almost equal percentages of male children (51%) and female children (49%) visited Endcliffe Park.

7.2.2 Difference by age

In order to understand the age range of children visiting Endcliffe Park, matrix-coding analysis was conducted between two variables. According to the children's survey results, a higher proportion of younger children visited Endcliffe Park (Figure 27). The

percentage of children aged 8-9 was higher (55%) than the percentage of children aged 10-11 (45%).

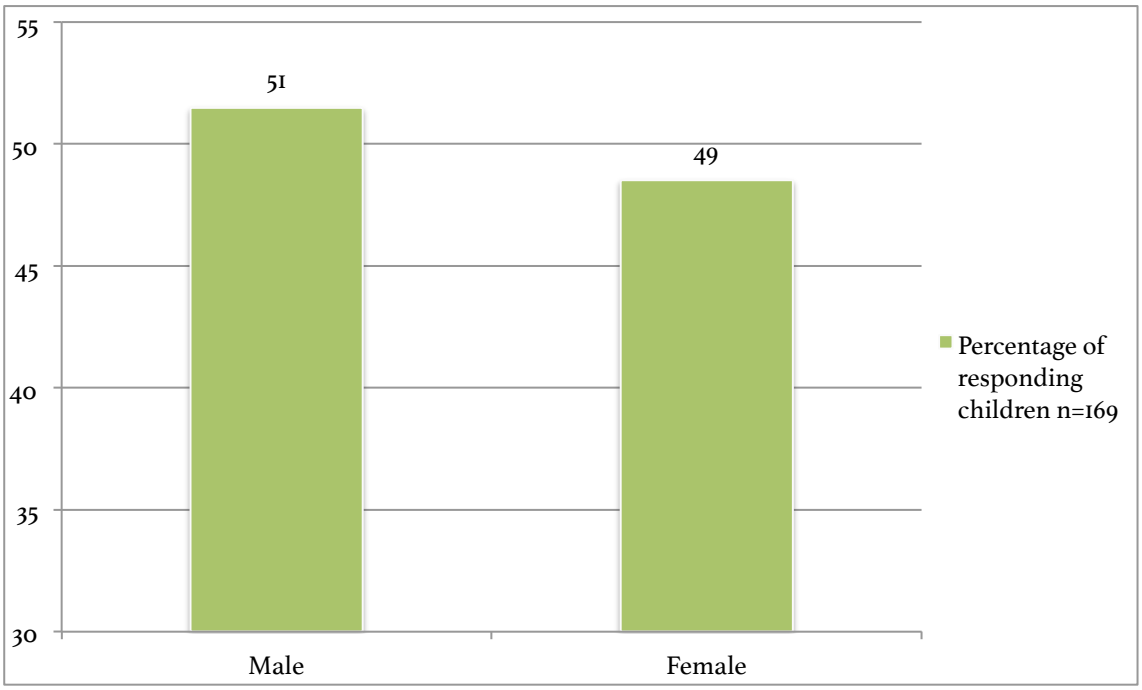


Figure 26: Children visiting Endcliffe Park by gender

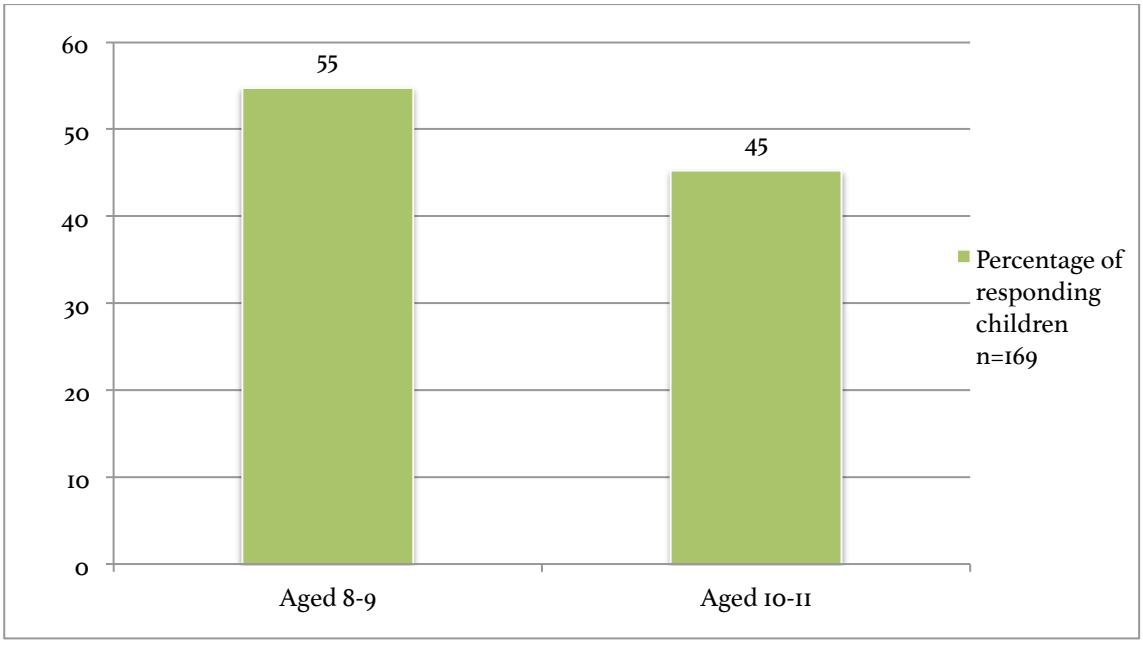


Figure 27: Age range of children visiting Endcliffe Park

7.2.3 Differences by ethnicity

Lastly, in order to understand the ethnic diversity of children visiting Endcliffe Park, ethnic data collected was cross-analysed with children visiting Endcliffe Park. The visual distribution of different ethnic backgrounds showed similarities with percentages of those ethnicities in the sample (Figure 28). Only percentage of children, who preferred not to say their ethnic background, visited Endcliffe Park slightly more than their proportion in the sample. The largest proportion of children who visited the park were from a White ethnic background, at 50% (Figure 26). The percentage of children from different Asian minorities was 12%, followed by children with a mixed ethnic background, at 9%. The percentage of children coming from a Black ethnic background was 3%, slightly more than Chinese and other ethnic backgrounds (2%). A considerable number of children (10%) preferred not to state their ethnic origin. A total of 15% of the children participating were coded under missing data because they either did not choose any of the options available or ticked more than one box.

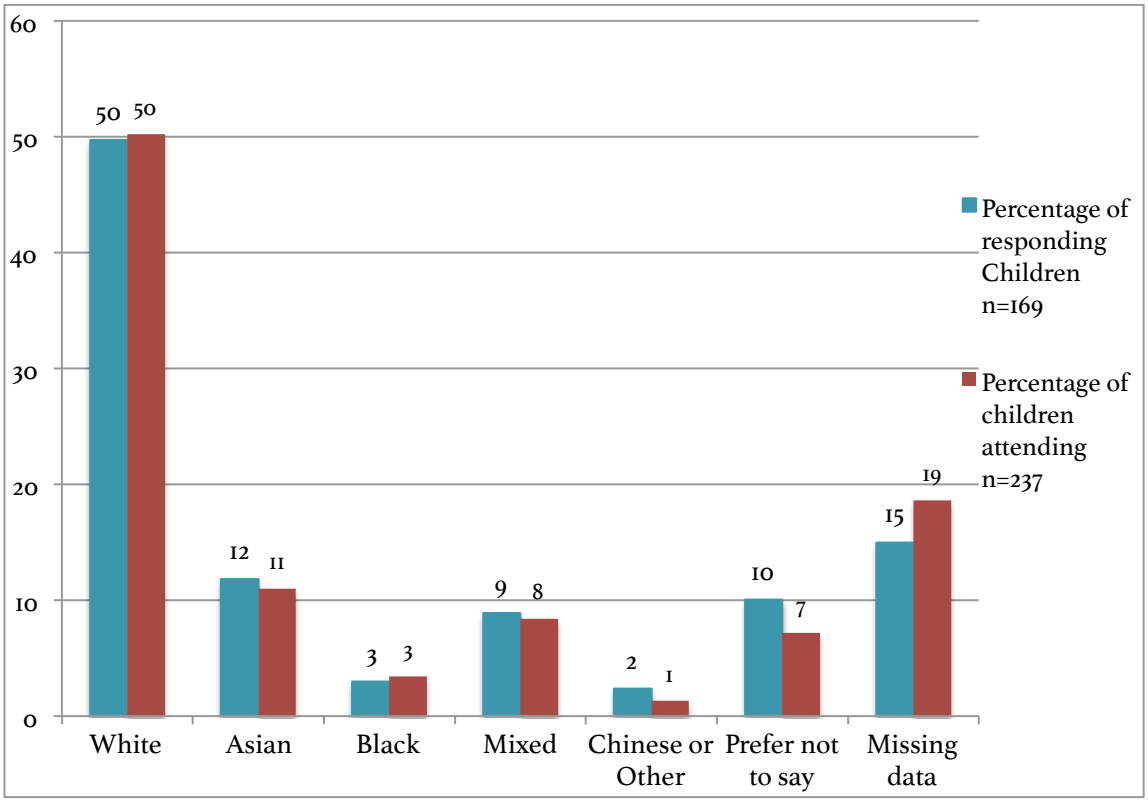


Figure 28: Children visiting Endcliffe Park by ethnicity

7.3 Children's Visits to Endcliffe Park

7.3.1 Frequency of visits

In order to understand the details of children's visit to Endcliffe Park, children's surveys were analysed. Figure 29 illustrates that the highest frequency of children's visits to Endcliffe Park were monthly (18%), followed by weekly visits (16%) and less than monthly visits (14%). The percentage of children visiting Endcliffe Park fortnightly was 13%, which was slightly less than the percentage of children paying less than monthly visit. The percentage of children visiting Endcliffe Park daily was 6%, while 7% of the children visited Endcliffe Park more than once a week. As can be seen from the results, a majority of children visited Endcliffe Park between weekly and less than monthly intervals and the frequency of children's visit fluctuated. This might be related to home location.

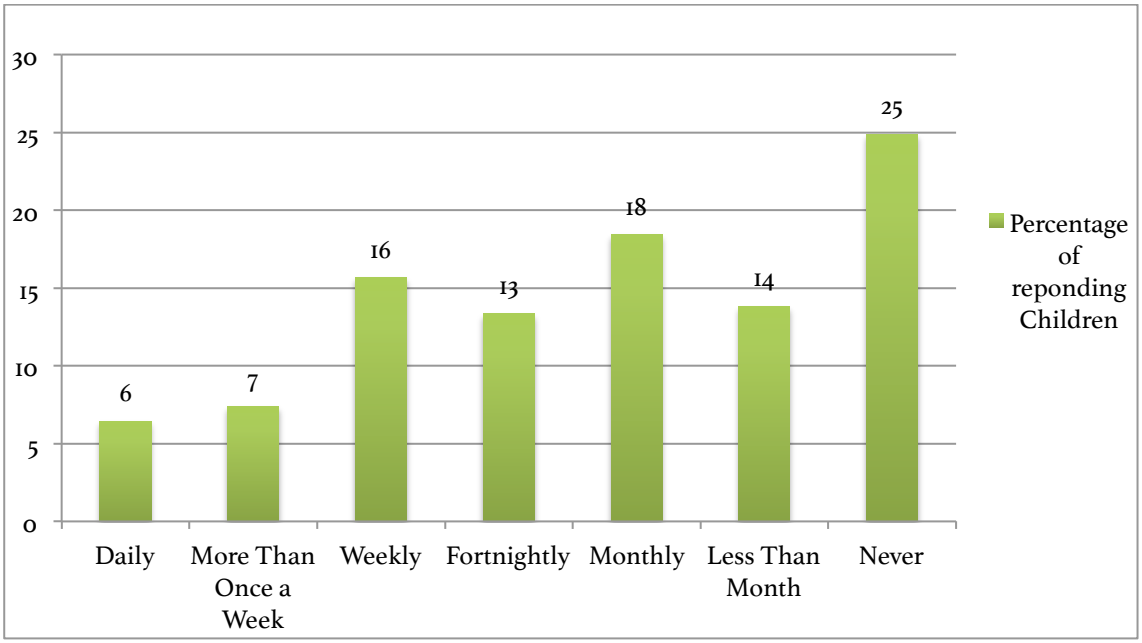


Figure 29: Frequency of children's visits to Endcliffe Park

In order to understand the relationship between locations where children lived and the frequency of their visits to Endcliffe Park, a matrix-coding analysis was conducted. A same criterion mentioned in the previous chapters was used. Furthermore, distance

from school location to the Endcliffe Park as follows; School in S2 3 miles, school in S11 0.5 miles and school in S7 2.3 miles. Map 2 shows the postcode boundaries of Sheffield and the location of The Peace Gardens. However, in order to protect confidentiality and privacy of the schools involved in the surveys, exact school locations or the their catchment areas cannot be represented on the map Analysis showed there was a positive relationship between locations where children lived and how often they visited (Figure 30). Children from S10, which is the closest to Endcliffe Park, paid more regular visits such as daily, weekly or fortnightly. The majority of the children paying daily visit from S10 mentioned that they visited Endcliffe Park after school or on the way to school.

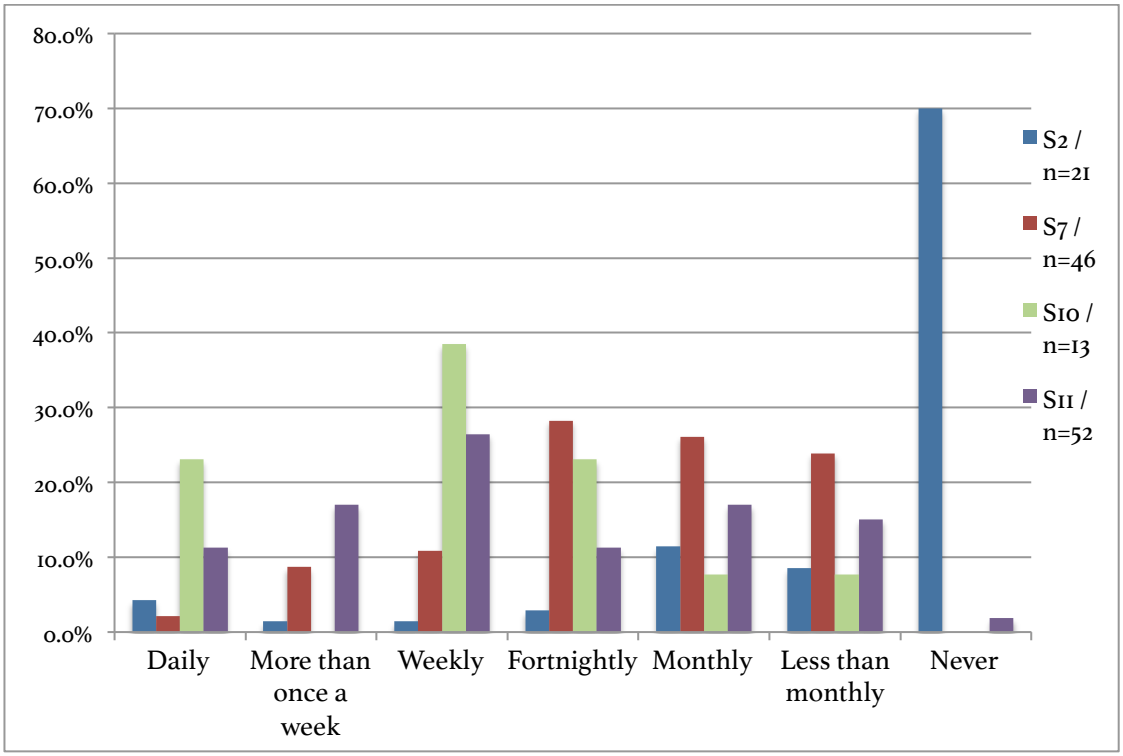
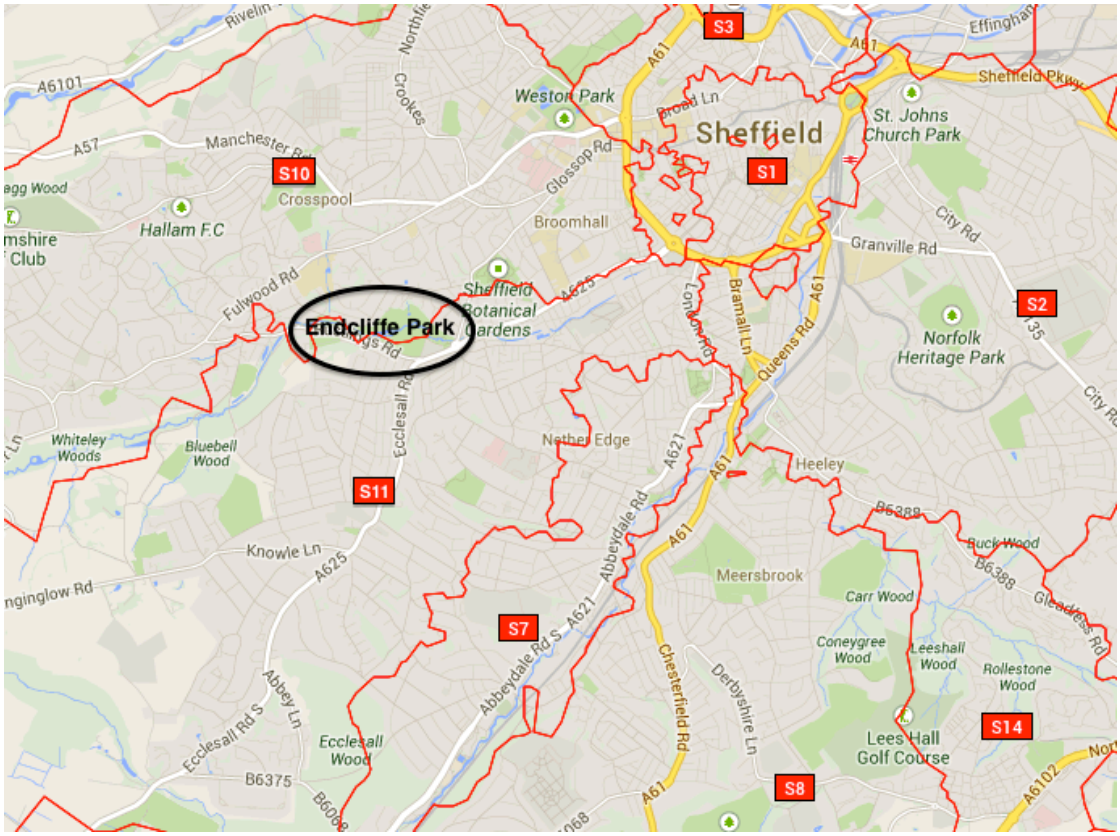


Figure 30: Frequency of children's visits to Endcliffe Park by home location

Moreover, S11 is another postcode that includes some parts of Endcliffe Park (see Map 4). The percentage of children visiting Endcliffe Park weekly or more frequently was higher from S11 than S7 and S2. Furthermore, more than 50% of children from S11 paid weekly or more frequent visits. Daily visits were higher in S10 compared to S11. The majority of children walking to school from S10 had to walk through Endcliffe

Park and some children mentioned that they visit the park on the way to school or home. However, the majority of children living in S11 might not need to walk though Endcliffe Park.



Map 4: Position of the Park in Sheffield and postcode boundaries (Free Map Tools, 2013)

The majority of the children from S7 paid fortnightly or less frequent visits to Endcliffe Park. Only 2% of the children living in S7 visited Endcliffe Park daily, while 9% visited more than once a week and 11% weekly. More than 80% of the children living in S7 paid fortnightly or less frequent visits.

The last postcode investigated was S2, which is furthest away from Endcliffe Park. The percentages of fortnightly or regular visits were considerably low compared to visits from other postcodes. Only 11% of the children from S2 paid monthly visits to Endcliffe Park while 9% paid less than monthly visits and 70% of the children had never been to Endcliffe Park. The results show that there was a positive relationship between home proximity to Endcliffe Park and frequency of visits.

7.3.2 When children visited Endcliffe Park

Understanding when children visited was as important as measuring how frequently they visited Endcliffe Park. In this respect children were asked to tell when they visited Endcliffe Park and they were free to choose more than one option. Therefore the sum of the percentages does not add up to 100%. Figure 31 shows that the largest proportion of children visited Endcliffe Park in the school holidays (75%), followed by Saturdays (60%) and Sundays (53%). The percentage of children visiting Endcliffe Park on the event days was very high (45%). After school visits to Endcliffe Park were 36% and only 11% of the children visited Endcliffe Park at other times, might be after their parents had come home from work.

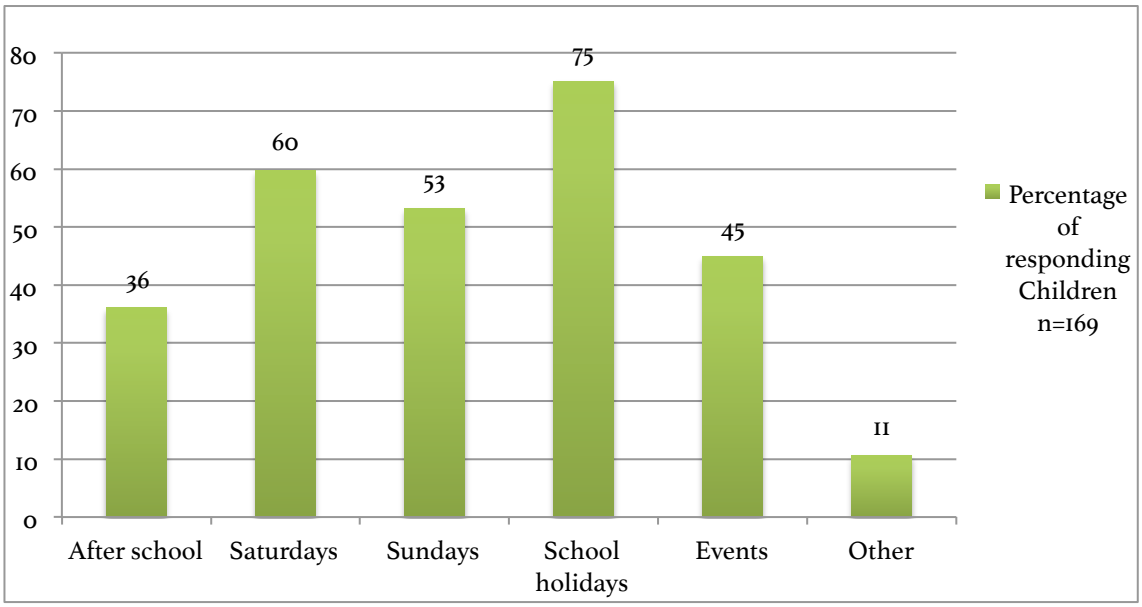


Figure 31: When children visited Endcliffe Park

In order to understand the relationship between when children visit Endcliffe Park and their home proximity to Endcliffe Park, an analysis was conducted. It can be seen from the Figure 32 that home location and their frequency of visits were positively related. Children living in close proximity to the space paid more after school visits to Endcliffe Park than children living in S2 and S7. On the other hand, as children were allowed to tick more than one option for this question, results show that children from S10 and S11 visited the park on almost every occasion, such as after school, Saturdays,

Sundays and school holidays. However, the highest percentage of children who visited Endcliffe Park in the school holidays were from S2 and S7.

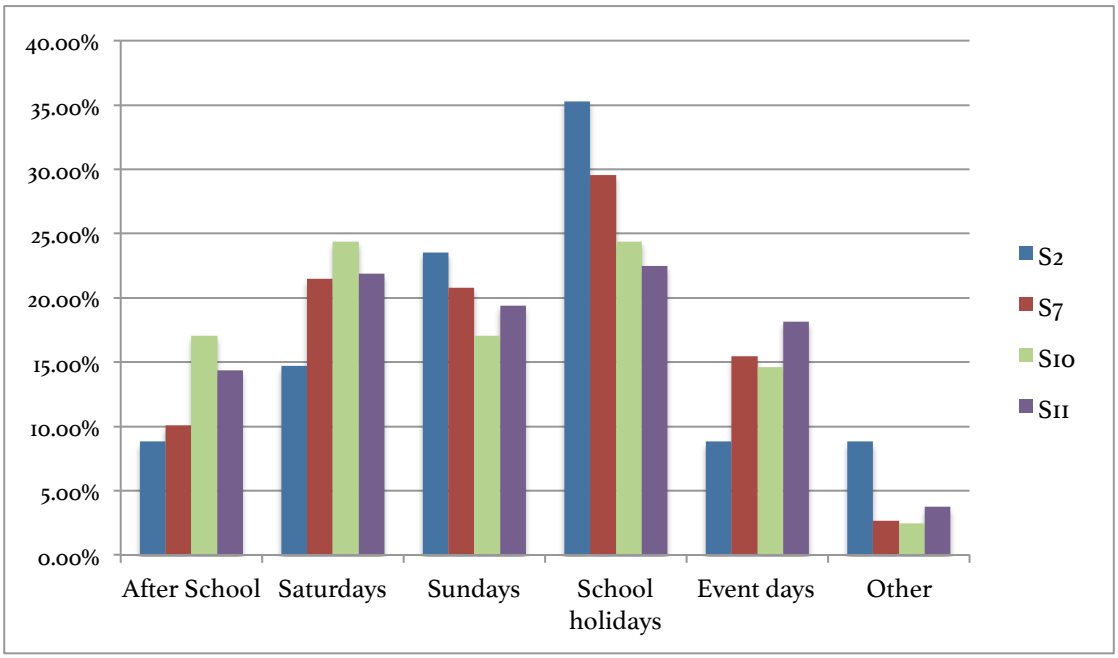


Figure 32: When children visited Endcliffe Park by home location

7.3.3 How children accessed to Endcliffe Park

How children got to Endcliffe Park is part of the analysis of children's visits. In the surveys children were asked to identify which form of transport they used to visit (see Appendix A). Children were free to choose more than one option as they might use different types of transport at various times. In the surveys, a great number of children chose two options, such as the car and walking, or walking and cycling. According to the results, the highest percentage of children (62%) were driven to Endcliffe Park, while 54% went on foot, and 33% cycled (Figure 33). The percentage of children who travelled to Endcliffe Park by bus was 13%.

The results suggest that, although the highest percentage of children was driven to the park, the percentage of children walking or cycling there cannot be underestimated. In total, 86% of the children travelled to the park either on foot or by bicycle occasionally.

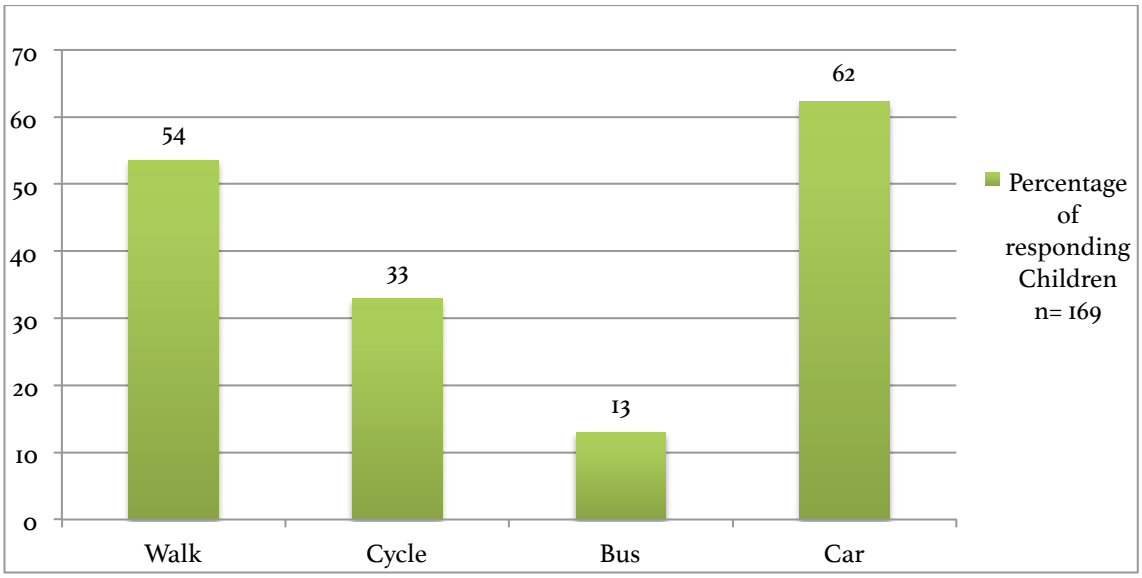


Figure 33: Types of transport that children used to visit Endcliffe Park

Concerning the relationship between how the children travelled to the park and their home locations, matrix-coding analyses were conducted. The results show that twice as many child from S10 walked to Endcliffe Park compared to children from S2. S11 showed similar characteristics to S10. The percentage of children cycled to the park was quite similar to each other in different locations and varying between 16% and 23%. Endcliffe Park is roughly 3 miles away from S2. Ecclesall Road connects Endcliffe Park to the city centre and consequently S2 to Ecclesall Road, which has cycle lanes in various locations and bus lanes along the entire road that might also be used by cyclists, depending on the time of the day, because, apart from at peak hours, these bus lanes can be used to park cars. The availability of cycle lanes and bus lanes might be the reason that similar percentages of children cycled from S2 and S10.

The percentage of bus use was higher among children from S2, twice as high as the other areas. The percentage of children travelling by bus to Endcliffe Park was quite low among children from S7. Although there are buses from S7 to Endcliffe Park, firstly S7 is closer than S2 to Endcliffe Park, and, secondly, children from this area might not have lived close to a bus route because only one bus operated from S7 to Endcliffe Park.

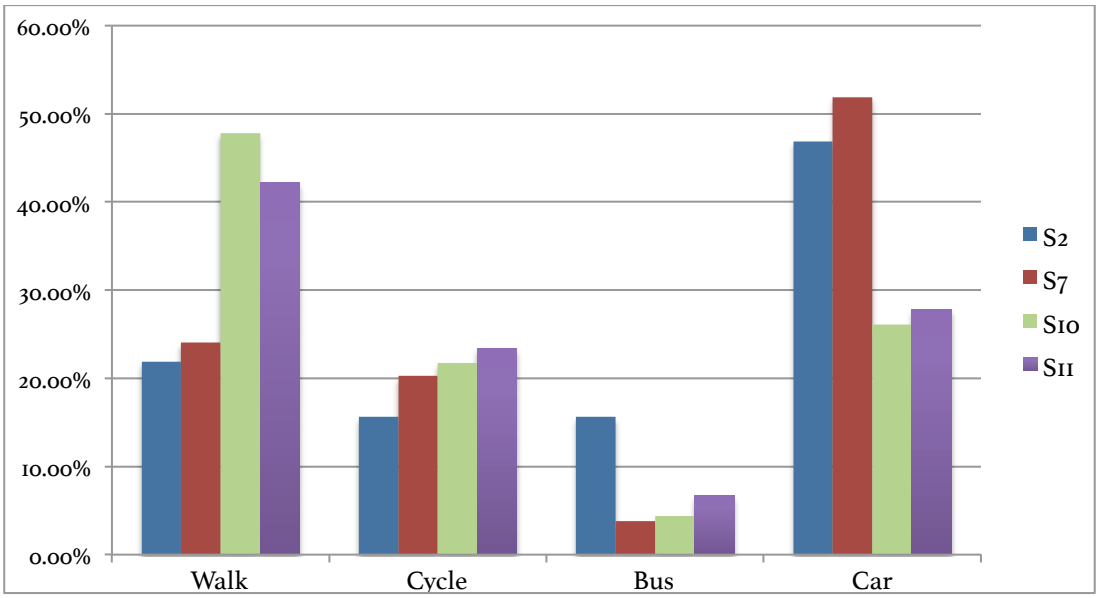


Figure 34: Types of transport that children used to visit Endcliffe Park by home location

The percentage of car use was considerably higher among children from S2 and S7 compared to S10 and S11. More than 50% of children from S7 and slightly less than 50% of children from S2 travelled by car to Endcliffe Park. For children from S10 and S11 getting to the park by car occurred half as much as walking. Overall, the results suggest that once more there was a positive relationship between home proximity to space and the type of transport they used.

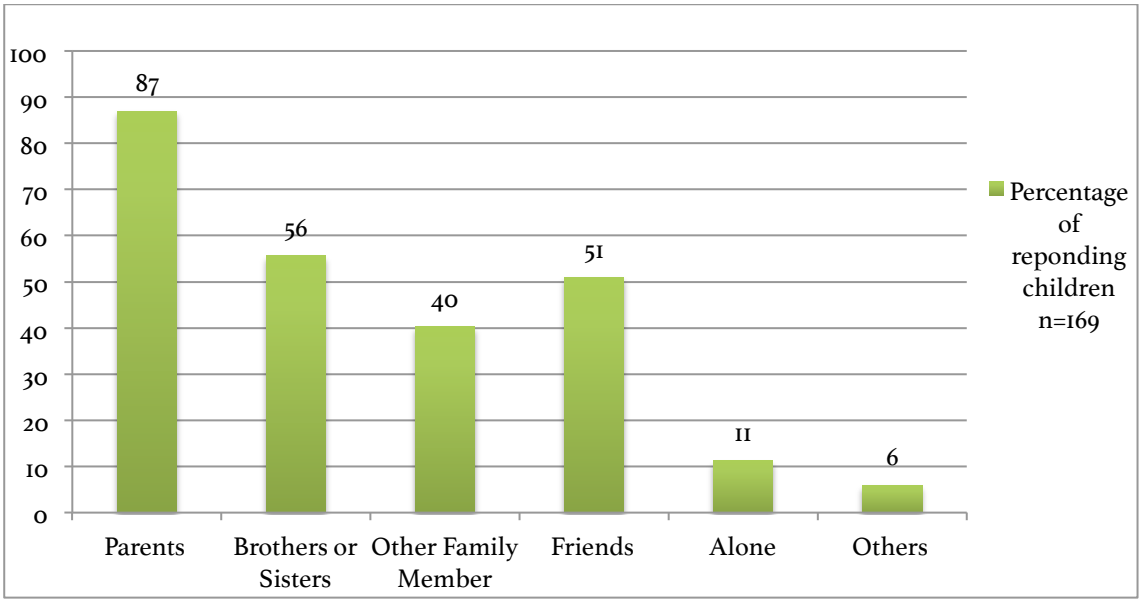


Figure 35: Who accompanied children to Endcliffe Park

7.3.4 Who accompanied children to Endcliffe Park

Children were asked to choose whom they went to Endcliffe Park with. Figure 35 illustrates that a large percentage of children (87%) went with their parents, followed by siblings (56%) and friends (51%), while 40% visited with other family members. Just over one in ten (11%) mentioned that they visited Endcliffe Park alone, while 6% chose the option 'other'.

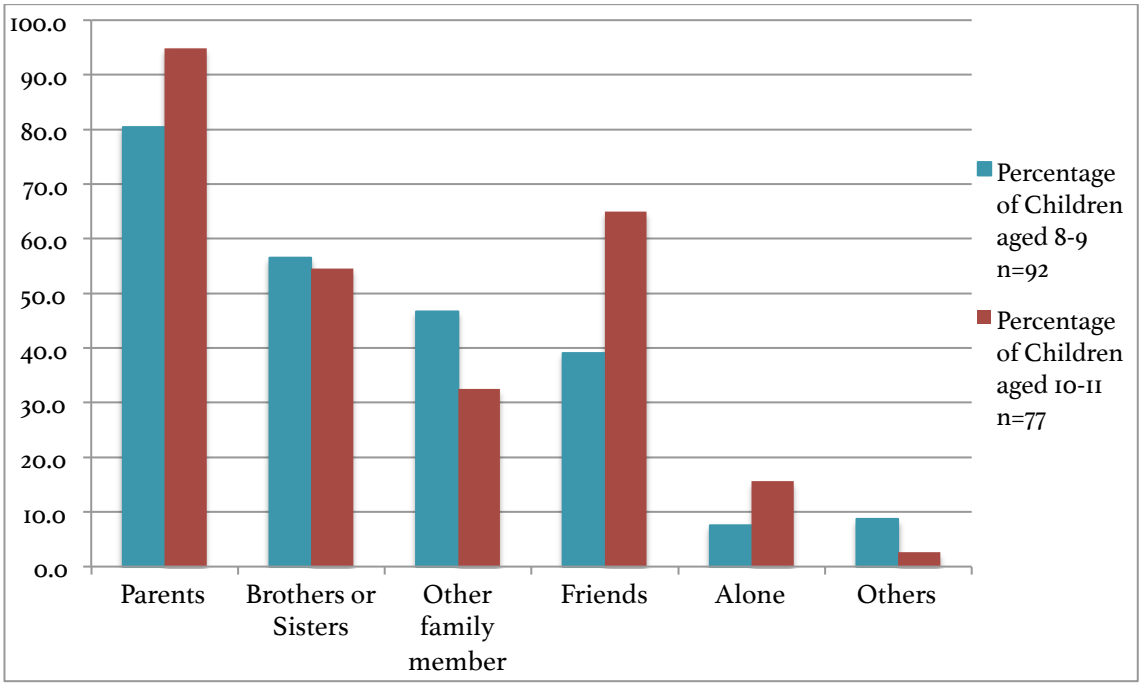


Figure 36: Who accompanied children to Endcliffe Park with by children's age group

In total more than 60% of the children involved visited Endcliffe Park without any adult supervision, either with friends and alone. Considering this, analysis was conducted to explore how age affected independent mobility. According to Figure 36, a majority of both age groups visited with parents. However, older children had more freedom to visit alone or with friends.

65% of older children visited Endcliffe Park with friends; whereas 39% of younger children indicated this. Interestingly a noticeable percentage of children aged 8-9 went with friends. This might be related to the children's journeys to school, which, for some of the children, involved walking through the park. Furthermore, the percentage of

children visiting alone among those aged 10-11 was 8% higher than for the younger children. Slightly less than half of the children visiting after school visited alone, suggesting the same reason.

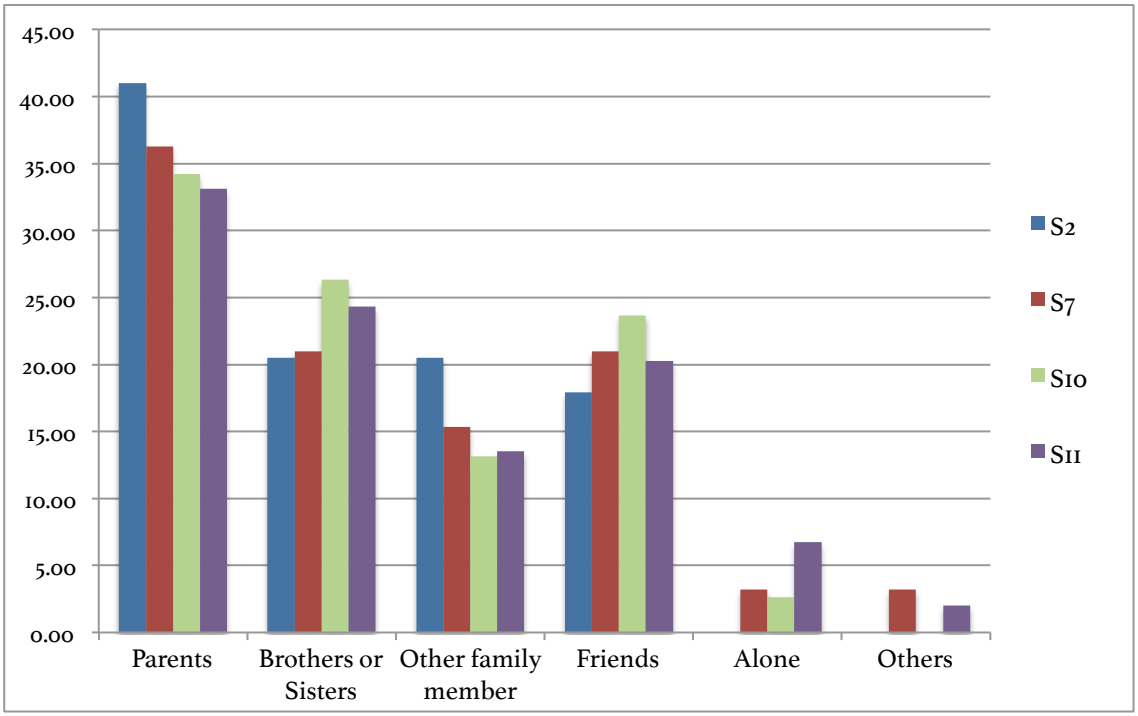


Figure 37: Who accompanied children to Endcliffe Park by home location

Lastly, who children went to Endcliffe Park with and home locations were analysed. As can be seen from Figure 37, a higher percentages of children from S2 (41%) and S7 (36%) visited with parents or other family members, while higher percentages of children from S10 and S11 visited with siblings or friends. Interestingly, the percentage of children from S7 visiting Endcliffe Park alone was slightly higher than from S10.

7.4 Children's Interaction with Water in Endcliffe Park

7.4.1 What activities children pursued in Endcliffe Park

In response to the question regarding children's activities in Endcliffe Park, a wide variety of activities was elicited. In total 84% stated that they went to Endcliffe Park

either to play in the playground or in the fields, which was the most common children's activity in Endcliffe Park by far.

The second most popular activity was going to the café (17%). The third most popular activity, playing on stepping-stones, was cited by slightly less children (16%). It can be seen from the results that, of the three main activities, only one involved water-related activity. Moreover, it was less popular when compared to playing in the fields or the playground.

Walking-related activities, such as walking around, running around, and walking the dog, were classified as one group of activities mentioned by 11% of responding children and listed as the fourth most popular activity.

Table 15: Other activities in Endcliffe Park

Activity	**Percentage of**
Feeding Ducks	7%
Paddling in the river	7%
Cycling	5%
Climbing trees or walls	4%
Having a picnic or barbeque	2%
Watching water	1%

Table 15 shows the rest of the activities the children mentioned. As can be seen that water related activities were not common in Endcliffe Park. Even the use of the café was mentioned more than playing on the stepping-stones and more than twice as much as paddling in the river.

7.4.2 Frequency and diversity of children's interaction with water features in Endcliffe Park

Of the responding children, 64% mentioned that they visited water features in Endcliffe Park, while 36% did not. In this respect, more than a third of the children did not visit water in Endcliffe Park.

7.4.2.1 Frequency of children interacted with water features in Endcliffe Park

In order to understand children's frequency of visits to water features, survey data were analysed. Half visited monthly (28%) or less than monthly (23%). 13% visited fortnightly (

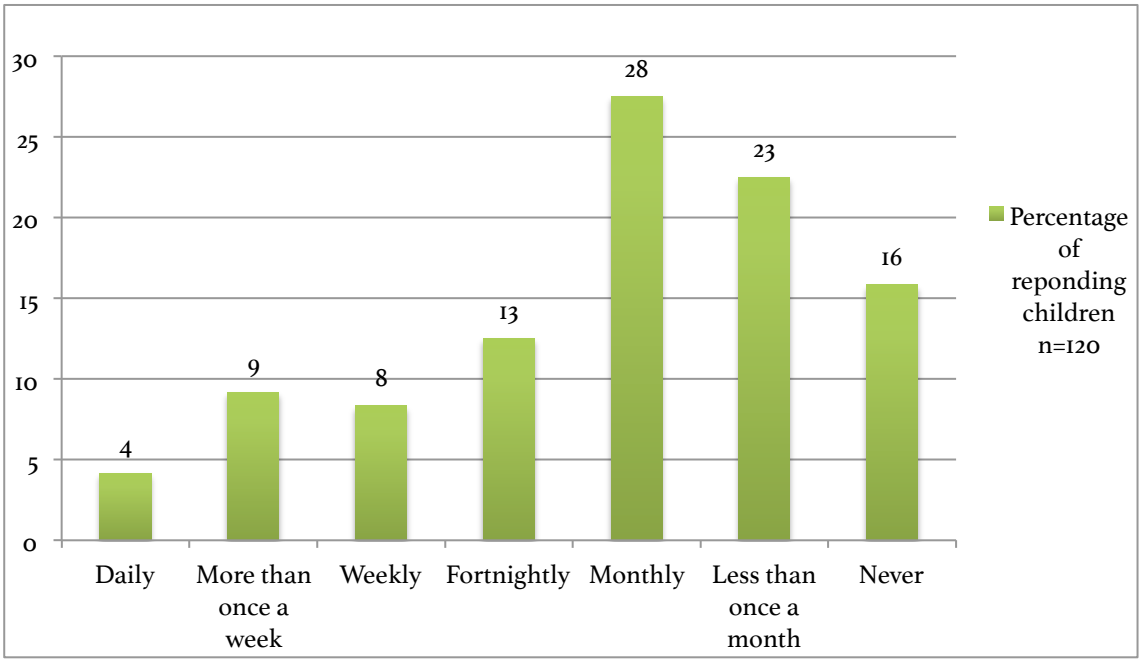


Figure 38), followed by more than once a week (9%), weekly (8%) and daily (4%).

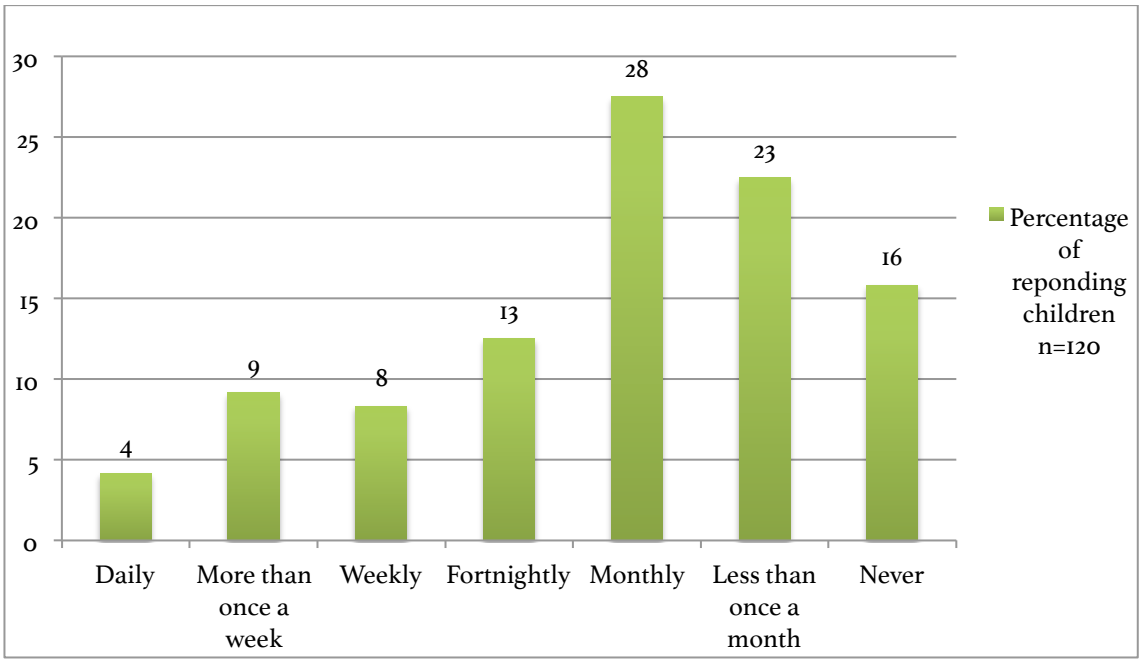


Figure 38: Frequency of visit to water features in Endcliffe Park

Children who visited the water features were asked to identify them. Children identified only 3; the stream (37%), ponds (32%), and stepping-stones (31%). Although there is not much difference between the amounts of visits to the three water features in percentage terms, the most used was the stream. This is surprising because it was expected that natural water would be perceived as a dangerous place by parents, restricting children's water interaction. To gain an understanding why and how the stream had become children's favourite water feature, activities that children undertook were investigated, as discussed in Section 7.4.3.

7.4.2.2 Children interacting with water by gender

The distribution of visits to water features by gender reveals that the percentage of female participants was considerably more than males. Table 16 gives details of males and females who visited water features. Slightly under 55% of children interacted with water were females, while 46% of males did this. On the other hand, 60% of children not interacting with water were male. Therefore, females pay more interest to water features in Endcliffe Park. The other activities in Endcliffe Park might be more attractive for male children.

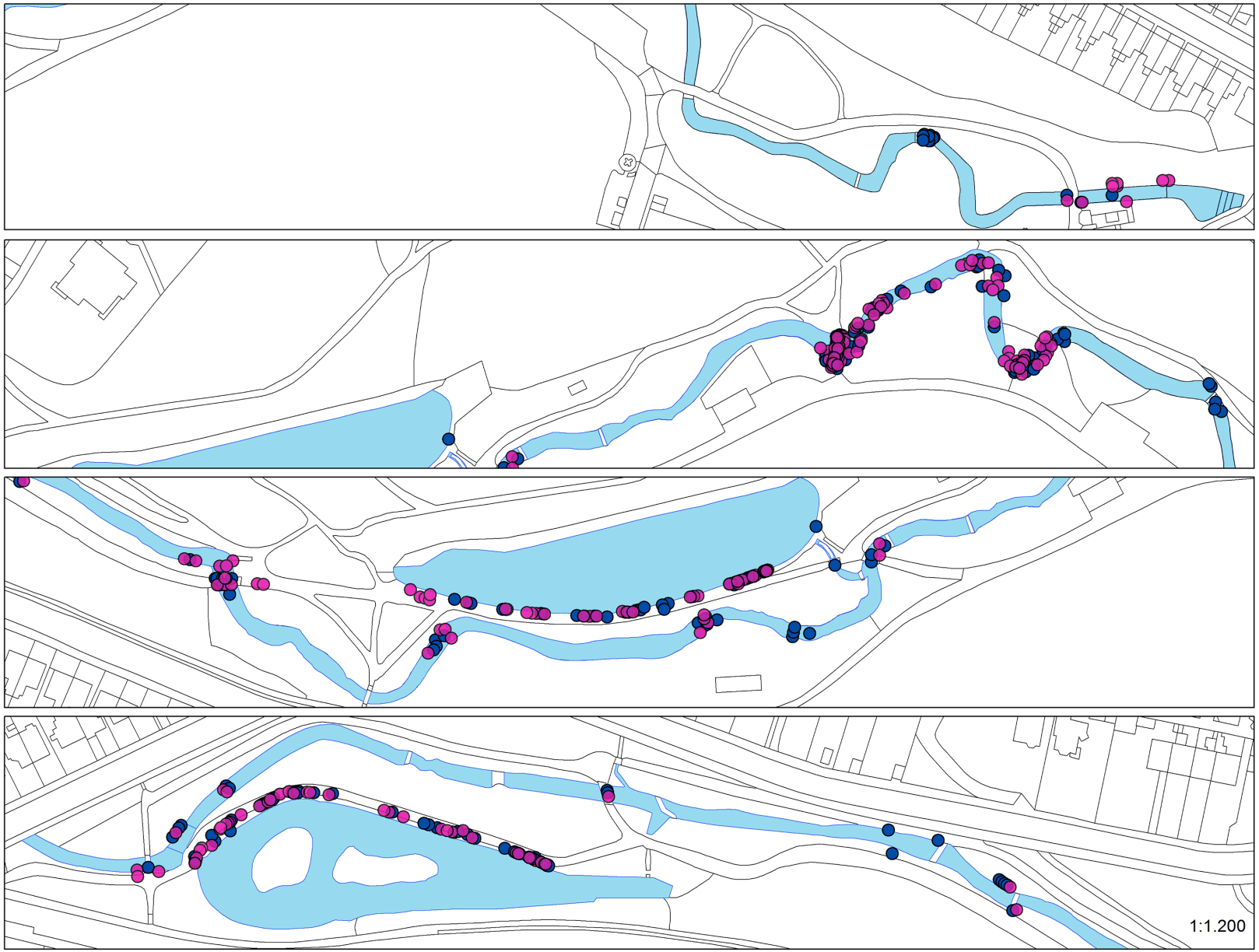
Table 16: Children who are interacting or not interaction with water features by gender		
	Male	**Female**
Children who interacted with water features in Endcliffe Park	46%	54%
Children who did not interacted with water features in Endcliffe Park	60%	40%

A total of 467 children were observed and recorded while interacting with water in Endcliffe Park. 48% were male and 52% females. Therefore, observation supports the findings from surveys that the proportion of females interacting with water features was higher than males. This can also be seen from the gender diversity map (see Behaviour Map 12, p.245).

7.4.2.3 Children interacting with water by age

According to survey results, 49% of the participated children were children aged 8-9 and 51% of the children were aged 10-11. Slightly more children from the older age group mentioned their interaction with water in Endcliffe Park. However, as discussed in previous chapters, only a limited number of children were involved in the surveys, not sufficient for examining children's age range. Therefore, observational data was also used to explore this issue. During the observations 84% of the children were in age group 1 and 16% age group 2. The age range of children can be seen on Behaviour Map 13 (p.246).

There seems to be a large difference in the percentage of young children interacting with water between behaviour maps and surveys. The surveys only involved a limited number of age groups but during the observations many young children and even toddlers were observed interacting with water. Therefore, a behaviour maps seems to better reflect the realities of Endcliffe Park.



Behaviour Map 12

Gender Diversity
in Endcliffe Park

Legend
Age group 1 (0-9)
Age group 2 (10-18)
Water surface
Behaviour Map 13
Age Diversity in Endcliffe Park
1:1.200

246

7.4.2.4 Children interacting with water by ethnicity

According to the survey results, the majority of children interacting with water features in Endcliffe Park were White (Table 17), followed by Mixed, Asian, Black and Chinese or other. As discussed earlier, the most common ethnic minority in Sheffield is Asian, according to Census 2011. Interestingly, the percentage of children from mixed ethnic backgrounds was higher than Asian children in the data. Census 2011 data was used to further analyse the Middle Layer Super Output Area (MSOA) Level, in order to understand ethnic diversity around Endcliffe Park. This analysis suggests that, in three MSOA, where Endcliffe Park sits, the second common ethnicity is Mixed. In this respect, data from surveys has similarities to the ethnic diversity of children recorded in Census 2011.

Table 17: Children who interacted with water features

Ethnicity	**Percentages**
White	71%
Asian	9%
Mixed	15%
Black	1%
Chinese or other	4%

7.4.3 How children interacted with water in Endcliffe Park

First of all, this section of the chapter will explain how children described their interactions with water features. After initial coding, codes were classified into two main categories; "Active interaction with water" and "Passive interaction with water".

4 children stated that they either walked or cycle past the water features. This means that they did not have any active or passive interaction with water, so they were excluded from the coding and analysis. Moreover, 3 children stated that they had fun

with water but unfortunately did not specifically state how. Hence, it was impossible to put them in either of the categories and they were also excluded from coding and analysis.

As mentioned previously, children's active interactions with water in urban open spaces includes activities physical contact and playing with water, while passive interaction includes activities such as watching, reading and listening to music. However, Endcliffe Park was different to the other study sites, with its stream, duck pond and stepping-stones, which were placed there more than a century ago. Therefore, activities related to water are mainly with natural water, which allowed different activities that could be coded under active interaction. They involved playing with water but no actual involve physical contact with water, such as stepping on stones, playing pooh sticks, and feeding ducks. Though not involving physical contact, they included spending time and energy, as well as playing with water to some extent. These activities will be discussed in detail below.

91% of the children's responses indicated active interactions with water to some extent, while 18% indicated passive interaction with water in Endcliffe Park. Therefore, 9% of the children's responses included both active and passive interaction. On the other hand slightly more passive interaction was observed during the site visits. 23% of the observed activities were recorded as passive interaction, including lying around water, observing water, sitting on a wall around the water, and sitting on the grass around the water. Spatial distribution of children's active and passive interaction in Endcliffe Park can be seen in the Behaviour Map 14 (p.256).

During the site studies it was observed that children's interaction with water was different in different seasons. Due to the fact that a natural stream was involved, in winter water temperature might drop to quite low levels, water levels rise and the water current become more rapid than in summer. Hence only a small proportion of activities mentioned involved direct contact with water or being in the water.

Photograph 23: Younger children paddling in the stream on the left; older children cooling off in the stream on the right (August 2012 – taken by the author)

The most popular of those activities that involve physical contact with water is paddling or splashing in the river, which was mentioned by 27% of the children. These children talked about their active interaction with water with phrases such as *"paddle", "splash brother or friends", "go in the stream", "play in the water", "walk in the stream", "paddle my feet in the rivers",* and *"dip my feet in the water".* The site studies confirmed that paddling or splashing in the stream was one of the popular activities in Endcliffe Park. However, this was a weather related activity. For the majority of children, paddling, splashing or walking in the stream occurred during warm summer days. Only a few children were observed in the stream during the autumn season, walking with waterproof boots. However, no children were observed in the water during the winter or spring observations.

One of the most popular activities was playing on the stepping-stones, along with paddling in the stream (both 27%). In terms of the stepping-stones, children jumped from one to another stone to cross the river. However, while playing on them, children went across the river several times or ran on the stepping-stones. Furthermore, the stepping-stones and the area around them was one of the most popular spots for water-related activity. Children coded in this category indicated their favourite activity with phrases such as:

"Go across the stepping stones" (10, female, White and Black Caribbean)

"Play on the stepping stones" (11, female, other White)

"I play on the rocks dirty jumping games and try to slip into the main." (10, male, White British)

"Fun across the stepping stones" (10, female, other Mixed)

"Go up and down on them" (9, female, White British)

Photograph 24: Children playing on and around main stepping-stones (July 2012 – taken by the author)

The last most common active interaction stated by children was feeding the ducks (27% shared with first two categories). Feeding the ducks and wild birds is one of the non-weather related activities in Endcliffe Park. During site studies it was observed that children and parents brought pieces of bread to feed the ducks. They spent time and energy, interacting with water when feeding.

Photograph 25: Children playing on small stepping-stones (August 2012 – taken by the author)

8% of the references coded under active interaction with water involved playing pooh sticks, which was popular all year round, although it observed in extensive numbers in winter, as children's opportunities for interaction with water was limited. Children picked up twigs from the ground and threw them into the water when on the bridge and raced them. This simple activity kept some of the children entertained all year around in the Endcliffe Park.

The rest of the active interactions coded from children's surveys were throwing stones or objects to water (6%); duck racing (5%); fishing for small insects or tadpoles (2%); and spraying water (1%). *Friends of Potter Valley* is a group which occasionally organizes a duck race, where a sack of numbered plastic ducks are released into the water and children choose their ducks while they are on the water, with the one who chooses the winning duck being the winner Sometimes children were given the ducks or they released their own ducks. The latter was observed in the duck race in Millhouses Park during site observations.

Only a small proportion of children indicated any kind of passive interaction in Endcliffe Park. The most common passive interaction was watching the water, which 8% of the children mentioned, using phrases such as:

"Watch the water"

"Watch the water flow" (10, male, Pakistani)

"Sit down and watch." (10, female, White and Black African)

"Watch the water rush around the park" (9, female, prefer not to say)

The second most common passive interaction was watching the birds (6%). Endcliffe Park is a large urban open space with a large woodland area accommodating many species of birds. During the site studies it was observed that some people came to the space for bird watching. The rest of the passive activities were only mentioned by a minority of the participating children, such as watching their dog play in the water (2%) and walking on the bridge (1%).

During the observations several spots where children were extensively interacting with water were identified: stepping-stones and surrounding water; part of the riverbed behind the playground; two ponds in the park, and the part of the riverbed behind the second duck pond. The locations of these spots are identified on the map 6 (p.251). The stepping-stones and water around the area offer variety of interaction opportunities to children. First of all, they have fun while playing on the stepping-stones, which is an all year round activity. Secondly, shallow water around the stepping-stones is a good opportunity for splashing or paddling. Thirdly, water flowing through the stepping-stones creates small waterfalls, which are another opportunity for the children to engage with water. The parts of the riverbed behind the playground and the second pond create opportunities for children to play in the water, splash, and step on the small stones in the stream. Ponds are busy spots all year. Most of the children observed around the ponds were either observing water or birds, or feeding ducks.

Endcliffe Park is a very large urban open space, approximately 0.7 Mile long. Therefore, maps of Endcliffe Park have been prepared at a 1:1200 scale, with four sections to every map, in order to cover the entire area of the park. Behaviour Map 15 (p.257) shows children in the space when the temperature was below and above 13.4^{O} C (Met Office, 2014). It is quite clear that, when the temperature is warmer, the number of visitors was more than twice that during cooler days, though some children were still observed actively interacting with water, just not in a way that involved physical contact with water. In the cooler days no children were observed playing in the water; rather children were observed playing with equipment, played at pooh sticks, played on stepping-stones and fed the animals were observed.

Comparison of children's active and passive interaction in warm and cool weather conditions is shown in the Behaviour Map 16 (p.258). Both active and passive interactions rose with the warm weather in Endcliffe Park. However, when the temperature was below 13.4^{O}C, levels of both active and passive play reduced dramatically. Although the number of children interacting with water decreased, it is clear that there were still plenty of children interacting with water in the cooler autumn, winter and spring seasons.

Table 18: Children's active and passive water interaction by age group in Endcliffe Park

	Aged 8-9	**Aged 10-11**
Active Interaction	82%	83%
Passive Interaction	17%	17%

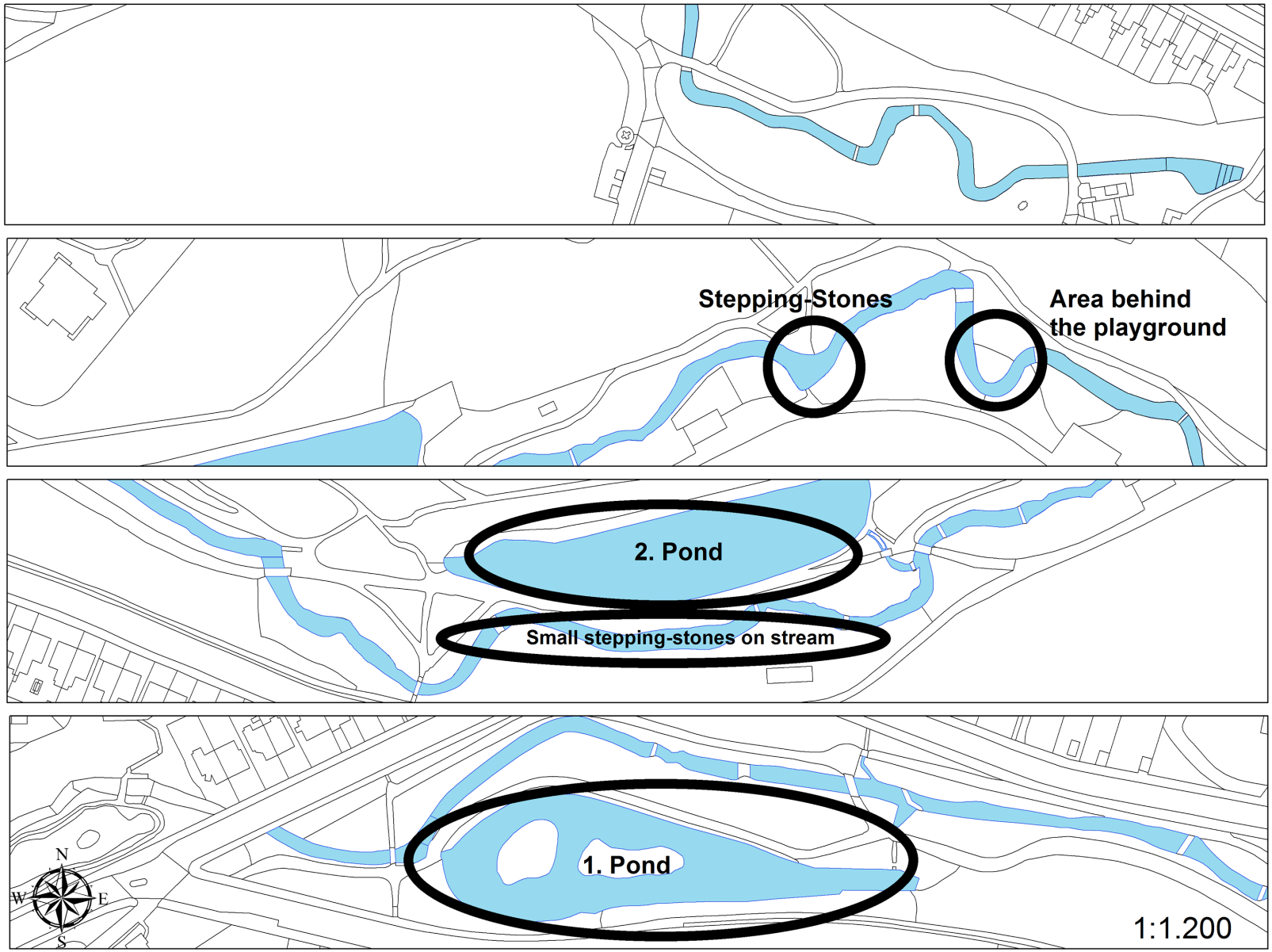
Table 18 shows the relationship between children's interaction with water and age group. It can be clearly seen that there is no substantial difference between categories, which means that the children's interest in water play did not disappear if they were older. Secondly, active interactions undertaken in Endcliffe Park are activities that can

be done by any age group. For instance, any children of any age can feed ducks and birds and during the site studies some older children were observed while feeding animals or taking their younger siblings to do this. In Endcliffe Park 82% of the children aged 8-9 interacted with water actively, and 83% aged 10-11.

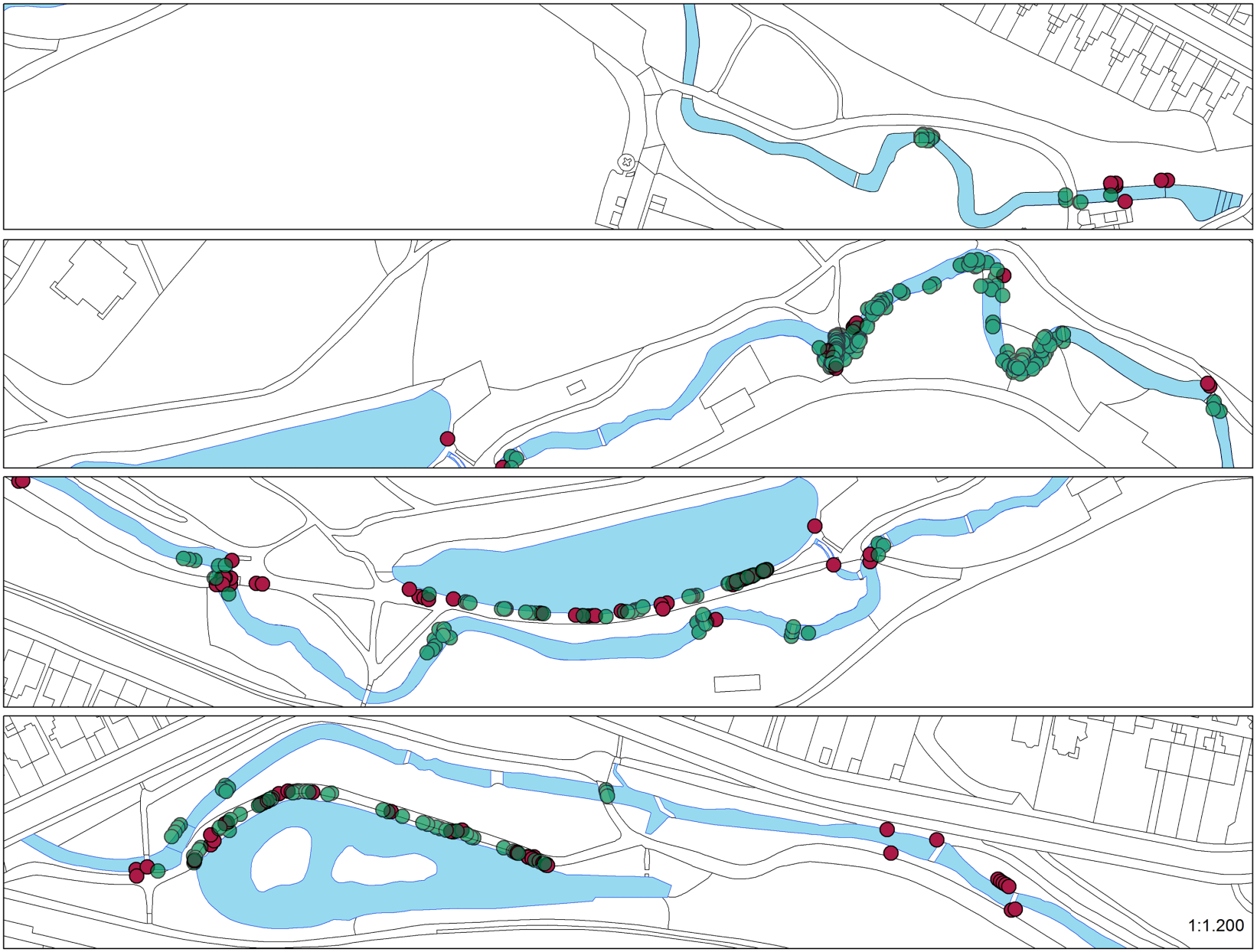
Table 19: Children's active and passive water interaction by gender in Endcliffe Park

	Male	**Female**
Active Interaction	87%	79%
Passive Interaction	13%	21%

Females engaged more in passive interaction in Endcliffe Park compared to males. Slightly more than 21% of females had passive interaction with water, while 13% mentioned passive interaction. During the observations it was also observed that slightly more females undertook passive interaction.



Map 6
Spots Where Children Highly Interacted with Water in Endcliffe Park



Behaviour Map 14

Spatial Distribution of Active and Passive Interaction in Endcliffe Park

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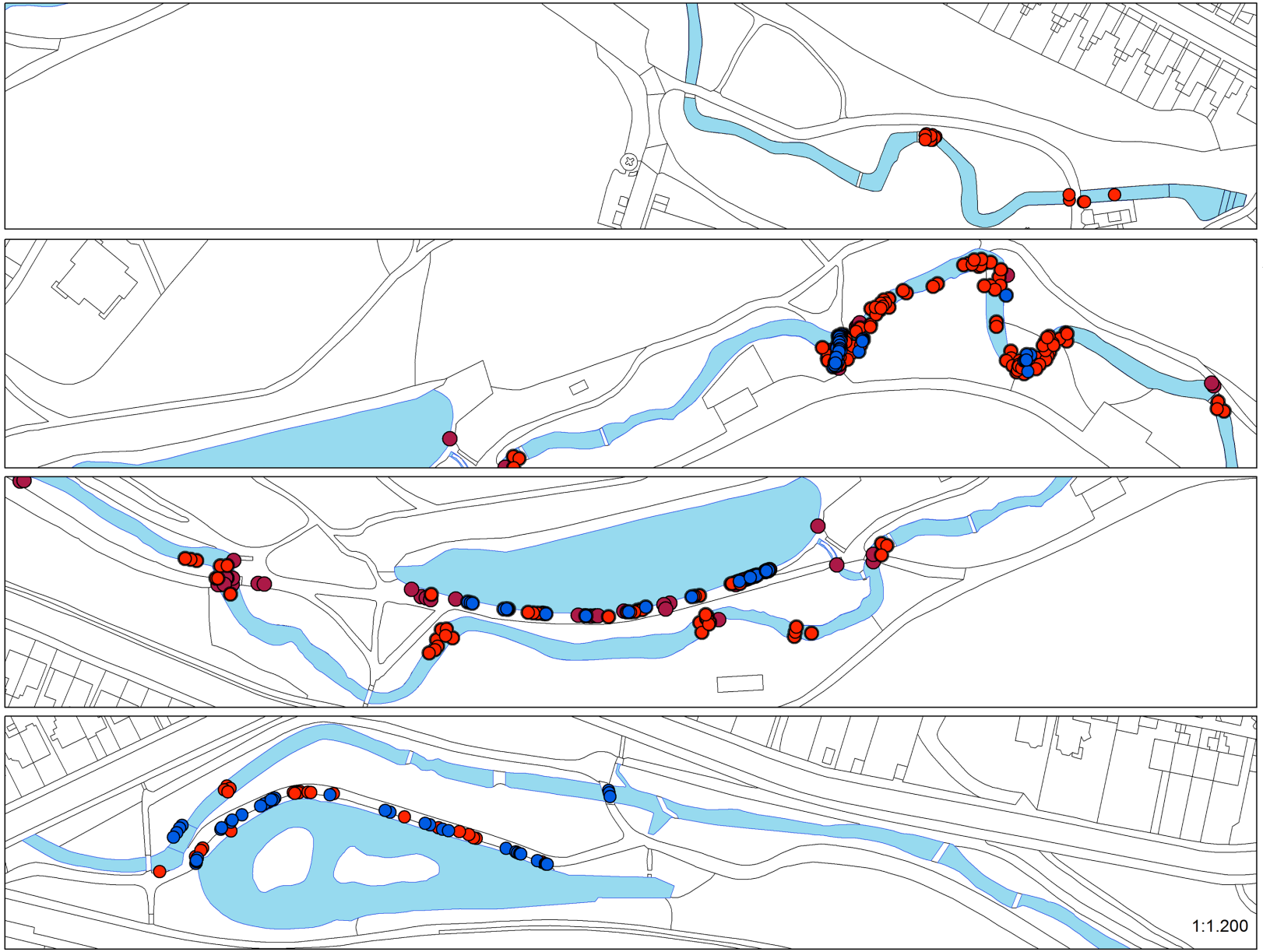
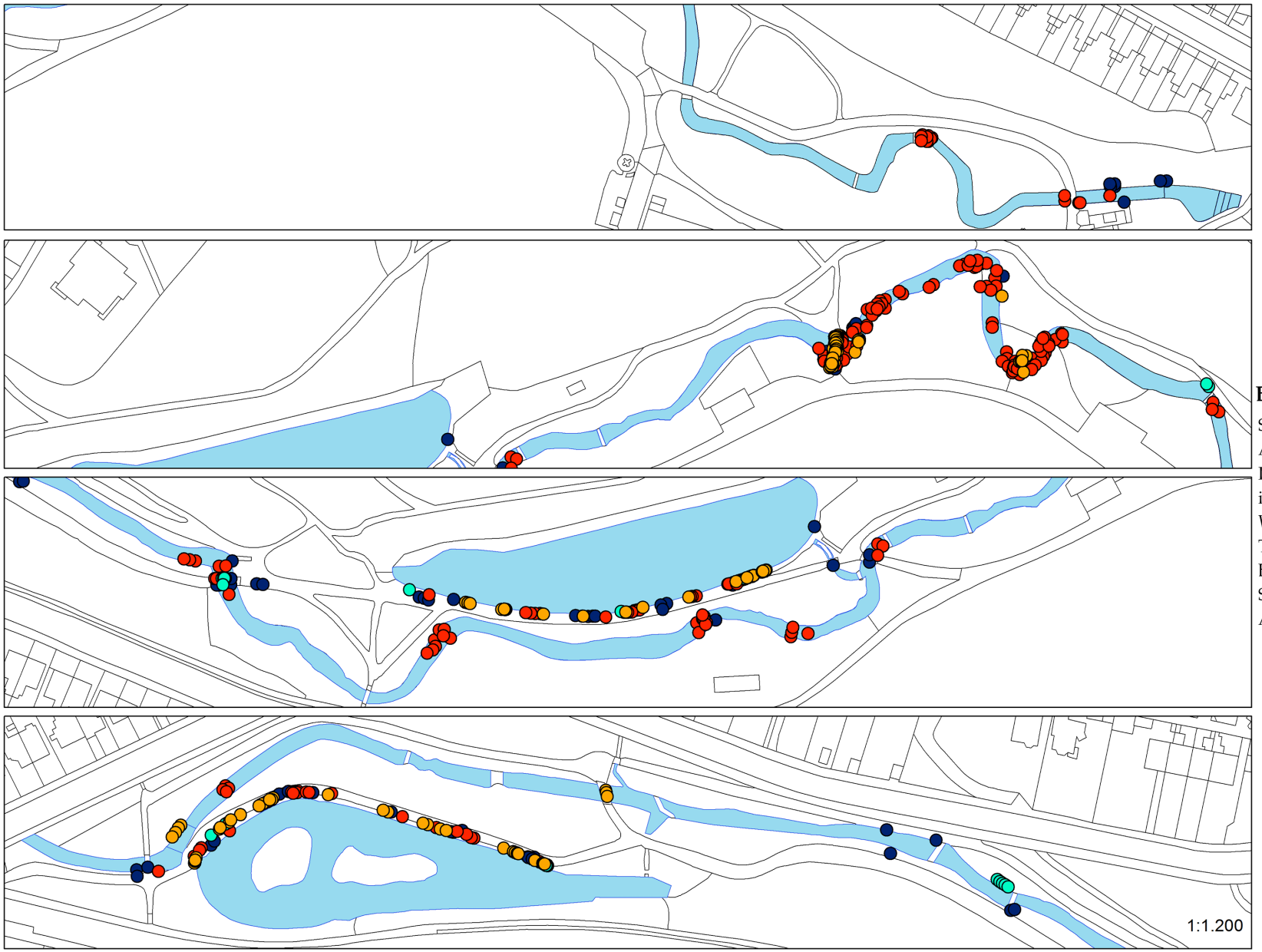


Behaviour Map 15

Spatial Distribution of Activities in Endcliffe Park When Temperatures are Below and Above Sheffield Annual Average.



Behaviour Map 16

Spatial Distribution of Active and Passive Interaction in Endcliffe Park When Temperatures are Below and Above Sheffield Annual Average.

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7.4.4 Why children liked water features in Endcliffe Park

In order to understand what children like about water features in Endcliffe Park, children were asked to give 3 things they liked about them. Children used many different words to describe this: however, 'fun', 'play', 'nice', and 'cool' were the most common.

"Paddling and Playing with" as a reason to like Endcliffe Park was indicated by 28% of the responder children, and activities coded in this category mainly concentrated on play aspects. Basically, these children liked water features because they were able to play with them. Common phrases used were: *"playing in the water"; "splashing"; 'walking in the water"; "playing adventure games"; 'like paddling in the cold water"; "jumping in the water"* and *"you can play in the summer".*

Photograph 26: Children walking down the stream on the left and children playing in the stream on the right (August 2012 – taken by the author)

Here are some examples of the responses from children referenced in this category;

"You can play to the water" (8, female, Pakistani)

"It's fun to play in the summer." (8, male, White British)

"It's good to play adventure games" (8, female, other ethnic origin)

Some children mentioned the way they interacted with water, while some others named the water features they liked, such as stepping stones, which was the second most popular reason (25%). Female children interacted more with stepping-stones compared to male children. Some examples of the phrases children used are as follows;

"You can jump across the stepping stones, which I like" (8, female, White British)

"Going across the stepping stones is fun" (10, female, White and Asian)

"Fun to get across." (11, female, White British)

The third most common thematically code was "Fun; cool; exciting" (24%), as these were the adjectives most often referenced, with most of the children using only one word to describe what they liked about the water features in Endcliffe Park: *"Fun", "nice", "it is fun", "it's great", "it's good", "pretty", "it's exiting",* and *"awesome*" being some.

The fourth code relating to what children like about water features in Endcliffe Park is "Looking or Feeding the ducks" (23%). The number of males and females in this category were relatively similar. Children used phrases such as:

"It has ducks and you can feed them" (10, female, Pakistani)

"I like feeding the ducks." (10, female, White British)

"Watch ducks" (10, male, Pakistani)

"Like water, pond or river" is one of the thematically created codes, which was mentioned by 14% of the children. Once more most of the comments referenced under this category named the water features preferred rather than the reasons for liking them. However, some children gave reasons, such as:

"I like to feel the water tickling my fingers." (10, female, White British)

"I like the flowing water" (11, female, White British)

The code "it is nice to watch or looks nice" was the most mentioned passive reason about why children liked water features, although 10% of the children mentioned it. Children referenced in this code described their passive interaction. For instance a 10-year-old female stated:

"I like to look at the water going up and down, I like to sit and watch the water."

Table 20: Other thematically created codes about why children liked water features in Endcliffe Park

Activities	**Percentage of**
Listening to water	7%
Like nature/wildlife	5%
It is a nice place to be	4%
It cools you off	4%
It is clean	3%
Like constructions/walls/bridges	2%
Safe	2%
Playing with parents	1%
Making friends	1%
Like rocks	1%

Table 20 shows the rest of the thematically created codes for why children liked water features in Endcliffe Park.

One of the most interesting answers in this part of the survey came from an 8-year-old female, who said that she liked the water in Endcliffe Park because it never flooded. Flooding was mentioned a by few families as a concern in the study, which will be discussed in Section 7.5.

7.4.5 Parents' attitude to children's interaction with water in Endcliffe Park and how this was perceived by children

Parent's attitudes towards children's interactions with water in Endcliffe Park were especially important because they might have had an impact on children's interactions. To gain an understanding of the issues related to parental attitudes, both groups were surveyed and parents interviewed in study areas as was the case with other study areas (see Appendix A, B and C). Children's perceptions of their parents attitudes were grouped into four different themes thus: positive attitudes, negative attitudes, cautious attitudes and not aware of parents' attitudes, while parents' answers were grouped into three categories: positive, negative and cautious.

All of the parents interviewed and the majority of the parents involved in the surveys were happy about their children's interaction with water in Endcliffe Park. Moreover, no parents were identified as having a negative attitude to children's interaction with water features in parental interviews. Surveys were also unable to identify any parent with a negative attitude. However, 22% of parents had a cautious attitude, despite the fact that a majority of the parents still had positive attitudes towards their children's interaction with water in Endcliffe Park. Details of these themes will be discussed below.

7.4.5.1 Positive attitudes

The proportion of children, who thought that their parents had a positive attitude to their interaction with water, was 67%. In the surveys children described their parents' attitudes towards the water features and their interaction with it in Endcliffe Park

with some common words, such as *"good", "happy", "fun",* and *"fine".* Some examples of the children's ideas are given below:

"My mum said she likes my play" (11, female, White British)

"I think my mum thinks that it's good" (10, female, White and Black African)

"They think it is a brilliant place to stay" (10, female, White and Black African)

Some of these children mentioned that not only was their parents' attitude positive but also their families had fun with them in water features in Endcliffe Park. So playing in the water features turned into an interactive family time together, as children stated:

"We're having a great time" (8, female, NA)

"They think it's fun and my dad comes in with me to" (10, male, White British)

"My mum takes videos of me and my dad laughs" (9, female, prefer not to say)

Some responses showed that some parents were quite aware of the importance of being outdoors and taking exercise. Responses showed that those parents had a consciously positive attitude towards children's interaction with water features rather than just a careless positive attitude. Children emphasized that their parents paid attention to their interactions with nature thus;

"My mum likes it because it's peaceful and good for me to learn about nature" (10, female, White and Asian)

"Good to explore and go outside" (11, female, White British)

There is a last category, in which children who thought their parents' attitude towards water features and their interaction with it was positive but parents found it to be a dirty or messy job. Although children in this category experienced the water features,

as they liked to, they might experience restrictions in interaction with water due to their parents' preoccupation with this aspect of the play.

On the other hand, one child's example showed how careful parents can be. One child mentioned that their parents were happy to let them cross the stepping-stones. This clearly shows that child was allowed to play on stepping-stone but no other water related activity was named by this child, which might mean that this child's interaction with water might have been limited.

According to parental interviews and surveys the proportion of parents who had positive attitudes towards children's interaction with these water features was higher than children's perceptions. Since Endcliffe Park water features are natural, this might cause some concerns, though all the participants involved in the interviews and 78% of the parents involved in the surveys had a positive attitude.

A word frequency analysis was used to convert data into a tag cloud (Figure 39) showing positive attitude words mentioned by parents. The bigger the word the more times it was stated. It can be seen that words such as 'good', 'enjoy', 'fun', 'important', 'safe', 'playing', and 'exciting' were some of the most used words. The majority of the parents thought that interaction with water was important. According to parents, Endcliffe Park is a safe and welcoming place and suitable for water play. Gaining confidence and freedom to play with water in a safe environment was one of the most significant concepts. One of the mothers participating in the interviews stated:

> *"I think it is really important. It gives some freedom to play in water in a safe environment and get messy and wet. You know just having that freedom to play with water and with nothing else there, just themselves and water. I think it is important."*
>
> *(24-29, female, White British)*

Figure 39: Word cloud of parents' positive words from survey and interviews

Parents who participated in the surveys perceived children's interaction with water as positive because they could see that children invented games and played imaginary games, exploring and had fun.

> *"I think it is positive because they are attracted to water so you don't have to provide a lot for them, if there is water there. It is inviting for them. They make their own play with it. "*
>
> *(40-44, female, White British)*

"... I think they have a lot of fun and they play with their friends and it is a way for them to explore.

(35-39, female, Pakistani)

The majority of the parents liked Endcliffe Park and had a positive attitude because they liked natural outdoor spaces: the river being natural was a plus point. Moreover, they liked Endcliffe Park because it gave children the freedom to play in water as they liked.

There were also groups of parents who thought that children's interactions with water in Endcliffe Park were good, although they would have preferred a water play area, like the one in Millhouses Park. One of the parents mentioned that they had just realized how valuable water play was after spending some time in Millhouses Park, and how much they had been missing it with not going to Endcliffe Park very often. She added that going to the river and stepping-stones was a good opportunity, but not same as having proper play area, meaning a structured water play space.

7.4.5.2 Cautious attitudes

A small proportion of children (4%) perceived their parents attitudes to their interaction with water as cautious. These children talked about their parents being panicky and stressed. There were different reasons for these anxieties. For instance, one of the children stated that their parents panicked when he went close to the water's edge. It is clear that some parents did not allow children to get into the water. Another child mentioned that their parents were anxious because it was a busy space and they feared losing their children in the crowd. Another child stated that their parent panicked and went with him.

Although the majority of the parents had a positive attitude and none a negative one, 22% of the parents had a cautious attitude, considerably more than the children's perception. Parents' fears about space were different from those children mentioned,

being about water quality, pollution, dangerous objects in the water, and weather. As long as they were sure about those things, they were happy to let their children interact with water.

7.4.5.3 Negative attitudes

21% of children, who thought their parents' attitude towards their interaction with water in Endcliffe Park was negative. Although no parents stated that they had a negative attitude, children perceived it to be so. This might be because only parents who had a positive attitude returned the surveys. Therefore, how children felt about it is more important because their interaction would be restricted due to the perception of a negative attitude. Some children mentioned that their parents found the river unhygienic and dirty.

> *"I'm not allowed in because it's dirty." (9, male, White British)*

Moreover children stated that their parents though water was dangerous. Some of the children indicated the dangers, which were related to slipping in the water, and getting injured, while other children did not indicate the reason why their parents perceived it as a dangerous place.

> *"They let me go across rocks in the ponds and rivers but I'm not allowed to get wet." (10, female, White and Asian)*

Furthermore, there was one interesting response from a 10-year-old white British male thus:

> *"It could be more accessible for children who like paddling" (10, male, Whiter British)*

This indicates that some children and parents desired natural water play, but children's interaction was limited because parents thought the stream was not accessible.

According to some of the children, their parents' negative attitude was related to children getting wet and staying wet (3%). When children get wet without spare clothes, they might make the car wet or they might get sick quickly. As children were not able to change clothing, this restricted children's interaction with water. For instance, one of the children stated;

> *"Not very good because then they won't let me sit in the car if I am wet." (10, male, Pakistani)*

As can be seen, due to parents' perceptions of the stream being dirty, unhygienic, dangerous, and having no changing facilities to get changed, some of the children's interaction with water was restricted by parents in Endcliffe Park.

7.4.5.4 Children not aware of their parents attitudes

Lastly, 7% of the children were not aware of their parents' attitudes to their interaction with water in Endcliffe Park. Most of them mentioned that they were not aware of their parent's attitude because they did not ask them, while some of the children just wrote, "I don't know".

7.5 Issues Identified

In the following part of the chapter, issues and concerns raised by children and parents, discovered during observations and mentioned by professionals, will be discussed. However, professionals were excluded because, as an historic and natural area, finding the original founder or designer was not possible, and interviews were undertaken only with the current park manager who did not mention anything about any issues in the park. It was assumed that the manager was not aware of these issues, as will be

discussed in the following sections, or that water interaction in Endcliffe Park was not considered. The latter is more likely to be the case because the manager mentioned that water play in the park had never been on their agenda and it would not be considered in the future.

7.5.1 Management Problems

85% of the children's responses indicated management problems in Endcliffe Park to some extent. The majority of the issues related to children's health and safety concerns, which had 4 sub-themes; and parents' concerns were categorised into 3 sub-themes. All of the issues identified by parents and children showed similarities and both groups shared some of the concerns. Pollution in the water, slippery surfaces, and sharp and dangerous objects in the water were commonly indicated issues, by both parents and children. Figure 38 illustrates the children's concerns.

56% of management issues were related to health and safety issues. These issues were coded into four sub-themes: safety around water; polluted or dirty water; slippery surfaces; and sharp object in the water. The most indicated health and safety issue was safety around water. Although not extensive, a number of parents were concerned about safety around water in Endcliffe Park, 32% of children were concerned about this too. Children's concerns were group into four sub-sub-themes: falling into water or drowning; water being dangerous; water being deep; water being fast flowing; and flood risk. Children, worried about falling in or drowning, actually indicated variety of areas in Endcliffe Park such as duck ponds, stepping-stones and the stream itself. Therefore, being a natural environment and a natural stream, it was perceived as non-safe or non-protected. The children showed diverse results about their interaction with water. Some actively paddled in it or played on the stepping-stones, while others watched or just fed the ducks and birds. Some children thought natural rivers and places were dangerous, deep and had fast currents, and that flooding was a risk factor, even though they were actively interacting with water, paddling and splashing in it. Moreover, some

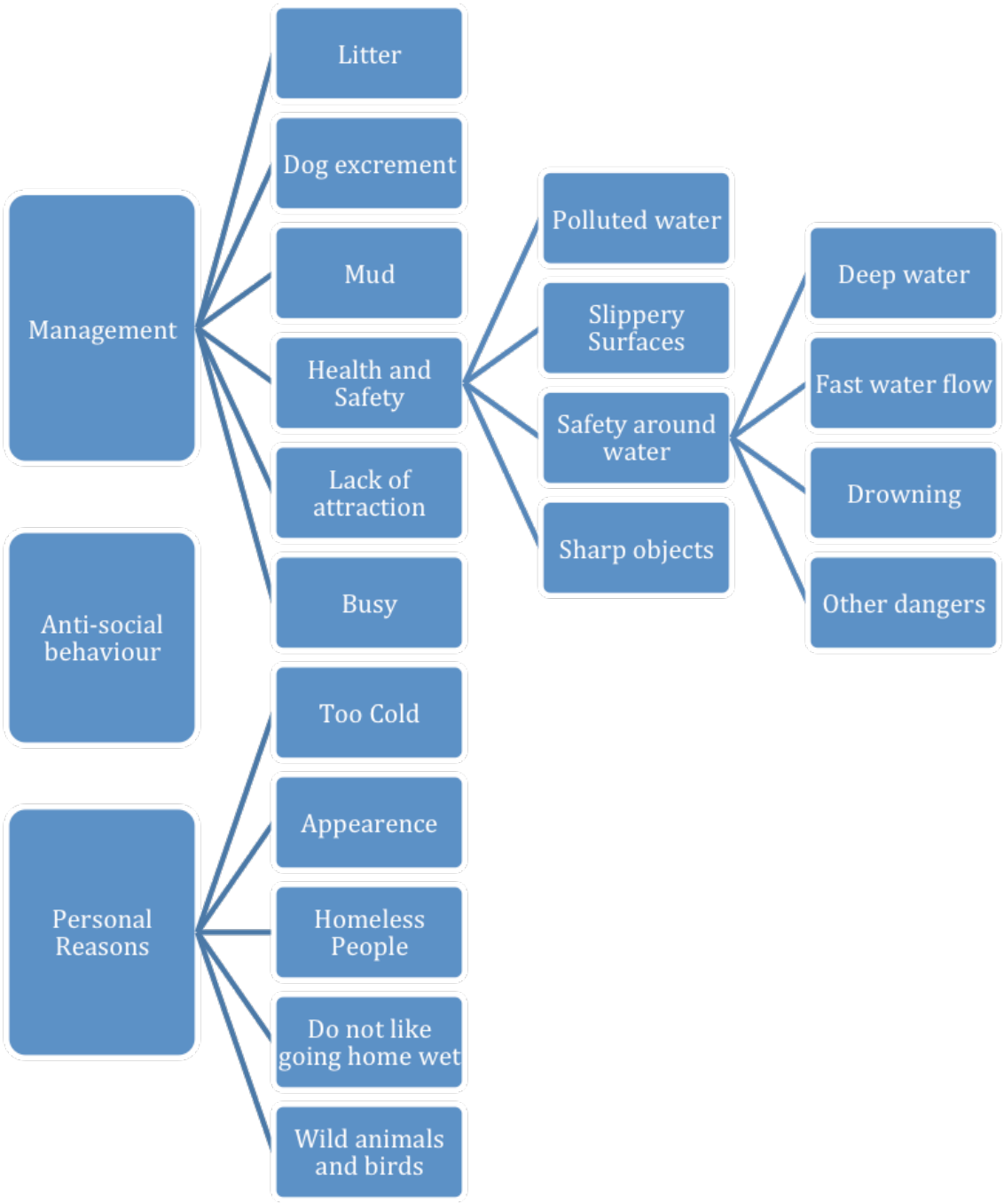
of the parents shared children's worries about safety, fast currents and flood risk, although the number of parents who mentioned these was not extensive (8%).

> *"Since the flooding a few years ago, I am a bit concerned about floods, riverbanks sliding and fast currents"*
>
> *(35-39, female, White British)*

> *"Eam, I suppose, I would be keeping an eye on them. Depending on how, in case you didn't know how deep the water was in places. That would be a minor concern really: not knowing if the current's faster than you think or something like that. In a park sometimes the river flowing through the current can be faster than you think."*
>
> *(30-34, female, White British)*

According to the surveys, 28% of the responder children indicated that water in Endcliffe Park was dirty, smelly, unhygienic and polluted. The majority of the children thought the stream was dirty and not clean. Some of the children indicated that they had seen rubbish in the stream, while some mentioned that "*you cannot get in the water", "cannot swim*", even one child stated that *"you cannot touch any water"* in Endcliffe Park. The majority only played on the stepping-stones, fed the birds and watched. Some mentioned that they were not allowed in the water as parents would be unhappy if they got wet. Thus, their parents might have taught the children that water in the park was dirty, unhygienic and polluted. In addition, some parents worried about pollution levels in the river, hygiene and water born disease. One interviewee explained why she was particularly sensitive to this:

> *"Only the diseases. I take responsibility for my children's safety. It is things like, it is just because my child has been.... (Name of disease inaudible) and had nine months in hospital and it was a water-based bug that he contracted. So I am particularly sensitive, more than others."*
>
> *(35-30, female, White British)*



Model 2: Children's issues and concerns in Endcliffe Park

Furthermore, 21% of the children responding mentioned issues related to slippery surfaces in Endcliffe Park. Algae were observed in the rocks that might make the surface of the stepping-stones slippery. As children complained about slippery surface on stepping-stones, the rock might have been treated over a longer interval or might not have been treated at all. In addition, during the site studies it was observed that children got into the water and climbed on the stepping-stones when they were soaking wet, especially in the summer. Those activities made the stepping-stones completely wet, which made the rocks even more slippery. Some of the parents were also worried about slippery surfaces, one in particular mentioning that the stepping-stones in winter might not be suitable for use as the water current might be too high for a safe crossing. This is also related to worries about fast currents in the safety around water heading. Slippery stepping-stones might be dangerous because, in the case of falling, it might prove fatal, as there are many rocks at the bottom of the stream.

The last theme coded under the health and safety category was sharp objects or stones in the river; 11% of the children complained about issue. As Endcliffe Park is a natural open space, nothing can be done about rocks in the river. However, sharp glass is another matter. Environmental control might be an issue in the park, as it is quite a large space. People might throw glass into the river and the river could carry it to this location. These issues will be discussed in Chapter 8.

> *"Safety is an important aspect. I would look for broken glass and examine if the water current is not too strong if paddling in a river. Keep young children away from water edges."*
>
> *(30-34, female, White British)*

The second most common management issue was lack of attractions in Endcliffe Park, which was mentioned by 16% of the children. There was a huge difference between the most common management issues (Health and safety issues, 56%) and this category. Almost all of the children mentioned this issue, complaining that the park was boring,

and some did not like the park because it did not have fountains or water play area like Millhouses Park.

Mud was another management issue raised by children (8%). In the autumn, winter and spring observations it was observed that small paths in the woodlands became extremely muddy, while large grass surfaces in the park became soaked and muddy. This would affect children's use of the park and experiences of any activity in the park. Soaked and muddy grass areas indicate a drainage issue in the park, while paths in the woodlands of the park might be solved by lying gravel on them.

Dog behaviour and faeces was mentioned by 8% of children. Uncollected dog excrement and dog urine was the main concern in this category. Moreover, parents also mentioned uncollected dog excrement as a concern during site interviews. One of the interviewees stated:

"Well just dogs doing their dirty and people not picking it up like he's just done here."

(40-44, female, White British)

Endcliffe Park is very popular for dog walking and most of the dogs in the park were unleashed. Since sometimes owners were not able to spot where exactly dogs defecated they could not collect it. In addition, unleashed dogs cause another concern mentioned by some children, that they get into the river and involuntarily splash people. Moreover, when they are wet and trying to dry themselves, they make people wet. To sum up, unleashed dog walking, allowing dogs to get in the river and uncollected dog faeces were mentioned by children.

Other issues were mentioned by only a minority of children, such as Endcliffe Park being busy (5%), litter (3%), anti-social behaviour (2%), such as children splashing unwilling people, the appearance of park not being nice (1%) and homeless people being in the park (1%).

7.5.2 Personal reasons

25% of children mentioned that they do not like Endcliffe Park for personal reasons, which can be listed in three main categories: water being too cold; wild animals and birds being present; not liking going home wet. The majority of children gave the water being too cold (21%), using small phrases such as *"cold", "too cold",* and *"freezing*". Endcliffe Park's stream is a natural river which would be cold most of the year.

> *"It's too cold to paddle in." (9, female, NA)*

Only a small proportion of children stated that they did not like water features in Endcliffe Park because there were some wild animals around (3%). Children are afraid of bugs and fish in the water, as well as birds. One child mentioned that fish in the water bite.

Finally 11% of the children mentioned that they did not like going home soaking wet as a reason why they did not like Endcliffe Park's water. Rather than being a dislike, this indicates a problem. Moreover, some of the parents mentioned the issues. These families or children probably came unprepared, since there are toilets in the park, which could act as a changing facility. The only problem would be that the toilets are located only in one place and children would have to go there to get changed.

> *"Occasionally I get anxious about things being slippery or not having enclosed spaces to change in afterwards... not a huge concern."*
>
> *(35-39, female, White British)*

7.6 Chapter Summary

In this chapter children's experiences of water features in Endcliffe Park have been discussed in the light of the data collected through children's surveys, parents' surveys, parents' interviews, professional interviews, and study site observations. Observations were primarily important to witness the events in the study site because the

characteristics of Endcliffe Park were different than for other study sites. General observations supported what children and parents have mentioned and revealed more detailed insights.

Endcliffe Park offers family outdoor space to people in natural settings, which is where it is different from other sites, and it is a local park for residents living in close proximity to the park. Around 70% of the children involved had been to Endcliffe Park at least once and the percentage of males was marginally more than the percentage of females. Although there was not a huge difference, younger children visited Endcliffe Park more compared to older children (aged 10-18). The ethnic mix of children using the park was as follows, in descending order: White, Asian, Mixed, Black, Chinese or other. Moreover, a large percentage of children either coded as missing or who did not want to give their ethnic background. Although this data would have changed the results, findings show similarities with the area census statistics.

In general, the majority of children visited Endcliffe Park between weekly and less than monthly. Further matrix-coding analysis showed that this was due to the children's home location. For instance, the majority of children who lived in S10 visited Endcliffe Park more frequently, and the majority of children visiting Endcliffe Park daily lived in S10. A strong relationship between location and frequency of visit continued among other postcodes. For instance, children from S10 and S11 paid more frequent visits, while children from S7 paid less frequent visits. The majority of the children from S2 had never visited Endcliffe Park.

Most of the children's visits to Endcliffe Park were on Saturdays, Sundays or school holidays. Children who lived in closer proximity visited the space on almost every occasion, such as after school, on event days, and at weekends. However, the results show that the percentage of children from more distant areas increased on Sundays and during school holidays.

The majority of children visited Endcliffe Park either by car or on foot. However, the percentage of children visiting by cycle was quite high (32%). The results suggest that, although the highest percentage of children went to the park by car, the percentage of children walking or cycling was significant. The majority of children walking to the park were from areas close by, while the majority of children visiting by car were from more distant areas. The percentage of bus use was higher among children from S2 and twice as much as for those from other areas.

As mentioned above, Endcliffe Park is a family day out destination. A majority of the children mentioned that they visited Endcliffe Park with parents, brothers or sisters and relatives. However, slightly more than 50% also mentioned that they visit the park with friends. Considering that a large proportion of children were able to visit Endcliffe Park without adult supervision, matrix-coding analysis was conducted between age and who children went to Endcliffe Park with, in order to understand the relationship between these two variables. According to the results the proportion of children going with parents was almost equal in both age groups, although the percentages of children aged 10-18 was slightly higher. Moreover, a considerably larger proportion of children aged between 10 and 18 mentioned visiting the park with their friends, compared to younger children. The percentage of older children visiting the park with relatives was considerably lower than the percentage of younger children visiting with relatives. Therefore, the results indicate that older children tended to visit Endcliffe Park either with their parents and siblings or friends, while younger children tended to visit with parent and siblings or relatives. Thus, younger children were more adult-dependent in their visits to the park. However, survey data is limited to children in 4 different age categories.

The results showed that children's favourite activity in Endcliffe Park was playing either in the playground or in the fields (84%). The rest of the activities mentioned were as follows, in descending order: going to the café; playing on stepping stones; walking; feeding the ducks; cycling; climbing trees or walls; having picnics or barbeques; and watching the water. As can be seen in the top three activities there

was one water-related activity in Endcliffe Park, which was the stepping-stones. The rest of the water-related activities were mentioned by only a small percentage of children, showing that the water-related activities were not common in Endcliffe Park. Even use of the café was mentioned more than playing on the stepping-stones and more than twice as much as paddling in the river.

The number children who mentioned visiting water features in Endcliffe Park was 64%; 36% of the children did not visit water features in Endcliffe Park. In this respect more than a third of the children did not visit water in Endcliffe Park.

According to the surveys the proportion of females interested in water in the park was considerably more than males. Slightly over 70% of females interacted with water, while 58% of males did this. Observations supported the survey findings. Although there was no major difference, in the observations more females were recorded than males interacting with water features.

A large proportion of the children interacting with water features during the observations were from age group 1 (0-9). Originally, more interaction from age group 2 was expected, because water features in the Endcliffe Park are natural water (stream or pond), which might have been dangerous for younger children. In spite of the dangers involved for younger children and with no restrictions keeping older children away from the water, a large majority of the children interacting with water were nevertheless aged between 0 and 9.

Three main water features were identified; a stream in the park, duck ponds and stepping-stones. Observations supported the idea that children mainly interacted with water in the stream.

Activities related with water were coded into two categories, as active and passive interaction. The majority of activities undertaken in Endcliffe Park were active interaction with water. However, the style of active interaction was different from other

two study sites because a natural stream flowing through the park was the only water source for the area. During site studies it was observed that children's interaction with water was different in different seasons. Due to the fact that a natural stream was involved, in winter, water temperature might drop to quite low levels, water levels rise and water flow faster than in summer season. As a result only a small proportion of mentioned activities involved touching water or being in the water.

The most popular activity was paddling or splashing in the stream. However, this was weather-related activity because no children were observed in the water during winter or spring observations. Playing on stepping-stones had the same percentage as the previous activity. During the observations it was seen that most of the activities occurred on and around stepping-stones, with the majority of children splashing in the water around them. Feeding the ducks had exactly the same percentage as the other two categories and was one of the most popular water interactions in the park. Feeding the ducks and wild birds is a non-weather related activity that can be undertaken in any season in Endcliffe Park. Moreover, playing Pooh sticks; throwing stones into the water; taking part in a duck race; fishing for small insects or tadpoles; and spraying water, were the other activities mentioned by children in the surveys.

Only a small proportion of children indicated a passive interaction to some extent. Watching water; watching birds or ducks; watching their dog playing in the stream; playing around the water; and walking on the bridge, were the passive interactions identified.

Observations and behaviour maps revealed that twice as much water-related activity was recorded on warmer days. However, even on colder days, many activities were recorded in the space because most of the activities did not involve any contact with water. Both active and passive interaction rose in relation to the temperature rising and, in the cooler conditions the number of passive interactions reduced dramatically.

Children described the things they liked about the Park's water features in many different words; however, 'fun', 'play', 'nice', and 'cool' were the most common words. After the data was coded, the most mentioned category was related to the water play aspect of the space. Children liked water features in the park because they could play and splash, it had stepping-stones, and was fun, cool and exiting, children were able to look at or feed the ducks. They also gave these responses: 'like water, ponds and rivers', 'it is nice to watch', 'it is nice to listen', 'it is natural and there is wide life in there', 'it is clean' and 'it is safe'.

Parent's attitudes towards children's interaction with water features were mainly positive. Only a small proportion of parents had a cautious attitude and none involved in interviews or surveys had a negative attitude. However, children perceived their parents' attitude to be more negative than the parents did. This might be related to the parents involved, who were generally happy with their children's interaction with water. According to children, who perceive their parents' attitude was negative, some parents restrict their children's interaction with water as a result of some parental worries. These worries were, water being unhygienic, dirty, dangerous, and having no changing facilities.

Children's responses indicated management problems in Endcliffe Park to some extent. The majority of these issues related to children's health and safety concerns. Health and safety issues, mentioned by participating children, were coded as a management problem because normally the management team has to deal with them. Safety around water; polluted or dirty water; slippery surfaces; and sharp object in the water, were the main issues discovered. Safety around water consists of several sub-codes, such as falling into water or drowning; water being dangerous; water being deep; water being fast-flowing; and flood risk. Other issues included lack of attraction; places being muddy; dog behaviour in water; being very busy; litter; anti-social behaviour; and the presence of homeless people.

Chapter 8

Discussion

8.1 Introduction

This part of the thesis discusses the findings which have emerged from the analysis presented in the previous three chapters. In this chapter results will be discussed across three study sites and in the context of other research in the literature.

This introductory section provides a brief overview of chapter; it then goes on to the discussion, which focuses on the emerging themes of diversity, and home proximity to open space with the water features and activities children undertake in the open space with the water feature. In Section 8.2 the diversity of children visiting study sites and of children interacting with water across all study sites will be examined.

Children's proximity of living to those study sites was one of the prominent points of this study. Results suggest that, as distance to space increased, children's visits the sites were decreased. Therefore, in Section 8.3 how home proximity to those study sites affected children's interaction will be discussed across the three study sites and will be compared with debates in the literature.

The third theme that will be discussed is children's activities in these areas. Children were asked what activities they engaged in in the specific parks. Many children mentioned activities such as playing in the playground, playing ball games on the grounds, as well as boating on the lake or playing on stepping-stones. Children's activities were identified and water interaction was not always the favourite activity. In Section 8.4 the place of water-related activities among other activities that children participated in in both parks will be discussed.

It was evident that most of the children liked interacting with water and did this in different ways. As explained in the previous three chapters, different rates of active and passive water interaction were identified. Section 8.5 will discuss children's different types of interaction and identify how different characteristics of parks and water features affected children's interaction with space and water.

Investigating parents' attitudes towards children's interaction with water was one of the main objectives of this study. The evidence suggested that there was a difference between how children perceived their parents attitudes and how parents' perceived their children's interaction with water. In Section 8.6 these differences will be discussed and identified across all study sites and literature.

In the literature review chapter it was identified that physical and social boundaries and controls limit children's interaction with water in urban open spaces. In Section 8.7 issues and concerns identified in this research will be debated in the context of the relevant literature to determine the issues that limit children's interaction with water. To make the discussion easily accessible this section is divided into seven sub-sections. Lastly, Section 8.8 will summarize the discussion.

8.2 Diversity of Children Visiting Study Sites

One of the main objectives of this study was to examine the diversity of children using study sites in terms of their gender, age and ethnicity. In this first section the diversity of children visiting the study sites is discussed.

8.2.1 Differences by gender

This study suggests that more females went to Sheffield city centre and this was supported by observations. On the other hand, slightly more males visited Millhouses Park and Endcliffe Park. Although more male children indicated they visited these parks, according to the census, the percentage of female children in Sheffield is considerably more than males and also the percentage of female children in those areas around both parks is higher than the for males ((Office for National Statistics, 2011). The former might explain why more female children were reported and observed in Sheffield city centre, which is the central location for all citizens. The latter revealed the results do not overlap with the census in these parks and suggests that these parks are more appealing for male children.

This may be related to what the parks have to offer. For instance, Hume *et al.* (n.d.) indicated that the presence of playgrounds in open spaces is strongly related to boys' access to urban open spaces and their physical activity levels there. Moreover, playgrounds were observed to be male-dominated environments, although minor changes in domination occur, depending on day and time (Karsten, 2003). Both parks included in this study had large playgrounds and it was observed that these areas were highly used. Apart from playgrounds, both parks had large open grass areas, suitable for ball games. Ball games, especially football, are a male-dominated activity (Karsten, 2003). Additionally, Millhouses Park has a skateboarding park, which is essentially another male-dominated activity (Woolley & Johns, 2001). Additionally, a scooter path is likely to be more appealing to males and during the site study many male children were observed playing football in the grounds, skating in the skateboard park, and

using the scooter path. Nevertheless, boys showed more interest in "active pursuits", such as ball games, in the river environment (Tunstall *et al.*, 2004). Lastly, male children had more independent mobility than female children (Hillman *et al.*, 1990; Foster *et al.*, 2014), which might also explain the larger proportion of male children compared to females observed in the two parks.

On the other hand, from the observations and surveys it was evident that a greater percentage of female children interacted with water features in all study sites. As discussed in the literature chapter research knowledge is limited in relation to children's interaction with water. Previously, Hume *et al.* (n.d.) indicated that water features make urban open spaces more appealing for adolescent girls. This current study provided additional evidence with respect to girls' interaction with water, namely that, although parks are male dominated environments, water features are seen to be more appealing for girls from all age groups explored in this study. Females highly attracted to either natural or artificial water features and interacted with them in all study sites. On the other hand in all study areas the percentage of male children, who did not interact with water features were higher than the percentage of females did not want to interact with water.

Basically, the finding of this study seems to suggest that more females interacted with water features, although more males were detected visiting the parks and literature suggesting play areas are male dominant environments. Therefore, this seems to be an important finding that needs to be noted and should be considered by designers and managers. One possible implication of these findings might be that female-related aspects of water features should be taken into consideration by designers and managers. Perhaps some design elements that attract females might be used or female use of those spaces could be acknowledged when management strategies are planned. However, these elements should be used with a specific care not to discourage male children in those spaces, which could create gender inequity.

8.2.2 Differences by age

The study has shown that the age range of children was quite similar across all three study sites. Children aged 8 and 9 visited study sites more than children age 10 and over. Results were similar in all study sites, although a marginally higher percentage of children over 10 mentioned visiting Sheffield city centre compared to parks. This increased in the older age group in city centre which might be related to gaining independent mobility. Different researchers have identified that children start to gain their independence at around the age of 10 (Hillman *et al.*, 1990; Hillman & Adams, 1992; Veitch *et al.*, 2008; Brockman *et al.*, 2011; Foster *et al.*, 2014).

Evidence from this study also suggests children aged 10 and 11 have more independent mobility, at least for Sheffield city centre and Endcliffe Park, than the younger age groups. None of the participating children aged 8 and 9 came to city centre alone. Furthermore, the proportion of children going to the city centre with friends and/or alone increased as children got older and there was a sharp increase between the age of 10 and 11. Thus, it can be argued that children gained independent mobility at around 10, and older children had considerably more independent mobility to access Sheffield city centre and Endcliffe Park. These findings confirm previous research about independent mobility (Hillman *et al.*, 1990; Hillman & Adams, 1992; Veitch *et al.*, 2008; Brockman *et al.*, 2011; Foster *et al.*, 2014). This also explains why considerably more children age 10 or over were detected in surveys. City centre locations are shopping, meeting and socialising destinations for children (Woolley *et al.*, 1999a; Woolley *et al.*, 1999b). Additionally, they are more likely to go to other locations other than where they live when they have independent mobility.

This study suggests that children from younger age groups also interacted more with water features in all study sites. In the Peace Gardens, minor differences were observed between the numbers of children from different age groups, as is the case above. On the other hand, in both parks remarkably larger numbers of younger children interacting with water were observed. In Millhouses Park this could be explained by the presence

of structured water play, which was designed for and more appealing to younger children. Although there seems to be no evidence-based research published about children's interaction with structured artificial water before, research related with structured playgrounds suggests that parents of older children and older children themselves think structured play equipment is uninteresting, especially when provided for young children (Veitch *et al.*, 2006; Veitch *et al.*, 2007). Therefore, older children might not be interested in structured water play, hence many more young children observed participating in this. In contrast, although is no structured water was involved, in Endcliffe Park the majority of children observed when interacting with water was still younger children aged up to 9. Hence, it can be said that younger children seem to be more interested in water interaction compared to older children. How children's interest in water and their interaction with water changes as they get older, will be discussed in Section 8.6.

8.2.3 Differences by ethnicity

This research has shown that patterns of ethnic diversity were quite similar among all three study sites for both visit to sites and visits to water features. The highest percentage of children came from a White background, followed by Asian, Mixed, Black and Chinese or other respectively. These findings seem to reflect the Sheffield Census statistics, which suggest that children from Asian ethnic backgrounds are the largest ethnic minority in Sheffield, followed by Mixed, Black and Other ethnic backgrounds (Office for National Statistics, 2011). It should be noted that Chinese and other minor ethnic backgrounds used to be grouped into one category according to the 2001 census, which was used as a guideline for the demographic section of surveys. However, in the 2011 census the Chinese ethnic group was included in the Asian category, but the number of Chinese children was not large enough, according to the Census data, to change the circumstances. The only difference detected was in Endcliffe Park, where a slightly lower percentage of children from Asian backgrounds and a higher proportion from a mixed ethnic background interacted with water in the

surveys. This might be related to the ethnic diversity of children living in the area. When Middle-layer Super Output Area (MSOA) boundaries that include pieces of Endcliffe Park were examined using the geographical information system software ArcGIS, it was revealed that the percentage of children from mixed backgrounds was higher than the number of children from Asian backgrounds around Endcliffe Park. In this respect, ethnic diversity of children visiting water features in Endcliffe Park also reflects patterns in the Sheffield Census 2011 statistics for the area (Office for National Statistics, 2011).

Greenhalgh and Worpole (1995) argued that ethnic minorities were under-represented in urban open spaces; however, research undertaken in Sheffield with the Pakistani, children and teenagers, from the largest ethnic minority, revealed that they were frequent users of open spaces in Sheffield (Woolley & Amin, 1999; Woolley & Amin, 1995). The main limitation of Woolley and Amin's study in terms of showing ethnic representation was that actual research had been undertaken in four Sheffield postcodes where the Pakistani ethnic minorities tended to be concentrated. Later research, undertaken in a variety of English cities, including Sheffield, again indicated the under-representation of ethnic minorities in urban open spaces (Dunnett *et al.*, 2002). However, the results were reported in general so the specific situation in Sheffield was not revealed. This thesis argues that ethnic minorities in urban open spaces studied in Sheffield were not under-represented because ethnic data shows similar patterns with Sheffield's Census 2011 data (Office for National Statistics, 2011). Therefore, it can be said that a large diversity of children used these study sites. This also indicates access equality in terms of ethnic diversity. Good representation of ethnic minorities is particularly important for establishing common values and citizen identity in the future: distinct attitudes, values and awareness are picked up and internalized in urban open spaces, which have critical roles, as they embody the shared identity of a multicultural urban context and enhance the feeling of being a citizen (Shaftoe, 2008; Gaffikin *et al.*, 2010). When they are playing, children ask questions of play partners or parents, and it gives them the opportunities to discover new in formation. Children

from different ethnic backgrounds might gather in these parks, and learn about difference and their identities, which would help create a more equal environment. Furthermore, better representation of ethnic minorities is an indicator of access equity, at least within the specific area, and can be part of the cement of a diverse civil society and sustainable city (Berke & Conroy, 2000; Langhelle, 2000; Leitao & Ahern, 2002; Gaffikin *et al.*, 2010).

8.3 Children's Access to Study Sites

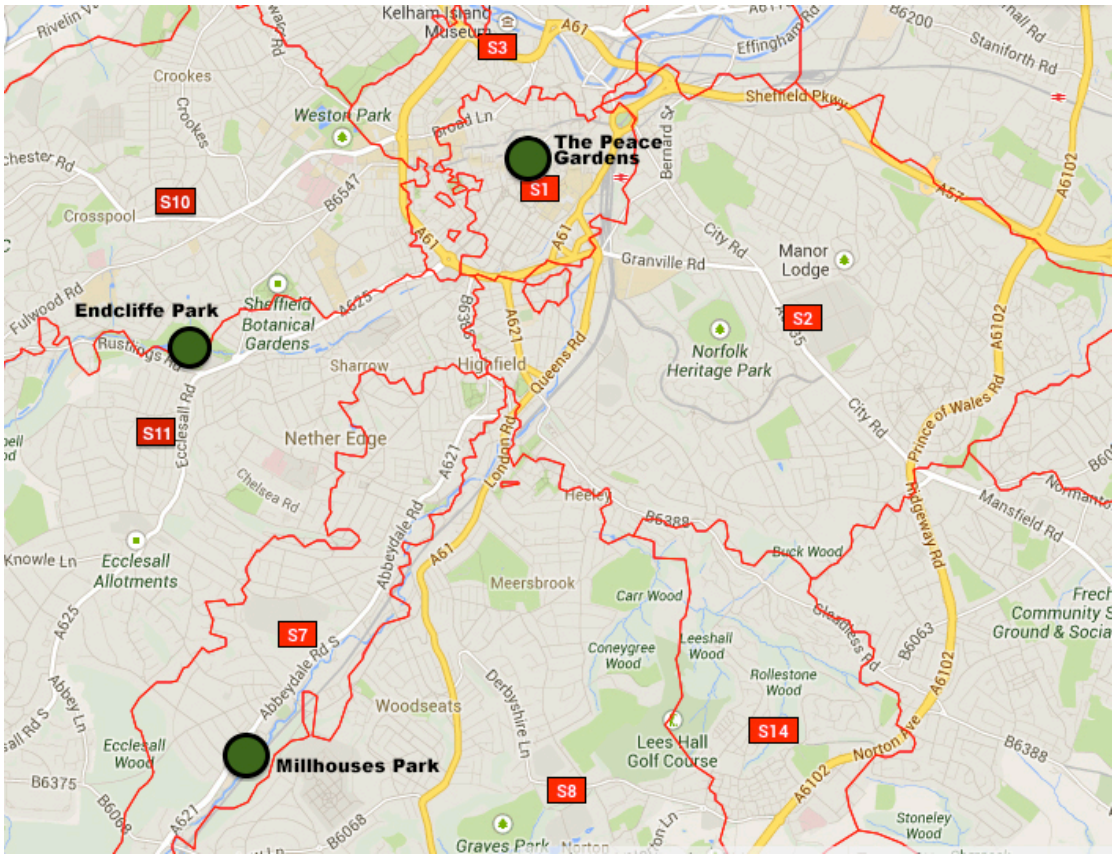
The results of this study indicate that home proximity to space was positively related to children's access to the study sites. Some of these indicators are critically discussed below. In Map 5, locations of the study sites and Sheffield postcode boundaries are shown.

The percentage of children who had never visited Endcliffe Park was highest, followed by Millhouses Park and Sheffield city centre, respectively. Significantly more children visited Sheffield city centre spaces compared to the parks.

Findings from this study suggest that Sheffield city centre and Endcliffe Park were more frequently visited than Millhouses Park. Both Sheffield city centre and Endcliffe Park had a similar percentages of visits, when weekly or more frequent visits and fortnightly and more frequent visits were investigated.

According to Woolley *et al.* (1999a), 70% of the children involved in the study visited town centres more than once a week and rates were higher in the bigger towns and cities. Sheffield is one of the largest cities in England; however the results indicate that the percentage of weekly or more frequent visits was 30% and the percentage from frequently more than weekly visits (Daily and more than once a week) dropped to 13%. In the last two decades there have been major changes to technology and human life, since Woolley *et. al.* studied town centres in England. These current results indicate that children's visit to town centres has reduced over this period. Changes in the urban

environment are continuous, due to changes in the economic structure (Low, 2006) and market driven urban strategies (Madanipour, 1997); the growth of population in cities and mobilization (Woolley, 2003); the transformation of modern humans into private citizens in their private sphere (Madanipour, 2003); and the social order of society (Gehl, 2007). Urban people have become less socially oriented, and interact less with each other. Those changes have also affected children's use of open spaces (Veitch *et al.*, 2007). Additionally, Veitch *et al.* (2006) found that a large majority of parents (74%) indicated that their children's active free play in open spaces took place in their private gardens and yards. Only 25% of the children had a chance to interact with urban open spaces: children have been removed from them (Karsten, 2002). Therefore, it can be said that a reduction in the percentage of children visiting the city centre in the last two decades overlaps with trends in the other parts of the world and can be understood to be an outcome of continuous changes in the urban environment.



Map 5: Study site locations and Sheffield postcode boundaries (Free Map Tools, 2013)

Several indicators suggest that there is a positive relationship between proximity of living to these spaces and use. The first indicator is frequency of use; when home proximity increases, frequency of use increases. For instance, a majority of weekly and more frequent visits to all study sites were made by local children who lived in surrounding postcodes. Children from distant areas visited less frequently across all study sites. The large majority of children who never visited Millhouses Park and/or Endcliffe Park lived in S2, which is furthest from these parks across the entire postcode locations included in this study. Contrarily, the results suggested that only a minority of children living in this postcode area, which is close to the city centre, had never visited it for water play.

The second indicator of the relationship between proximity of living and use is when children visited study sites. Results suggest that children visited study sites mostly on school holidays, Saturdays, Sundays, event days and after school in all areas. The number of visitors from further distances increased on weekends and school holidays. However, a substantial increase was evident on school holiday in both parks. On the other hand, local children paid more regular visits after school. Endcliffe Park was visited by a slightly larger percentage of children from other postcodes after school but this is more likely to be related to the school that surveys were undertaken in near Endcliffe Park because it included many children from different postcodes, even including S9 that was quite far from the school. Therefore, it can be argued that distance plays an important role when children visit study sites. For instance, children from S2 might not be able to visit both parks at the weekends but it is more likely that large numbers of them visited in the school holidays.

The third indicator of the relationship between the proximity of living to space and use is the method of transport to get to the park or city centre. The highest percentage of car use to access sites was found in Millhouses Park, followed by Endcliffe Park and the city centre, respectively. The percentage of car use to access Millhouses Park was more than twice as much than any other methods of transport. The results suggest that the majority of children living in distant areas accessed both parks by car.

Therefore, it can be argued that children who lived at a distance to the parks and had access to a car were more likely to visit both parks. It was suggested that parents were prepared to drive to parks, which were quite far away from where they lived, if children were happy in that location (Veitch *et al.*, 2006). What park facilities offer is more important than the distance (Potwarka *et al.*, 2008). Karsten (2005) called the type of child driven from one place to another the "backseat generation". Therefore, children from S2 who had never visited the studied parks might not have had access to a car. Analysis of Census 2011 supports the argument that the percentage of people without car ownership was highest in S2 and lower in other study areas (Office for National Statistics, 2011). Especially, children's access to Millhouses Park might have been restricted because it was furthest from S2 and in general had least frequent use by children and most car use detected to access to the park. Furthermore, a considerable percentage of children living in the same postcode area as the study sites walked and cycled across them to access their schools. For instance, more than half of the children indicated they walked to Endcliffe Park. Additionally, children's after school visits were also high in Endcliffe Park, probably because one of the schools that participated in this research is quite close the park. Surveys supported the argument. Therefore, it can be said that children local to the study site were more likely to walk and cycle to those areas, whereas children living further away mainly used cars and public transport.

As was discussed above there are several indicators that home proximity to the study areas was positively related to children's access to these spaces. Children living in close proximity to the areas visited spaces more frequently, mostly on foot or by bicycle. A significant proportion of children who had never visited these parks, were from distant areas. Even if they visit, children from distant areas were more likely to do this less frequently, and generally visits by non-local children on school holidays increased dramatically in both parks.

These findings seems to support various research studies showing that human activity is directly related to distance to urban open spaces (Giles-Corti & Donovan, 2002b; Giles-Corti & Donovan, 2002a; Roovers *et al.*, 2002). Additionally, Burgess *et al.*

(1988) argued that many cannot satisfy their needs in urban open spaces in closest proximity to their homes. They were more likely to visit parks more frequently, if nearby park with desired qualities existed (Veitch *et al.*, 2006; Shaftoe, 2008). It has been reported that deprived areas are less likely to have better parks and green space provision and more likely to include less facilities and amenities, compared to non-deprived areas (Hume *et al.*, n.d.; Timperio *et al.*, 2008; Crawford; *et al.*, 2008; CABE Space, 2010). The most deprived areas of Sheffield are Manor, Firth Park, Attercliffe, and Shirecliffe (Office for National Statistics, 2011). It can be argued that children living in deprived areas are less likely to get two busses or have access to a car to go to Millhouses or Endcliffe Parks. Analysis of Census data also supported the argument that the most deprived areas of Sheffield was where the higher percentages of no car ownership occurred. Furthermore, interviews also supported the argument that several parents indicated they were only able to visit Millhouses Park a few times a year and did not have such spaces in their area. This might result in inequalities in public open space provision and inequalities of access to public open spaces. Equity in the distribution of services is one of the key elements of the sustainable city (Berke & Conroy, 2000; Langhelle, 2000; Leitao & Ahern, 2002).

8.4 Places of Water-related Activity among Other Activities

Research questionnaires concentrated on which water features children would use in the city centre – as there were several water features there - rather than other activities they would undertake. However, in parks there were only certain water features and the parks had limited spaces. Therefore, what children would do in parks was asked to identify the place of water-related activities, among others.

Evidence from this study suggests that children more frequently visit other facilities in both parks than water features. Children undertook ten activities in Endcliffe Park and fourteen in Millhouses Park. However, only four were water related in both parks. The most common activity in both parks was playing in the fields or playing in the playground. The presence of playgrounds attracts children to open spaces, especially

boys (Hume *et al.*, n.d.; Timperio *et al.*, 2008; Tucker *et al.*, 2009). As was mentioned in Section 8.2, the percentage of males visiting both parks was higher than that of girls. In this sense, playing activities the most cited activity in both parks would be accepted as a natural outcome. Furthermore, Tunstall *et al.* (2004) found that activities took place in wide open spaces, such as playing on grass and in playgrounds, while running and biking were among the most common "non-river based" activities near rivers. Findings from this research also support previous research findings.

The location of water-related activities and percentage of children who mentioned them was considerably higher in Millhouses Park compared to Endcliffe Park. For instance, "playing in the water park" was the second common activity in Millhouses Park. A structured water park is one of the newest features of the park. Although it was not the most commonly mentioned activity, it was still mentioned by a large number of children.

The second most common activity was "going to the Café" in Endcliffe Park. Possible explanations of this would be that many parents also mentioned this. The findings of this section suggest a possible linkage between taking children to Endcliffe Park and going to the Café. This result reflects Greenhalgh and Worpole's (1995) assertion that taking children to parks is a passive activity for parents. Moreover, Shaftoe (2008) advised that mixed use, providing opportunities for adults as well as children, is one of the key elements of successful play provision. On the other hand, the café can be a good observation location as it is quite central and oversees stepping-stones and a large open grass area, where the majority of active games happened.

The third most popular activity in Endcliffe Park was playing on stepping-stones, while the third common activity in Millhouses Park was playing sports. In the top three activities there was only one water-related activity (playing on stepping-stones) in Endcliffe Park. Moreover, it was not as popular when compared to playing in the fields or playground. Similarly, there was only one water-related activity within the top three

most rated activities in Millhouses Park; however, it was considerably more popular among children compared to the stepping-stones in Endcliffe Park.

Photograph 27: Child playing in stream around stepping-stones (taken by author)

These results suggest that general water interaction was not the most popular activity in both parks. This is likely to be related to the weather dependence of water activities, which will be discussed in Section 8.5.4. However, water-related activities find more place among other activities in Millhouses Park. This is related to several themes which emerged from the findings. First of all, the presence of a water play area and boating lake dedicated to water interaction seems to be positively related to children's interactions with water. Secondly, the highest percentage of positive parental attitudes was identified in Millhouses Park. Parental approval is likely to have had an effect on children's interaction with water. Thirdly, a number of parents underlined that they specifically visited Millhouses Park for water play. Lastly, children had more health

and safety-related concerns in Endcliffe Park, which might have affected their interaction.

8.5 Children's Interaction with Water at Study Sites

8.5.1 Frequency of children interacting with water at study sites

The findings of this study suggest that similar percentages of children visited water features in Millhouses Park and Sheffield city centre. However, considerably less children mentioned any visits to water features in Endcliffe Park. Therefore, it can be said that artificial water features are more visited by children. This attitude might be related to activities children undertake in the area or children's and parent's concerns, which will be discussed in Section 8.7.

Graphical patterns of frequency (Figure 9, 23, 37) of children's visits to water features show similarities across all study sites. A majority of children visited these water features monthly or less frequently. There seems to be only slight differences in the figures. For instance, in Endcliffe Park rates of more than weekly and fortnightly visits were slightly more than in Millhouses Park and Sheffield city centre water features. As children visited water features in Endcliffe Park more frequently, it might indicate that children went to Endcliffe Park to interact with water features even in the cooler weather conditions because a majority of children's active interactions with water features did not involve physical contact with water in Endcliffe Park. Therefore, many children continued interacting with water features during the cooler months, although numbers dramatically decreased.

8.5.2 Where children interact with water

This study suggests that popular water features in the city centre were the developments made in the last two decades, such as the Peace Gardens, Millennium Square, and Sheaf Square (Railway Station). On the other hand, in Millhouses Park

the most visited water features were the water splash area and the boating lake. Only a small number of children mentioned interaction with the river. In Endcliffe Park paddling in the river, stepping-stones and feeding the ducks were the highest rated water-related activities.

This study identified two more locations of water interaction in Millhouses Park, apart from well-known areas such as the water play area and boating lake. The two locations identified were the locations of interaction with natural water (stream), despite the fact that the number of children was limited, when compared to water play facilities. Tapsell *et al.* (2001) found that the majority of children play in parks, streets and gardens; however, only less than a quarter of children involved mentioned that they play around rivers and 18% never visited them. Furthermore, Tapsell's (1997) findings indicate that children visited rivers but the activities they undertook were not directly related to water. Hence these two places where children interacted with natural water, although there was a nearby "safe" water splash area, is an important finding. It seems that the areas of interaction with natural water were where children and families preferred paddling, rather than playing in the splash area or the recently built fish pass. There are number of reasons why children interacted with water in these places. First of all, one of the spots is very shallow, so children could enter the water and walk in it as much as they liked. Children's easy access to shallow rivers has been identified previously and considerably more children were observed doing this, (Tunstall *et al.*, 2004). Secondly, shallow water is likely to reduce the health and safety concerns of parents, especially since the majority of those children were young. Thirdly, in the summer months the water splash area became quite crowded, as manager of the Millhouses Park acknowledged. Therefore, children and/or families finding this to be the case might have chosen to interact with water in those areas instead.

However, results from observations suggest that children's interaction with water in those natural spots a tenth of the number of children who played in the water splash facility. This was even lower than Tapsell *et al.'s* (2001) findings. This is more than likely to related to the existence of "safe" water splash area in Millhouses Park because

in Endcliffe Park, where no structured water play was available, the number of children interacting with natural water was considerably higher.

8.5.3 How children interact with water features

Types of children's interaction with water were discussed in the results chapters. There were two main types of water interaction: active interaction with water and passive interaction with water. As discussed earlier the former involves activities that really need doing, expend energy, and involve physical contact with water and throwing things into the water, running and walking in it. On the other hand, the latter involves activities with no physical interaction with the water but includes watching, listening and sitting nearby.

This study suggests that, in Millhouses Park, almost all children (95%) actively interacted with water features, while in the Peace Gardens, the least active interaction with water was identified. In Millhouses Park children's relationship with water was quite different from the other two case study areas, as it was a designated water play area and boating lake. The first reason why Millhouses Park had more active interaction than other case study areas is that it had a structured water play area, where most people took their children in summer specifically to enjoy water. The water play area was mentioned substantially more than any other type of water play. Parental interviews also support the case that many parents particularly took their children to water splash. Secondly, children and number of parents were concerned about pollution in River Sheaf going through Millhouses Park. This might also be the reason why lower levels of water interaction in the river were detected. Thirdly, in June 2007 one 14-year-old boy died in Millhouses when the river flooded. Due to some parent's worries, some children's interaction with water is likely to have been limited to the structured water play area in the Millhouses Park. Fourthly, observations revealed that a structured water play seems to be suitable for toddlers and young children aged up to 8 or 9. Lastly, as was identified earlier, older children are likely to undertake passive interaction. This study argues that there is limited opportunity for older

children in water play areas, and other parts of the park, in terms of water interaction. Taken together, limited opportunities for passive interaction and concerns related to river are likely to cause the higher number of active interaction detected at Millhouses Park.

On the other hand, this study seems to suggest that slightly less than half of the responder children passively interacted with water features in the Peace Gardens, which was the highest level of passive interaction across all study sites. There are several reasons for the high levels of passive interaction. First of all, the Peace Gardens is a city centre location, and the majority of parents admitted that they mostly went to shop, taking their children with them. Some of the shoppers are likely to have a break in the Peace Gardens, where they can have lunch or coffee. This was evident in the interviews and surveys. Secondly, children's independent mobility increases as they get older, especially around age 10 (Hillman *et al.*, 1990; Hillman & Adams, 1992; Veitch *et al.*, 2008; Brockman *et al.*, 2011; Foster *et al.*, 2014). As discussed earlier, all of the children went to the city centre alone and the majority of children who went with friends were aged 10 and 11. The older children are likely to have gone to the Peace Gardens to meet their friends. Observation results were consistent with the argument that many children were seen meeting and spending time with friends. Although more groups of friends were observed in summer, this trend was consistent all year around. Thirdly, older children moved towards passive interaction. A number of children signalled this transition with phrases like *"playing in the fountains for younger children"*. Therefore, some children, likely to be older ones, went to the Peace Gardens just to watch water features. Moreover, some parents mentioned that their children preferred physical contact with water and getting wet when they were younger. Therefore, it can be said that older children did not like getting wet as much as they used to when younger.

Lastly, children and families likely had small breaks when they walked through the Peace Gardens, which was mentioned in surveys and also observed many times on warm days.

Despite the fact that lowest degree of physical contact with water, such as touching, paddling or getting wet were detected in Endcliffe Park, the percentage of active interaction with water was higher than in the Peace Gardens. However, it should be noted that active interaction with water in Endcliffe Park is quite different than in other study areas. In the majority of active interaction cases children actively interacted with the water, spending time and effort; however, in most of the cases they did not include physical contact with water and getting wet. A notable example of this type of active interaction is playing with water equipment; playing Pooh Sticks; fishing for insects; playing on stepping-stones; and feeding ducks. This attitude of less or no physical contact with water is likely due to the children's fears of rivers being dirty and polluted, as well as water being cold in the winter. Yamashita (2002) reported the perception that the presence of water in landscapes highly attracts children and they look for the qualities of water. Moreover, children find rivers dangerous, due to the risk of falling in, or of it being polluted and dirty, but were still interested in places to visit (Tapsell, 1997; Tapsell *et al.*, 2001). Meanwhile, Tunstall *et al.*'s (2004) research about children's perceptions and play in the river environment identified only about 10% of the children interacting with rivers in a way that this research called active interaction with physical contact. Rates of active interaction in natural river environments were higher in this research compared to Tunstall *et al.* (2004). However, numbers were quite low compared to the structured play area in Millhouses Park. This research supports the limited number of previous research studies cited above about children's interaction with rivers. Children in Endcliffe Park interacted with water but the vast majority of the interactions did not involve direct physical contact with water.

The findings of this research suggest that, when children are encouraged to interact with water in a place specifically designed for water splash play, the rates of active interaction are more likely to rise. However, children's play might be limited with the equipment provided. During the site study it was observed that the majority of children ran from one piece of equipment to another in the water play facility in Millhouses Park. These children only operated the different machines and imaginative

play was likely to be limited. On the other hand, when children were given a chance to play in an unstructured environment, they found new affordances in the open space to actively or passively interact with water, as is the case in Endcliffe Park. Gibson (1979) first mentioned the affordance to indicate the activity's potential rather than what the spaces were actually designed for. Affordances are functional properties of a built environment that stimulates, allows and supports human beings to undertake activities. These affordances do not even involve getting into the stream, which might not be appropriate. The stream affords playing Pooh Sticks, fishing for insects and feeding ducks, none of which require direct physical contact with water, although they need actively spending time, energy and interaction with water.

It can be argued that the properties of these types of activity are what makes them occur all year around. On many occasions parents encouragement and involvement to this type of activities has observed. The River Sheaf, which runs through Millhouses Park, has similar properties as Porter Brook that runs through Endcliffe Park. However, interactions observed in Endcliffe Park were quite rarely occurred in Millhouses Park possibly because Endcliffe Park does not involve any kind of structured water play area. Children gain a lot of creativity, imagination, fun and physical, cognitive, emotional and dexterity development through imaginary play (NPFA, 2000; Ginsburg, 2007; Kolb & Kolb, 2010). In fact, rivers create affordances to support imaginary water play (Tunstall *et al.*, 2004). Besides, taking ownership of their own thinking and responsibility in an environment where they can relax allows children to develop their understanding of our world and their own experiences (Broadhead, 2006). Unstructured play is valuable and stimulates children's imagination, helping them find new ways (affordances) of interacting with water. Endcliffe Parks is suitable for unstructured water play and this study suggests that children find ways of actively interaction with water there. Furthermore, it appears that older children are more interested in active interaction than young children in Endcliffe Park. As pointed out earlier active interaction in Endcliffe Park is different to other areas. Those activities require less physical activity and no physical contact with water, which evidence

suggests is what older children like. This study also argued that, when children were given opportunities rather than structured play areas, even older children found affordance to interact with water in their own way, which is more beneficial for children's development (Broadhead, 2006).

It appears that active and passive interaction with water is not only related to what a site has to offer but also age. The findings from this study suggest that children's behaviour on water interaction changes over time. This change was detected even in Millhouses Park, where the majority of children interacted with water actively in the water play area. Children's activity levels dropped over a time and older children become less active (Cleland *et al.*, 2008; Cleland *et al.*, 2010). Those studies were not directly related with water interaction but illustrate a general tendency towards outdoor activities and activity levels. As children get older they lose their interest in active interaction with water, as was evident in two of the case study areas. The biggest difference was detected in the Peace Gardens, where the percentage of children, who had passive interaction aged 10-11 was higher, compared to children aged 8-9. The Peace Gardens offer unstructured artificial water play for children; however, play was more likely to be limited compared to Endcliffe Park, which involved a couple of ponds and the Porter Brook in a natural environment. Therefore, opportunities for active interaction were limited for older children in the Peace Gardens. Evidence from the observations also supports the argument that only a small number of older children were observed having active interaction in the Peace Gardens. Therefore, it can be said that active interaction in the Peace Gardens was not appealing for older children. This is likely why the vast majority of older children had passive interaction around water features there.

To conclude, this study has shown that children's water-interaction behaviour changes as they get older. In structured water play areas and artificial water fountains children move to passive interaction and in areas with natural water children continue their active interaction but they are less likely to be involved in physical contact with water. Therefore, natural water interaction should be encouraged as much as possible.

Moreover, additional facilities might be included into currently built and running water play areas, such as Millhouses Park, to provide opportunities for older children and keep them physically active through water interaction.

8.5.4 How weather affects children interaction with water

This study suggests that children's water interaction is positively related to outdoor temperature at all study sites. The number of children interested in water reduced dramatically when the temperature was lower. Levels of thermal comfort in outdoor spaces decreased in winter (Nikolopoulou *et al.*, 2001). A European-based study that researched 7 different cities around Europe identified that, including Sheffield, the overall thermal outdoor comfort levels were lowest in winter (Nikolopoulou & Lykoudis, 2006). Therefore, a reduction in the number of children interacting with water features in colder weather conditions was expected and the results reflected the expectations. Behaviour maps showed this. Nikolopoulou and Lykoudis (2006) also identified Sheffield's neutral temperature, a thermal condition where people feel neither cold nor warm (Humphreys, 1975), was 10.8 Celsius in winter. People would feel comfortable around this temperature and would start undertaking outdoor activities in open spaces. However, evidence from this study suggests that temperature around 10 degrees are still too cold for direct contact and active interaction with water. This was quite evident in the behaviour maps showing activities conducted when the temperature was under or over the average for Sheffield, 13.4^{o} C (Met Office, 2014). Even under average Sheffield temperatures a limited amount of active water interaction with physical contact with water was observed. Nonetheless, passive interaction in the Peace Gardens and active interaction without physical contact, such as activities in Endcliffe Park, continued throughout the year.

8.6 Parent's Attitude to Children's Interaction with Water

8.6.1 Positive attitudes

This study suggests that a majority of parents involved in both surveys and interviews had positive attitudes towards children interaction, which was more than their children anticipated. Parents favoured structured artificial water play areas because their highest positive attitude was expressed regarding Millhouses Park. There are several reasons why the majority of parental attitudes was positive. First of all, Millhouses Park was seen as a family day out destination by parents. Secondly, parents recognized the social interaction and play opportunities. Lastly, the majority of the parents thought the water play in structured, confined area was best for their children's safety and security. There is no evidence in the literature about structured water play which allows us to discuss these findings; however, it is very similar to structured playgrounds to some extent, which are fenced, structured, carpeted and remained unchanged over the last 50 years (Shaftoe, 2008; Woolley, 2008). Playground design has concentrated on children's wellbeing (Veitch *et al.*, 2006) and this is likely to be related to children's undervalued self-protection (Valentine, 1997), especially where water is involved, as no negative attitudes and not many cautious attitudes were detected in Millhouses Park.

This study has shown that the majority of parents have positive attitude towards natural water play in Endcliffe Park and no negative attitudes were detected. This is actually surprising because, due to the concerns around natural water, more negative parental attitudes was expected. However, these parents seem to have recognized the value of free play with water in natural environments, involving opportunities to explore and develop aware of the importance of unstructured water play and encourage creativity in water play. The importance of imaginary and unstructured play has been stated by many researchers (NPFA, 2000; Ginsburg, 2007; Kolb & Kolb, 2010), and recognized by parents. There seems to be some who not only have a positive attitude but also have fun with children in water. Social support and the company of families encourage children to engage with more physical activities (Holt *et al.*, 2009) and

children enjoy spending time with their families (Veitch *et al.*, 2007). So for some of the children, playing in the water features might turn into an interactive family time. It can be argued that Endcliffe Park is the most suitable settings for this type of interaction. Firstly, the design of the other spaces discourages parents' interaction because Millhouses Park water splash area was designed for children up to age seven, and, in the Peace Gardens, adults would not prefer to get into fountains where there are no changing facilities nearby. Additionally, during the observations no adult interaction was observed. Secondly, research revealed the positive association in children's outdoor play between vegetation and more play, more creative play and children's access to adults (Taylor *et al.*, 1998). Endcliffe Park is rich in vegetation that might provide opportunities for increasing water playtime, encouraging creative play and providing opportunities for children and parents to play together. Moreover, this adds value to the importance of interaction with natural water and parent's recognition of these values.

On the other hand, in all study sites parents recognized the values of water play, such as development skills, and social development. Moreover, parents agreed that these sharing experiences give their children a chance to learn from other people. For instance, in the most basic from they learnt not to splash people if they did not want to be splashed. These social experiences put many children from different ethnicities together, creating social infrastructure (UNICEF, 2012).

8.6.2 Cautious attitudes

Evidence from this study suggests that higher proportions of parents had cautious attitudes in both parks. These parents were concerned with water quality, safety around water and visible dangers, such as broken glass and sharp objects. However, none of these worries affected children's interaction with water and none restricted children's interaction with water in the water splash area in Millhouses Park. However, in Endcliffe Park some children had restricted physical access to water due to parental concerns. Some children were only allowed on stepping-stone, feeding ducks and any

other sort of activities without physical contact. As was identified in the literature, due to parental worries, children's use of urban open spaces was restricted (Blakely, 1994; Valentine, 1996; Valentine & McKendrick, 1997; Valentine, 1997; Veitch *et al.*, 2006; Karsten & Vliet, 2006; Veitch *et al.*, 2007). None of these studies were undertaken in water interaction contexts; however, they identified physical and social worries that are likely to affect children's use of urban open spaces. In this study these worries are water quality, pollution, dangerous objects in water and weather. Issues and concerns related to the study sites that would cause negative parental attitude will be discussed in the Section 8.7.

In all of the study sites not only cautious parents but also parent with positive attitudes regularly gave "if" sentences in different parts of the surveys and interviews. Therefore, they might restrict their children's interaction with water features, if not convinced that water features are safe, which is probably why a majority took their children to Millhouses Park water splash, where the area is confined and tap water is used.

8.6.3 Negative attitudes

At the other end of the spectrum, only negative attitudes towards children's interaction with water were detected in Sheffield City Centre. These parents did not want their children to interact with water in Sheffield city centre. Those parents appeared to be reluctant to they go to Sheffield city centre just for children's interaction with water. This also seems to support the argument of the importance of home proximity to water play areas, as discussed in Section 8.3.

Some parents questioned whether the city centre was an appropriate place for water interaction, being prepared to drive some distance to desired urban open spaces (Veitch *et al.*, 2006). This study suggests that a number of parents took their children to either natural areas in peak districts, swimming pools or Magna, a private science adventure centre, for what they would call "better" or "proper" water interactions. These parent's

attitude, who took their children to private water centres, are no different than parents, who take their children to specifically designed private play spaces (McKendrick *et al.*, 2000; Hart, 2002). It can be said that these private activities keep children away from urban open space. McKendrick *et al.* (2000) argued that play safety, socially comprehensive play and the procurement of a space for adventure play in a controlled environment attract parents with children. Moreover, these spaces are owned by private companies, which means that access might be restricted and unequal, in that those whose parents can afford it, get to play. Furthermore, children are likely to be driven to those spaces because some are quite far away. Access to a car plays an important role and children from disadvantaged backgrounds are less likely to have this.

Consequently, results indicated that parents preferred parks for their children's interaction with water, over the city centre locations examined. However, still a large majority of the parents were happy with children's interaction with water in artificial, controlled and structured water play areas because they thought it was safer and suitable for children's interaction. This could be expected due to the concerns and fears related with the city centre, such as heavy traffic, stranger danger, etc. (Blakely, 1994; Valentine, 1996; Veitch *et al.*, 2006; Karsten & Vliet, 2006). These concerns are not directly associated with city centres but more likely to be seen. One implication of these findings is about tackling the issues and concerns of parents in Sheffield city centre, in order to allow children's interaction with water, or shifting water play towards urban opens spaces in neighbourhoods. However, none of these actions are likely to happen in the near future, due to budget cuts and the fact that managers of the sites will not encourage further water play in current water play areas. Lastly, natural water play is not on Sheffield City Council's agenda.

8.7 Issues at Study Sites

The results of this study indicate that most of the issues and concerns mentioned by children and parents were shared across all the study sites. The highest percentage of

issues and concerns related to the Peace Gardens by children, followed by Endcliffe Park and Millhouses Park.

8.7.1 Anti-social behaviour

Despite the fact that anti-social behaviour was mentioned in all three study sites, it was a bigger concern in the Peace Gardens, which interestingly was the most controlled of all study areas. Controls in the Peace Gardens are achieved by city centre ambassadors who regularly patrols of different spaces within the city centre. Pushing each other; swearing; noise levels; splashing others, disturbing others; and not caring for their own or others' safety, were some of commonly mentioned anti-social behaviour across all study sites, especially some of those anti-social behaviours raised. For instance, in the Peace Gardens and Millhouses Park water splash, covered with hard surfaces, or in Endcliffe Park, where water levels are higher, pushing unwilling children might cause serious injuries. In addition, parents were also concerned about anti-social behaviour, especially in places where younger and older children played together, such as the Peace Gardens.

Children's fears about other people are identified in previous studies (Simmons, 1994). However, more importantly, rather than potential risks being involved, over a time children might be reluctant to go to the sites because of anti-social behaviour issues. Despite the fact that these issues are human-specific and may be challenging to control, management teams should pay attention to achieving this. It was evident that children liked the presence of police or security guards as a symbol of security, although some children, especially teenagers, had negative experiences with them (Woolley *et al.*, 1999a; Nayak, 2003). These officers should act as regulators rather than controller of the space, preventing problem activities occurring, rather than punishing children with anti-social behaviour orders (ASBOs). As mentioned in Chapter 2, ASBOs were first introduced in 1998 and their use significantly has increased since 2003 (Flint & Nixon, 2006; Minton, 2006). Wide definitions of the anti-social behaviour in the orders make it usable in a variety of contexts (Home Office, 2002), depending on tolerance levels of

police forces and local authorities (Nixon *et al.*, 2003). Children playing in or with water might be thought of as being noisy and disruptive, depending on who evaluates it.

Furthermore, in reality' young people have become principal targets (Flint & Nixon, 2006). Recent report published by the Home Office indicated that two thirds of youth (aged 10-17) had breached their ASBO conditions by the end of 2012 (Home Office, 2013). Therefore, a protective approach should be adapted to prevent anti-social behaviour occurring, rather than punishing children once it has occurred. Increasing the number of staff in the Peace Gardens and employing new staff for Endcliffe Park and Millhouses Park, where ambassadors are not available, might help to stop such issues occurring. Managers of spaces should carefully watch the ambassadors to make sure they act as regulators of space rather than controllers. However, provision of new staff does not seem feasible in the near future, due to budget cuts, as further discussed below. Lack of staff in the sites to prevent anti-social behaviour might increase the number of children reluctant to participate in water interaction as a long-term effect. However, until relevant staff become available, voluntary space regulators might be placed in urban open spaces with water features, equipped with less power, but there to supervise the area, preventing anti-social behaviour.

8.7.2 Over use at study sites

Another concern this research has identified was study sites being busy or overcrowded, the second most common issue in the Peace Gardens and the third most common issue in the Millhouses Park, but one of the least common issues in Endcliffe Park. Millhouses Park and the Peace Gardens become extremely crowded on a warm summer's day. Over 400 children visited the Peace Gardens within a three-hour observation period during such days. Moreover, more than 10 children trying to interact with a single piece of equipment in the water play area was not uncommon in Millhouses Park. Families, especially the ones travelling from further distances, tended

to stay longer, have picnics, stay several hours, even all afternoon, as was also true of the Peace Gardens.

Despite the fact that the city centre management team try to put some measures in place to keep pressure down in the Peace Gardens, such as lowering the water jets or turning them completely off, this does not solve the problem. Moreover, in Millhouses Park no such measure is in place. It was identified that all the artificial water play areas, including Rivelin paddling pools, are in the South/South-West of Sheffield (Bozkurt *et al.*, 2012), the wealthy areas of the Sheffield. The newly renovated Rivelin water play site also mainly serves those from advantaged backgrounds because of where it is situated, and the issue discussed earlier regarding access to cars for those from deprived areas (Office for National Statistics, 2011). Moreover, people in these areas were less likely to change several busses to visit Rivelin.

To keep to pressure low at the sites and establish service provision equity, Sheffield local authority should invest more areas with water features in different parts of the city. Even manager of Millhouses Park has advised that the other areas of Sheffield should be promoted rather than attracting more children to Millhouses Park. Since this is unlikely in the current climate, natural areas with water features should be fostered to keep the pressure down and spread the population of children and families, who can interact with water across the city. Sheffield is a rich city in terms of natural water. There are many rivers and streams running in almost every direction of the city. The main rivers are the River Sheaf, from which the city derived its name, and the River Don. Moreover, there are many tributaries, such as the River Loxley, the River Rivelin, Blackburn Brook, Sheffield Lake Dine, Tongue Gutter and Bagley Dike. Although some of the main rivers lie in the South-South-West area, there are many small tributaries and dikes in the North and the River Don goes through North-East Sheffield, one of its most deprived areas. Planning towards natural water play and encouraging it would be a step towards equal landscape services distribution, and a sustainable city (Berke & Conroy, 2000; Langhelle, 2000; Leitao & Ahern, 2002; Smith, 2011). One possible implication of this would be that families might be encouraged to use local parks

containing water features, which would favour people from disadvantaged backgrounds who might not be able to travel to current water play destinations. Secondly, it might also save families the time and cost of travelling to other parts of the city. Thirdly, encouraging the use of local water facilities could prevent the well-known areas from becoming too busy.

8.7.3 Water quality

This study's findings suggest that water quality-related issues and a concern shared across all study sites, although it was a minor one in the Peace Gardens. Children perceived the stream in Endcliffe Parks as dirty, smelly, polluted and unhygienic and they said the river in Millhouses Park was polluted. Tunstall *et al.* (2004) indicated that litter and rubbish in rivers is misinterpreted by children as pollution. Some children mentioned they could not even touch the water in the stream. This research seems to support the limited number of previous research with similar findings, where children also found rivers polluted and dirty (Tapsell, 1997; Tapsell et al., 2001). Tapsell et al. (2001) undertook surveys before visiting river area with children and 36% of the children did not like rivers, due them being perceived to be dirty and polluted. In the surveys after visiting rivers children become less concerned, although there were still large percentage of children who thought of rivers as polluted and dirty. However, this shows that children's concerns about interaction with rivers can be reduced through education and taking children to rivers to interact with water, where it is safe to do so.

Moreover, water related issues and concern were also shared among parents, including water quality, water born disease, unpleasant odours, and unhygienic water, which is understandable. The importance of the quality of water in children's water interaction areas was highlighted in the literature. For instance, following an outdoor event for children in 2001, 151 children developed a papulopustular rash because of the water used in water games (Evans *et al.,* 2003). Moreover, Jones *et al.* (2006) commented that in August 2003 many children were contaminated with cryptosporidiosis from interactive water play in an adventure park in South West England. Therefore,

children's and parents worries about water quality can be understood. Even slight contamination in the water used for water play equipment or fountains might spread the disease to many children.

The water in the Peace Gardens seems managed to a good standard and water jets and areas surrounding them are cleaned regularly to reduce the chances of any injuries. However, it was observed that, on busy days, while children played with clean water at the start of the path, children at the other end played with dirty muddy water in Millhouses Park. Examples can be seen in Photograph 20 (p.214). Furthermore, as a consequence of little dams, built for children's play, water might stay in the same location overnight, creating unpleasant smells, as witnessed during the observations. Therefore, to reduce the children's and parents' concerns, new cleaning regimes should be introduced. Still water left in facilities should be cleared and the entire water path should be cleaned of mud, leaves and rubbish.

On the other hand, Sheffield City Council has no plans for Endcliffe Park stream in the foreseeable future, as mentioned by a manager of the park. However, at least to assure the families and reduce their concerns, the management team should test the water quality regularly and announce it publicly.

8.7.4 Children's fear of health and safety

This study's findings have illustrated that children have a variety of fears related to health and safety around water, as previously identified by a limited number of studies. For instance, Tapsell *et al.* (2001) indicated that almost half of the children involved feared of falling in, or related dangers. Furthermore, Tunstall *et al.* (2004) also indicated similar findings related to obstacles; ditches and holes in river banks; mud; deep water; and the risk of falling in. These results seem to support previous research knowledge. Although it has been more than 10 years since these studies were undertaken, children's fears about natural water persist.

Mover, in both parks some children and parents mentioned the risk of flooding, and of deep waters, such as in the boating lake in Millhouses Park, and risk of falling in the river. Flooding was also mentioned by respondents in Endcliffe Park, which makes flooding a broader concern. Children's fear of rivers is a well-known issue (Tunstall *et al.,* 2004; Tapsell *et al.,* 2001; Tapsell, 1997). This research shows that children also have a fear of flooding and being taken away, which is not shown in previous studies. Fears about flooding kept some children away from natural rivers in both parks. However, parents were not as concerned as children. Although fear of flood is minor issue, it would be better dealt with through public awareness, if Sheffield city council made the public aware of fast flowing times and the times that were suitable for water interaction.

8.7.5 Litter at study sites

Another shared issue in all study areas was a dirty environment. Litter; getting dirty easily; cigarettes and gum on the floor; dog waste and broken glass or similar sharp objects, were some of the issues mentioned by children and parents. Dirt and rubbish irritated children and kept them away from spaces. The relationship between under-management and children's use of urban open spaces were covered in the literature. It was identified that children do not like litter and do not want to use such spaces (Woolley *et al.,* 1997; Woolley *et al.,* 1999a; Woolley *et al.,* 1999b). Additionally, Tunstall *et al.* (2004) identified in their study about children's perception and play in rivers that more than 30% of the children took photographs regarding litter, rubbish and pollution. This study seems to support these findings, though more than a decade has passed after those studies.

Furthermore, in Tapsell (1997) the majority of children saw rivers as dirty places, having a lot of rubbish dumped in them. Tunstall *et al.* (2004) also outlined that children saw litter and rubbish around as indicators of neglected, unmanaged space. Wilson and Kelling's (1982) *"Broken Windows Theory"*, which influenced many urban strategies, indicated how places rapidly decline if minor signs are not dealt with. In his

paper (Carmona, 2010b) called these kinds of spaces neglected spaces. Tibbalds (2001) argued that litter in urban open spaces is one of the main problems among others, such as poor maintenance and pollution in the United Kingdom context. Tibbalds' (2001) description of public space management included "caring about litter".

Therefore, with guidance and evidence from previous research it can be said that under-management of urban open spaces in relation to litter, dog fouling and broken glass, might affect children's interaction with water in public environments in the long term.

On the other hand, broken glass actually is not only a litter problem, but a health and safety issue. Broken glass or similar sharp objects left behind might cause injuries. However, it is not feasible to clean and check the entire park area. However, this study outlined where large numbers of children commonly interact with water, which could be used by the management team to pay more attention to those areas and develop special cleaning regimes for them, especially the areas where children entered the stream or played with it bare feet, such as on and around the stepping-stones.

8.7.6 Professionals' issues and control of spaces

It was identified that restrictions of space fell into two categories: physical and social (Moore, 1989), discussed in two subcategories, boundaries and controls. Physical boundaries such as litter, water quality and lack of facilities, and social boundaries, such as anti-social behaviour, were discussed above and some minor ones will be discussed in the following section. In this section first control of those spaces will be discussed.

Sheffield city centre manager stated that they controlled the space in several ways. Physical controls in the Peace Gardens are managed through the control of water features. When the Peace Garden gets quite crowded, the city centre management team lower the water features or completely turn it off until crowds reduce. It can be

argued that such physical control limits children's interaction with water. If managers become controllers, other visitors become controlled and children interacting with water become undesirables (Tibbalds, 2001) because turning the water features off only eliminates the children interacting with water. The rest of the public is more likely to continue their activities in the area. For instance, children and families who come to the space just for children's water interaction were likely be disappointed as a result. Additionally, lowering the water features also limits the some groups of children's water interaction, especially children more than 5-6 years old. It was observed that, when the water features were low, not many children were interested in. During summer 2013 water levels were quite low compared to Godwin fountains in the winter. Mainly young children were observed in the fountain in this period. On the other hand, it can also be argued that this limitation of lowering water jets, gives toddlers and younger children more chance to interact with water. However, observation findings suggest that even young children enjoyed it when water jets shot up, so it might be that only toddlers might benefit from lower water levels and many other children would be more likely to find the water features boring and move on. These types of physical control of spaces are not very different from placing obstacles to prevent skateboarders using urban open spaces (Woolley *et al.*, 2011). Both limit one group of children's activity. However, physical controls discussed in this paragraph are innocent compared to what Woolley *et al.* (2011) described because these controls of water features are only temporary.

This study also suggests that there seems to be some social control by city centre ambassadors. As mentioned in the literature, children like the presence of security guards, when they are not intruding on their space and activities (Nayak, 2003). No direct issues were reported from children and parents regarding city centre ambassadors. However, in the observations it was witnessed that they limited some behaviour. For instance, they stopped children from playing water fights and collected plastic bottles to prevent them restarting their play. The role of ambassador might be explained why they tried to prevent children slipping and injuring themselves; however,

they still intruded on children's unstructured play, in which they ran, spent energy, and engaged in physical activity. These are important for their creativity, imagination, health, and also physical, cognitive, emotional and dexterity development (NPFA, 2000; Ginsburg, 2007; Kolb & Kolb, 2010).

Furthermore, several times ambassadors were observed warning children who were skating and biking in the area because skating in the Peace Gardens was banned by-law in 1998 (Woolley *et al.*, 2011). This shows that restrictions against skateboarders and bikers still persist, and seems to support previous research (Woolley *et al.*, 2011; Woolley & Johns, 2001). Biker children were observed doing their tricks in the water and skateboarder children ran through the water features, when ambassadors were not around, especially on cooler days. The presence of these groups and their use of water features show that they liked these features and wanted to interact with them.

Photograph 28: Bikers interacting with water (Photographs taken by author)

The second issue related to professionals is budget. The managers of the Endcliffe and Millhouses Parks mentioned that he had just about the right number of staff in the

team but on busy summer days the management and maintenance team struggled to keep up with demand due to lack of staff, adding that the management team probably would not have new staff in the foreseeable future because of governmental cuts, which have affected almost every city councils across the country, especially in the most deprived areas (Woods, 2014). For instance, Wolverhampton City Council had to make two thousand workers redundant as the Government cut half of the council's budget (Withnall, 2014). These budget cuts have even affected the largest U.K. cities, such as Liverpool, where many leisure services will be closed, due to agreed £156 million budgets (BBC News, 2014). In the last few years news similar to this has been a daily matter. According to recent reports, 86% of the park managers have been affected by budget cuts in the last four years in the United Kingdom (Neal, 2014). Sheffield lost half of the council budget and these cuts will cause changes in library services, home care services, residential care settings and many other services, as well as requiring the restructuring of staff across services (Sheffield City Council, 2014b). As discussed by many academics a lack of public funding is generally replaced by private interest, which over a time makes public spaces private (Trancik, 1986; Goldberger, 1996; Loukaitou-Sideris & Banerjee, 1998; Kohn, 2004; Carmona *et al.*, 2008; Carmona, 2010a). Recent findings from "The state of UK public parks" report argued that 45% of the local authorities were considering selling or transferring the management of parks and green spaces (Neal, 2014). Furthermore, Neal mentioned that friends groups and park user groups had increased their membership size by 47% in the last three years. As was argued, friendship group mechanisms work very well in wealthy areas; however cannot replace governmental finance in deprived areas (Katz, 2006).

Furthermore, according to Butler's (2014) recent report published in The Guardian, the Birmingham Council leader stated *"The next few years may well see the end of local government as we know it*". Taken together, these discussions suggest that current affairs can have a major impact on quality and the use of public spaces in the future. Therefore, Sheffield park managers are also more likely not to get any more funding in the near future, which would affect the quality of not only water features but also park

management in general in Sheffield. A reasonable approach to tackling this issue could be using the findings of this research about where large numbers of children interact with water and introducing focused management regimes. As these tasks will be concentrated on a few areas in the parks, it could be undertaken with the available workforce.

Budget issues not only affect the management of sites with water features but also the provision and sustainability of water features. Artificial water feature provision is expensive as it involves many steps to provide swimming pool standard water. In the Peace Gardens, electricity is used in water jets, pumps and many other parts of the water feature, and chlorine is used in every cycle of water to keep it at swimming pool standards, and since the water is full of chemicals it needs to be replaced with fresh water regularly. It should not be forgotten that water features in the Peace Gardens run almost 24 hours a day, 7 days a week most of the year, which would also increase the total cost to the city council. In Millhouses Park fresh tap water is used. Although water is bought from Yorkshire Water with reduced tariff, due to the special agreement between parties, it still costs Sheffield City Council a lot of money.

According to a designer of the structured water play area in Millhouses Park, Sheffield Local Authority could only afford one artificial water feature, the Peace Gardens, and now the rest of city parks are struggling to pay for Millhouses water play area. Taken together, budget cuts and running costs make the future of artificial water features uncertain. It should not be forgotten that many water features in the past were neglected and closed down due to lack of relevant budget, management and public interest in Sheffield, such as Millhouses Lido, closed in 1989, when one of the largest budget revenue cuts happened (Urban Parks Forum, 2001); Millhouses Paddling Pools, closed in 1990; and water features in Charter Square were closed.

The last category that needs to be emphasized relates to professionals is non-consideration of water play in natural areas, which creates physical and social boundaries. All the boundaries related to natural water might be due to this non-

consideration of water play. The manager of Endcliffe Park admitted that they had never considered children's interaction with water in the area and have never done anything towards children's interaction. One major drawback of this approach is that the boundaries children mentioned regarding Endcliffe Park are likely to be related to ignorance about water play in this area. Furthermore, managers also indicated that water play in Endcliffe Park would not be on their agenda in the future. However, a consideration of water interaction in Endcliffe Park and other natural water sources in different parts of the city could be a good alternative to artificial water play provision because it is cheaper and can take place in any natural water in urban open spaces in Sheffield, providing play in the natural environment that has many benefits, such as developing their understanding of our world and their own experiences (Broadhead, 2006); helping develop gross motor and fine motor skills; improving concentration and observation skills (NPFA, 2000); and improving educational success (Greater London Authority, 2003). It is also one of the areas in which water is enjoyed by children and with a little affordance and encouragement it would achieve its full potential.

8.7.7 Minor concerns

The minor concerns related to study sites will be discussed in this section. This study's findings suggest that the largest human-orientated concern of parents was supervision. Some of the parents seemed to be quite aware of the dangers involved and they were concerned on behalf of other children who were not closely supervised. Children, especially younger ones, might fall into water or have accidents and injure themselves as well as others. Despite the fact that none of the study sites had dangerous water features for older children, they still might be dangerous for younger children. Streams in Endcliffe and Millhouses Park, the boating lake in Millhouses Park and canals in the Peace Gardens could be potential danger areas for young children.

Play Safety Forum (2008) indicated that even a shallow paddling pool could include the risk of drowning but this is very small. Furthermore, it is known that presence of adults negatively affected younger children's physical activity due to safety concerns

(Floyd *et al.*, 2011; Holt *et al.*, 2009). Parents' unnecessary involvement in play would take invaluable benefit out of water play. Play Safety Forum (2008) also suggested children need to expose the low level of risk that would provide them with stimulating experiences and help their development. However, it was argued that the presence of adults is important when physical activity is involved (Floyd *et al.*, 2011). Thus children, especially younger ones, should not be left alone in urban open spaces involving water features but their activities should not be intruded on or limited by parents. Therefore, keeping children in eyesight, providing them with visual protection against the danger of water, is a useful approach that should be adapted. However, during the site visit not many unsupervised children observed in the spaces and most of the unsupervised children were 10 years old or older, which should reduce concerns, as older children are more likely to be able to look after themselves and think of others, compared to younger children.

This research has identified that a lack of changing facilities and toilets was cited as an issue, especially in the Peace Gardens. Families were likely to use nearby cafés and shops, and they had to buy goods for this purpose, in order to use their toilet facilities. Not only children but also parents are concerned with having no public toilets around the Peace Gardens. Lack of facilities was one of the common discussions during interviews with parents. Furthermore, this study also suggests that the lack of changing facilities negatively associated children's interaction with water in urban open spaces because a number of children discussed parental limitations due to a lack of changing facilities. Many parents were observed trying to change their children's clothing in open public area in the Peace Gardens, especially during summer 2013 compared to the year before, it is likely to be related to the closure of toilet facilities.

It was also identified that some parents were not comfortable with seeing children changing in the public space and worried behalf of the parents, due to the potential for strangers seeing children naked, though this cannot be proven. and of course and it might be urban paranoia. This seems to support the finding of Blakely (1994), who

indicated that newspaper articles, television news and rumours about kidnappers, rapists and strangers make parents "worried" for their children.

It was indicated in the literature that the presence of facilities seems to be positively associated with children's access to urban open spaces (Hume *et al.*, n.d.; Timperio *et al.*, 2008; Potwarka *et al.*, 2008). Hence, one of the issues emerging from these findings is the lack of public facilities, in this case toilets and changing facilities, which affects children's interaction with water, as well as concerning the parents. One possible implication of these findings is that Sheffield City Council should re-open toilet facilities and should put some changing facilities in spaces, especially the Peace Gardens. Moreover, these facilities should be provided free to the public because results indicated that some people were not keen on paying for toilet facilities. Furthermore, large families coming from disadvantaged backgrounds with several dependent children might not be able to pay.

There was also a slight concern from a few parents in Millhouses Park that the vegetation in the middle of the water splash area reduced visibility. The vegetation (bushes) sits on top of the higher topography which creates a miniature landscape, as the presence of vegetation supports play activities and interaction with parents (Taylor et al., 1998), However, parents get concerned when they are not able to see their children in an open space (Blakely, 1994; Holt *et al.*, 2009; Valentine, 1996; Veitch *et al.*, 2006). Study observations suggest that a number of parents followed their children around the water splash facility due to the restricted view. Woolley (2003) mentioned that the use of vegetation in children's play areas had long been debated by professionals but parents have a negative attitude towards it, for the reasons given. This research supports Woolley, although the issue was minor, probably related to water play area being a confined space, surrounded by low fencing, so there are always many adults present to provide visual protection, as was suggested by Jacobs (1961).

This study suggests that majority of the issues, worries and concerns discussed above are related to the management of the study sites and it is very important to address

these issues, despite some being minor, as it is the first stage of solving the problem. Sheffield local authority and other local authorities owning water features in a public open space should pay more attention to those areas to understand and address the issues. Although the majority of the public appreciate these open spaces, management issues, even minor ones, might underpin the success of these sites, and public might lose interest and the areas become neglected (Carmona, 2010b; Tibbalds, 2001). This happened to some other water features in Sheffield previously, such as Endcliffe Park boating facilities in early 1900s; Millhouses Park swimming pool; water features in Charter Square; and Rivelin Valley paddling pools. The design team leader of the Peace Gardens also mentioned the importance of management for this site and he gave the example of Charter Square. Therefore, to prevent these areas becoming neglected spaces, every concern of the public should be listened to, addressed and solved, regardless of how minor they may be.

8.8 Summary

This chapter has critically discussed important findings to enhance our understanding of children's interaction with different water features in urban open spaces.

This study suggests that females visited Sheffield city centre more but slightly more males visited both parks more often. However, interaction with water features was undertaken more by females in all areas.

Discussions from emerging findings established that younger children paid more visits to all areas. Furthermore, considerably more young children interacted with water features. with regards to age, this study also suggested that there was a relationship between children's ages and independent mobility. As children get older their independent mobility increases, at least for city centre and Endcliffe Park visits, and 10 seems to be the milestone age for children's independent mobility, which supports previous research about independent mobility (Hillman et al., 1990; Veitch et al., 2008;

Brockman et al., 2011; Foster et al., 2014). For these age groups slightly more children from older age groups visited Sheffield city centre.

Another important point discussed in this chapter was the relationship between the proximity of living close to study sites and children's access to those urban open spaces. Several different indicators suggest that there is a positive relationship between these two factors. Children living close to study sites are more frequent users of those areas, pay more after school visits and walk or cycle to them, compared to children living further away.

This chapter has also discussed the fact that water-related activities are not the most common in all study sites. A majority of the children visited the water features monthly or less frequently, and children visited artificial water features more compared to natural ones. Furthermore, through observation, several spots where children extensively interacting with water were identified.

This chapter has also shown that there are two different types of water interaction in urban open spaces: active and passive. Results suggest that children's behaviour around water interaction changes over time. Younger children are more interested in active interaction, while the majority of older children interact passively. However, in Endcliffe Park many older children were involved in active interaction but not in activities that required physical contact with water. These properties of natural water play seem to support the existence of interaction with water all year around.

This study extends our knowledge about the effect of structured water play. Findings suggest that extensive numbers of children actively interacted in structured water play areas because they were limited by the equipment provided. Furthermore, it is more appealing for young children (age 0-9) and provides limited opportunities for older children (Age 10 and over). However, unstructured areas offer different opportunities for different types of water interaction. Children find affordances in those areas to interact with water, as they want to. However, the findings also suggest that artificial

water in the Peace Gardens also provided a small degree of affordance, especially for older children. Therefore, it can be argued that children are able to continue their active and passive interaction in natural areas and these findings emphasize the opportunities natural water play provides.

This chapter also discussed parents' attitudes to children's interaction with water, these being mainly positive attitudes. Furthermore, parents liked the artificial structured water play areas in Millhouses Park. Parents' negative and cautious attitude were related to health and safety concerns, location, and proximity of home to water. It was outlined that some parents had negative attitudes to water interaction in the Peace Gardens; they would took their children to "proper" water play areas, such as private water centres.

Lastly, this chapter discussed the common issues of the study sites, such as anti-social behaviour; overuse of space; water quality; lack of facilities; litter; professional issues and some minor concerns.

Chapter 9

Conclusions

9.1 Introduction

The purpose of this thesis was to explore what makes water features in different urban open spaces attractive to children and what opportunities or constraints influence children's ability to experience those water features. To date children's interaction with water has hardly been researched. Hence, the significance of this study is the exploration of how children experience water features in different types of urban open spaces and the exploration of parents and professionals attitudes towards children's water play, the first of its kind to look at this issue in this way.

The few studies on children's interaction with water have been discussed in the literature chapter. This qualitative study used children's surveys to understand children's experiences; parental surveys to explore parental views; interviews with parents on sites to find out why parents took their children to study sites and whether they had any issues with those sites; interviews with professionals to understand the other side of the phenomenon; and observations and GIS-based behaviour mapping to

find spatial distributions of children's interactions with water in the study sites. Results were identified and the findings which emerged discussed in previous chapters.

This chapter starts by reflecting on the research aims, discussing key findings and identifying the limitations of the study, and concludes by considering how these concepts can be taken forward to provide a better water experience for children in urban open spaces, making recommendations to professionals and researchers regarding how to build on this study in the future.

9.2 Overview of Research Findings

9.2.1 Reflecting on research aims and objectives

This research was carried out in order to explore what makes water features in different urban open spaces in Sheffield attractive to children and what opportunities and constraints influenced children's ability to experience those water features at three different type of urban open spaces in Sheffield, United Kingdom. The key issues this thesis focuses on are:

- Identification of diversity of user groups in terms of age, gender and ethnicity.
- Understanding children's perceptions and experiences of different types of water features in urban open spaces.
- Exploring how children's experiences of water are perceived, facilitated and controlled by parents and professionals.

These issues have been explored using a qualitative triangulation methodology that includes three urban open spaces with different types of water features and uses three methods: surveys, interviews and observations.

- Surveys have been used to develop an understanding of children's and parents' experiences, especially the ones who did not visit the study sites, and attitudes towards children's interaction with water in urban open spaces.
- Interviews have aimed at discovering parent's perceptions of water play have been explored, which was especially beneficial for understating why parents took their children to urban open spaces. Furthermore, semi-structured interviews have been undertaken with designers and managers of those sites to develop an understanding of the professionals' perspective.
- Observation behaviour maps have been created to illustrate spatial distributions in children's water-related activities.

This research has achieved its objectives through the methodology mentioned above, revealing children's diversity, and their access to and experiences of water features, as well as outlining how parents and professionals' react to these experiences.

9.2.2 Key themes emerging

9.2.2.1 Findings supported by existing research

This research investigated how children's home location affected children's frequency of visit, when they visited and how they visited urban open spaces with water features. Understanding the relationship between the proximity of living and use would outline how equal and how sustainable the access to those areas was for children coming from in different areas and being from different socio-economic backgrounds.

One of the major points emerging from this study is that when home proximity to urban open spaces with water features increased, children's frequency of visit increased. Children living in distant areas were more likely to visit on school holidays or for special event days, and were likely to be driven to the spaces. Furthermore, these findings support the existing knowledge about the relationship between proximity and

use (Giles-Corti & Donovan, 2002b; Giles-Corti & Donovan, 2002a; Roovers *et al.*, 2002; Veitch *et al.*, 2006; Shaftoe, 2008).

This research has also ascertained that, as children got older, their independent mobility and access to Sheffield city centre and Endcliffe Park considerably increased. Additionally, there was a substantial increase at around the age of 10. Although there seems to be no evidence-based research investigating the relationship between children's independent mobility and access to urban open spaces with water features, different studies have identified that children start to gain their independence at around the age of 10 (Hillman *et al.*, 1990; Hillman & Adams, 1992; Veitch *et al.*, 2008; Brockman *et al.*, 2011; Foster *et al.*, 2014).

Another important finding was regarding the place of water-related activities among other activities in Millhouses and Endcliffe Park. This study has shown that play activities around water features are not concentrated on water aspects in both parks. A majority of the children played in the playgrounds and on the open field. This finding seems to support the limited knowledge about children's play activities around rivers. It was previously identified that *"non-river based"* play in wide open spaces, such as playing on grass land, in playgrounds, and running and biking, were more common (Tunstall *et al.*, 2004).

This research has also been concerned with exploring children's experiences of water features, showing that the majority of children interacted with water without physical contact in river environments. Only a minority of children had active interaction with a physical contact such as splashing and paddling in rivers. This research also seems to support Tunstall *et al.*'s (2004) research on children's perception and play in and around rivers, which found that only a minority of children participated in these kinds of activities.

This research has also investigated issues and concerns children had, because identifying those issues and concerns can be the first step towards improving the quality of children's water interaction. The children have concerns about litter, rubbish, sharp objects, water quality, and pollution. These findings also support limited previous research into children's perception of rivers as polluted, littered and dirty (Tapsell, 1997; Tapsell *et al.*, 2001; Tunstall *et al.*, 2004). This research has also identified health and safety concerns around rivers, such as the risk of falling in, mud, and deep water, which was also indicated by Tapsell et al. (2001) and Tunstall et al. (2004). Although it is over 10 years since these studies were undertaken, children's fears of natural water persist.

Lastly biker and skateboarder children were observed running through the water features when ambassadors were not present, especially on cooler days. The presence of these groups and the use of water features by them showed that they liked water features and wanted to interact with them. However, their activities were limited when ambassadors are present. Observational findings suggest that social controls against skateboarders and bikers in the Peace Gardens continue, supporting previous research (Woolley & Johns, 2001; Woolley *et al.*, 2011).

9.2.2.2 Themes adding to the body of knowledge

One of the main objectives of this study was to explore the perception and children's experience of water in different urban open spaces. There seems to be a lack of evidence-based research about children's experiences of water in urban open spaces. Understanding this would give us clues about how such interactions should be planned and designed.

This study extends our knowledge about types of water interaction. Active interaction takes time, energy and, in most circumstances, involves physical contact with water, whereas passive interaction does not. However, as was identified, when natural water in Endcliffe Park was involved, children found many different types of affordances to

actively interact with water that did not require physical contact. These opportunities for play in natural water supported children's interaction with water all year around, providing opportunities for paddle play, splashing in the summer, and playing Pooh Sticks, fishing games, and stepping-stones in the winter months; or for the children who do not want to have, or were allowed to have, physical contact with water.

There have been no specific research knowledge about children's interactions with artificial water features previously. Previously, in the literature it was evident that presence of water features was related with adolescent girls use of urban open spaces. However, this research extends our knowledge that female children, in all age groups, are more attracted and more interacting with water features in urban open spaces then males. Furthermore, majority of the children did not want to interact with water features were males.

Another important finding emerging from this thesis is that structured water play areas, such as that in Millhouses Park, provide limited opportunities for imaginative play for younger children, and limited opportunities for older children's involvement and passive interaction.

One of most important aspects of this study is the way it illustrates how the transition to adolescence affects children's water interaction behaviours. A majority of the children moved to passive interaction with water when they became adolescents. This was the case in all study sites, although natural water in Endcliffe Park provided more opportunities for older children to actively interact with water while spending less energy and usually having no physical contact with water.

This study has also investigated parents' attitudes towards children's interaction with water in urban open spaces and whether this attitude affected children's interaction with water features. Evidence from this research suggests that parents have a preference for artificial water play because water quality and security of the space are perceived to be high. Interestingly, a considerable number of the parents had positive

attitudes towards natural water and no negative attitudes were detected. Therefore, there might be a potential for encouraging natural water play, if the concerns that cause cautious parental attitudes are overcome.

The evidence from this study suggests that managers of the study sites seem to provide care and maintenance for artificial water play in both Millhouses Park and the Peace Gardens. However, their ability to provide and encourage a better water play experience is limited due to budget cuts. This is especially correct for Millhouses Park's water play area.

On the other hand, one of the most important things this individual piece of research adds to body of knowledge is that children's interaction with water and water play in rivers has never been considered by practitioners in either park. On the other hand Sheffield City Council seems to have no plans for putting natural water play on the agenda for the future. Natural water play seems to offer more variety and appeal to a wider age range. Although natural water in many areas of the city is freely available, it has never been considered for water play by professionals.

Lastly, this research has taken innovative behaviour mapping methodology that created precious information about children's behaviours around water environments, which could not be collected with other research methods. Development procedure of this technique has discussed in methodology (Chapter 3) in detail and added valuable information to the body of knowledge. This technique will provide base for future researchers to directly adopt or modify to suit their specific research context.

9.2.3 Limitations of Study

Physical and access limitations faced during the data collection were discussed in Section 3.5. This section recapitulates these limitations and further discusses the limitations related to the research instrument and data collection and sampling methods.

9.2.3.1 Limitations of the research instruments

Children's qualitative surveys were useful instruments for collecting large data from children in a time limit and helping to explore children experience of water in urban open spaces in many different directions. However, the instrument was limited in some areas due to various reasons.

First of all, ethnicity in the surveys was designed according to Census 2001 categories designed by the Office for National Statistics. In spite of having a *"Prefer not to say"* option on the ethnicity scale, some children did not tick any box. Additionally, some children ticked more than one box, although it clearly stated in the instructions, *"Please tick one box for each answer. In some questions you may tick more than one box when it says so".* The total percentage of children who either did not give any answer or gave an incorrect answer was around 15%. This might have limited the understanding of ethnic diversity, despite the fact that the general distribution of ethnic backgrounds showed the same patterns to the Sheffield average and the neighbourhood average.

Secondly, the survey also intended to explore what kind of water features children would like to see in the future, which the children did, but none seemed to be feasible in urban open spaces because most of the answers were imaginary such as; "*Spiderman shaped water features" and "Secret cave which is underwater water polo pitch".* This did not discover what was intended to being covered. Therefore, these responses could not be interpreted into relevant knowledge in this study, even though there was an attempt to code the answers.

Thirdly, short interviews proved to be a useful instrument to gather information about parents' attitudes towards children's interaction with water. However, it was identified that the vast majority of the parents had positive attitudes towards their children's interaction. The instrument did not seem to cover the whole saturation because none of the parents had negative attitudes. In order to understand whether whole saturation is

covered, parental surveys in schools were introduced. Parental surveys seemed to cover saturation because it helped to explore some parents' negative and cautious attitudes and themes repeated many times by those parents.

Lastly, it was not feasible to observe an entire study area in Millhouses and Endcliffe Parks as a sole researcher because they are quite large open spaces, divided into sections and subsections to cover them in a round of observation. Therefore, this might have limited the number of children observed and recorded in those study sites because, when the author moved to another section, other children might have interacted with water in previous sections. However, in the observations a large number of children were observed and recorded undertaking the same sort of activities in the same places over and over again. Therefore, these observations provide valuable information about understanding the spatial distribution of children's activities all year around in the study sites.

9.2.3.2 Adequacy of data collection

Limitations of access to schools were discussed in Section 3.5 in detail. The original research design included 12 schools (8 primary; 4 secondary). Although many attempts were paid, only three primary schools agreed to the surveys being undertaken. Each was within the proposed distances to one of the study areas, therefore a methodological change was not made.

First of all, this might have limited the number of children involved in this study. However, number of year groups involved in the surveys increased and 237 children in total were involved in the surveys, which showed that saturation was achieved. Furthermore, the age range of the sample was between 8 and 11, which covered most of the primary school children. In this respect it can be said that involving small numbers of schools did not influence the findings in most cases.

Secondly, no secondary schools agreed to be involved in the study, which limited the understanding of older age groups. Although observations provided some information about older children's interaction with water as a secondary source of data, this study has not been able cover older children's perceptions and interactions with water from their point of view. This limitation might provide an opportunity for later research.

9.3 Scope for Future Work

This thesis ends by reflecting on the research approach and whether there is scope for development. Research deigns and processes will be reviewed and principle findings reflected for potential future research.

9.3.1 Reflections on methodology

Triangulation methodology provided a philosophical base for this research that allowed for the use of different research methods to strengthen the trustworthiness of the research results. Furthermore, the method provided additional information to enhance the findings and helped the interpretation of findings.

This research has looked at the three different aspect of the water play in urban open spaces; children, parents and professionals. The mind of possible relations between these parties prior to research being implemented was reflected in the Figure 1 (p.73) and Figure 2 (p.73) reflects the relationship and effects of relationships between those parties on children's water play. The main difference between those figures is relationship between different aspects was not hypothesized prior to research being implemented; however, relationship between professional and parents, professional and children, parents and children has identified. Therefore, each groups does not only effect water play directly but they effect water play through other group. For instance non-consideration of natural water play by professionals cause some negative and

cautious attitude on parents that limits children's water play. On the other hand, professionals direct measures of controls on spaces such as lowering the water features, directly effect water play but management issues effect water play through children's choice. Therefore, Figure 2 (p.73) in methodology Chapter 3 has summarized the relations between different groups and issues identified effecting water play.

The behaviour mapping developed for this research is a new tool specifically oriented to particular research context because previously developed behaviour mapping techniques was not suitable for this research. Behaviour mapping technique and tool developed seems to be innovation product of this thesis. This thesis seems to make good contribution to the body of knowledge because researchers in the future can easily relay on this technique and behaviour mapping methodology for observing water features. Moreover, this thesis provided valuable information about development of the behaviour mapping technique. Therefore, researchers, who are interested in with children's experiences of water, could easily adopted and change the techniques according to their particular research context. Moreover, development of this simple but effective behaviour mapping technique and tool for observing children's interaction with water provide a base for development of more technology oriented behaviour mapping tools for observing water play.

On the other hand, observations provided considerably reliable information. The behaviour maps created seemed to offer an insight into the spatial distribution of children's activities. Undertaking observations for a year in all study sites extended our knowledge about how spatial distribution of those activities changed, depending on the weather. However, there was a limitation of observations but this limitation was not related with the technique developed. Only activities children undertook were observed and coded, due to the fact that it was not possible to make more as a sole researcher. In the future, deeper observations can be conducted to observe not only what activities they undertake but also how they undertake these activities, if more researchers are employed or observations are concentrated in specific areas, where a larger number of children interact with water using the spatial distribution in behaviour maps.

The reliability of the surveys used in this study varied depending on questions and surveys. As discussed in the previous section, some questions on the children's surveys did provide only limited understanding. However, in general, reliable information was gained. Without employing a survey method it would have been difficult to gather information from a sample of this size (237 children and 104 parents) within the given time period of this study. However, due to the access issues some age groups could not be involved. There might be a potential in the future to research those age groups' interactions with water features in Sheffield.

Scheduled semi-structured interviews both with parents in study sites and professionals emphasised parental and practitioner's attitudes towards water play and achieved their objectives. Interviews also have a limitation as discussed above. The use of parental surveys and interviews together provided a better understanding of issues and seemed to cover the saturation. However, parents with negative or cautious attitudes towards children's interactions with water in urban open spaces were identified in surveys where the majority of the parents tended to give shorter answers. Therefore, parents with negative and cautious attitudes can be interviewed in the future, in order to improve the depth of understanding.

There have been limited attempts to explore children's interaction with water previously, which would have provided a historical context and base for this research that would have indicated a direction for future research into specific focus. Due to lack of previous research knowledge, this research rather focused on a wide spectrum of children. However, this research has identified considerable numbers of young children at study sites. There might be a scope for including these younger children in the future, which might help us to gain a deeper understanding of young children's interactions. However, a methodological framework used in this study would not be suitable for younger children as survey method used require children who are able to read and write.

9.3.2 Recommendations for professionals

This study has developed an understanding of children's experiences of water through qualitative triangulation. This knowledge can be transferred to practitioners in Sheffield and, with their acknowledgment of this knowledge, there might be a potential for creating better places for children's interaction with water in urban open spaces. The following recommendations are proposed to improve children's experiences of water features in Sheffield.

1. This research has highlighted many issues and concerns seem to be limiting children's experiences and cause cautious parental attitude. Those issues and concerns such as; anti-social behaviour, over use of study sites, water quality, health and safety concerns, and lack of facilities, are majorly related with the management of these sites. Therefore they should be acknowledged by city centre management team and parks and country-sides management team. This thesis provides detailed insight to those issues. Acknowledgement of those issues will be first step towards resolving them and providing better water play experience for children.
2. Behaviour maps has illustrated the spatial distribution of water interaction in all study sites. Those maps have identifies 4 different spots in Millhouses Park and 5 different spots in Endcliffe Park where water interaction was focused. Some of those areas such as water splash play area and boating lake in Millhouses Park were well known areas of water play; however, other two spots in Millhouses Park was not identified previously and water play in Endcliffe Park has not been considered. Therefore, using the maps this research has provided, management and maintenance strategies can be focused on to the areas this research identified because as was explained by managers of spaces. Due to budget cuts and financial difficulties they have a limited staff to look after to areas and they are struggling to maintain whole park area. Furthermore, in this financial climate budget cuts and financial circumstances

does not seem to improve in the near future. Therefore focusing on identified areas can provide better water experiences for children.

3. Structured water play is parents' favourite type of water features as it is considered as safe water play. However, it also seems to be limiting children's activities. For instance for Millhouses Park water play area children seemed to be operating equipment provided and running from one equipment to other. Moreover, older children had limited interaction with those water features because they were specifically designed for children up to 7 years old. Secondly those water features only provide activate interaction. Secondly children wanted to have passive interaction with water, especially older children, had almost no opportunity. Therefore, in the future designers should consider what this research has provided and should encourage unstructured water play areas with different active and passive interaction options.
4. Sheffield City Council should acknowledge the importance and benefits of natural water play such as; providing variety of different activities, providing active and passive play all year around, encouraging imaginative play and family involvement to water play. Sheffield city council should also include natural water play in policies such as inclusive play policy. Natural water play should also be included into parks and countrysides management's local agenda for the future and development of a theoretical framework to improve awareness of natural water interactions should be considered.
5. Previous research undertaken by the author (Bozkurt *et. al.,* 2012) identified the inequalities of distribution of water play and this research has found evidence to support the case. There are many potential areas for the natural water play in the North/North-East part of Sheffield such as Firth Park, Shire Brook, the River Don goes through North-East Sheffield and there are many small tributaries and dikes in the North. Therefore, Sheffield City Council, and parks and countrysides management team should evaluate the potential of natural water resource in the North/North-East part of the city for distributing available resources into the whole community in terms of water play provision

to achieve social justice and a sustainable city. Furthermore, natural water play could be the low-cost alternative to structured water play.

6. Encouraging communities, groups and children into natural water play through creating knowledge about flood risks, pollution levels and water quality. This encouragement may be achieved through Sheffield City Council policies, creating awareness on use of natural water through taking children to natural water areas on the school trips. Furthermore, parental awareness may be achieved though informing friends groups, community centres, and playgroups.
7. Lastly, to increase the awareness and decreases the level of cautious attitude, Sheffield parks and countryside management team should test the water quality, flood risk and pollution levels and should publicized the results through Sheffield City Council web site and local new papers. Furthermore, digital advertisement boards that can be regularly updated should be places to the sites with natural water to create awareness and encouragement of natural water play.

9.3.3 Scope for future research

This thesis has concluded with several themes about children's experiences of water features in different urban open spaces and a number of suggestions for practitioners to enhance children's experiences of water. However, there is still potential for a number of future studies.

1. The variety of different age groups' experiences of water features in urban open spaces can be research. Although this research identified main differences between age groups, such as change of water interaction behaviour, with transition to adolescence, a limited number of children from the older age bracket were involved. Therefore, future research exploring the experiences of children from a wider age range would enhance the understanding.

2. This research has illuminated the nature of children's interactions with water in different urban open spaces and identified a potential for improvement of natural water play. Children's experiences of natural water play can specifically be researched with methods such as unstructured interviews or focus groups to enhance understanding and create better water play areas.

3. The potential for natural water play has been discovered by this research; however, researching water play in a policy context was beyond the scope of this research. In the future water play policy in the United Kingdom context can be researched to provide a legal infrastructure to encourage and develop natural water play areas.

4. In this research artificial water in prestige locations, artificial water play areas in a park and natural water play in a park has been research. However, there are a limited number of water play areas that use natural water but include equipment for entertainments such as the new Rivelin Valley Water Play space. Research on the way children play in this environment would be helpful.

In addition, future research on children's experiences of water in urban open spaces could contribute to increased knowledge development; help develop play policy; add to the understanding of natural water play; and improve the design and management of equally accessed sustainable water play areas for children in urban open spaces.

Appendix A

Children's Survey Example

Section 1:

Tell us a little about yourself

1. Which part of the Sheffield do you live?

1 ☐ S1 5 ☐ S5 9 ☐ S9

2 ☐ S2 6 ☐ S6 10 ☐ S10

3 ☐ S3 7 ☐ S7 11 ☐ S11

4 ☐ S4 8 ☐ S8 12 ☐ Other:.....

2. How old are you?

a ☐ 7 b ☐ 8 c ☐ 9 d ☐ 10 e ☐ 11 f ☐ 12

3. What is you Gender?

1 ☐ **Male**

2 ☐ **Female**

PLEASE CONTINUE TO NEXT PAGE ➔

4. How would you describe your ethnicity?

White	Asian	Chinese or Other
a ☐ White British	d ☐ Indian	h ☐ Chinese
b ☐ White Irish	e ☐ Pakistani	i ☐ Other Ethnic
c ☐ Other White	f ☐ Bangladeshi	
	g ☐ Other Asian	

Mixed	Black
j ☐ White and Black Caribbean	n ☐ Caribbean
k ☐ White and Black African	o ☐ African
l ☐ White and Asian	p ☐ Other Black
m ☐ Other Mixed	

q ☐ **Prefer Not to Say**

School Number:	1
Year group:	4
Pupil number:	

Children Water and Open Spaces Survey

Dear Children 

I am Melih , a researcher at the Department of Landscape in the University of Sheffield and I am carrying out a survey as part of my PhD research project. I am interested in how you experience the water in different parks and open spaces in Sheffield.

Your help is very important for me to understand how these spaces are used. Please read the questions and fill in the survey carefully with honest answers. You do not need the worry about your answers because your answers will not be mentioned to any other person. I and my supervisor will be the only people who have access to the surveys.

Yours sincerely,

Melih Bozkurt 

Instructions

Please tick one box for each answer. In some questions you may tick more than one box when it is mentioned. Please write carefully where there is a space for you to write answers so that I can read your handwriting.

Your teacher will show you photographs of spaces that mentioned in this questionnaire. Please look them carefully to recognize them.

Please ask your teacher if you need any help or if you do not understand any of the questions.

Thank you in advance for your important help.

5. How do you get to Sheffield city centre?

1 ☐ Walk 

2 ☐ Cycle 

3 ☐ Bus 

4 ☐ Tram 

5 ☐ Car 

6. Do you go to any water features in city centre?

1 ☐ Yes

2 ☐ No

7. If yes, which water features do you go to?

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PLEASE CONTINUE TO NEXT PAGE ➔

8. How often do you go to water features mentioned above?

1 ☐ Daily

2 ☐ More than once a week

3 ☐ Weekly

4 ☐ Fortnightly

5 ☐ Monthly

6 ☐ Less Than Month

7 ☐ Never

9. What do you do there?

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10. What do your parents think about your interaction with water in Sheffield city centres?

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Section 2:

City Centre

1. Do you visit Sheffield city centre?

1 ☐ Yes 2 ☐ No

2. How often do you visit city centre?

1 ☐ Daily
2 ☐ More than once a week
3 ☐ Weekly
4 ☐ Forthnightly
5 ☐ Monthly
6 ☐ Less than month
7 ☐ Never

PLEASE CONTINUE TO NEXT PAGE ➔

3. When do you visit Sheffield city centre? (Please tick as many box as you would like)

1 ☐ After School
2 ☐ Saturday
3 ☐ Sunday
4 ☐ School holidays
5 ☐ Events
6 ☐ Other.....

4. Who do you go to Sheffield city centre with?

1 ☐ Alone
2 ☐ Parents
3 ☐ Brother or Sisters
4 ☐ Friends
5 ☐ Other Family Member
6 ☐ Other.....

Section 3:

Endcliffe Park

1. Have you ever been to Endcliffe Park?

1 ☐ Yes 2 ☐ No

2. How often do you visit Endcliffe Park?

1 ☐ Daily

2 ☐ More than once a week

3 ☐ Weekly

4 ☐ Fortnightly

5 ☐ Monthly

6 ☐ Less Than Month

7 ☐ Never

PLEASE CONTINUE TO NEXT PAGE ➔

3. When do you visit Endcliffe Park? (Please tick as many box as you would like)

1 ☐ After School

2 ☐ Saturdays

3 ☐ Sundays

4 ☐ School Holidays

5 ☐ Events

6 ☐ Other.....

4. Who do you go to Endcliffe Park with?

1 ☐ Alone

2 ☐ Parents

3 ☐ Brother or Sisters

4 ☐ Friends

5 ☐ Other Family Member

6 ☐ Other.....

11. What 3 things do you like about water features in Sheffield City Centre?

1-.....

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2-.....

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3-.....

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12. What 3 things don't you like about water features in Sheffield City Centre?

1-.....

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2-.....

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3-.....

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PLEASE CONTINUE TO NEXT PAGE ➔

13. What kind of water features would you like to see in Sheffield city centre spaces?

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14. Why would you like to see those changes in Sheffield city centre spaces?

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11. What do your parents think about your interaction with water in Endcliffe Park?

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12. What 3 things do you like about water in Endcliffe Park?

1-.....
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2-.....
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3-.....
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PLEASE CONTINUE TO NEXT PAGE ➔

13. What 3 things you don't like about water in Endcliffe Park?

1-.....
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2-.....
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3-.....
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14. What kind of water would you like to see in Endcliffe Park?

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5. How do you go to Endcliffe Park?

1 ☐ Walk 

2 ☐ Cycle 

3 ☐ Bus 

4 ☐ Car 

6. What do you do in Endcliffe Park?

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7. Do you go to any water in Endcliffe Park?

1 ☐ Yes

2 ☐ No

PLEASE CONTINUE TO NEXT PAGE ➔

8. If yes, which water do you go to?

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9. How often do you go to water in Endcliffe Park?

1 ☐ Daily

2 ☐ More than once a week

3 ☐ Weekly

4 ☐ Fortnightly

5 ☐ Monthly

6 ☐ Less Than Month

7 ☐ Never

10. What do you do there?

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3. When do you visit Millhouses Park? (Please tick as many box as you would like)

1 ☐ After School

2 ☐ Saturdays

3 ☐ Sundays

4 ☐ School Holidays

5 ☐ Events

6 ☐ Other.....

4. Who do you go to Millhouses Park with?

1 ☐ Alone

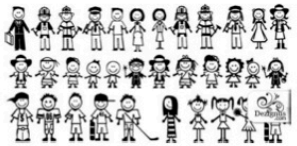
2 ☐ Parents

3 ☐ Brother or Sisters

4 ☐ Friends

5 ☐ Other Family Member

6 ☐ Other.....



PLEASE CONTINUE TO NEXT PAGE ➔

5. How do you go to Millhouses Park?

1 ☐ Walk 

2 ☐ Cycle 

3 ☐ Bus 

4 ☐ Car 

6. What do you do in Millhouses Park?

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7. Do you go to any water in Millhouses Park?

1 ☐ Yes

2 ☐ No

PLEASE CONTINUE TO NEXT PAGE ➔

15. Why would you like to see those changes in Endcliffe Park?

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PLEASE CONTINUE TO NEXT PAGE ➔

Section 4:

Millhouses Park

1. Have you ever been to Millhouses Park?

1☐ Yes 2☐ No

2. How often do you visit Millhouses Park?

1☐ Daily

2☐ More than once a week

3☐ Weekly

4☐ Fortnightly

5☐ Monthly

6☐ Less Than Month

7☐ Never

13. What 3 things you don't like about water in Millhouses Park?

1-.....
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2-.....
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3-.....
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14. What kind of water would you like to see in Millhouses Park?

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PLEASE CONTINUE TO NEXT PAGE ➔

15. Why would you like to see those changes in Millhouses Park?

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THIS IS END OF THE SURVEY.

THANK YOU FOR TAKING PART IN THIS STUDY.

8. If yes, which water do you go to?

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.....

9. How often do you go to water in Millhouses Park?

1 ☐ Daily

2 ☐ More than once a week

3 ☐ Weekly

4 ☐ Fortnightly

5 ☐ Monthly

6 ☐ Less Than Month

7 ☐ Never

10. What do you do there?

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PLEASE CONTINUE TO NEXT PAGE ➔

11. What do your parents think about your interaction with water in Millhouses Park?

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12. What 3 things do you like about water in Millhouses Park?

1-.....

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2-.....

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3-.....

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Appendix B

Parents' Survey Example

<u>Section 1</u>: Children, open spaces and water in Sheffield city centre.

1. How often do you visit Sheffield city centre?

1 ☐ Daily

2 ☐ More than once a week

3 ☐ Weekly

4 ☐ Fortnightly

5 ☐ Monthly

6 ☐ Less Than Month

7 ☐ Never

2. When do you visit Sheffield city centre? (you may tick more than one box)

1 ☐ After Work Hours

2 ☐ Saturdays

3 ☐ Sundays

4 ☐ Holidays / Bank Holidays

5 ☐ Events days

6 ☐ Other.....

3. Why do you go to Sheffield city centre? (you may tick more than one box)

1 ☐ Shopping

2 ☐ Meeting with Friend

3 ☐ Enjoying town centre

4 ☐ Day out with children

5 ☐ Work

6 ☐ Event

7 ☐ Other.....

4. How do you go to Sheffield city centre? (you may tick more than one box)

1 ☐ Walk

2 ☐ Cycle

3 ☐ Bus

4 ☐ Tram

5 ☐ Car

5. Do you take children to Sheffield city centre?

1 ☐ Yes

2 ☐ No

6. What do you do in Sheffield city centre with your children?

.....
.....
.....

7. Do you ever take children to spaces with water features in Sheffield city centre?

1 ☐ Yes

2 ☐ No

8. Which spaces?

.....
.....
.....

9. How often do you take children to water features in Sheffield city centre?

1 ☐ Daily

2 ☐ More than once a week

3 ☐ Weekly

4 ☐ Fortnightly

5 ☐ Monthly

6 ☐ Less Than Month

7 ☐ Never

10. What do you think about children's interaction with water features in Sheffield city centre?

.....
.....
.....

11. Why do you think this?

.....
.....
.....

12. Do you have any concern about children's interaction with water features in Sheffield city centre? If yes what are they?

.....
.....
.....

13. Should children's interaction with water in city centres be

1 ☐ Encouraged

2 ☐ Discouraged

14. What kind of changes would you like to see in terms of design and management, to encourage children to interact with water in city centres?

.....
.....
.....

15. Could you explain why you would like to see those changes?

.....
.....
.....

Section 2: Children, open spaces and water in other parts of Sheffield.

16. Do you take your children any other water features in open spaces or parks in Sheffield?

1 ☐ Yes

2 ☐ No

17. If yes, Please say which open spaces or parks?

.....
.....
.....

18. When do you visit those open spaces or parks? (you may tick more than one box)

1 ☐ After Work Hours

2 ☐ Saturdays

3 ☐ Sundays

4 ☐ Holidays / Bank Holidays

5 ☐ Events days

6 ☐ Other.....

19. How do you go to those open spaces or parks? (Please note name of space next to the option and you may tick more than one box)

1 ☐ Walk.....

2 ☐ Cycle.....

3 ☐ Bus.....

4 ☐ Tram.....

5 ☐ Car.....

20. Why do you go to those open spaces or parks?

.....
.....
.....

21. How often do you visit those open spaces or parks with children?

1 ☐ Daily

2 ☐ More than once a week

3 ☐ Weekly

4 ☐ Fortnightly

5 ☐ Monthly

6 ☐ Less Than Month

7 ☐ Never

22. What do you think about children's interaction with water in urban open spaces?

.....
.....
.....

23. Why do you think this?

.....
.....
.....

24. Do you have any concern about children's interaction with water features in urban open spaces? If yes what are they?

.....
.....
.....

25. Should children's interaction with water features in urban open spaces?

1 ☐ Encouraged

2 ☐ Discouraged

26. What kind of changes would you like to see in terms of design and management, to encourage children to interact with water in urban open spaces?

.....
.....
.....

27. Could you explain why you would like to see those changes?

.....
.....
.....

Section 3: Personal Details

Which part of the Sheffield do you live?

1 ☐ **S1**	5 ☐ **S5**	9 ☐ **S9**
2 ☐ **S2**	6 ☐ **S6**	10 ☐ **S10**
3 ☐ **S3**	7 ☐ **S7**	11 ☐ **S11**
4 ☐ **S4**	8 ☐ **S8**	12 ☐ **Other:.....**

How old are you?

a ☐ 18-19	f ☐ 40-44	k ☐ 65-69	p ☐ 90 and over
b ☐ 20-24	g ☐ 45-49	l ☐ 70-74	
c ☐ 24-29	h ☐ 50-54	m ☐ 75-79	
d ☐ 30-34	i ☐ 55-59	n ☐ 80-84	
e ☐ 35-39	J ☐ 60-64	o ☐ 85-89	

What is you Gender?

1 ☐ **M**

2 ☐ **F**

How would you describe your ethnicity?

White

a ☐ **White British**

b ☐ **White Irish**

c ☐ **Other White**

Mixed

j ☐ **White and Black Caribbean**

k ☐ **White and Black African**

l ☐ **White and Asian**

m ☐ **Other Mixed**

Asian

d ☐ **Indian**

e ☐ **Pakistani**

f ☐ **Bangladeshi**

g ☐ **Other Asian**

Black

n ☐ **Caribbean**

o ☐ **African**

p ☐ **Other Black**

Chinese or Other

h ☐ **Chinese**

i ☐ **Other Ethnic**

Prefer Not to Say

q ☐

Appendix C

Parents Interview Example

Interview Questions for Adults in City Centre

Participant Number:

Age of Children: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

1. How often do you visit Sheffield city centre?

- ☐ Daily
- ☐ More than once a week
- ☐ Weekly
- ☐ Fortnightly
- ☐ Monthly
- ☐ Less Than Month
- ☐ Never

2. When do you visit Sheffield city centre?

- ☐ After Work Hours
- ☐ Saturdays
- ☐ Sundays
- ☐ Holidays / Bank Holidays
- ☐ Events days
- ☐ Other.....

3. Why do you come to Sheffield city centre?

- ☐ Shopping
- ☐ Meeting with Friend
- ☐ Enjoying town centre
- ☐ Day out with children
- ☐ Work
- ☐ Event
- ☐ Other.....

4. How do you come to Sheffield city centre?

- ☐ Walk
- ☐ Cycle
- ☐ Bus
- ☐ Tram
- ☐ Car

5. Do you take children to Sheffield city centre?

- ☐ Yes
- ☐ No

6. What do you do in Sheffield city centre with children?

.....
.....
.....

7. Do you ever take children to spaces with water features in city centre?

- ☐ Yes
- ☐ No

8. Which spaces?

.....
.....
.....

9. How often do you take children to water features?

- ☐ Daily
- ☐ More than once a week
- ☐ Weekly
- ☐ Fortnightly
- ☐ Monthly
- ☐ Less Than Month
- ☐ Never

10. What do you think about children's interaction with water features in city centre?
    .....
    .....
    .....

11. Why do you think this?
    .....
    .....
    .....

12. Do you have any concern about children's interaction with water features in urban open spaces? If yes what are they?
    .....
    .....
    .....

13. Should children's interaction with water in city centres be

    ☐ Encouraged

    ☐ Discouraged

14. What kind of changes would you like to see in terms of design and management, to encourage children to interact with water in city centres?
    .....
    .....
    .....

15. Could you explain why you would like to see those changes?
    .....
    .....
    .....

Personal Details

Which part of the Sheffield do you live?

- ☐ **S1** ☐ **S5** ☐ **S9**
- ☐ **S2** ☐ **S6** ☐ **S10**
- ☐ **S3** ☐ **S7** ☐ **S11**
- ☐ **S4** ☐ **S8** ☐ **Other:.....**

How old are you?

- ☐ 18-19 ☐ 40-44 ☐ 65-69 ☐ 90 and over
- ☐ 20-24 ☐ 45-49 ☐ 70-74
- ☐ 24-29 ☐ 50-54 ☐ 75-79
- ☐ 30-34 ☐ 55-59 ☐ 80-84
- ☐ 35-39 ☐ 60-64 ☐ 85-89

What is you Gender?

- ☐ **M**
- ☐ **F**

How would you describe your ethnicity?

White

- ☐ **White British**
- ☐ **White Irish**
- ☐ **Other White**

Mixed

- ☐ **White and Black Caribbean**
- ☐ **White and Black African**
- ☐ **White and Asian**
- ☐ **Other Mixed**

Asian

- ☐ **Indian**
- ☐ **Pakistani**
- ☐ **Bangladeshi**
- ☐ **Other Asian**

Black

- ☐ **Caribbean**
- ☐ **African**
- ☐ **Other Black**

Chinese or Other

- ☐ **Chinese**
- ☐ **Other Ethnic**

Prefer Not to Say

- ☐

THIS IS END OF THE INTERVIEW. THANK YOU FOR TAKING PART IN THIS STUDY.

Appendix D

Professionals' Interview Example

Participant Number:

Name of Designed Space:

1- Why did you design The Peace Gardens? Was that city councils policy to create better area?

.....

.....

.....

2- What kind of open space were you trying to create?

.....

.....

.....

3- What were the intended uses? / Who were the intended users in The Peace Gardens?

.....

.....

.....

4- Why did you include water features in your design?

.....

.....

.....

5- For you, How well does the space achieve its intended purposes?

.....

.....

.....

6- After completion of the project has the water features been used for purposes you did not expect?

.....

.....

.....

7- What do you think about children's interaction with water features in urban open space?

.....

.....

.....

8- How do you think facilities like water features can attract children to come city centres or urban open spaces more often?

.....
.....
.....

9- Do you agree or disagree with the following statement that children's interaction with water features in urban open spaces should be encouraged by designers.

- ☐ Strongly agree
- ☐ Agree
- ☐ Neither Agree or Disagree
- ☐ Disagree
- ☐ Strongly Disagree

10- Why?

.....
.....
.....

11- Do you have and concerns about children's interaction with water features in urban open spaces?

☐ Yes ☐ No

If so, What are they?

.....
.....
.....

12- Do you think children's interaction with water in urban open spaces should be controlled by designers or managers?

☐ Yes ☐ No

Why/Why not

.....
.....
.....

13- Did you consider the management of these spaces and water features when you designed it? Like management of overcrowd or management of controlling children in space etc?

.....
.....
.....

14- In general, do you think urban open spaces should be designed to attract more children?
If so,why.....
.....
.....
If not, Why?.....
.....
.....

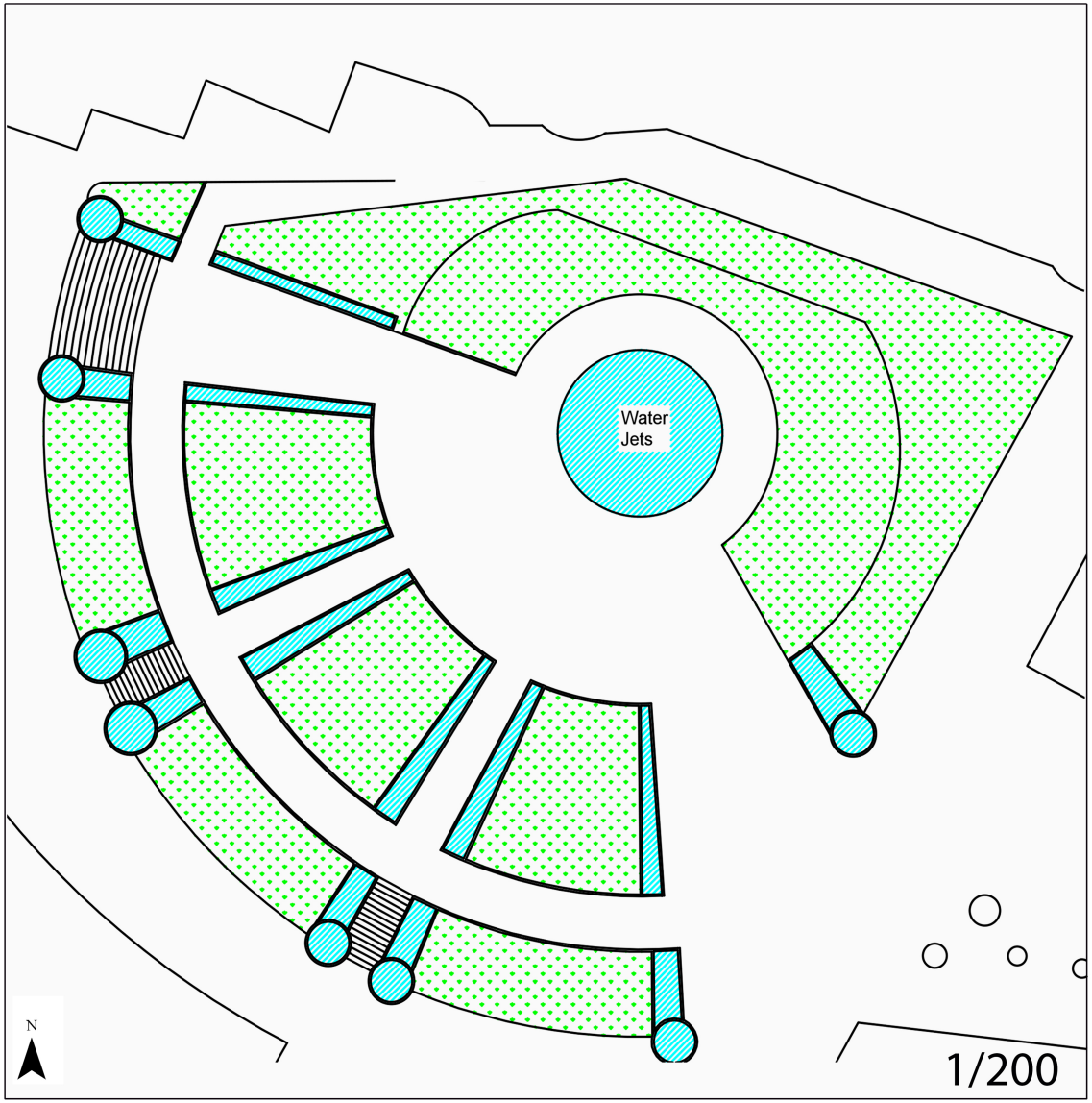
15- What can be done to enhance children's experience of water in urban open spaces?
.....
.....
.....

16- What can be done to increase number of children in urban open spaces with water features?
.....
.....
.....

Appendix E

SOPARC		SOPLAY		Marušič's (2011)
Fitness Related Codes		**Physical Activity Codes for Secondary Schools**		Walking
	aerobics (dance/step aerobics)		no specific activity (sit, stand, walk)	Cycling
	fitness stations		aerobics (dance, step aerobics)	Standing
	jogging/running		baseball/softball	Sitting
	strengthening exercises (pull ups)		basketball	Sitting on a bench
	walking		dance (ballet, country, line)	Sitting around a table
	Physical Activity Classes		football	Pushing Pram
	Dancing formal		gymnastics	Walking with a child
Sport Related Codes			martial arts (judo, karate)	Walking Dog
	Baseball/softball/t-ball		racquet sports (tennis, badminton)	Walking with a child&Pushing Pram
	basketball		soccer	Sitting with Pram
	cheer leading		swimming	
	dance		volleyball	
	football		weight training/lifting	
	gymnastics		playground games (e.g., tetherball, 4-square)	
	handball		none of the activities above (e.g., track)	
	horseshoes	**Alternative Physical Activity Codes for Young Children**		
	soccer		no specific activity (sit, stand, walk)	
	tennis/racquet		Fitness/aerobics (dance/step aerobics)	
	volleyball		baseball/softball	
	swimming		basketball	
Active Game Related Codes			dance/gymnastics	
	climbing/sliding		soccer/football	
	jumping (rope, hop scotch)		climbing/sliding	
	manipulatives (e.g., tetherball, 4-square, hoops, racquet activities		jumping games	
	tag/chasing games (e.g., tag, dodgeball)		manipulative games/racquet activities	
	dancing informal		sedentary games/activities	
Sedentary Related Codes			none of the other ten categories	
	artwork		tag/chasing games	
	chess/checkers/cards			
	lying down			
	picnicking (food involved)			
	reading			
	standing			
	sitting			
	hanging out			

Appendix F



Date:

Day:

Starting Time:

☐ 12:00 ☐ 12:15 ☐ 12:30 ☐ 12:45

☐ 13:00 ☐ 13:15 ☐ 13:30 ☐ 13:45

☐ 14:00 ☐ 14:15 ☐ 14:30 ☐ 14:45

Area Condition:

Temperature:

Weather Conditions:

☐ Sunny ☐ Part Cloudy ☐ Cloudy

☐ Light Rain ☐ Heavy Rain

Ethnicity codes:

White (W) Asian (A) Black (B)

Mixed (M) Chinese and other (CO)

Gender Codes:

Male ● Female ○

Proximate Age Codes:

0-9 (1) 10-18 (2)

Activity Codes:

Running / Walking in/under water ● ○

Jumping in water

Chasing games (Water fights)

Play water with equipment

Lying down around the water feature

Standing

Walking around water

Sitting on a bench

Sitting on a wall

Sitting on a grass

Observing water

Walking through space

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