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Impact of Design on Social Interaction within Urban Residential Developments in Scotland

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Abstract

Over the last few decades, the emergence of various social problems within the urban neighbourhoods of cities, especially in developed countries such as the UK, has called for further research into the relationship between the built environment and the social sustainability of urban developments. Recently, the Scottish government and local authorities have started to revisit and refine their policies and guidelines in order to promote positive social interaction between residents, which is a critical factor in creating a sense of community, and preventing social problems, such as segregation, crime, and apathy. However, in the absence of any detailed information or any practical framework for designers, these policies and guidelines have ended up drawing pictures of an ideal world without helping the designers with the socially responsive solutions.

Using multiple case studies, this research aims to establish if and how the design of urban residential developments can facilitate social interaction between residents in Scotland. To achieve this aim, primary data have been collected from seven urban residential developments in Scotland. Self-completion questionnaires, semi-structured interviews and a site survey, have been used to collect data in three areas: social interaction patterns, use of communal spaces and design qualities of the communal spaces within selected developments. Content analysis and GIS analytical maps have been used to analyse the data.

The findings show that the access routes and service spaces of urban residential developments, such as entrances, lifts and corridors accommodate most of the interactions between residents. This calls for more attention to the design of these unintentional communal spaces as actual places of contact among neighbours. A number of physical attributes, mostly concerned with the affordance, privacy, physical proximity and visual attractiveness of communal spaces have been found to affect social interaction and the use of space patterns within selected case studies.

This research contributes to the much-needed empirical evidence to inform the design of future sustainable housing developments in Scotland by creating a detailed list of design recommendations based on empirical evidence along with modifications of existing assumptions about the quality and quantity of social interaction among residents and the role

of communal spaces in facilitating these interactions. It also contributes to our knowledge by introducing new methods of empirical research in the built environment, specifically for research on building scale by expanding the use of analytical GIS maps and the refinement of existing indicators and measures.

Keywords: Communal space, service space, social interaction, urban residential development, architectural design, Scotland, GIS

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Chapter 1: Introduction

Today, there are no more doubts about the close relationship between the built environment and the social life of people. The famous quote from Winston Churchill, 'We shape our buildings, and afterwards our buildings shape us' (The Churchill Centre 2012), has been backed up with both theoretical and empirical studies during the last decades (e.g. Chermayeff, Alexander 1965, Hertzberger, Ghaït et al. 1998, Hanson 1998, Jenks, Burton et al. 1996, Dempsey, Bramley et al. 2011). The dialectic relationship of buildings and society has been studied in a wide range of disciplines (such as archaeology, sociology, environmental psychology, architecture and planning) using various approaches and methodologies.

Before the second half of the 20th Century, the literature was mainly focused on the ways in which society and people shaped buildings, i.e. how 'we shape our buildings' (The Churchill Centre 2012). Many archaeologists and architectural historians have studied how different societies shaped their built environment and what we can learn about these societies by studying their architecture. However, since 1960, there has been an increasing awareness of the social consequences of built environment design within architectural practice reversing the focus on, how 'our buildings shape us' (Jacobs 1961, Alexander, Ishikawa et al. 1977, Gehl 1996). Social problems that arose after a period of mass housing construction in some cities in developed countries, have led to a situation whereby "for the first time, we have the problem of a 'designed' environment that does not 'work' socially, or even one that generates social problems that in other circumstances might not exist: problems of isolation, physical danger, community decay and ghettoization" (Hillier, Hanson 1984:28). Since the publication of "The death and life of great American cities" (Jacobs 1961) in 1961, there have been many design guidelines and checklists published in response to these emerging social problems and to avoid previous mistakes likely to occur in future designs (e.g. Alexander, Ishikawa et al. 1977, Bentley 1985, Newman 1973). Thereafter, a growing body of literature has placed an emphasis on both social and psychological needs of urbanites, as well as the social and psychological functions of the designed spaces which are supposed to respond to those needs, such as privacy, safety, sense of community, social interaction and happiness (e.g. Dempsey 2006, Lindsay, Williams et al. 2010).

At the beginning of the 21st century, a joint field of knowledge emerged from the intersection of the social sustainability agenda and the previously published design guidelines for tackling the social problems of modern cities (Bramley, Power 2009, Dempsey, Jenks 2005, Manzi, Lucas et al. 2010, Caistor-Arendar, Woodcraft et al. 2011). In search for design qualities which would guarantee urban social sustainability, recently some empirical studies (e.g. Dempsey 2006, Lindsay 2010, Raman 2005) have been conducted to investigate built environment attributes, which can respond to the social and psychological needs of urbanites. In the meantime, some architects have also tried to apply these principles and lessons in their projects, aiming to create more socially sustainable buildings and neighbourhoods(Hertzberger 2000).

Currently, a growing body of literature is forming around ‘urban social sustainability’ and ‘designing sustainable communities’ (Barton 1999, Manzi, Lucas et al. 2010, *The Egan Review: Skills for Sustainable Communities*. 2004, *Sustainable Communities: Homes for All*. 2005) aiming to answer various questions about ‘how our buildings shape us’ and consequently how design decisions can affect the social life of people.

1.1 Rationale of the research

The governments of developed countries all over the world have paid extra attention to policies on the sustainability of urban developments since 1987, when the United Nations released the Brundtland Report and defined ‘sustainable development’ as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (*Report of the World Commission on Environment and Development: Our Common Future*. 1987). Recently, changes in the concept of ‘sustainable development’ have brought the social and economic dimensions under closer scrutiny. The sustainability of urban developments is not limited to environmental and energy usage considerations anymore. Governments are now well aware of the importance of maintaining a ‘sense of community’ and ‘social cohesion’ within urban neighbourhoods in order to encourage the concept of ‘diversity’ (*Sustainable Communities: Homes for All*. 2005:6). Thus, social sustainability of urban developments has become one of the critical goals of architecture and urban design - rather than an optional bonus - in developed countries.

Social sustainability is a dynamic concept which has evolved over time, being affected by many other factors such as emerging technologies, lifestyles and social values. The main debates have moved gradually from ‘hard’ themes such as, equity and poverty reduction towards ‘softer’ themes such as well-being and place attachment (Colantonio 2008). While it

is difficult to find an agreed definition of concepts such as 'social sustainability' and 'sustainable communities', there is an overall agreement about the related concepts and components which can affect them. Social interaction, also referred to as 'social networks', is one of the most agreed components, which can impact the social sustainability of communities both directly and indirectly (Aldridge, Halpern et al. 2002, Bramley, Dempsey et al. 2009, Caistor-Arendar, Woodcraft et al. 2011, Dempsey, Bramley et al. 2011, Unger, Wandersman 1985). Since 1961, when Jane Jacobs (1961) first used the term 'social capital' in 'The Death and Life of Great American Cities', social interaction and social networks, as components of 'social capital', have been explored extensively by urban planners and urban designers. It is argued that social networks are 'social support systems' (Coyle, Dugan 2012, Fischer 1982, Castells 2000). In other words, the people we know and feel we can depend on, can influence other aspects of life such as, 'feeling of safety' and 'sense of well-being' (Fischer 1982:3). Previous studies suggest that social interaction can provide residents with social support, a sense of community and safety within urban neighbourhoods. Without social interaction, people living in a given area can only be described as a group of individuals but not a community (e.g. Dempsey, Bramley et al. 2011, Unger, Wandersman 1985, Kuo, Sullivan et al. 1998).

The importance of locally based social networks has been emphasised in theoretical and empirical studies (Wellman 1996, Skjaeveland, Garling et al. 1996, Forrest, Kearns 2001). Neighbours can provide support in particular situations that geographically distanced members of a social network cannot (Unger, Wandersman 1985).

So far, many studies in the field of urban design and planning have explored the relationship between social sustainability and built environment in the neighbourhood scale (Jenks, Burton et al. 1996, Dempsey, Bramley et al. 2011, Dempsey, Jenks 2005, Bramley, Power 2009). However, many scholars within the field of urban sociology have recently claimed that it is time to shift the scale of studies from neighbourhood to building, in response to changes in society and urban lifestyle (e.g. Castells 2000, Wellman, Wong et al. 1997). It has been claimed that nowadays most local social interaction happens within and around residential buildings rather than within the traditional boundaries of a neighbourhood (10 minutes walking distance) (Wellman 2001, Foth 2006). People may not feel strong attachments to a neighbourhood anymore while they still feel attached to the residential building they live in and the nearby environment. Moreover, users of communal spaces in a neighbourhood scale may include a significant number of non-residents (people may come to a neighbourhood to use certain facilities without being related with anyone within that neighbourhood). In contrast, within the boundaries of communal spaces of a residential development even the

small number of non-resident users are supposed to somehow be related to residents; they are almost always visitors rather than complete strangers. In other words, while communal spaces in the scale of neighbourhood can be completely public, in the scale of a building these spaces are either semi-public or semi-private. The previously discussed characteristics have made these spaces more significant in terms of their effect on creating local social interaction between residents, while they can create the grounds for problems and conflicts as well. As Newman(1973:32) has stated, the majority of all recorded crime happening in residential developments, occurs within the building proper.

Recently, the British government and local authorities began to revisit and refine the policies and guidelines to achieve social sustainability within urban neighbourhoods (*The Egan Review: Skills for Sustainable Communities*. 2004, *Sustainable Communities: Homes for All*. 2005). However, in the absence of any detailed information or any practical framework for designers, these policies and guidelines have ended up just setting fancy targets without suggesting to designers how to achieve them. In some cases, although the architect had the design intention of providing suitable spaces for social interaction, post occupancy evaluation study has shown that this intention has not been materialised successfully (Salama 2012). Since the aim of this study is to address this gap and provide designers and developers of urban residential developments with useful and practical knowledge, it will focus on urban residential developments, rather than the neighbourhoods within the traditional boundaries of a 10 minutes walk. What architects usually face in a design project having urban context is neither a whole neighbourhood nor a single house/dwelling but a building block or a combination of few building blocks as a united residential development usually situated in an urban brownfield. So far, among those professionals who tried to explore the impact of design on social interaction in building scale, none of them have approached the topic with the objective of providing information to designers. One recent piece of research on selected urban residential developments in five British cities (Lindsay 2010), which has examined this relationship, has set out some problems and challenges within the existing policies and guidelines, but did not focus on developing a practical framework for designers.

In order to design buildings for unknown users, architects have to find the answer to two main questions. First of all, they need to know the users' requirements. To address these requirements, designers have to apply a certain level of generalisation and classification of the users' needs in order to create a list of desired qualities for the psychological and social well-being of the unknown residents. Secondly, they need to know how they can achieve these desired qualities through the design. They have to identify the common patterns of perception in order to create a list of physical attributes, which can affect certain perceived

qualities. During the last decades, many studies have tried to address the question about how to achieve the required qualities. Investigating the social and psychological impacts of the built environment in different contexts, new fields of study have emerged, widely known as environmental psychology, environment and behaviour studies, environmental sociology and architectural psychology (Marcus, Sarkissian 1986:4). Based on the findings of these growing areas of knowledge, many architects and scholars have proposed design guidelines and handbooks, which tried to bring back the users' needs to the heart of the architectural design practice, with an emphasis on the psychological and social consequences of the design decisions (Alexander, Ishikawa et al. 1977, Bentley 1985). However, these guidelines were later criticised by other scholars. For example, Hanson(1998:133) has questioned the fact that many design guidelines sacrifice the richness and diversity of social practice in favour of a spurious biological uniformity. It has also been argued that using traditional assumptions about the first question- concerning the desired qualities for the psychological and social well-being of unknown residents- these guidelines fail to consider the growing diversity of urban populations and the rapid changes in different aspects of people's everyday life (Foth 2006, Farshidi 2011).

1.2 Knowledge gap

Reviewing the existing literature in the areas of urban social sustainability and environmental psychology, this thesis identifies three main gaps. Firstly, there are very few studies focusing on building scale rather than neighbourhood or city scale. Secondly, among the few studies that examine individual residential developments, the level of detail is not sufficient to provide useful and practical knowledge for designers and architects. For example, physical attributes such as the size of spaces, lighting, spatial structure and similar small-scale features have remained untouched by researchers in the field of urban social sustainability. And last but not the least, the existing literature is based on traditional assumptions of an ideal urban neighbourhood, which have been recently questioned by many scholars. In order to help designers and architects with their design decisions, it is very crucial to revisit and refine these traditional assumptions about neighbouring and social interaction between residents of urban residential developments.

1.3 Research aim and objectives

The aim of this research is to address the previously discussed gap in knowledge and practice, by establishing **“if and how the design of urban residential developments can**

facilitate social interaction between residents in Scotland". Rather than general rules and recommendations this research aims to provide designers and developers with a detailed picture of social interaction patterns among residents as well as how residents use communal spaces within urban residential developments in Scotland.

In order to achieve this aim, the following research questions have been proposed (see Figure 1.1):

- **Research question 1:** What are the characteristics of positive and negative social interaction between residents within urban residential developments?
- **Research question 2:** Which design qualities of communal spaces of urban residential developments can affect the quality and quantity of social interaction between residents?
- **Research question 3:** What are the existing and potential patterns of social interaction between residents of urban residential developments in Scotland?
- **Research question 4:** What are the existing and potential patterns of use of communal spaces for social interaction between residents in urban residential developments in Scotland?
- **Research question 5:** What are the impacts of design on the quality and quantity of social interaction between residents of urban residential developments in Scotland?

The first research question is concerned with understanding the different types of social interaction through an extensive literature review. Patterns of social interaction are changing constantly due to the constant changes in people's life styles. The emergence of new technologies alongside many other factors such as changing demographic patterns of urban development have affected the way people live and interact with their neighbours during the past few decades. It is crucial to understand these changes and revisit the traditional assumptions about social and psychological needs of urbanites in order to avoid repeating previous failures (e.g. Pruitt-Igoe urban housing project in St. Louis, USA). On the other hand, cultural and geographical settings are other factors which can affect how people interact in a certain area. For example, the way people interact with their neighbours in India is completely different from social interaction between residents in Sweden. Accordingly, it is fundamental to understand the characteristics of positive and negative social interaction between residents within urban residential developments in the UK before drawing any picture from an ideal environment for positive social interaction between residents.

The second research question aims to identify those physical attributes, which may affect, both directly and indirectly, social interaction between residents. During last decades, research in the field of environmental psychology and environment and behaviour have proposed and tested relations between physical attributes and certain design qualities such as attractiveness and safety, which can affect social interaction (e.g. Borst, Miedema et al. 2008, Dempsey 2006, James, Bound 2009). In order to create a list of all effective physical attributes to be used in following stages, it is fundamental to identify and classify all physical attributes of spaces within the boundaries of communal spaces of urban residential developments, which can potentially affect the quality and quantity of social interaction between residents.

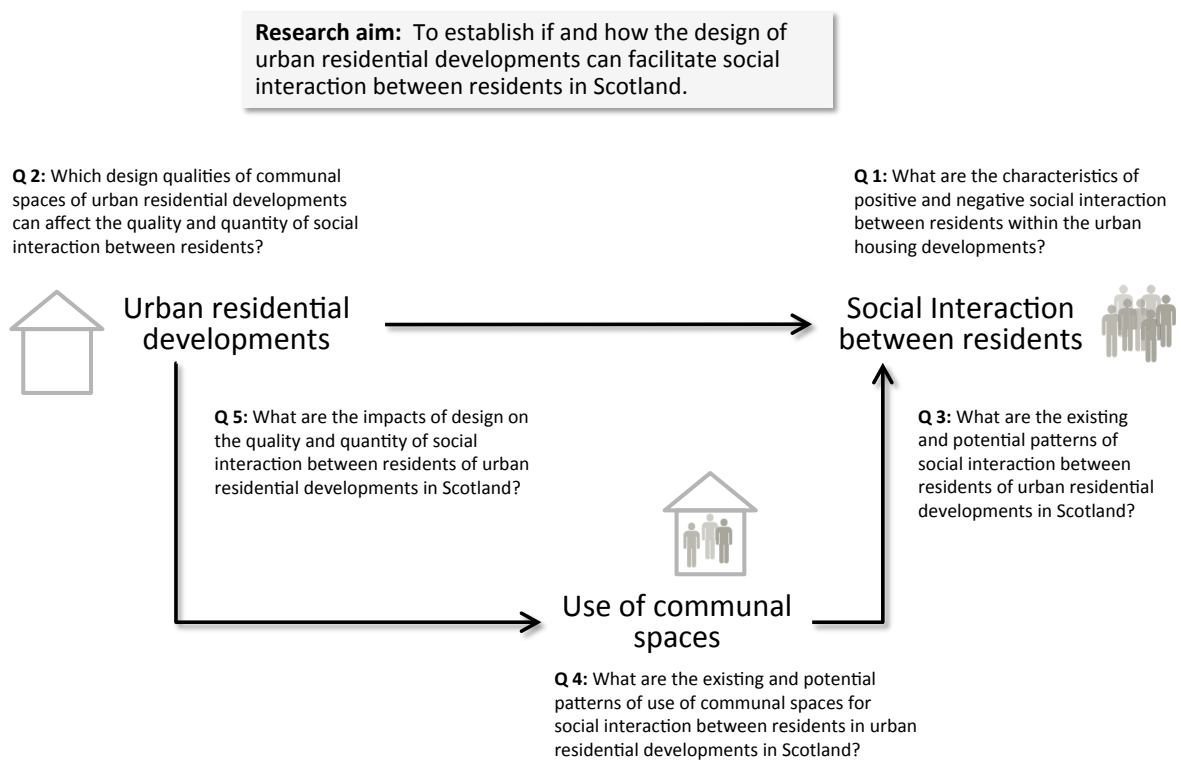


Figure 1.1: Research questions and the three main areas of the research

Focusing on multiple case studies, the third research question is about capturing the quality and quantity of social interaction among residents within selected urban residential developments in Edinburgh and Glasgow. In order to successfully design communal spaces which can facilitate social interaction among residents, first the designers need to understand nature of existing and potential interactions among them. It is critical to have a realistic understanding of the various aspects of social interaction among residents, such as the dominant forms of interaction, frequency of interaction and the residents' perception of interaction with their neighbours.

The fourth research question is concerned with how residents use communal spaces within these selected residential developments in Scottish cities. Certain types of communal and service spaces are associated with different functions and characteristics in different geographical and cultural contexts. It is inevitable to expect significant differences in the way people occupy the spaces of similar typologies but in different geographical and cultural considerations. For example, private balconies may be used for a wide range of activities depending on climate, culture and traditions of different societies such as Greece and Iran. Therefore, it is important to provide designers with detailed information about how residents use communal spaces of urban residential developments for social interaction and individual activities in Scotland.

Finally, physical attributes of the built environment may impact social interaction between people in certain ways. Some features may have direct effects while others may affect the way people interact indirectly through enhancing certain qualities and perceptions such as safety, place attachment and privacy. Moreover, the effect of some features may be dependent on other variables such as non-environmental factors. It is crucial to understand the nature of relationships between the identified physical attributes of communal spaces and the quality and quantity of social interaction between residents as well as the impact of non-environmental factors such as demographic patterns and socio-cultural origins of residents. Understanding the impacts of design on the quality and quantity of social interaction between residents can help architects to make more informed decisions through the design process to promote social sustainability.

1.4 Definitions

Terms such as 'local social interaction' and 'neighbouring' have been used to refer to a wide variety of social contacts, such as eye contact in the lift, borrowing things, helping each other or forming very close relationships with neighbours. According to Raman (2005), the term 'social interaction' encompasses any sort of communication between two or more people and does not have to involve physical co-presence, for example an email can represent a social interaction. However, in this research the types of social interaction that are of particular interest are face-to-face interactions between individuals. In other words, "interactions that happen directly between people where all who are involved are aware they are participating in an interaction" (Lindsay 2010:21).

Communal and service spaces of urban residential developments are where social interaction occurs as a passive outcome of service-related activities such as walking up the stairs, using

service corridors, spending time in breathing and smoking points, using communal laundry rooms, etc. It has been claimed that these spaces facilitate the transition from individuals to the society (Lindsay 2010). Lawrence(1987:123), in his study of “communal spaces”, has defined these as “interior collective spaces and facilities (including lobbies, circulation stairs and landings, laundries and toilets) located between the private domain of each dwelling unit and the public realm of the street”. His study is more concerned with the morphology and physical appearance of these spaces. The term “communal” in his study refers to shared ownership, which is the common characteristic of these spaces, whereas in this study the term “communal” refers to the social function of these spaces. In this research “communal spaces” refer to all outdoor and indoor transitional spaces between the public space (e.g. street) and the private space (e.g. flat), which are shared between the residents of two or more different households. Some additional spaces such as balconies and front gardens may not be subject to shared ownership yet some level of social interaction between residents may take place in them; therefore this study will also include these spaces in order to cover all typologies of spaces where social interaction between the residents occur.

In this research, “unintentional communal spaces” refer to all those communal spaces originally designed for service purposes, which also naturally accommodate different levels of social interaction. These spaces are not intentionally designed for social interaction so they might be called “unintentional communal spaces”, such as stairs, lifts, parking areas and shared laundries. Having differentiated the “unintentional communal spaces”, “intentional communal spaces” here refers only to those shared spaces originally designed for the purpose of social interaction such as gathering rooms, shared gyms and leisure facilities. Architects and designers of the selected residential developments have been asked to either name or mark those communal spaces they have designed intentionally to facilitate social interaction between residents. These spaces which have been either named or marked have been labelled as “intentional communal spaces”.

1.5 The structure of thesis

This thesis contains eight chapters. The next two chapters form the literature review. Chapter 2 examines the literature in the area of urban sociology to address the first research question. The changing patterns of social interaction and the characteristics of different types of social interaction among neighbours are discussed. Moreover, this chapter provides an overview of existing empirical evidence of neighbouring in Scotland.

Chapter 3 provides an answer to the second research question through an extensive review of literature in areas of environmental psychology and sustainable design. A list of design qualities and their associated physical attributes, which may affect social interaction among residents, is created to be used in later stages of this study. The potential effect of non-environmental factors and climate has also been examined through literature.

In chapter 4, the methodology used to achieve the research aim and address research questions is explained. The theoretical perspective and the research strategy are established before discussing the data collection and data analysis methods. Measures and indices are explained and justified and criteria for selecting case studies are discussed.

Chapter 5 provides an overview of morphological and demographic characteristics of seven selected residential developments in Edinburgh and Glasgow. Various typologies of communal spaces are also explained in this chapter.

The third and fourth research questions are addressed in chapter 6 through analysis of qualitative data. Quality of social interaction among residents, motivators and barriers to social interaction, existing and potential types of interaction, activities within communal spaces and the residents' expectations of communal spaces are investigated using data collected by semi-structured interviews and open answer questions of self-completion questionnaires. Moreover, mapping reported interactions among residents in isometric maps, places of contact are identified. This chapter provides a detailed picture of social interaction and use of space patterns within communal spaces of seven selected developments.

Chapter 7 focuses on the relationship between the physical attributes of the communal spaces and social interaction among residents. The list of design qualities and their associated physical attributes, which was created in chapter 3, is used to examine the relationship between design and social interaction. GIS three-dimensional analytical maps have been used to identify direct and indirect effects of physical attributes as well as non-environmental factors.

The concluding chapter provides an overview of the research findings and their implications in theory and practice. Research contributions and limitations of the research are explained before concluding with some recommendations for future research.

Chapter 2: Local social interaction

2.1 Introduction

Local social interactions have played a critical role in the social sustainability of urban communities by enhancing the sense of community and safety among residents of urban neighbourhoods (Dave 2011:3). It has been claimed that the presence of some level of 'social interaction' or 'social ties' transforms a group of individuals living in a given area into a community (Dempsey, Bramley et al. 2011, Unger, Wandersman 1985, Kuo, Sullivan et al. 1998). In their study of a Swedish residential development, Henning and Lieberg (1996) have found that even very weak forms of social interaction such as visual contact and greetings can create a 'feeling of home' and 'security' among residents. It has also been argued that social interactions and social networks as 'social support systems' are crucial for physical and mental well-being of residents in urban neighbourhoods (Fischer 1982, Unger, Wandersman 1985).

In addition, local social interactions and networks play an important role in the formation of social capital within neighbourhoods. According to the most cited definition of social capital articulated by Putnam(2000), social capital refers to "connections among individuals - social networks and the norms of reciprocity and trustworthiness that arise from them." Especially in disadvantaged neighbourhoods, it is argued that local social networks including both weak and strong ties lead to the formation of social capital which provides residents with coping mechanisms for poverty (Flint, Kearns 2006).

As it is mentioned in the previous chapter, rather than virtual interactions such as email and chat, this research is concerned with face-to-face interactions among residents of urban residential developments in Scotland.

2.2 Different types of social interaction

Residents of urban neighbourhoods interact with each other in many different forms each varying in terms of the strength and frequency (Foth 2006). Recently, many researchers have

explored and classified the different types of local social interaction in order to understand the characteristics and impact of each type. Reviewing the literature in the field of urban sociology and urban social sustainability, two main categories of local social interaction have been identified, namely 'informal interaction' and 'formal participation' (Ross, Jang 2000, Dempsey, Bramley et al. 2011). Each of these categories encompasses a wide spectrum from very weak to very strong interactions.

2.2.1 Informal interaction

Spontaneous contact in corridors, giving each other a lift, short greetings in the parking area and many other examples are all various types of informal interaction between residents. Although this category of interaction does not involve any formal commitment or participation and might not be recorded officially, it has been claimed that informal interactions are very effective in creating sustainable communities (Ross, Jang 2000, Dempsey, Bramley et al. 2011, Forrest, Kearns 2001). Within this category, a wide spectrum of interactions can be identified varying from weak contacts to strong ties. Recent studies have shown that even the very weak types of informal interactions such as repeated visual contacts and greetings are important since they might develop into stronger levels of interaction among neighbours (Henning, Lieberg 1996, Kuo, Sullivan et al. 1998). In other words, the stronger kinds of social interaction could be the potential results of the regular but weaker ties among residents (Foth 2006).

2.2.2 Formal participation

Another category of social interaction refers to the degree to which people participate in neighbourhood organisations such as neighbourhood improvement associations, local sports teams, and other community service groups (Ross, Jang 2000:404). Formal participation in neighbourhood organisations is claimed to be an indicator for measuring the sense of community within urban neighbourhoods (Dempsey, Bramley et al. 2011). Despite the recent changes in patterns of social interaction between residents especially in urban residential developments, which has led to a natural decrease in these types of interaction (Foth 2006, Wellman 2001), volunteer participation in neighbourhood organisations is still widely considered to play an important role in the social sustainability of urban neighbourhoods.

2.3 Changing patterns of social interaction in urban residential developments

During the last two decades many different factors have affected the way people live and interact with each other especially within cities. After reviewing the literature in the field of urban sociology and social sciences, the following six themes have been identified to describe the critical changes in the way people live and interact with each other in an urban context and how the neighbouring and social interaction patterns have changed.

2.3.1 Demographic and household patterns

Probably one of the most powerful demographic changes in European countries has been the baby boom generation – those individuals born between 1946 and 1964 (Knox, Pinch 2010:10). Sixty years later, European cities are facing serious challenges in terms of accommodating this aged population inside and around the cities. Facing retirement, decreased mobility, increased illness and disability, as well as the loss of spouse and other social network members, older adults are at high risk of social isolation and loneliness and the negative health outcomes that follow (Coyle, Dugan 2012:1347). The severe health risks associated with loneliness, social isolation and lack of physical activities have led to extensive studies about the environmental barriers and regulators of movement and activities for older adults (Larco, Steiner et al. 2012, Gallimore, Brown et al. 2011, Borst, Miedema et al. 2008). Encouraging walking habits amongst senior citizens has been suggested as a way of helping them maintain their physical functional status and overall health as well as having social interaction and creating local ties (Borst, Miedema et al. 2008:353).

On the one hand, the aged population of urban residential developments means that there are more residents who spend the majority of their time at home. This will create potential for more local social interaction within the spaces inside and around residential developments (Lindsay 2010, Skjaeveland, Garling 1997). There is new potential for exchange of social support between older adults and other categories of households such as single parents with children. On the other hand, different needs and preferences of older adults in terms of sleeping and working hours, noise and quietness may cause negative social interactions within residential developments where the various generations of residents live in proximity.

The decreasing social value of marriage in developed countries has led to an increase in the number of non-traditional households (single-parent households, in particular) with non-traditional housing needs and non-traditional social interaction patterns (Hall, Ogden 2003:10, Ogden, Hall 2000). The traditional nuclear family is not the absolute dominant type

of household, due to the decline in the rate of marriage, an increase in divorce and an increase in cohabitation without marriage (Wellman 1979). The growing number of single-adult households calls for new perspectives in the design of urban residential developments in order to facilitate the new patterns of social interaction between residents. Some research have shown that local social support and neighbouring is more valuable and important for single-adults and single-parents especially in urban contexts (Coyle, Dugan 2012).

In addition to these changes, the growing proportion of people entering higher education in the United Kingdom has increased the number of young adult residents (i.e. those aged between 18 and 24) in British cities (Hall, Ogden 2003:71). Since purpose-built university properties cannot accommodate all the students, almost three-quarters of them move to the privately rented sector. This trend leads to the domination of young adult residents in some inner-city neighbourhoods and suburbs close to universities (Buzar, Ogden et al. 2005:71). It has been argued that these changes can cause negative interaction between older inhabitants and the transient student population (Knox, Pinch 2010:71).

2.3.2 Live-Work patterns

Young adults in full-time employment spend more time away from home while the elderly and unemployed spend most of their time at home. Due to the recession and ensuing economic problems, higher level of competition for job opportunities has led to changes in the working patterns of young adults. Having limited choice, job hunters are more likely to accept job offers, which involve longer commutes and working hours. Spending more time away from home- working or commuting to and from work- young adults have fewer hours available to spend at home or in their neighbourhood. The level of local social interaction is directly affected by the amount of time people spend in the proximity of their homes.

“Neighbourliness levels are usually low in areas where there are a high proportion of second homes or commuters” (Buonfino, Hilder 2006: 22).

Longer working hours might lead to a situation where people are less willing to leave their neighbourhood in the evening, so they are more willing to take advantage of local facilities. Growing numbers of remote workers and flexible workers have challenged the traditional live-work patterns through their increasingly Bohemian lifestyles which stand in contrast with the traditional values of hard work. As Knox (2010:150) has stated “The growth of the ‘cultural industries’ in the late twentieth century has meant that various non-conformists, eccentrics and mavericks have become incorporated into mainstream capitalist enterprises”. The Manchester Neighbourliness Review (Harris, Gale 2004) showed that people whose employment status meant that they spent a greater proportion of time within their

neighbourhood (flexible workers; unemployed; housewives etc) scored very highly on the neighbourliness index. These categories of young adults maintain high levels of social interaction not only because they have more time but also because in the absence of a defined workplace and colleagues, they depend more on local social interactions (Harvey, Taylor 2000).

2.3.3 Residential mobility

Residential mobility and immigration are the two important factors affecting the social environment in cities of developed countries including the UK. The relationship between the duration of stay of residents in a neighbourhood and the quality and quantity of local social interaction between the residents has been stressed in many studies. It has been claimed that households with long-term residency tend to have more connections with their neighbours (Skjaeveland, Garling et al. 1996).

Nowadays, the growing number of rented properties, demographic changes and more accessible transport and communication technologies have resulted in a situation where the average rate of residential mobility has increased especially in cosmopolitan cities such as London (Knox, Pinch 2010:254). Search for better opportunities of employment and education has made the duration of residencies shorter, especially for young adults in their 20s. Frequent moves to new homes have made people less interested in investing in local relationships with neighbours (Tobey, Wetherell et al. 1990, Wellman, Wong et al. 1997). Residents of inner city urban residential developments have less time to meet neighbours and develop local social networks before they move to another neighbourhood, city or in some cases to another country. In the absence of time and interest for creating strong social ties with neighbours, weak social ties and casual encounters seem to become more important among the different kinds of local social interactions.

In the UK, owner occupation has been in decline since 2005 after reaching a peak of 70.9% in 2003. It has been suggested that home ownership can affect many factors of the social environment, including social interaction between residents in urban neighbourhoods (Lindsay 2010). Studies show that neighbourly relations are stronger in neighbourhoods occupied by a large number of home-owners (Chavis, Hogge et al. 1986). Homeowners show more interest in the upkeep of the neighbourhood as well as their property, which provides the ground for a stronger sense of community and a higher level of social interaction between residents (Rossi, Weber 1996, Lindsay 2010). Overall, homeowners are more sensitive to their local environment and more willing to take part in the local community. Reduction in

the number of owner occupied properties may also represent higher levels of resident mobility, which is discussed in detail in the following section.

2.3.4 Technology and transport

Probably Internet and telecommunication technologies are the most powerful inventions in the field of technology, which have affected the daily life of people all around the world in many different ways. Although these technologies are so recent that it is difficult to evaluate their real impact, few studies have already shed light on the impact of the Internet on the quality and quantity of local social interaction.

Despite widely held assumptions about the negative effect of the Internet on local face-to-face social interaction, some recent studies have shown that the situation is much more complicated (Muusses, Finkenauer et al. 2014, Misra, Stokols 2012). Recent studies have indicated that online interaction is not an alternative to face-to-face interaction but a supplement (Wellman, Quan Haase et al. 2001). While activities such as gardening and jogging create chances for more local face-to-face interaction, Internet offers the chance to spend more time with family and friends outside the neighbourhood (Misra, Cheng et al. 2014, Przybylski, Weinstein 2012).

In addition, globalisation and a growing appetite for international brands have led to small local shops being replaced by giant supermarkets and shopping malls all around the world. The growing popularity of online grocery shopping and online shopping service providers like amazon and eBay has reduced local shopping activities significantly. As a result, people spend less time on daily activities in the proximity of their homes, which in turn reduces the chance of encounters with residents living in the same neighbourhood (here we use the traditional definition of neighbourhood which is approximately an area within 10 minutes walk of one's residence). It has been argued that small local grocery shops, bakeries and such places are important places for neighbouring encounters (Lund 2003).

Over the past few decades, technological developments in different areas have made the private space inside flats self-contained, comfortable and attractive places for families and individuals to spend time in. Less than 100 years ago, residents had to use shared facilities for their everyday needs such as wash rooms, public baths and common spaces for drying laundry. Using communal spaces for daily activities could create many chances for local social interaction between neighbours. In the past, local ties between residents would develop during unavoidable daily activities, such as washing and cleaning. By contrast, in the contemporary urban context the only unavoidable daily activity, which may lead to social

interaction, is access from the street to one's private unit. Almost all other necessary daily activities, such as laundry, have been moved inside the private space. Cheap and compact domestic appliances have eliminated those communal spaces related to certain daily activities within urban residential developments and moved these activities inside the boundaries of each household unit. Moreover, the new generations of video game consoles, home theatres and TVs are offering high quality and attractive entertainment options within the boundaries of private spaces and therefore reducing the reliance of people on public spaces such as cinemas, parks and pubs (Plowman, McPake et al. 2010). One survey in 2000 showed that on average people in the UK spend 2 hours and 48 minutes watching television, video and DVD per day – this has signalled a partial retreat to the private sphere (Buonfino, Hilder 2006, Aarsand 2007). This effect can be doubled where the weather is not pleasant over the year (e.g. in Scotland where the winter is almost 6 months of cold and rainy weather) and therefore people prefer to stay at home and entertain friends and family in the comfort of their warm living room thanks heating technologies.

Fast and accessible transport options along with the new ways of communication using the Internet and mobile phones have broadened the horizons of social interaction between people (Palackal, Nyaga Mbatia et al. 2011). In 2001, 73 per cent of households in England and Wales owned at least one car (Census), which has led to the domination of cars and reduction in the number of pedestrians and face-to-face local interactions in residential neighbourhoods. "People often get on an expressway near their home and get off near their friend or colleague's home with little sense of what is in-between. Airplane travel and email are even more context-less" (Wellman 2001:305). Despite these changes, many recent studies have shown that physical proximity is still an important factor affecting the frequency with which people see one another and provide material aid (Lindsay 2010, Wellman 1996, Wellman 2001). However, it is crucial to understand the new dimensions of physical proximity and locality. Wellman suggests that while the "community" has been "liberated" from place, "Place – in the form of households and work units remains important – even if neighbourhood or village does not. Households and work units are important bases of interaction" (Wellman 2001:103). People still create local social networks with their colleagues and neighbours in order to obtain the social support when needed.

The globalisation process has been encouraged by new telecommunications systems that facilitate rapid transmission of information and images around the world. Cultural consequences of globalisation have been discussed using three main theses, namely homogenisation, pluralisation and hybridisation (Knox, Pinch 2010:140). It is beyond the scope of this study to explore the different aspects of each theory. However, it is useful to

review some evidence of each thesis, which can affect social interaction patterns in urban residential developments. The first one is an example of homogenisation, manifested in the use of same products all around the world which has been mentioned also as “Coca-Colonization” or “McDonaldization” (Goodman 2007). This is also the case for cultural products such as films, games and books (e.g. Harry Potter books which have been translated to many different languages and have been read by many people across the globe). It seems that through consuming same products and information all around the world, people have more in common now, which makes it easy to start an informal chat between them regardless of their geographical background. The second example supports the hybridisation theory. The image of a teenager who wears American jeans, loves Italian food and watches Japanese animations is not surprising or out of ordinary anymore. Immigration and technology have led to a new generation with a selective and hybrid culture. This can also help to remove the cultural barriers of social interaction especially in the context of metropolitan cities such as London. Thus, one should be careful about cultural hybridisation and homogenisation when putting emphasis on the effect of cultural differences on local social interaction in urban residential developments.

2.3.5 Diversity

Diversity is one of the most important characteristics of the urban environment, in the context of metropolitan cities such as London and New York. This growing quality – also referred to as ‘cosmopolitanism’ – has different dimensions. Residents of one urban neighbourhood are significantly different in many aspects including, economic background, rhythms of work, ethnicity, culture, language, interests and desires. Many European governments have over the past few decades encouraged this diversity within the urban environments, through different policies. The policy of the Labour government in the UK about including affordable houses in new urban residential developments is one example of such policies, which promote diversity in urban residential developments. In addition, the large number of migrants – especially of Eastern European origin – has added to the diversity of the urban environment in the UK. Laurence (2011) argues that such cultural differences could possibly help people to step outside their comfort zone and engage in social interaction. However, many studies have shown that demographic divisions can also act as barriers to local social interaction between residents (Talen 1999). Another research (Stolle, Soroka et al. 2008) has shown that language barriers can also create mistrust among neighbours. As Knox (Knox, Pinch 2010:161) stated “It is now generally accepted that the less social distance there is between individuals, the greater the probability of interaction of some kind”. In such a context, it might be risky to go too far with assumptions about the residents’ willingness to

interact with all the neighbours at the same level (Turner, Fenderson 2006). On the other hand, facilitating positive social interactions while reducing the chance of negative interactions is crucial for creating socially sustainable communities “in which the diversity of people’s backgrounds and circumstances are appreciated and positively valued” (*Sustainable Communities: Homes for All*. 2005:6).

2.3.6 Psychological characteristics

Networking - knowing how to network (on and offline) - has become a crucial survival skill in a society characterised by “networked individualism” (Wellman 1979). As Wellman (2001) has proposed, in today’s societies, social interactions tend to be individualised – person-to-person – and specialised. “For example, some relationships provide emotional support while others help with household needs” (Wellman 2001:205). In order to obtain social support, urbanites have to actively maintain different networks of potentially supportive relationships. The freedom in making choices to create and maintain social interactions has become an important part of the social networking process (Madell, Muncer 2007). More freedom in social networking, especially in an online where people have less time to invest in social interaction, has made urbanites less tolerant in their relationships (Madell, Muncer 2007). Some people believe that the diverse urban environment can tolerate a wider range of lifestyles and behaviours which in turn make urbanites more tolerant towards others (Turner, Fenderson 2006). Others argue that the broad spectrum of choices for social interaction has eroded the necessity of tolerance in social interactions between people (Wellman, Quan Haase et al. 2001). On the other hand, it has been asserted that facilitating social interaction in diverse environments can help people develop their interpersonal skills such as tolerance (Turner, Fenderson 2006).

Another physiological consequence of changes in the urban environment is the emergence of a quality called “impersonality” in urbanites (Miles, Borden et al. 2000). Resulting from psychological overload, one of the most important manifestations of impersonality is “the lack of informal help for strangers who are in trouble in public spaces” (Wellman 2001). According to the determinist theory, this quality might lead to the emergence of deviant behaviours by eroding social responsibility and social control (Knox, Pinch 2010). It has also been stated that urbanites are more emotionally buffered in their social interactions, especially in encounters with strangers (Knox, Pinch 2010). Urban environments have been experiencing growing levels of ‘insecurity’, as residents are surrounded by strangers and in the absence of social responsibility and social control. This has resulted in the growth of urban residential developments with gates, barriers and walls, security guards, infrared

sensors, panic rooms, motion detectors, rapid response links with police departments and surveillance equipment such as CCTV (Knox, Pinch 2010:30). Since the 1960s, many architects have also responded to the problem in different ways. Newman(1973) has proposed an architectural design guideline for designing “defensible spaces” while Jacob (1961) emphasised the importance of “natural surveillance”. In the absence of local social interaction with neighbours, people desperately look for safe neighbourhoods to live in metropolitan cities (Wellman, Wong et al. 1997). The percentage of people who believed that others could generally “be trusted” has reduced dramatically from 60 per cent in 1950s to 29 per cent in 2000s (Aldridge, Halpern et al. 2002). However, recent studies have shown that this is not the case among neighbours (Buonfino, Hilder 2006). In contrast with nonlocal spaces, the communal spaces of urban residential developments still offer a place where social interaction among the neighbours could occur, providing a chance for the urbanites to overcome their insecurity and lack of trust.

The privatisation of social interactions is another effect of networked individualism and recent technological developments (Wellman 2001). It has been argued that in this context people tend to prefer private spaces (someone’s home) or private places in public spaces (cafes, bars and Internet) for social interaction (Foth 2006:164). In addition, the shift from collective communities to networked individualism has led to a more private peer-to-peer forms of interaction instead of collective many-to-many interactions (Foth 2006:164). In other words, people do need some privacy within common spaces. While a big common room can be useful for gatherings and events, it might not be adequate to support peer-to-peer social interactions among residents.

2.4 Neighbouring in Scotland

There is an overall agreement among scholars that neighbouring level and social interaction patterns have changed in Britain and many other developed countries during the last few decades (Forrest, Kearns 2001, Henning, Lieberg 1996). However, empirical evidence of how neighbouring has changed over the last century in Scotland is very limited. Referring to Wilmott and Young’s famous research about East London communities and relationships in the 1950s (Young, Willmott 1957), Buonfino and Hilder (2006) argue that neighbouring used to be ‘natural’ in Britain during the 1950s and 1960s. They highlight the strong levels of trust and mutual help among residents, as a result of family relationships in close proximity and longstanding residency across generations (Buonfino, Hilder 2006).

It is argued that ‘natural’ neighbouring no more exists in most urban neighbourhoods due to the economical, social and technological changes that have affected people’s lifestyle across Britain, including in Scottish cities(Stafford, Bartley et al. 2003). However, empirical evidence shows that neighbouring and local social interaction is still important especially for the elderly and children (Guest, Wierzbicki 1999). Despite the overall decrease in the level of trust in other people- from 60 per cent in 1950s to 29 per cent in 2002 (Donovan, Halpern 2002)- 47 per cent of the people still trust others in their neighbourhood (*2003 Home Office Citizenship Survey : people, families and communities. 2004*). According to the national survey in 2003 (*2003 Home Office Citizenship Survey: people, families and communities. 2004*), more than 40 per cent of UK residents socialise with their neighbours at least once a week. However, there is a significant difference between neighbouring level in social housing areas and areas of home-owners. According to ‘Transport, Housing And Well-being’ study in 1999 in Glasgow (Kearns, Ellaway et al. 2000), more people in social housing areas have no one with whom they exchange favours locally. Based on these findings Buonfino and Hilder (2006) suggest that neighbouring has changed in Britain towards either ‘fearful neighbouring’ where people suffer from negative neighbouring behaviour or ‘detached’ neighbouring where people keep themselves to themselves (see Figure 2.1).

It can be argued that in contemporary urban neighbourhoods in Scotland, weak ties play an important role where the level of interactions is lower (Forrest, Kearns 2001). Within the urban neighbourhoods of Scottish cities, during the last decades a shift has occurred from strong ties with neighbours to weak ties.

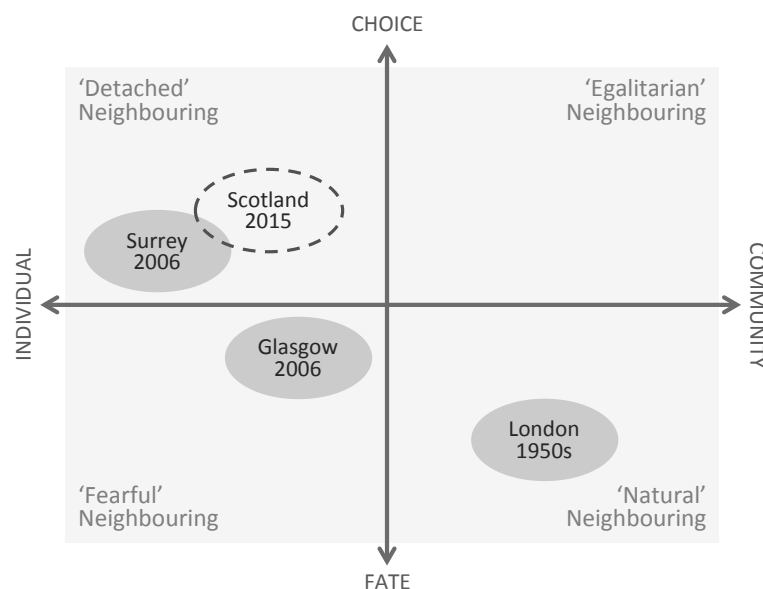


Figure 2.1: Map of neighbouring; adapted and modified from (Buonfino, Hilder 2006)

2.5 Conclusion

Despite all the recent changes in society and how people interact with each other, local social interaction within urban residential developments plays a critical role in residents' physical and mental well-being in many different ways. As it has been discussed before, knowing people in your neighbourhood can contribute to a sense of safety and place attachment among residents (Henning, Lieberg 1996, Buonfino, Hilder 2006, Newman 1973, Lindsay 2010). Moreover, local social interactions are the generators of social networks, which are social support systems. People who live in proximity can provide certain types of support in times of crisis and emergency, which might be difficult to obtain from friends who are living far away (Fischer 1982, Unger, Wandersman 1985, Lindsay 2010). Residents of urban housing developments still need to have social interaction with their neighbours, however, the nature and characteristics of the desired interaction has changed, due by many factors discussed previously in this chapter.

Reviewing the critical changes that have affected the social life of urbanites, the following characteristics have been identified for desired social interaction between residents:

- **Controllable social interaction**

Due to the increased diversity of the urban populations, people tend to maintain a personal balance between their privacy and social interactions. Being offered many different choices, people now are far more selective about their preferences. They want to have the freedom of controlling the level of interaction depending on each case and situation. As Hertzberger (1998:178) has mentioned, it is this freedom of withdrawal as soon as one likes that encourage people to interact with each other. From another point of view, for face-to-face local interactions to be able to compete with many easy and accessible options of virtual interaction with friends, it is necessary to offer the same freedom and control over the settings of local social interaction with neighbours.

- **Informal social interaction**

Spending long hours in formal interactions with other people and maintaining different formal commitments, urbanites tend to be more attracted to informal local social interactions where they can psychologically recover from daily commitments. They prefer to have fewer obligations and more freedom to choose the format and duration of their interaction as well as to make personal choices about whom they are willing to interact with. Informal interactions have been claimed also as the first steps towards formal participation in neighbourhood organisations, as they increase

the sense of community and place attachment among residents (Buonfino, Hilder 2006, Festinger, Back et al. 1963, Fischer 1982, Forrest, Kearns 2001). Informal interactions provide residents with the chance of obtaining the essential social support without compromising a lot of time and effort, which is needed for formal commitments.

- **Small groups and peer-to-peer social interaction**

As a result of privatisation of social life, people prefer private places within public spaces for interacting with each other (Foth 2006). People's interactions tend to take place in small groups rather than big groups since small groups create a casual environment where participants have less commitment and more freedom.

Finally, it can be concluded that in a contemporary urban context knowing your neighbours by face and name is mostly enough for most people- especially young adults- because of their higher residential mobility. Accordingly, facilitating informal and short interactions between neighbours has become more important within the context of urban residential developments.

Chapter 3: Design for social interaction

3.1 Introduction

Over the past few decades, a vast number of studies have shown, both empirically and theoretically, that the built environment has a significant impact on the quality and quantity of social interaction between residents of a given area (Evans, McCoy 1998, Gehl 1996, Hertzberger 2000, Hillier 1996, Lindsay 2010, Raman 2005). This impact has been approached and studied from different angles, including environmental psychology, urban design, and architectural theory.

Within the Environmental Psychology literature, many empirical studies have shown that certain qualities and attributes of the built environment can affect how people perceive their environment as well as patterns of their behaviour within a neighbourhood or a space. It has been shown that the assessment of the built environment by people can influence the way they move, behave and interact with each other in that environment (Appleyard, Lintell 1972, Kasl, Harburg 1972, Wohlwill, Carson 1972, Abu-Ghazze 1999). Although there are significant similarities in the outcomes of those studies examining the same variables, some studies have shown differences in their results (Talen 1999). These differences might be small but they are meaningful in the sense that they may suggest the impact of non-environmental variables.

New urbanism, as an urban design paradigm which has affected a wide range of scholars and practitioners since the 1960s, has formed around the important role of built environment in promoting a 'sense of community' and 'social interaction' between residents. According to the new urbanism principles, encouraging people to come out of their houses through careful design and placement of local public spaces, putting people in close proximity by increasing density and offering people a variety of local services by encouraging mixed land use will increase the social interaction and sense of community within urban neighbourhoods. The new urbanist ideas have been backed up with a significant number of empirical studies (Dempsey 2006, Dixon, Bacon et al. 2012, Gehl 1996), it is difficult to ignore the failure of some famous new urbanist urban developments during the last decades. According to Talen

(1999:1374), the spatial arrangement can create “an environment where desired forms of behaviour (i.e. social interaction and sense of community) are possible”, but it cannot guarantee certain results in various social situations.

From a scientific point of view, space syntax theory (Hillier, Hanson 1984) and its recent implications has created the ground for testing the relationship between spatial configurations and movement patterns of people. As Hillier and Hanson describe “by giving shape and form to our material world, architecture structures the system of space in which we live and move. In that it does so, it has a direct relation – rather than a merely symbolic one – to social life, since it provides the material preconditions for the patterns of movement, encounter and avoidance which are the material realisation – as well as sometimes the generator – of social relations”, (Hillier, Hanson 1984:ix). Using a mathematical approach, the theory can provide a useful tool to analyse and compare different spatial configurations in terms of how they affect the movement patterns and consequently how people interact. However, it is fairly impossible to explain the impact of built environment on the quality of social interaction between people using abstract models such as justified graphs and visibility graphs.

An extensive review of literature in these three areas suggest very strong evidence of the relationships between the built environment and social interaction between people. However, the role of non-environmental variables such as demographic patterns, cultural context and climate should not be undermined.

3.2 How design can affect social interaction

Built environment can affect both the quality and quantity of social interaction between people in two different ways. Firstly, some physical attributes such as walls, windows and doors can directly affect the travel behaviours and movement patterns of people within the space and create a chance for encounters and interactions. Secondly, the physical attributes of the built environment may also influence people’s perception of a certain environment. These perceived qualities (e.g. safety, attractiveness and privacy) then impact people’s behaviour and their decisions in terms of whether and how they use the space. As a result, some attributes indirectly affect the social interaction between people. Ewing and Handy (2009) in their study of urban design qualities related to walkability, proposed three different categories of variables related to built environments which can affect user behaviour, including physical attributes, design qualities and users’ perception (see Figure 3.1). Borrowing their proposed definition of ‘design qualities’, this research focuses on the

first two categories of variables, namely ‘physical attributes’ and ‘design qualities’. Based on Ewing and Handy’s conceptual framework, the term ‘design quality’ in this study refers to characteristics of space created by a combination of certain physical attributes within that space. Legibility, accessibility and affordance are some examples of design qualities while size, finishing materials and layout are examples of physical attributes which can create these design qualities within a space. Although it is not possible to set a clear boundary between what is considered as design quality and what is considered as user’s perception, it can be argued that design qualities are more objective and can be gauged by measuring certain physical attributes while user’s perception is completely subjective and can be measured only by asking the users’ opinions. Since the ultimate aim of the research is to help designers assess the impacts of their design on social interaction between residents prior to construction and occupancy stages, the focus area includes mainly physical attributes and design qualities which are mostly measurable independent from occupants. However, the effects of non-environmental factors and residents’ perception have also been taken into account in order to assess the level of independency and accuracy of the outcome.

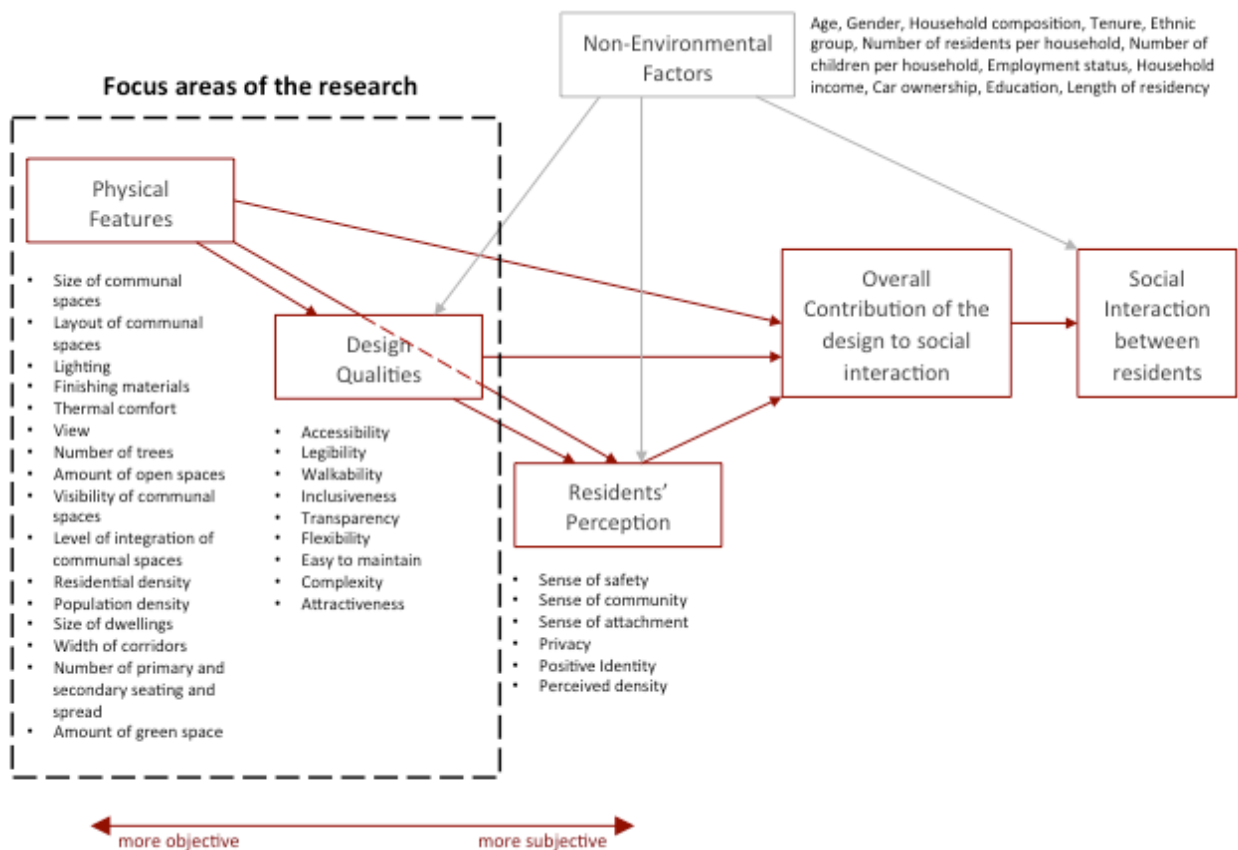


Figure 3.1: Design qualities and physical attributes as focus area of the research; adapted and modified from (Ewing, Handy 2009)

Both indirect and direct impacts of the built environment attributes can be assessed based on two main functions. The first function is to facilitate positive interactions and the second function is to avoid negative interactions. It has been suggested that to facilitate positive social interaction, it is important for three conditions to be present: opportunity for passive social contacts, proximity and an appropriate place to interact (Festinger, Back et al. 1963, Fleming, Baum et al. 1985, Skjaeveland, Garling 1997). It is arguable that the opportunity for passive social contacts increases when people spend more time within communal spaces. In terms of proximity, it is crucial to understand that it can also cause annoyance and negative interactions between the residents. Many other variables may also have this paradoxical effect, which need to be considered. Accordingly, it is crucial to consider the impacts of the built environment both on positive and negative interactions.

3.3 Design qualities which can affect social interaction

Through an extensive review of the literature in the areas of Environmental Psychology and sustainable design, this thesis identifies the following as the most commonly agreed design qualities which can affect social interaction among residents.

3.3.1 Physical proximity

Physical connectivity can affect social interaction between residents. Accessibility and physical proximity of communal spaces directly influence movement patterns, thus possibly creating more opportunities for passive contact (Festinger, Back et al. 1963, La Gory, Pipkin 1981, Raman 2010). It has been suggested that locating communal spaces at a central position, where they are well-connected to other paths and spaces can render them more active and busy (Alexander, Ishikawa et al. 1977, Raman 2010). However, It is important to consider the significance of layout and design elements in making spaces functionally near and accessible (Raman 2010, Abu-Ghazzeh 1999, Michelson 1970). Moreover, the layout and other design elements are very important in averting the possible negative impacts of physical proximity, which can in some cases be stronger than the positive effects (Haggerty 1982, Loo, Ong 1984, Paquin 1992, Halpern 1995, Skjaeveland, Garling 1997). Other studies have also found that certain non-environmental factors, such as the homogeneity of demographic patterns can reinforce the positive effect of proximity while other factors such as cultural differences can reverse that effect (Talen 1999). The following are some of the potential effects of physical proximity on social interaction and use of spaces patterns:

- Increasing the use of communal spaces by showcasing activities, possibilities and opportunities

- Positively affecting social interaction levels among residents by increasing the chance of encounters among them
- Encouraging residents to use communal spaces more by reducing the cost (time, physical effort and fear of danger) of using communal spaces

3.3.2 Visual connectivity

Visual connectivity and visibility of communal spaces can increase the opportunity for social interaction between residents in many different ways. Gehl (1996:17) has emphasised on the importance of “see and hear contacts” as the generators of more complex and emotionally involved interactions. Although his statement has been backed up by other scholars (Kuo, Sullivan et al. 1998, Henning, Lieberg 1996, Unger, Wandersman 1985), it has also been found that those communal spaces with very high level of visibility might be over-exposed and the lack of privacy in these spaces may have a negative impact on the density of social interactions in them (Raman 2010:75). While visual connectivity and transparency of space can have a positive impact on social interaction by providing more information, it might also have a negative impact by making this information available to everyone. Another way in which visibility may affect social interaction is by increasing the sense of safety. The concept of natural surveillance is a central quality which can influence the sense of safety and therefore the usability of spaces especially for sensitive users such as children and disabled people (Jacobs 1961, Newman 1973). Feeling safe during the day and night can extend the length of time people spend in communal spaces as well as increase the frequency of using these areas. The followings are some of the potential effects of visual connectivity on social interaction and use of spaces patterns:

- Encouraging residents to use communal spaces more by showcasing activities, possibilities and opportunities
- Increasing the use of communal spaces by providing natural surveillance and a sense of safety

3.3.3 Visual attractiveness

Another quality which can affect the social interaction between residents is the visual attractiveness of the built environment. Many studies has shown that visually attractive environments increase the chance of passive contacts and enhance socialising by encouraging people to walk and inviting them to stay for more time within the space (Kaplan, Kaplan et al. 1989, Nasar 1994, Skjaeveland, Garling 1997, Borst, Miedema et al. 2008). As it has been previously discussed, the more people spend time or walk within the communal spaces the

more they have the chance to find neighbours with similar interests and develop strong ties with them. It can be also argued that visually attractive places may enhance the social identity and place attachment among residents (Augoustinos, Walker 1995). The following are some of the potential effects of visual attractiveness on social interaction and use of spaces patterns:

- Increasing the use of communal spaces by attracting and inviting residents to use communal spaces for optional activities
- Positively affecting social interaction levels among residents by enhancing the social identity and place attachment

3.3.4 Privacy

While visual connectivity and accessibility of communal spaces can extend the use of these spaces, it is crucial to achieve a balance between privacy and permeability within these spaces. Individuals are naturally selective about their contacts and they need to have some level of control over their 'territory' and their interaction with others (Altman 1975, Goffman 1961). What this thesis means by "privacy" is not the privacy as a behaviour or an attitude at individual level, but what Newell (1995) calls "architectural privacy" alongside with "territoriality" and "permeability of boundaries". Two different kinds of privacy have been identified as important for positive social interaction between residents. First, the level of privacy in the home has been found to be a critical factor which can affect the social interaction especially within the cultural context of the UK (Lindsay 2010). Hertzberger (1998:28), points out the same concept when he talks about the importance of having a 'safe nest' in the choice to engage in social interaction with others. The second type of privacy refers to having privacy within the communal spaces. Foth (2006:163) has found that even within the settings of completely public spaces such as bars and cafes, people prefer private spots. In other words, making communal spaces accessible to everybody, physically and visually, can make residents uncomfortable to the level that they spend less time within these spaces and as a result it will reduce the chance of social interaction. The following are some of the potential effects of privacy on social interaction and use of spaces patterns:

- Decreasing the chance of negative interactions between residents by providing the essential balance between privacy/exposure
- Encouraging residents to use communal spaces more by providing them with the chance to control their interactions

3.3.5 Affordance

Affordance, also called 'place-capacity' (Hertzberger, Ghait et al. 1998) and 'variety' (Bentley 1985), is found to have an impact on how people use spaces for social interaction (Gehl 1996, Skjaeveland, Garling 1997). According to Skjaeveland and Garling (1997:183), affordance refers to "functional values inherent in physical characteristics of the environment".

Flexibility of space increases the probability that residents take ownership of the space and change it according to their needs (Alexander, Ishikawa et al. 1977, Hertzberger 2002).

Generally, many studies have shown that diverse and inclusive environments are more socially sustainable (Bailey, Haworth et al. 2006, Barton 1999, *Planning and Building Standards Advice Note: Inclusive Design*. 2006). It has been argued that the design of spaces affects the variety of uses available to users, a quality known as 'variety' (Bentley 1985:9).

Having access to a wide variety of activities within the communal spaces encourages residents with different preferences to spend more time in these spaces and interact with neighbours (Gehl 2007, Kuo, Sullivan et al. 1998, Unger, Wandersman 1985, Ross, Jang 2000).

In addition, creating an inclusive environment, where people with different physical needs and abilities can move around easily, helps provide an equal chance of social interaction for all residents (*Planning and Building Standards Advice Note: Inclusive Design*. 2006). This quality is especially crucial for the social life of those residents with disabilities and young children.

Moreover, due to economic considerations, which always limit the size and variety of communal spaces to some extent, the flexibility of these spaces can grant access to a variety of activities in minimum space. As a result the flexibility and affordance of communal spaces may extend the length of time residents spend there and increase social interaction between neighbours. The following are some of the potential effects of affordance on social interaction and use of spaces patterns:

- Encouraging residents to use communal spaces more by offering a wider variety of functions and activities
- Preventing isolation and increasing social interaction level among residents by creating comfortable environment for all residents including children and the elderly

3.3.6 Density

The relationship between density and social interaction has been the subject of much discussion over the last few decades. Many studies have shown that higher dwelling densities encourage social interaction through busier communal spaces and closer proximity (Krupat

1985, Putnam 2000, Churchman 1999). However, there is also evidence of negative impacts such as crowding effects, stress, lack of privacy and anonymity (Lindsay 2010, Dempsey 2006). In order to have a certain probability of finding neighbours suitable for close contact, it is important to have a minimum of density (Skjaeveland, Garling 1997). Moreover, higher densities increase the chance of spontaneous contact among residents, which may lead to higher levels of social interaction (Talen 1999, Bramley, Power 2009). Hertzberger (1998:63) also suggests that a minimum level of population density is required to make communal spaces active, busy and as a result attractive places to be in. On the other hand, population density can also affect the level of anonymity in a shared space. In a tower block where the residents of 50 flats are sharing lifts and staircases, these areas are far more anonymous in comparison with similar spaces shared between the residents of 8 flats. Based on this level of anonymity, the quality and quantity of the potential social interactions will change. According to Raman (2010) there is a 'critical mass' of dwelling density, which is in line with Altman's (1975) optimisation process. Raman (2010) suggests that rather than abstract density, in reality, what has more impact on social interaction between residents is the perceived density. The relationship between density and its associated physical attributes, and social interaction among residents has been extensively discussed in recent literature (e.g. Jenks, Burton et al. 1996, Raman 2010, Burgess, Jenks 2000, Dave 2011), therefore this thesis deliberately excludes density and its relative concepts by choosing all the seven case studies from medium density urban developments.

3.4 Physical attributes affecting design qualities

During the last few decades many studies have theorised and empirically tested the effect of various physical attributes on creating certain perceptions and design qualities. This thesis has conducted an extensive literature review in order to identify those physical attributes which might affect the previously mentioned design qualities. Literature in the areas of environmental psychology, urban social sustainability, sustainable communities and generic design guidelines have been coded against five design qualities. These are effectively the six identified design qualities excluding density, as discussed above. The design qualities considered are visual connectivity, physical proximity, privacy, visual attractiveness and affordance. Table 1 represents all the physical attributes related to each design quality along with existing indicators for each physical feature, used in previous studies. For the purpose of this research, new indicators will be proposed where no evidence of previously used indicators have been found within the literature.

Finally, these indicators and relationships are used to identify suitable measures for the built environment to be used for site survey and also as hypothesis to test the effect of design qualities on social interaction and use of spaces patterns.

Table 1: An overview of physical attributes and existing indicators associated with the discussed design qualities, extracted from various resources

Design Quality	Physical attributes	Indicator
Visual connectivity	Visual integration value (Turner 2001, Abu-GhazzeH 1999)	Visibility graph analysis (Turner 2001)
	Visual controllability (Hanson 1998)	Visibility graph analysis (Turner 2001)
	Visibility of communal spaces (Newman 1973)	Visibility graph analysis (Turner 2001)
Physical proximity	Integration value (Hanson 1998)	Axial map (Turner 2001)
	Connectivity (Hanson 1998)	Axial map (Turner 2001)
	Distance from the main pedestrian route (Raman 2010)	Justified graph (Turner 2001)
	Building's height (no. of levels) (Raman 2010)	
	Complexity of routes (Raman 2010)	Topological floor plan complexity (ICD) (O'Neill 1991)
	Physical distance of dwellings (Fischer 1977, Hillier, Hanson 1984, Gehl 1996, Abu-GhazzeH 1999)	
	Functional distance of dwellings (Fischer 1977, Hillier, Hanson 1984, Gehl 1996, Abu-GhazzeH 1999)	
Privacy	Visibility (Raman 2010)	Visibility graph analysis (Turner 2001)
	Location of seats (Gehl 1996, Alexander, Ishikawa et al. 1977)	
	Elevated entrance (Altman 1975, Alexander, Ishikawa et al. 1977)	
	Security/alarm signs on property (Perkins, Wandersman et al. 1993)	
	Clearly defined territories (Newman 1973)	
	Territorial markers (Perkins, Wandersman et al. 1993)	
Visual Attractiveness	Presence of vegetation and greenery (Borst, Miedema et al. 2008, Kuo, Sullivan et al. 1998, Marcus, Sarkissian 1986, Kaplan, Kaplan et al. 1989)	Percentage of vegetation- covered area per setting (Number of cells) (Hur, Nasar et al. 2010)
		Amount of open space (Borst, Miedema et al. 2008)
		Number of trees (Borst, Miedema et al. 2008)
	Visual complexity (Borst et al, 2008)	Number of interesting things to look at (Borst, Miedema et al. 2008)
		Number of dominant colours (Ewing, Handy 2009)
		Number of accent colours (Ewing, Handy 2009)
	Spaciousness (Skjaeveland, Garling 1997, Gehl 1996, Kaplan, Kaplan et al. 1989, Herzog 1992, Nasar 1994)	Adjacent non-occupied land (Skjaeveland, Garling 1997)
		View more than 500 m (Skjaeveland, Garling 1997)
		The area of the space (Abu-GhazzeH 1999)

	Formal aesthetics (Nasar 1994)	
	Natural daylight (Foth 2006)	
	Uniform illumination (Alexander, Ishikawa et al. 1977)	
	Finishing materials and colours of surfaces (Alexander, Ishikawa et al. 1977, Foth 2006)	
	Tidiness and upkeep (Borst, Miedema et al. 2008, Greenbaum, Greenbaum 1981, Brown, Werner 1985)	
	Direct sunshine (Skjaeveland, Garling 1997)	
	View (Nasar, Valencia et al. 1985)	Number of long sight lines (Ewing, Handy 2009)
		Proportion sky ahead & across (Ewing, Handy 2009)
		Street width (Perkins, Wandersman et al. 1993)
	Variety of vegetation (Green 1999)	The Normalized Differential Vegetation Index (NDVI) (Hur, Nasar et al. 2010)
	Landscape design (Green 1999)	
	Variety of built forms (Green 1999)	
Affordance	Place-capacity (Hertzberger, Ghait et al. 1998)	
	Presence of soft edges (e.g. front gardens) (Gehl 1996)	
	Number of seats (Gehl 1996)	
	Sheltered areas (Skjaeveland, Garling 1997)	
	Average width of routes (Dempsey 2006)	
	Number and Spread of seats (Dempsey 2006)	
	Playing areas (Skjaeveland, Garling 1997)	
	Instances of ramps/ dropped kerbs (Dempsey 2006)	
	Presence/Quality of pavements (Borst et al, 2008)	

3.5 The effect of non environmental factors

In addition to environmental factors, many different non-environmental factors have been found to have significant impact on social interaction between residents (Talen 1999, Buonfino, Hilder 2006, Dempsey 2006, Lindsay 2010). Some studies have found that these non-environmental factors can outweigh the impact of physical-spatial factors on residents' behaviour (Dyckman 1961). Criticising the new urbanism's claims about creating sense of community, Talen (1999) has stated that social and economic homogeneity within a neighbourhood might be more influential on social interaction between residents. Her statement has been backed up with many studies finding high levels of neighbouring within homogeneous suburban neighbourhoods (Fischer 1976, Dyckman 1961). Certain household

types such as retired couples and families with young children have been found to have more interaction with neighbours since they spend more time around home (Lindsay 2010).

Moreover, the patterns of local social activities vary from one culture to another. Developers and clients usually are the ones who understand these patterns and trends better than designers (Farshidi 2011). The way people use semi-private spaces for socialising in Mediterranean countries is completely different from how people use these spaces in the UK. This can be also explained as an effect of climate. Home ownership is another factor, which can affect social interaction between residents. Home owners have been found to have more interaction with neighbours than tenants (Fischer 1982).

The following factors have been identified as a result of an extensive review of related literature in urban sociology and environmental psychology. These factors have been integrated in the household questionnaire design, which will be used for data collection.

- Demography (age, gender, marital status, ethnic group),
- Household pattern (household tenure, household population, household type, number of children)
- Stability of Community (length of residency, plan to stay)
- Socio-Economic Class (employment, education, household income)
- Live-Work Patterns (average working hours per week, distance to workplace)
- Transport (mode of transport, car ownership)

3.6 Conclusion

This chapter addressed the second research question by identifying the design qualities that can affect social interaction and use of space patterns within urban residential developments. Six design qualities have been extracted from literature mainly in the areas of environmental psychology, urban social suitability and general design guidelines: These include visual connectivity, physical proximity, visual attractiveness, privacy, affordance and density. An extensive literature review was conducted to identify the physical attributes that can impact these design qualities, excluding density. The list of physical attributes and their potential effects on social interaction and use of space patterns is used in subsequent chapters to choose the measures and finally test the impact of design qualities on social interaction and use of space patterns. Table 2 summarises the list of design qualities and their associated physical attributes to be used in the subsequent chapters.

Table 2: Summary of the identified design qualities and their associated physical attributes which have been selected for this study

Design qualities	Physical attributes
Physical proximity	Proximity to the main access route
	Proximity to the dwelling units
	Integration value
Visual connectivity	Visibility from main access route
	Visibility from dwelling units
Visual attractiveness	Colour
	View
	Light
	Greeneries
Privacy	Privacy inside the dwelling units
	Well-defined boundaries
	Presence of private spots
Affordance	Seats
	Children's play area
	Variety of functions
	Shelter

Based on the extensive literature review which was discussed in this chapter, proximity to the main access route, proximity to the dwelling units and integration value of communal spaces are three physical attributes that are expected to affect social interaction between residents. It is expected that those intentional communal spaces located closer to the main access routes and dwelling units are busier and facilitate more interactions between residents. In terms of visual connectivity, the literature review suggests that visibility from the main access route and visibility from the dwelling units can affect social interaction level in a development. It is expected that those intentional communal spaces, which are more visible from the main access routes or dwelling units, facilitate more interactions between residents. Moreover, the review of literature suggests that colour, view, light and greeneries are the main physical attributes, which can affect social interaction between residents by increasing the visual attractiveness of spaces. It is expected that colourful and bright intentional communal spaces with greeneries and open views attract more people and can facilitate more social interactions between residents. In addition, based on the same literature review, privacy inside the dwelling units, well-defined boundaries of communal spaces and providing private spots within communal spaces can affect social interaction level in a development. It is expected that benefiting from a good level of privacy inside the dwellings and communal spaces can increase the chance of social interaction between residents. Finally, in terms of affordance, the literature review suggests that number of seats, providing a children's play area, accommodating a variety of functions and providing sheltered areas can bring more people into communal spaces and increase the chance of

social interaction between them. It is expected that those communal spaces with more seats and sheltered areas will be used more by residents.

A list of non-environmental factors, which can affect social interaction level between residents, is also created based on the literature review to be investigated further in future chapters.

Chapter 4: Methodology

4.1 Introduction

This chapter represents the development and application of a research methodology based on multiple case studies in order to establish “if and how the design of urban residential developments can facilitate social interaction between residents in Scotland”. Five research questions investigating social interaction, use of communal spaces and design qualities of the communal spaces are proposed to achieve the research aim.

An explanation of the research framework is followed by a description of the theoretical perspective and research strategy. The methods used for data collection and data analysis are explained and justified before discussing the development of the indicators and variables used to measure the three main elements including the design qualities of communal spaces, use of communal spaces and social interaction among residents. Finally, the criteria for case selection and the process of the pilot study are briefly described.

4.2 Conceptual framework

This research seeks to contribute to the empirical knowledge regarding the relationship between the built environment and social interaction by establishing “if and how the design of urban residential developments can facilitate social interaction between residents in Scotland”. Previous empirical studies in this area have mostly focused on neighbourhood scales investigating the effect of physical attributes such as the layout of streets and residential density (Dempsey 2006, Lindsay 2010, Raman 2005). These studies have resulted in general recommendations, which are more useful for policy makers, urban planners and urban designers rather than architects and developers of residential developments. Aiming to provide architects and developers with empirically evidenced insights into how residents interact within shared spaces of urban residential developments, this study has focused on the communal and service spaces within urban residential developments, to explore the effect of design qualities in building scale. In order to achieve this aim, the following five research questions have been developed:

- **Research question 1:** What are the characteristics of positive and negative social interaction between residents within urban residential developments?
- **Research question 2:** Which design qualities of the communal spaces of urban residential developments can affect the quality and quantity of social interaction between residents?
- **Research question 3:** What are the existing and potential patterns of social interaction between residents of urban residential developments in Scotland?
- **Research question 4:** What are the existing and potential patterns of use of communal spaces for social interaction between residents in urban residential developments in Scotland?
- **Research question 5:** What are the impacts of design on the quality and quantity of social interaction between residents of urban residential developments in Scotland?

The first two research questions have been addressed by conducting an extensive literature review in urban social sustainability and environmental psychology. As discussed in Chapter Two, answering the first research question resulted in identifying critical factors with respect to the changing patterns of social interaction to capture the quality and quantity of social interaction among residents. Answering the second research question, as discussed in Chapter Three, has resulted in identifying potentially effective design qualities and a list of related physical attributes, which may have either a direct or indirect effect on social interaction among residents. This list of design qualities and their associated physical attributes is used later on to answer the last research question regarding the relationship between the design qualities of communal spaces and social interaction patterns. Figure 4.1 represents the conceptual framework of this research including three main parts, each addressing one of the last three research questions. Within the literature reviewed it has been claimed that when people share a physical space, there is a chance of social interaction between them (e.g. see Hillier, Hanson 1984). The research examines the impact of design qualities both on the social interaction and use of spaces patterns. Since the effect of design qualities on the use of space will eventually affect social interaction between residents by increasing the chance of social interaction, this relationship has been labelled as “indirect effect” in oppose to the “direct effect” of design qualities on social interaction between residents.

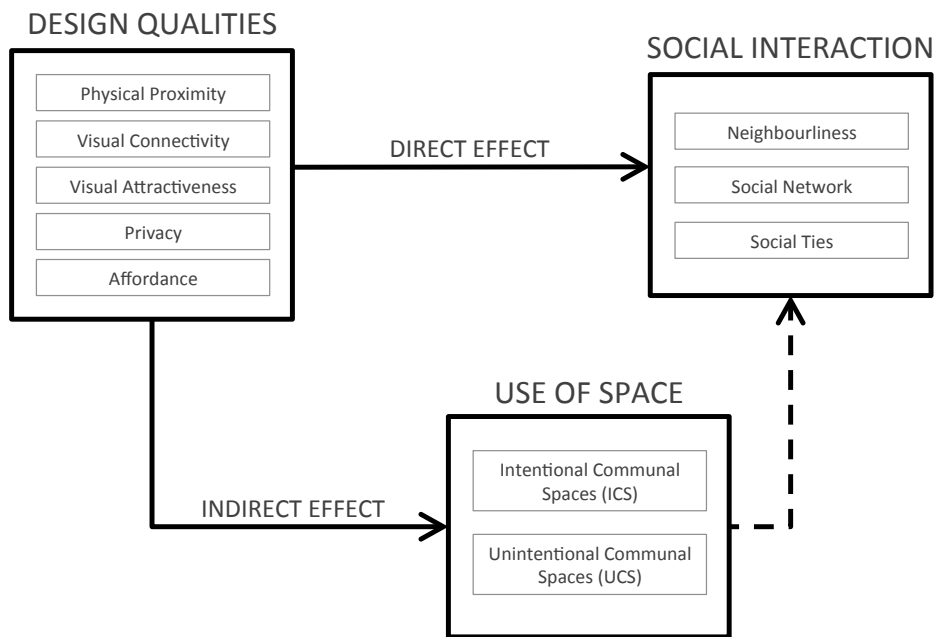


Figure 4.1: Conceptual framework of the research – Continuous arrows represent those relationships that are investigated in this research and dashed arrow shows the relationship, which is based on the literature

The first part answers the third research question through measuring the social interaction level among residents using the identified critical factors from Chapter Two (see Figure 4.2).

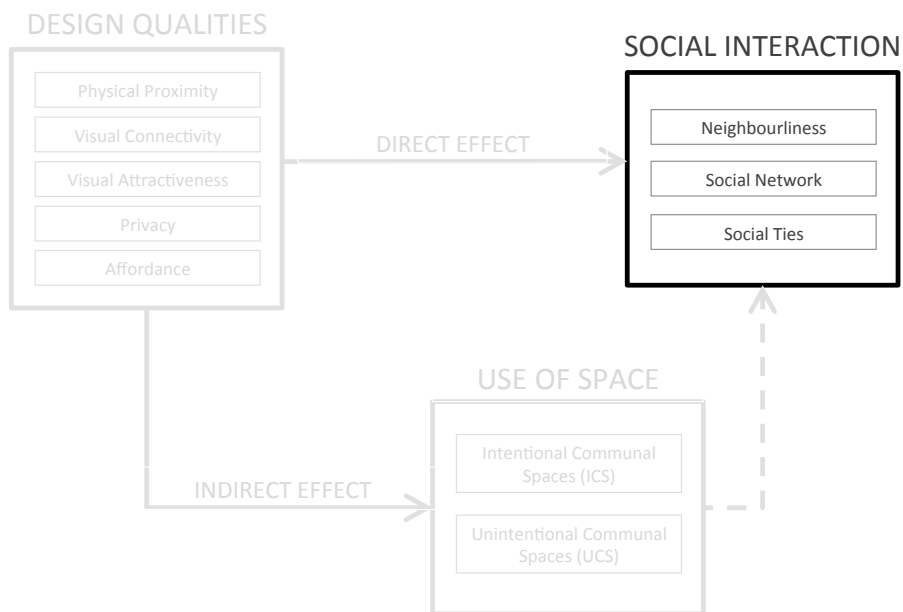


Figure 4.2: First research area answering the third research question

The second part addresses the fourth research question by capturing a detailed picture of social interaction patterns within intentional and unintentional communal spaces (see Figure 4.3).

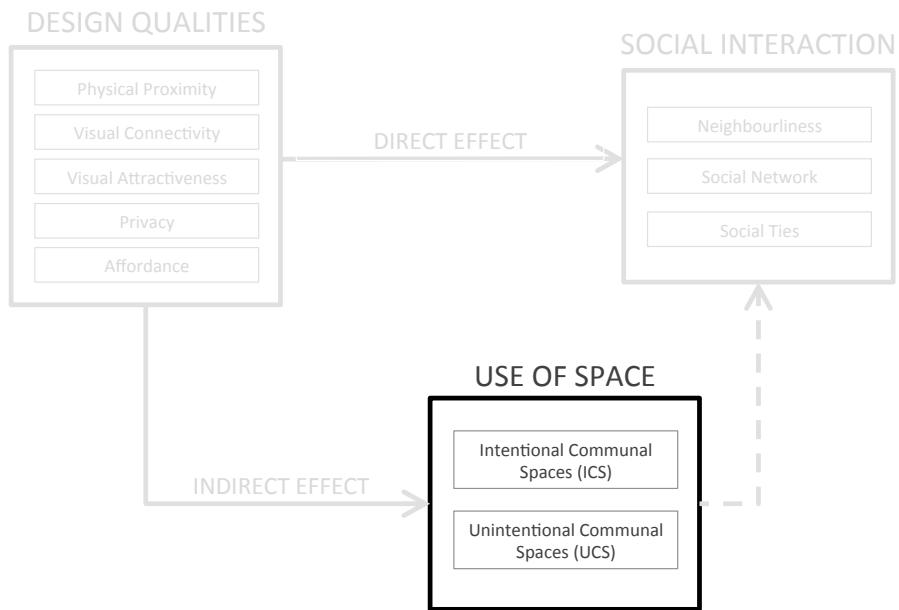


Figure 4.3: Second research area answering the fourth research question

Finally, the third part answers the last research question through examining the direct and indirect effects of identified design qualities and their associated physical attributes on social interaction among residents (see Figure 4.4).

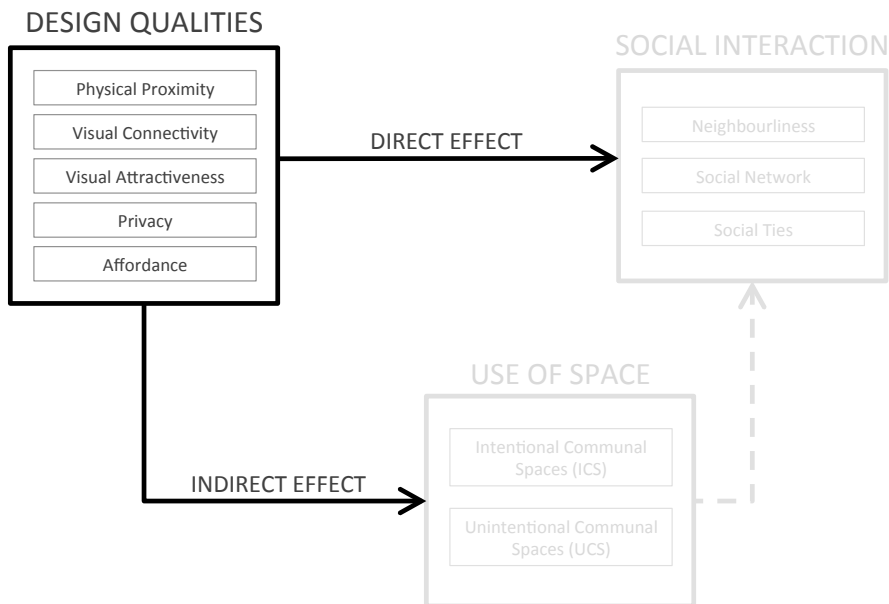


Figure 4.4: Third research area answering the fifth research question

The starting point of this study is that although the built environment does not create social interaction, it can facilitate social interaction where there is potential.

4.3 Theoretical perspective

This research uses a “pragmatist” knowledge claim, which is based on ‘what works’ to understand the problem. Drawing from the works of Peirce, James, Mead, and Dewey (Cherryholmes 1992), a pragmatist knowledge claim within built environment research has recently been developed by (Kunz, Rittel 1970, Rittel, Webber 1973, Buchanan 1992). Leaving aside the questions about the reality and law of nature, pragmatists simply use every useful method to create knowledge about a problem or situation (Creswell 2009). However, this freedom of choice does not mean random use of research methods. The choice of research method depends on the research questions and context and needs a clear argumentation about its compatibility to generate relevant new knowledge (Creswell 2009). Looking at the relationship between the built environment and people’s behaviour through the lens of design, taking a pragmatist position creates the opportunity to generate unique knowledge around “if and how design works” in a specific context. To achieve this, both inductive and deductive approaches have been utilised.

An inductive approach has been adapted for the first two parts of the research to explore the social interaction patterns within communal spaces of urban residential developments comprehensively and deeply. As (Amaratunga, Baldry et al. 2002) stated, the inductive approach is very effective when it comes to understanding current situations or answering questions like ‘what is happening’ and ‘how is it happening’.

Testing existing assumptions about the effects of selected design qualities on social interaction among residents, a deductive approach has been adapted for the last part of this research to answer the last research question. However, it should be considered that rather than a generalisation of the results, this study is focused on testing the validity of a hypothesis in a particular context (Amaratunga, Baldry et al. 2002).

4.4 Research strategy

“Multiple case studies” has been chosen as the design strategy for this research to understand how residents use communal spaces for social interaction and the impact of design. This involved the collection and analysis of data from seven urban residential developments regarding three main elements including the design qualities of communal spaces, the use of communal spaces and social interaction among residents. The multiple case study approach has been chosen for the following reasons.

Case studies usually investigate one or multiple cases in their context by using a multitude of methods (Johansson 2003). This sensitivity to the context is important in this study because it is evidenced that non-environmental factors such as cultural settings, demographic patterns and climate can affect the way people use specific spaces by changing their lifestyles.

Moreover, case studies are capable of capturing the complexity of a phenomenon by using different methods of data collection (Creswell 2009). In order to draw a comprehensive picture of how people use communal spaces and how they interact with their neighbours, it is necessary to look at both the quality and quantity of social interaction from different angles. This also provides the opportunity for “triangulation” of data, which is one of the main characteristics of the case study approach.

Finally, it has been claimed that in the design oriented research area such as architecture, case studies are especially valuable (Johansson 2003). In real life practice, architects either use their own personal experience with previous projects or refer to established model cases every now and then. This study also aims to provide architects with context specific reference points about the use of communal and service spaces in urban residential developments in Scotland.

Overall, it is argued that multiple case studies create rich and reliable evidence, but researchers should be careful to control effective consumption of time and resources (Baxter, Jack 2008).

4.5 Research methods

In order to create a full picture and to provide the basis for substantive analyses a “mixed method” approach has been adopted which means a variety of techniques for the collection and analysis of both qualitative and quantitative data have been used (Bryman 2008). The use of different methods of data collection is argued to maximise the validity of observations and add weight to the data (Webb 1966, Denzin 1970). This process is also called ‘triangulation’ (Johansson 2003). In addition, it is argued that combining qualitative and quantitative methods creates the opportunity to provide fresh insights through attention to unexpected results and paradoxes (Amaratunga, Baldry et al. 2002, Rossman, Wilson 1994).

Qualitative methods have been used alongside some quantitative methods to answer the two research questions regarding ‘existing patterns of social interaction’ and the ‘use of communal spaces’. It is argued that qualitative methods are useful when the research is concerned with people’s perception and behaviour, which is the case in this part of this

research (Amaratunga, Baldry et al. 2002). To address the last research question regarding ‘correlations between design qualities and social interaction patterns’, quantitative methods have mostly been used, however where necessary qualitative data is also added.

Since one of the research questions concerns the exploration of the current situation to understand the current and potential patterns of social interaction and how people use the communal spaces in reality, conducting the research only based on the numerical data and statistical methods cannot be justified. In order to address the exploratory nature of this research, a combination of the geographical and statistical approach has been used. Applying a geographical approach, data have been collected regarding the location and types of social interaction among residents, while the statistical approach is only focused on the quantity and quality of social interaction. While the statistical data answers questions such as ‘*how many?*’ and ‘*how much?*’, the geographical data reveals the answers to questions such as ‘*where?, what?*’

Instead of quantitative analysis methods, which lead to generalised rules and recommendations, this research adapted descriptive and qualitative analysis methods to provide architects with fresh insights regarding the communal spaces of urban residential developments in this specific context.

4.6 Data collection

The data is collected regarding three main areas, first, the quality and quantity of social interaction among residents, second, the use of communal spaces, and third, the design qualities of communal spaces. These three areas of data collection have been established based on the last three research questions (see Figure 4.5). The first two sets of data have been collected using specifically designed household questionnaires and semi-structured interviews with residents. The last set of data is collected through an analysis of building documents (e.g. plans, sections and photos) and a site survey checklist. Figure 4.6 represents how the data collected using each of four methods (i.e. household questionnaires, sites survey, semi-structured interviews and architectural documents) have been analysed with different data analysis methods which will be discussed comprehensively in future sections.

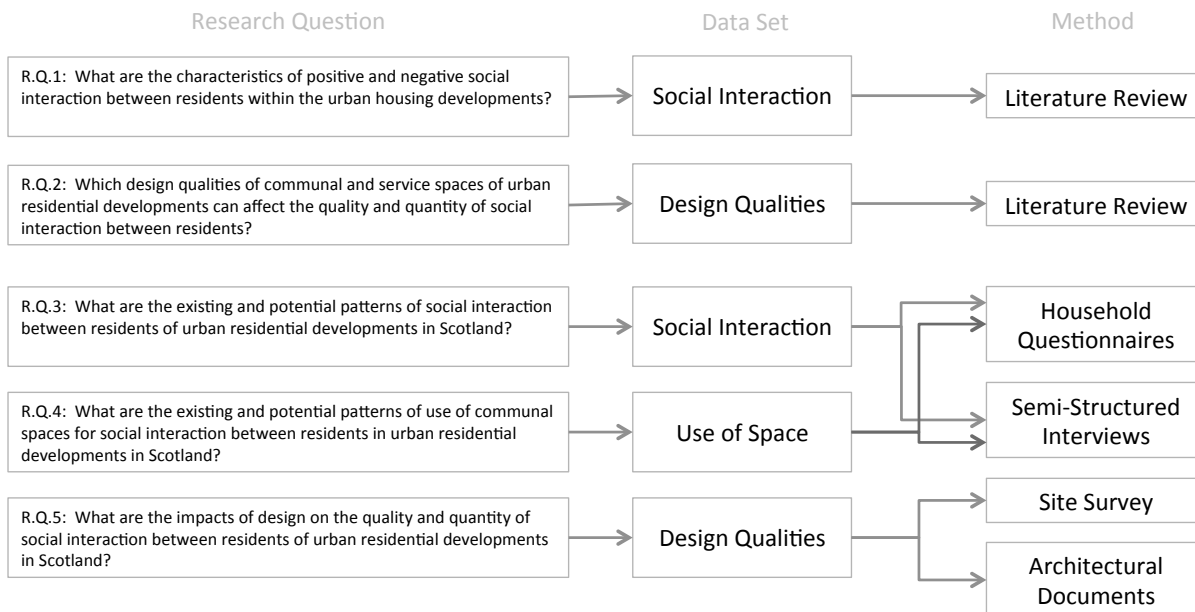


Figure 4.5: Research questions and methods of data collection

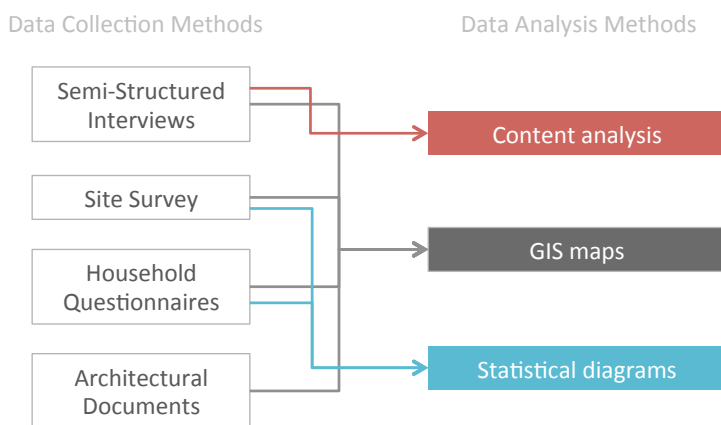


Figure 4.6: Data collection methods and data analysis methods

4.6.1 Household questionnaires

The initial intention was to carry out a systematic observation of social interaction between residents within the communal spaces; however, due to problems with residents' privacy this was not possible. An alternative method for collecting data from a large sample population is a self-completion questionnaire, which is also efficient in terms of cost and time (Bryman 2012). The main limitation of using self-completion questionnaires instead of systematic observation is that what will be captured, as the quality and quantity of social interaction, is basically very subjective and based on the self-reported information. While some researchers argued that what questionnaires capture is respondents' perception rather than what happens in reality, other scholars have claimed that even the direct observation of samples is eventually filtered through the observer and in this way it is also subjective. The research has

focused on the design of the questionnaires to minimise this limitation by designing a comprehensive and smart questionnaire, which can provide the maximum reliable information regarding the quality and quantity of social interaction incidents between residents.

The questionnaire includes three parts, each covering different types of information, namely non-environmental factors, perception and use of space, social interaction and networks. Since the approach of the research is both inductive and deductive, which means forming new hypotheses regarding the social interactions and individuals' behaviour as well as testing the existing hypotheses, a couple of open questions have been included in the questionnaires in order to obtain qualitative data regarding the social interactions between residents. The designed questionnaire was tested in two stages prior to the main pilot study. First, experts from different backgrounds (e.g. applied social science, architecture, project management, research methods) were asked to review the draft of the questionnaire and to make comments both about the questionnaire and the proposed methods of delivery and collection. The revised version of the questionnaire was given to five non-experts in order to check the clarity of the questions and the time needed for completion. Finally, the questionnaires and the process of delivery and collection were refined based on the findings from the pilot study. In order to increase the response rate, the residents of the development were contacted one week before the delivery of the questionnaires and pre-paid envelopes were also provided in addition to an option for completing the online version of the questionnaire. Moreover, the questionnaires were delivered in person to each household and 4 days later another visit was conducted to collect the completed questionnaires in order to maximise the response rate (Bryman 2012). Having used these arrangements, the average response rate of 25% (i.e. eighty-eight people completed the questionnaires out of three hundred and forty-eight questionnaires distributed) was achieved, which is a fairly acceptable response rate for a postal questionnaire considering the length of the questionnaire (i.e. ten pages) in comparison with similar studies in the field (Dempsey 2006, Lindsay 2010).

4.6.2 Semi-structured interviews

Semi-structured interviews with the residents were conducted to obtain qualitative data regarding the quality of the social interaction between residents and their perception of communal spaces. It is argued that semi-structured interviews save time and resources while preserving some degree of freedom to collect rich qualitative data regarding respondents' perceptions and ideas (Barriball, While 1994). Similar to the questionnaires, the proposed

questions for the interviews were reviewed by experts from different backgrounds (e.g. applied social science, architecture, project management, research methods) and five non-experts were asked to comment on the clarity of the questions prior to the main pilot study. After conducting the pilot study, the questions were revised based on the feedback to maximise the richness of the qualitative data. The questions were designed to capture more detailed information about the preferences and opinions of residents regarding the design of communal spaces as well as their interaction patterns with other residents by asking them to recall and describe real life situations. Each interview took between 15 and 20 minutes and was audio recorded after obtaining official consent from the interviewees. From each development, three or four residents living in units located at different levels and preferably from different household patterns were interviewed. Overall, twenty-one interviews were conducted with residents from all seven developments.

4.6.3 Site survey

A site survey checklist was designed to collect information regarding the physical attributes of the built environment. The previously produced list of indicators was used for the design of the site survey checklist. In order to save time and to make it more practical, the checklist is used as a guide for extensive photography of the communal spaces within the residential developments. The researcher visited the communal areas prior to the distribution of the household questionnaires and photographed the communal areas using the site survey checklist as a guide. The photographs not only provide complementary information about the physical attributes of the communal spaces which cannot be extracted from two dimensional building documents (e.g. finishing materials, daylight and lighting) but they have also been used as visual references within the household questionnaires.

4.7 Data analysis

The data analysis is conducted in three parts, including an analysis of the plans and a 3D model of the building, an analysis of the qualitative data and an analysis of the quantitative data. The first part aims to create objective measurements regarding the design qualities of the communal spaces. The second part involves an analysis of the interviews using content analysis to explore the patterns and qualities of social interaction. Finally, the third part includes an analysis of the quantitative data using GIS maps and graphical analysis to investigate the patterns and correlations between the physical attributes and social interaction between residents. However, it should be considered that these three parts are neither independent nor sequenced. As also mentioned by Baxter and Jack (2008), the data

analysis started during the data collection process and continued until the end of the research. Having used both quantitative and qualitative data, case studies have been used for analytical generalisation rather than statistical generalisation (Johansson 2003).

Overall, it is argued that analysing the case study data is the most difficult task in case study research due to the complex nature of case studies and the variety of data (Yin 2014). In this research we have combined various methods of qualitative and quantitative data analysis. The following sections discuss the two most important methods including content analysis and GIS maps.

4.7.1 Content analysis

This research has adopted the content analysis method to analyse the qualitative data collected by both semi-structured interviews and open-ended questions at the end of the questionnaires. It has been argued that content analysis is useful for creating theory from qualitative data (Creswell 2009). In this study, qualitative data has been used to explore the four following aspects of social interaction patterns among the residents of the selected cases.

- The quality of social interaction and level of neighbouring
- Motivators and barriers for social interaction
- Existing and potential patterns of activities and interactions
- Expectations of residents about communal spaces

First, for each of these aspects, related sentences and phrases have been extracted from the text. The next step was to read each batch of data carefully and to assign the initial codes. This process is called initial coding or open coding (Fereday, Muir-Cochrane 2006). The initial coding is followed by cycles of review and editing codes, which leads to the development of the final codes and categories (Elo, Kyngas 2007). At this stage, the categories and themes are formed by finding connections between the codes. Finally, the categories and codes are weighted based on the number of repetitions.

4.7.2 Geographic information system (GIS)

Linking tabular data, also known as attribute data, to spatial features with reference to locations on Earth has made GIS a powerful method of investigating spatial relationships (Harder, Ormsby et al. 2011). Not surprisingly, within the built environment study area an increasing number of studies are now using this unique quality of GIS in storing, analysing and presenting spatial data (Pearce, Witten et al. 2006, Raman 2010, Thornton, Pearce et al. 2011). This is particularly the case when working with spatial and non-spatial data at the

same time. Many researchers within the built environment discipline have used GIS; however, it has always been used for studies about cities and neighbourhoods but not inside buildings. Using the three dimensional capabilities of ArcGIS, this study used GIS to explore the patterns and relations inside the buildings.

Exploring the relationship between the physical attributes of urban residential developments and the social interaction between residents, this research includes an investigation of both the *spatial data* related to the built environment and the *non-spatial data* about residents and their interaction with neighbours. All the data collected using questionnaires and site survey checklists have been transformed into excel spread sheets and the following three sets of data are transferred to ArcGIS software for further analysis.

- **Environmental factors:**

The first set of data includes the physical attributes of different spaces, which can be either *spatial data* (e.g. trees, pathways, boundaries of spaces, and building footprints) or *non-spatial data* (e.g. finishing materials, capacity of spaces and window area). This data is either collected using site survey checklists or obtained as *AutoCAD* vector files (containing the floor plans of the development) from the designers. The spatial data is imported to *ArcMap* to create vector GIS “shapefiles” represented in polygons, lines and points. The non-spatial features captured and marked on the plans during the site survey, are transformed to *attribute tables* associated with geometries within the existing “shapefile”. This created a *GIS dataset*, which stores all the data related to environmental factors. A multi-layer *GIS dataset* allows the data about each spatial feature (for example the trees on the site) to be stored in a different layer.

- **Non-environmental factors:**

The second set of data includes socio-economic information about the residents within the selected residential developments and the surrounding neighbourhood, which is totally *non-spatial data* (e.g. age, income and ethnicity). The data is either collected using household questionnaires or obtained as *excel* files from local authorities. The data from the household questionnaires is transformed to excel data sheets. Using the GIS “join” tools, the data is linked to the *attribute tables* within the previously created *GIS dataset*.

- **Social interaction incidents:**

The last set of data includes the quality and quantity of social interaction between residents within the communal spaces of selected residential developments, which is mainly *non-spatial data* (e.g. duration, frequency and type of interaction). The data is

collected through household questionnaires and interviews with residents. Similar to the non-environmental factors, the data is linked to the *attribute tables* within the previously created *GIS dataset*.

As mentioned before, GIS is a very powerful method for spatial analysis. Spatial analysis is essentially a broad term to answer questions using spatial information (Mitchell 1999). It can range from very simple analysis, such as “where is my nearest?”, through to complex Multi Criteria Analysis (MCA) and hydrological analysis (Mitchell 1999).

Aiming to test an existing series of hypotheses and to capture existing patterns, this study has benefited from GIS maps to explore the relationship between spatial and non-spatial data. For example, using ArcGIS has created the chance to superimpose non-spatial data such as number of friends and level of interaction with neighbours with spatial data such as proximity to the entrance or the main access route. Thematic (also known as choropleth) maps have been generated for all seven residential developments in order to identify and explore the trends and patterns of social interaction in relation to spatial attributes such as proximity. While using numerical data and statistical methods, values (represented by numbers) are disconnected from their relative attributes in real life such as location and time. While numerical data and statistical methods have very limited capacities for identifying and representing the patterns of variables with reference to their location in three-dimensional spaces, isometric thematic maps simply expose these patterns by connecting values and locations.

4.8 Indicators and measures

In order to be able to quantify the three main elements of this research, i.e. the design qualities of communal spaces, use of communal spaces and social interaction patterns, appropriate indices, indicators and measures have been adopted based on the literature review and the research questions of the research. It is argued that the use of indicators is necessary for quantifying concepts that are not easy to measure directly (Bryman 2012). Indices as composite measures have been used widely in social science to accumulate and summarise different aspects of one concept. While most indices and indicators have been borrowed from literature, some new indicators have also been proposed to address the special needs of this study and provide the opportunity for triangulation of data.

Three sets of measures and indicators have been defined. The first set is designed to measure the quantity and quality of social interaction among residents. The second set measures the

frequency and likelihood of being used for communal spaces. The last set of measures is designed to capture certain design qualities such as physical proximity, visual connectivity and etc. for communal spaces.

4.8.1 Social interaction measures

Measuring social interaction between residents is difficult due to the qualitative nature of data. Some previous studies have adapted or developed indices and measures to capture the quality and quantity of social interaction among a group of people (Skjaeveland, Garling et al. 1996, Raman 2010, Lindsay 2010). In this study we adapt some of these previously tested indices and we also propose new indices based on the similar methods and the nature of this study. The indices and measures have been adapted and designed to capture the following main features as representative of the quality and quantity of social interaction between residents.

- Neighbouring level among residents (Neighbouring index “*N-Index*”)
- The quantity of social interaction among residents (Index of social networks “*SN-Index*”)
- The quality of social interaction among residents (Index of social ties “*ST-Index*”)

4.8.1.1 Neighbouring index (*N-Index*)

The *neighbouring index (N-Index)* is a composite measure of the ‘neighbouring level for each individual resident and also for the residents of each development overall’. The index is developed and defined based on the ‘Multidimensional Measure of Neighbouring’ proposed by Skjaeveland et al. (1996). Likert scales measuring the likelihood of supportive acts of neighbouring and likelihood of neighbour annoyance have been adopted from previous research in the field (Skjaeveland, Garling et al. 1996, Unger, Wandersman 1985). Going through a set of ten statements about their relationship with neighbours, residents report on their perception of neighbouring level at their residence. The respondents’ levels of agreement with the statements are added to achieve the final value of the index for each respondent. In each development the *Overall Neighbouring Index* is achieved by calculating the mean *Neighbouring Index* for all the respondents living in the development. The number 37 (highest value of the index) represents the highest level of neighbouring for residents and the overall level of neighbouring within a development, while the number 0 represents the lack of neighbouring.

The following statements have been included in the index:

- The friendships and associations I have with other people in my residence mean a lot to me (strongly agree 4; agree 3; neither agree nor disagree 2; disagree 1; strongly disagree 0)
- If I need a little company, I can stop by a neighbour I know (strongly agree 4; agree 3; neither agree nor disagree 2; disagree 1; strongly disagree 0)
- If I have a personal crisis, I have a neighbour I can talk to (strongly agree 4; agree 3; neither agree nor disagree 2; disagree 1; strongly disagree 0)
- If I don't have something I need for my cooking, I can borrow it from a neighbour (strongly agree 4; agree 3; neither agree nor disagree 2; disagree 1; strongly disagree 0)
- I have made new friends by living here (strongly agree 4; agree 3; neither agree nor disagree 2; disagree 1; strongly disagree 0)
- This residence is a place where people from different backgrounds get on well together (strongly agree 4; agree 3; neither agree nor disagree 2; disagree 1; strongly disagree 0)
- The noise which my neighbours make can occasionally be a big problem (strongly agree 0; agree 1; neither agree nor disagree 2; disagree 3; strongly disagree 4)
- How often do you help your neighbours with small things, or they help you? (not at all 0; hardly ever 1; quite often 2; most of the time 3; constantly 4)
- How often are you irritated with some of your neighbours? (not at all 4; hardly ever 3; quite often 2; most of the time 1; constantly 0)
- Have you ever participated in scheduled gatherings with neighbours? (yes 1; no 0)

4.8.1.2 *Index of social networks (SN-Index)*

The *index of social networks (SN-Index)* is a composite measure representing 'the quantity of the residents' social networks'. The respondents have been asked to indicate the number of people *they know by name, say hello to or stop and chat with*. The three numbers are added and then divided by the number of dwellings to achieve the index of social networks for each resident. In each development the *Overall Social Networks Index* is achieved by calculating the mean *Index of Social Networks* for all respondents within the development.

The following question has been included in the index:

- How many of the people living in your residence do you know by name? (Integer)
- How many of the people living in your residence do you say hello to when you meet? (Integer)
- How many of the people living in your residence do you typically stop and chat with

when you run into them? (Integer)

4.8.1.3 *Index of social ties (ST-Index)*

The *index of social ties (ST-Index)* is a composite measure representing ‘the strength of the residents’ social ties’. The respondents have been asked to indicate the number of people *they say hello to* or *stop and chat with* (weak social ties) as well as the number of people *they consider as friends* or *visit regularly* (strong social ties). The number of strong ties is divided by the total number of weak and strong social ties to achieve the *Index of Social Ties* for each resident. In each development the *Overall Social Ties Index* is achieved by calculating the mean *Index of Social Ties* for all respondents within the development. The higher value of the index represents stronger social ties among residents within a development.

The following question has been included in the index:

- How many of the people living in your residence do you say hello to when you meet? (Integer)
- How many of the people living in your residence do you typically stop and chat with when you run into them? (Integer)
- How many of the people living in your residence do you consider as friends? (Integer)
- How many of the people living in your residence do you visit every now and then? (Integer)

4.8.2 *Use of space measures*

Before setting up any measure of how people use each communal space, it is necessary to define the boundaries of each communal space within the residential developments. The boundaries were either set where there is a significant physical boundary (e.g. walls, doors, fences and plants) between spaces or where there is a significant change in function (e.g. transition from corridors to entrance hall) of spaces. Those spaces with the exact same functions and physical attributes (e.g. integration value, exposure to daylight, visibility, finishing materials, etc.) have been considered as one communal space for the purpose of data analysis.

How frequently do residents use each communal space can affect the chance of meeting one of their neighbours in that particular space. Also, the number of social interaction incidents may encourage more residents to make use of the communal space and accordingly affect social interaction. Thus, two main measures have been developed capturing the frequency of use and the density of social interaction incidents within each communal space.

4.8.2.1 *Interactional space index (IS-Index)*

The *interactional space index (IS-Index)* is a composite measure representing ‘to what extent a communal space facilitates *first time, regular and formal* contact between residents’. The respondents have been asked to report on those communal spaces where they regularly meet their neighbours, they have met their neighbours for the first time and they meet neighbours for formal gatherings. The number of respondents indicating a communal space as a first contact place, regular contact place or formal contact place are added and then divided by the number of respondents (mean value) to achieve the final value of the index for each communal space which is a number between 3 (marked by all residents as place of first, regular and formal contact) and 0 (never marked). *Actual places of contact* are those communal spaces with a higher *IS-Index*.

The following questions have been included in the index:

- Where do you usually meet your neighbours? (marked 1; unmarked 0)
- Thinking about the people you know by name in your residence, where did you first meet? (marked 1; unmarked 0)
- Where do you usually meet your neighbours for scheduled gatherings? (marked 1; unmarked 0)

4.8.2.2 *Frequency of use index (FU-Index)*

The *frequency of use index (FU-Index)* is a composite measure representing ‘how frequently the residents use each communal space within the residential development’. The respondents have been asked to indicate whether they use each communal space daily, weekly, monthly, twice a year or never used it before. The respondents’ frequency of use are all added and then divided by the number of respondents (mean value) to achieve the final value of the index for each communal space which is a number between 4 (the most frequently used space by all residents) and 0 (never used before by any of the residents). *Potential places of contact* are those communal spaces with a higher *FU-Index*.

The following question has been included about each communal space:

- How often do you use each space? (daily 4; weekly 3; monthly 2; once or twice a year 1; never used before 0)

4.8.3 **Design qualities’ measures**

For each communal space, certain physical attributes, which can affect one of the seven design qualities, have been measured using specific measures and indicators. In addition to

the previously defined boundaries of communal spaces, the main access routes have been marked as central lines going through those communal spaces connecting the main entrances from the street to the doorsteps of the residential units within the development. Depending on the design, a residential development might have more than one main access route (e.g. where there are two entrances one from the parking area at the back and one from the front street). Where there are two alternative spaces to pass through within one main route (e.g. having the option to use either a lift or stairs), those spaces which are being used more have been included in the main access route (e.g. in the case of a lift and stairs, the main access route will pass through the lift if it is being used more by residents).

4.8.3.1 Visibility from the main access routes (V_{AR})

The measure represents the overall visibility of each communal space from the main access routes within each residential development. The calculation of the measure is based on the space syntax theory and the calculations for visibility graph analysis proposed by Turner et al. (2001). Starting from the beginning of the marked main access routes on the street, every 30cm (approx. 1 foot) has been marked as a location (vertex) on the main access routes. A rectangular grid of points with a one metre distance from each other is applied to the space, with each point representing a location (vertex) within the communal spaces. Using the same logic as Turner et al. (2001) have proposed for neighbourhood size calculation, the neighbourhood size is calculated for each location within the communal space as the number of locations on the main access routes visible (immediately connected by an edge) from. The visibility value of each location within the communal space is calculated by dividing its neighbourhood size by the total number of locations on the main access routes of the development. Visibility from the main access route (V_{AR}) is the mean visibility values of the locations within one communal space.

4.8.3.2 Integration value

The measure shows the overall accessibility of each communal space from all the other spaces within each residential development. The measure is adopted from the space syntax theory and the calculations proposed by Hillier and Hanson (Hillier and Hanson, 1984). The “mean depth” is calculated for each communal space using the “justified graph” of the residential development (the mean path length L_i from a vertex is the average number of edge steps to reach any other vertex in the graph using the shortest number of steps possible in each case). The integration value of each communal space will then be calculated using the mean depth of each space (Hillier and Hanson, 1984:40).

4.8.3.3 Functional distance from the main access route (FD_{AR})

The measure represents the length of the shortest walking (functional) path between the entrance point of an intentional communal space or a residential unit and the main access routes within the development. The distance will be measured in metres using the floor plans. In case of vertical movement within the path (e.g. stairs or lift), both vertical and horizontal distances have been included in the calculations.

4.8.3.4 Functional distance from intentional communal spaces (FD_{CS})

Similar to the previous measure, this measure represents the length of the shortest walking (functional) path between the entrance point of an intentional communal space and a residential unit within the development.

4.9 Case selection

Previous studies have shown that patterns of social interaction and the use of different spaces is greatly affected by cultural and geographical context (Rapoport, Rapoport et al. 1975). Therefore, this study is conducted in a relatively small geographic area, i.e. the two cities of Edinburgh and Glasgow in Scotland. Residential developments of medium density in Edinburgh and Glasgow, which have been built and occupied for between 3 and 10 years, have been gathered to create a pool from which seven final case studies have been selected.

4.9.1 Selection criteria

Four different factors have been considered as the criteria for sample selection to maximise the variety of samples while ensuring comparability.

4.9.1.1 Age

Completed and occupied between 2000 and 2010: The development has to be completed no less than three years ago, mainly because social interactions between residents usually take some time to form once residents have moved into a new development. Since characters and identities can become very strong and significant after a certain length of time, the developments have to be under a certain age to increase the validity of the comparisons between case studies.

4.9.1.2 Density

Net dwelling density higher than 100 dpha (dwellings per hectare): The samples have been limited to the high density urban residential developments in order to make the comparisons valid.

4.9.1.3 Location

Aberdeen, Glasgow and Edinburgh (within the city): The choice of samples has been limited to three Scottish cities including Glasgow, Edinburgh and Aberdeen.

4.9.1.4 Typology of communal spaces

Variety of functions and typologies (see next section): Since the focus of this research is on the relationship between social interaction with a wide range of physical attributes (e.g. visibility, proximity) rather than a generic typology, each sample building has been categorised against seven different characteristics in contrast with common typologies which are based on a single main criterion (e.g. see Pfeifer and Brauneck, 2009). A “Typology Table” which includes the following features of communal spaces represents the typology of communal spaces for each sample building:

1. *Access Route (AR)*: The layout of the access route relative to the dwelling’s position
2. *Private Outdoor Space (POS)*: The presence and position of the private outdoor spaces relative to the dwelling’s position
3. *Intentional Communal Spaces & Access Route (ICS-AR)*: The position of intentional communal spaces relative to the access route’s position
4. *Indoor/Outdoor Access Routes (I-O-AR)*: Whether the spaces on the access routes are indoor or outdoor
5. *Entrances (E)*: Number and function of entrances to the development
6. *Indoor/Outdoor Intentional Communal Spaces (I-O-ICS)*: Whether the intentional communal spaces are indoor or outdoor
7. *Vertical/Horizontal Access Routes (V-H-AR)*: Whether the access routes are mainly vertical (e.g. stairs and lifts) or horizontal (e.g. corridors and decks)

The case studies have been selected to cover different varieties of the “typology table” including all the different varieties for each feature (e.g. Access Route, Entrance).

4.10 Pilot study

Pilot studies are the most suitable way of testing and refining the research methods and procedures before starting the study of a larger population and collecting data from the entire target group of samples (Creswell 2009). By finding the issues and challenges associated with the methods and procedures by applying them to a small group of samples, the researcher will have the chance to avoid critical mistakes while managing time and risks.

Accordingly, a pilot study of one selected residential development in Glasgow was carried out in this research before proceeding to the main data collection stage.

Considering the previously discussed criteria for the sample selection, 20 Moore Street residential development has been chosen for the pilot study. The data was collected during two arranged visits of the building on Thursday 28th November and Tuesday 3rd December 2013. The previously designed site survey checklist, the household questionnaire and the interview form have been tested in a real life situation. In addition to the data collection, a primary analysis of the data has been carried out in order to test the capability of the proposed research methodology in answering the research questions. The finding from the pilot study has been used to refine the data collection methods and logistic arrangements to maximise efficiency. Table 3 represents a brief summary of the lessons learnt and related re-arrangements.

Table 3: Summary of lessons learnt from pilot study

	Lessons learnt	Re-arrangement
Site Survey	Due to the time considerations during the site visit, rather than filling in the checklist for each space on the field, photos of spaces were taken and the information was extracted later from photos.	The checklist has been revised to a single page checklist to use as a guide for photography.
Questionnaires	The section in the questionnaire regarding the mode of transport was found to be irrelevant during the primary data analysis.	Mode of transport section has been deleted from questionnaire.
	Question regarding type of household was found to be confusing and sensitive.	Type of household question has been deleted.
	Respondents do not differentiate between certain communal spaces which are very similar in terms of physical features and function (e.g. in this case East stairs and West stairs).	Those communal spaces that are similar (especially in the case of symmetric plans) are named and visually represented just once.
	All the communal spaces have been reported by all respondents as safe places during the day (generally most people feel safe during the day around their dwellings).	The question about safety during the day has been deleted from the next versions of the questionnaire.
	Data regarding the number of neighbours respondents know by name has a different scale to the other questions, which makes it difficult to calculate the "Social network index".	The question has been changed so that the respondents are asked to write an exact number instead of choosing from multiple choices.
Interviews	A significant number of answers were yes/no or short sentence answers, which calls for a careful recalibration of questions to encourage the interviewees to engage more to	In order to engage the interviewees more with the conversation and to receive more in depth data regarding the quality of social interaction and

	explain their opinions in detail.	how residents use communal spaces, the number of questions has been added to the new version of interviews.
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Overall, the new version of the questionnaire has been made shorter and more precise (8 pages instead of 10 pages), while interviews have been extended to ensure the richness of the data collected.

4.11 Conclusion

The research methodology proposed for this study based on multiple case studies has been expanded in this chapter. The rationales for choosing a case study research study as well as data collection and data analysis methods have been explored. It has been argued that both qualitative and quantitative methods have been used for this study to create a comprehensive picture about the patterns of social interaction and the relationship between design and social interaction. New measures and indicators have been developed based on existing ones to measure the quality and quantity of social interaction among residents as well as the use of space patterns among residents of seven selected developments. In order to capture social interaction level, three different measures have been proposed including, Neighbouring Index (N-Index), Index of Social Networks (SN-Index) and Index of Social Ties (ST_Index). In addition, two new measures have been proposed to measure how frequently people use communal spaces namely, Interactional Space Index (IS-Index) and Frequency of Use Index (FU-Index). Semi-structured interviews, self-completion questionnaires and a site survey have been used to collect data in three areas of social interaction on the use of space and design qualities of communal spaces.

The qualitative data has been analysed using the content analysis method to understand patterns of social interaction and the use of communal spaces among residents of seven selected case studies. In addition, combining spatial and non-spatial data, GIS maps have been used for data analysis to not only test the existing assumptions about the effect of design qualities on social interaction patterns but also to search for spatial patterns of social interactions within communal spaces.

Moreover, four main factors have been introduced as case selection criteria. Age, Density, Location and Typology of communal spaces have been considered to choose the samples for case studies among thirty two samples which has been gathered in a pool. All the data collection methods and processes have been tested through a pilot study, which has been

carried out prior to the main data collection phase.

The following chapter provides an overview of selected case studies by providing brief information about the characteristics of each sample.

Chapter 5: Overview of case studies

5.1 Introduction

This chapter sets the basis for detailed case studies by providing background information on the design characteristics and demographic patterns of seven selected samples for this research.

A brief background about newly built mid-rise high density buildings by housing associations is followed by an exploration of four common types of intentional communal spaces within urban residential developments in Scottish cities including back garden, courtyard, roof terrace and communal room. The morphological characteristics of each sample are explained before giving an overview of the demographic patterns of residents for the selected samples. Finally, a summary of the important characteristics of all seven selected samples is presented.

5.2 Urban social housing in Scotland

The case studies selected for this research are all newly built mid-rise high-density urban developments built by housing associations in Edinburgh and Glasgow. Although, the focus of the research is not on the role of housing associations but on the design characteristics of these developments, it is necessary to have brief contextual information regarding housing associations and their scope of work.

In 2013, around 22 per cent of new built homes in Scotland were built by housing associations (*Housing Statistics for Scotland Quarterly Update (June 2015)*, 2015). Housing associations are independent, not-for-profit organisations that provide homes for people in housing need. They count for the majority of nearly 200 active Registered Social Landlords (RSLs) in Scotland, which are regulated by the Scottish Housing Regulator, an independent organisation established in 2011 under the Housing (Scotland) Act 2010. The emergence of housing associations as providers of social housing in the UK has been tracked to the 1930s. However, it was only after the 1960s that housing associations became a significant force (Malpass 2000). The development continued until the last decade of the 20th century when in 1998 the portion of social rented housing owned by housing associations exceeded 20 per

cent (Wilcox 2001). This expansion was maintained through the transfer programme of housing stock from local authorities to housing associations (Malpass 2001).

Aiming for a community led regeneration of disadvantaged urban areas; recently, the Scottish government has encouraged housing associations to engage in local community development initiatives and partnerships by introducing the Wider Role Fund in 2000. This was followed by the People and Communities Fund from 2012 (*Achieving A Sustainable Future (Regeneration Strategy)*, 2011) This has led to a visionary shift within housing associations to go beyond their traditional housing stock management activities (Flint, Kearns 2006).

Responding to the government's emphasis on 'social capital' as a central element of the neighbourhood renewal programme, many housing associations started to act as enablers of social interaction among local people. This has resulted in the provision and maintenance of high-quality urban residential developments in which social interaction can take place (Flint, Kearns 2006). Accordingly, different typologies of intentional communal spaces have been designed within communal spaces of the new generation of mid-rise high-density urban residential developments built by housing associations.

Moreover, it is argued that recently, i.e. after the introduction of Anti-Social Behaviour Orders (ASBOs) in The Housing (Scotland) Act 2001 and Criminal Justice (Scotland) Act 2003, housing associations started to take the role of the Police against anti-social behaviour and to act as regulators of the relationships between neighbours (Sim 2004). Potential negative interactions between neighbours have been redirected through housing association officers affecting the patterns of social interaction among residents both positively and negatively. On the one hand, it has decreased the chance of serious conflicts between neighbours, but on the other hand, it can be argued that in the long-term it could decrease the number of reasons residents have for interacting with neighbours.

In terms of household patterns, the residents of this new generation of urban residential developments are mostly social renters. Although they might stay for more than 5 years; they are still not the owners of their homes. It is argued that home ownership can affect the level of social interaction with neighbours (Lindsay 2010). Some of these developments are mixed tenure and include a limited number of mid-market rented units or private rented units.

5.3 Typology of intentional communal spaces within urban residential developments in Scotland

As has been discussed in this study, we have divided communal and service spaces within residential developments into intentional and unintentional communal spaces.

Intentional communal spaces emerged when architects and designers started to respond to social problems caused by the poor design of social housing developments in the 1950s and 1960s (Farshidi, Deveci et al. 2013).

In order to identify the major types of intentional communal spaces in Scotland, first, the historical evolution of communal spaces in Scottish cities was studied and then an inventory list of over 120 newly built, i.e. after 2000, urban residential developments were reviewed in terms of the characteristics of intentional communal spaces. Four types of intentional communal spaces were identified, which are the most common ones within urban residential developments in Edinburgh and Glasgow.

The seven cases have been selected to ensure that at least two samples of each typology have been included.

5.3.1 Back garden

Communal 'back gardens' are shared open spaces located at the rear of residential blocks on the ground level. Back gardens are typically accessed by shared closes connected to staircases (see Figure 5.1). Communal back gardens have a long history in the UK housing typologies. It could be the subject of another study to look at the historical evolution of communal back gardens in Scotland in detail. However, it is important to understand that in Scotland, communal back gardens have a history that goes back as far as the construction of first tenements in Edinburgh and Glasgow in the 19th century.

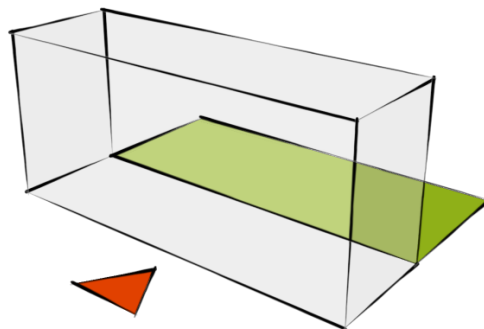


Figure 5.1: Back garden as Intentional Communal Space (ICS)

In many recently built residential developments, the traditional communal back gardens have been transformed into intentional communal spaces by implementing furniture and greenery and in some cases a children's play area (see Figure 5.2).



Figure 5.2: Back garden as Intentional Communal Space (ICS) - Friary Court development, Glasgow, New Gorbals H.A.

This type of intentional communal space is usually combined with other service spaces such as bin storage, a drying area and a parking space (see Figure 5.3). The dwelling units usually overlook the back gardens as well as the main street, which increases the visual connectivity level of this type of intentional communal space. In many cases, the private back gardens of units on the ground floor are also located adjacent to the communal back garden (see Figure 5.4).



Figure 5.3: Combining back garden and service spaces – Queen Elizabeth Development, Glasgow, New Gorbals H.A.



Figure 5.4: Combining back garden and private open spaces – McNeil Development, Glasgow, New Gorbals H.A.

5.3.2 Courtyard

The main characteristics of courtyards, which make them different from back gardens, are that courtyards are surrounded by dwelling units and the main access to the dwelling units is through the courtyard (see Figure 5.5). Courtyards have a long history across the world from China to the Roman Empire. In Britain, single-family courtyard houses were a popular way of building large houses in the sixteenth century. However, a multiple-unit courtyard is a relatively new form in urban residential developments in Scotland. Although old tenements in Glasgow usually had an open space at the centre of the residential block surrounded by tenement blocks of four or five storeys, these open spaces are not an example of courtyard typology. These spaces are made up of multiple back gardens and the main access route to the units is still from the main street at the front of the buildings. It is argued that courtyards can promote a sense of community (Alexander, Ishikawa et al. 1977). Therefore, this typology became particularly popular after the new urbanism movement and increasing concerns about the sense of community and social sustainability.

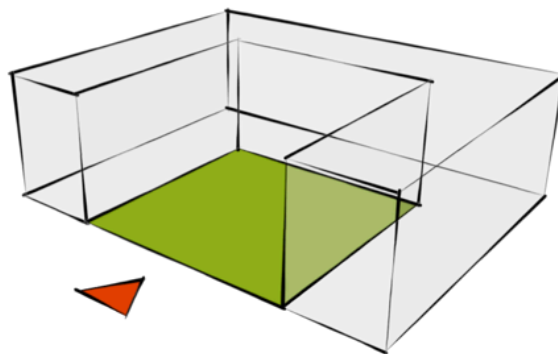


Figure 5.5: Courtyard as Intentional Communal Space (ICS)

Similar to back gardens, the dwelling units look into the courtyard, increasing the level of visual connectivity and in some cases other service spaces such as bin storage, a drying area and parking spaces have been integrated into the courtyard (see Figure 5.6).



Figure 5.6: Combining courtyard and service spaces – Lindsay Development, Edinburgh, Port of Leith H.A.

In some cases, private open spaces such as balconies and private back gardens have also been integrated into the courtyards (see Figure 5.7). Because this type of intentional communal space is located on the main access route, the constant presence of residents makes these spaces more lively and suitable for spontaneous interactions among residents.



Figure 5.7: Combining courtyard and private open spaces – Coin Street Development, London, Coin Street Community Builders (CSCB)

5.3.3 Roof terrace

In contrast with back gardens and courtyards, roof terraces are not located on the ground floor but on the top floor of urban residential developments. These shared spaces are mostly exposed and sunny and they are usually accessed through the stairs or lifts (see Figure 5.8). Communal roof terraces or roof gardens are relatively new concepts in Scotland's urban residential developments. In some cases they are designed as alternatives to back gardens or courtyards in very dense inner city areas.

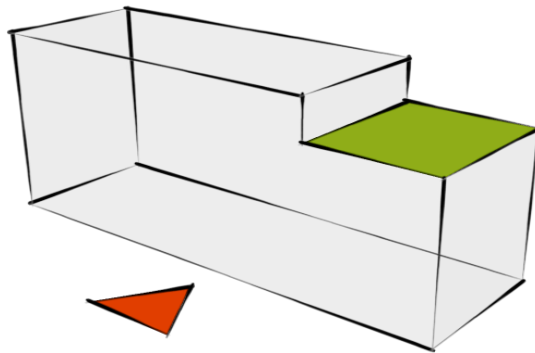


Figure 5.8: Roof terrace as Intentional Communal Space (ICS)

Because of their location, roof terraces are not usually visible from many dwelling units but only from a couple of units located next to them (see Figure 5.9).



Figure 5.9: Roof terrace as Intentional Communal Space (ICS) – Cowgate Development, Edinburgh, Castlerock H.A.

Again, because roof terraces are located on the top floor they cannot accommodate certain service spaces such as bin storage. However, in some cases they have been combined with other service spaces such as a drying area (see Figure 5.10).



Figure 5.10: Combining roof terrace and service spaces – Cowgate Development, Edinburgh, Castlerock H.A.

5.3.4 Communal room

Communal rooms are indoor shared spaces usually located either on the top floor or on the ground level and accessed through a corridor connected to the main staircase or lift (see Figure 5.11). In most cases these rooms have wide windows facing south to capture the sun and daylight. Communal rooms only became common recently in Scotland but it can be argued that they are the next generation of ‘conservatories’ or ‘sunrooms’.

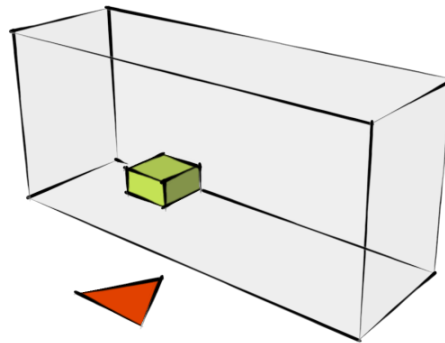


Figure 5.11: Communal room as Intentional Communal Space (ICS)

Depending on the design, communal rooms can have a high or low level of visibility, however they are mostly transparent and benefit from a nice view of the surrounding environment (see Figure 5.12).



Figure 5.12: Communal room as Intentional Communal Space (ICS) – Queen Elizabeth Development, Glasgow, New Gorbals H.A.

Communal rooms are usually dedicated solely to social interaction among residents and have furniture for indoor activities such as meetings and reading. In some cases these spaces are located next to other types of intentional communal spaces such as back gardens or roof terraces (see Figure 5.13).



Figure 5.13: Combining communal rooms and terraces – Brandfield Development, Edinburgh, Dunedin Canmore Housing

5.4 Morphological characteristics of selected samples

This section presents introductory information regarding each sample to understand the morphological characteristics of each selected sample. Measures of the physical attributes of

intentional and unintentional communal spaces are presented for each development as well as the use of space indices, which provides an overview of how intentional and unintentional communal spaces have been used within each development.

As mentioned in the first chapter, in order to identify intentional communal spaces within the selected urban residential developments, the architect of each development was asked if he/she intentionally designed any space within the development to facilitate social interaction among residents.

5.4.1 Case 1: 20 Moore Street (Moore)

20 Moore Street residential development was designed by Richard Murphy Architects as part of a master plan for Molendinar Park Housing Association (see Figure 5.14). Completed in 2008, it is located in the east part of Glasgow fairly close to the city centre (20 minute walk) (see Figure 5.15). The 22 flats on four levels are a mixture of rented, shared ownership and outright owned dwellings. The development is managed and maintained by Molendinar Park Housing Association.



Figure 5.14: Moore Street development designed by Richard Murphy Architects



Figure 5.15: Moore street development - location

In addition to the normal service spaces such as stairs, corridors, entrances and a parking area, the building benefits from a central courtyard inside the building and also another shared courtyard with other buildings within the development, which are intentionally designed by the architect for social interaction among residents (see Figure 5.16).

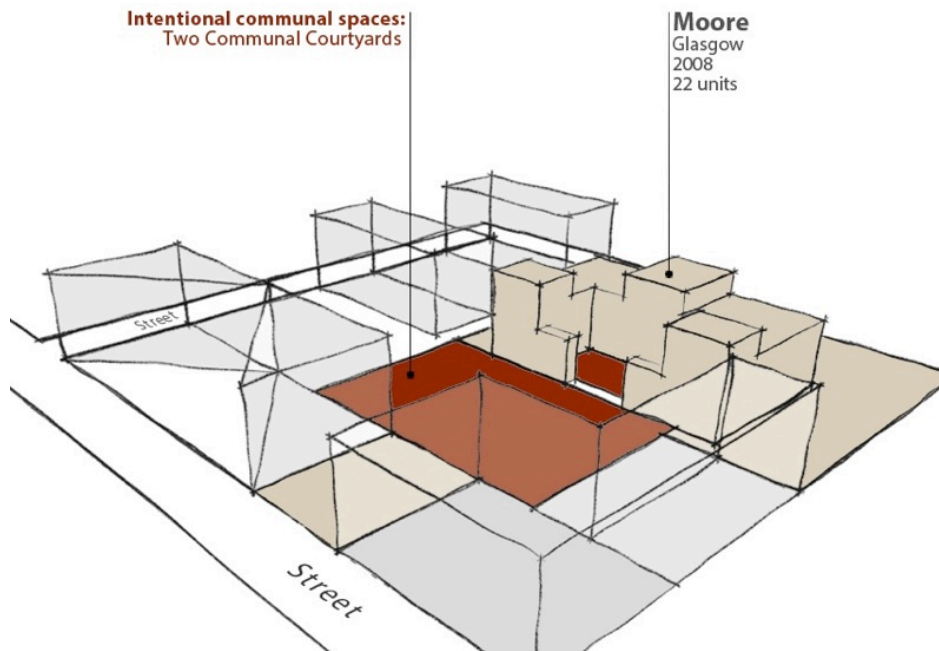


Figure 5.16: Moore street development – Intentional Communal Spaces (ICS)

The building has two entrances; the main entrance which is connected to the main street through a shared courtyard and a back entrance to the parking area at the back of the building (see Figure 5.17). The dwellings on the ground floor have access to private outdoor spaces at the back (see Figure 5.18).

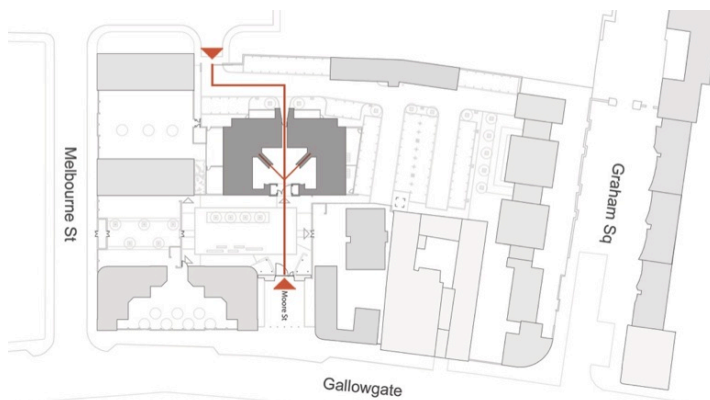


Figure 5.17: Moore Street development – entrances and main access routes

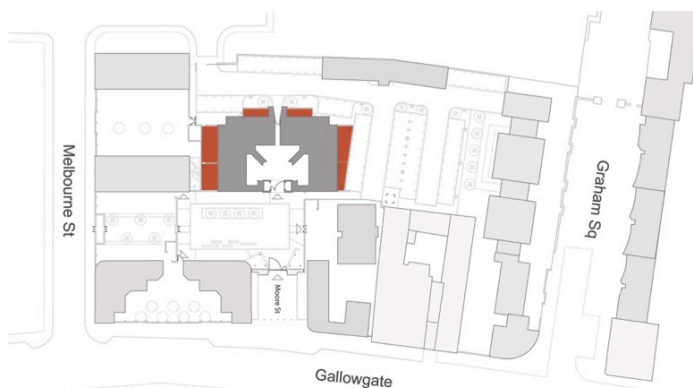


Figure 5.18: Moore Street development – private outdoor spaces

The Moore Street development is an example of a central courtyard typology and also one of

the rare examples with exposed outdoor access routes. The exposure of access routes has resulted in maximum visual exposure of the communal spaces within this development. Table 4 represents some measures of intentional and unintentional communal spaces within the Moore development.

Table 4: Measures of intentional and unintentional communal spaces in the Moore development

		Fun-Dis*	Integration Value	V-AR**	V-Units***	Daylight Level	Lighting Level	No. of Colours	Safety at Night	View	No. of Reported Contacts	F-U-Index+	I-S-Index++
Unintentional Communal Spaces (UCS)	Max.	0	1.6	35	18	4	4	4	4	2	10	3.8	1.4
	Min.	9	0.8	3	0	1	2	3	3	0	0	0.8	0
Main Entrance		0	1.6	35	18	3	3	3	4	2	10	3.7	1.4
Entrance Walkways		2	1.5	16	6	4	4	3	4	0	2	2.1	0.2
The Close		0	1.6	19	0	1	3	3	4	1	2	3.7	0.2
Back Entrance		0	1.2	20	4	4	2	3	3	2	4	3.7	0.5
Walkway to Parking		8	1	3	1	4	3	4	3	1	3	2.7	0.4
Development Entrance		0	1	25	0	4	4	3	4	2	2	3.5	0.2
Parking Entrance		0	0.8	30	8	4	2	3	3	2	2	3.8	0.2
Parking Area		0	1.1	24	8	4	3	3	3	2	3	3.5	0.4
Stairs		5	1.5	11	12	4	3	3	4	2	3	1.1	0.4
Terraces		9	1.1	5	6	4	3	3	4	2	0	0.8	0
Intentional Communal Spaces (ICS)	Max.	0	2.6	37	22	4	4	4	4	2	8	3.8	1.1
	Min.	0	1.2	31	12	4	3	3	4	2	6	3.7	0.8
Entrance Courtyard		0	2.6	37	22	4	4	4	4	2	8	3.8	1.1
Central Courtyard		0	1.2	31	12	4	3	3	4	2	6	3.7	0.8

* Functional distance from the main access route (m)
 ** Visibility from the main access route (%)
 *** Number of dwelling units visible from (integer)

+ Frequency of use Index
 ++ Interactional space Index

5.4.2 Case 2: 148-149 Cowgate Street (Cowgate)

Designed by Richard Murphy Architects, 148 and 149 Cowgate Street are located in the central area of Edinburgh in a very dense and vibrant urban environment (see Figure 5.19). The development was completed in 2006 and since then it has been maintained and managed by Castle Rock Housing Association (see Figure 5.20). A total of 35 residential units on eight floors are located above 3 separate office spaces on the ground and second floors.



Figure 5.20: Cowgate development - location



Figure 5.19: Cowgate development designed by Richard Murphy Architects

The development comprises two shared terraces on the 5th and 7th floors in addition to normal service spaces such as stairs, a lift, corridors and entrance areas (see Figure 5.21). Two communal terraces have been designed intentionally to facilitate social interaction among residents.

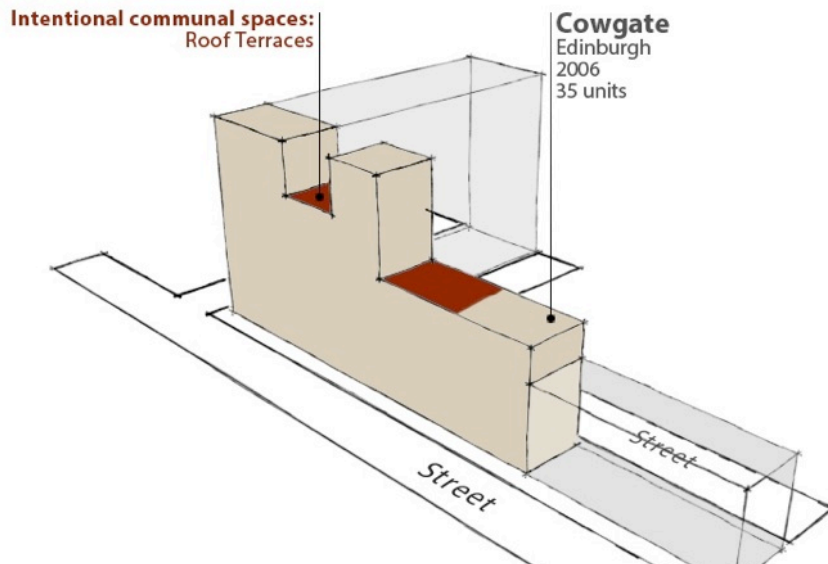


Figure 5.21: Cowgate development – Intentional Communal Spaces (ICS)

The building has three entrances to two blocks of residential units (see Figure 5.22). The first block, 148 Cowgate Street, has two entrances from both sides of the building, i.e. Cowgate Street and Borthwicks Close. The second block entrance, 149 Cowgate Street, is located at Borthwicks Close but it can be accessed from Cowgate Street directly through the close.

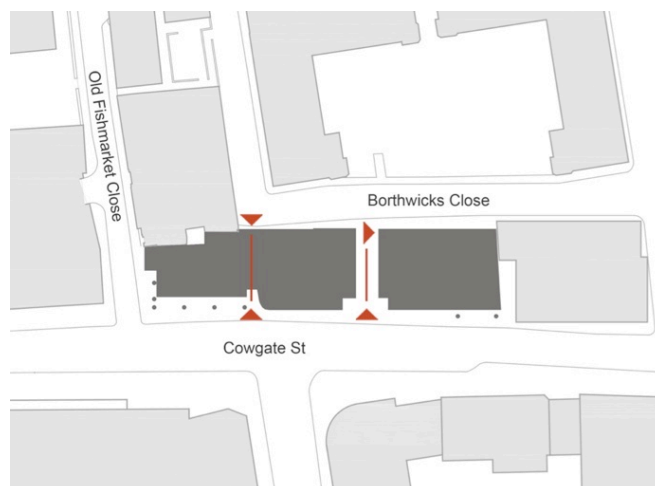


Figure 5.22: Cowgate development – entrances

The Cowgate development has both indoor and outdoor corridors as part of the communal spaces. The presence of three office spaces which share some of the communal spaces with residents have made the building an interesting case in terms of the use of communal areas. The development is an example of inner city mixed-use developments with a small footprint

area. Some of the measures of intentional and unintentional communal spaces within the Cowgate development have been summarised in Table 5.

Table 5: Measures of intentional and unintentional communal spaces in Cowgate development

		Fun-Dis*	Integration Value	V-AR**	V-Units***	Daylight Level	Lighting Level	No. of Colours	Safety at Night	View	No. of Reported Contacts	F-U-Index*	I-S-Index**
Unintentional Communal Spaces (UCS)	Max.	2	1.8	16	12	4	4	6	4	2	5	2.6	0.4
	Min.	0	0.9	0	0	0	2	2	2	0	0	0.4	0
Main Entrance		0	1.2	3	12	4	3	6	4	2	4	3	0.3
Entrance Hall		0	1.7	9	0	3	3	5	4	1	4	3	0.3
Entrance Stairs		2	1.3	6	12	4	3	2	4	2	1	1	0.1
Lift		0	1.8	6	0	0	4	2	4	0	4	2.3	0.3
Entrance Corridor		1	1.4	3	0	1	3	2	4	0	2	1.6	0.1
Indoor Stairs		2	1.6	0	0	2	2	3	4	0	1	1.4	0.1
The Close		0	1.3	10	1	3	2	2	2	2	0	1.3	0
Façade Stairs		0	1.1	16	5	4	2	3	2	2	3	1.1	0.2
Indoor Corridors		0	1.4	8	0	2	3	3	2	2	5	2.6	0.4
Outdoor Corridors		0	1.4	8	5	3	3	3	2	2	3	1.2	0.2
Terrace Stairs		1	0.9	2	5	2	2	2	4	0	0	0.4	0
Intentional Communal Spaces (ICS)	Max.	10	1.2	1	5	4	2	3	4	2	3	0.5	0.2
	Min.	2	1	0	4	4	1	3	4	2	2	0.5	0.1
Roof Terrace 5 th Floor		10	1	0	5	4	1	3	4	2	3	0.5	0.2
Roof Terrace 7 th Floor		2	1.2	1	4	4	2	3	4	2	2	0.5	0.1

* Functional distance from the main access route (m)

** Visibility from the main access route (%)

*** Number of dwelling units visible from (integer)

+ Frequency of use Index

** Interactionsal space Index

5.4.3 Case 3: 2 Brandfield Street (Brandfield)

2 Brandfield Street is a six storey care home, designed by Oberlanders Architects LLP to meet the needs of its over 50 residents as part of the Springside master plan (see Figure 5.24). Completed in 2011, Brandfield development is located in the west part of Edinburgh fairly close to the city centre (20 minute walk) (see Figure 5.23). The development comprises 20 residential units and is managed and maintained by Dunedin Canmore Housing.



Figure 5.24: Brandfield development designed by Oberlanders Architects LLP



Figure 5.23: Brandfield development - location

In addition to the normal service spaces such as a lift, stairs, corridors and an entrance, the building benefits from a communal sunroom and a terrace on the top floor, which was intentionally designed by the architect for social interaction among residents (see Figure 5.25).

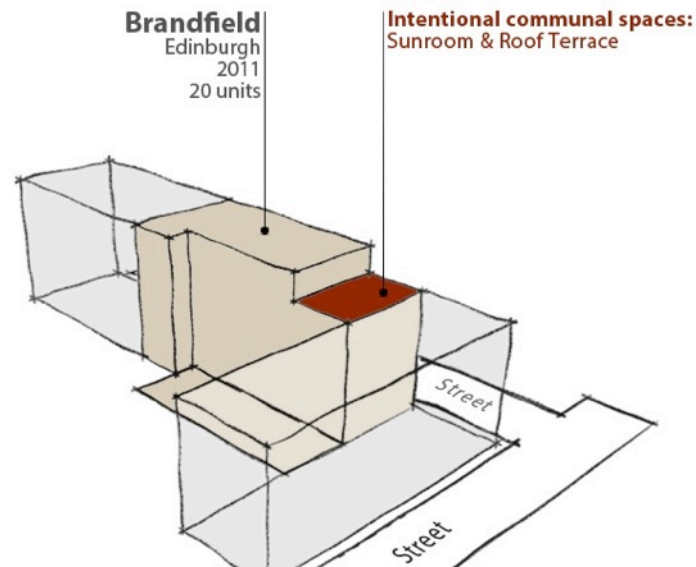


Figure 5.25: Brandfield development – Intentional Communal Spaces (ICS)

The building has one entrance; the entrance connects to the stairs and lift through the entrance hall (see Figure 5.26). Some of the residential units benefit from private outdoor spaces, i.e. balconies overlooking the main street.

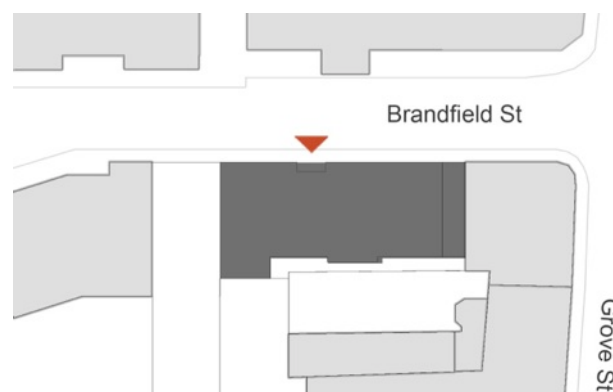


Figure 5.26: Brandfield development – entrance

The Brandfield development benefits from both indoor and outdoor intentional communal spaces on the top floor. The units are accessed through generously wide and bright indoor stairs and corridors. Table 6 represents some measures of intentional and unintentional communal spaces within the Brandfield development.

Table 6: Measures of intentional and unintentional communal spaces in Brandfield development

		Fun-Dis*	Integration Value	V-AR**	V-Units***	Daylight Level	Lighting Level	No. of Colours	Safety at Night	View	No. of Reported Contacts	F-U-Index*	I-S-Index**
Unintentional Communal Spaces (UCS)	Max.	20	2.7	52	6	4	4	3	4	1	18	4	1.5
	Min.	0	0.8	0	0	0	2	2	3	0	0	0.3	0
Entrance Lobby		0	1.8	52	2	3	4	3	4	1	18	4	1.5
Stairs		2	2.7	0	0	3	4	2	4	1	0	1.2	0
Lift		0	2.7	33	0	0	4	2	4	0	10	3.3	0.8
Pedestrian Pend		20	0.8	0	0	1	3	3	3	1	0	0.3	0
Walkway		4	1.7	3	4	4	3	3	4	0	0	1.3	0
Drying Green		6	0.8	6	6	4	2	3	4	0	0	0.9	0
Corridors		1	1.7	0	4	4	4	3	4	1	8	2.8	0.6
Intentional Communal Spaces (ICS)	Max.	9	1.1	0	1	4	4	5	4	2	27	1.9	2.2
	Min.	5	0.8	0	1	4	2	4	4	2	13	1.9	1
Sunroom		5	1.1	0	1	4	4	5	4	2	27	1.9	2.2
Roof Terrace		9	0.8	0	1	4	2	4	4	2	13	1.9	1

* Functional distance from the main access route (m)
 ** Visibility from the main access route (%)
 *** Number of dwelling units visible from (integer)

* Frequency of use Index
 ** Interational space Index

5.4.4 Case 4: 32 Queen Elizabeth Gardens, 301 Cumberland Street and 2 Jane Place (Queen Elizabeth)

The Queen Elizabeth Gardens development consists of three residential blocks sharing a back garden designed by Elder and Canon Architects (see Figure 5.27). The development is part of the New Gorbals development in the south east of Glasgow fairly close to the city centre (see Figure 5.28). A total of 67 residential units in two four storey blocks and a seven storey block are managed and maintained by New Gorbals Housing Association. The development was completed in 2004.



Figure 5.27: Queen Elizabeth development designed by Elder and Canon Architects



Figure 5.28: Queen Elizabeth development - location

The development comprises two connected communal gardens between the first block and the tower and one communal room on the ground floor of the tower block in addition to normal service spaces such as stairs, a lift, corridors and entrance areas (see Figure 5.29). These spaces have been designed to facilitate social interaction among residents.

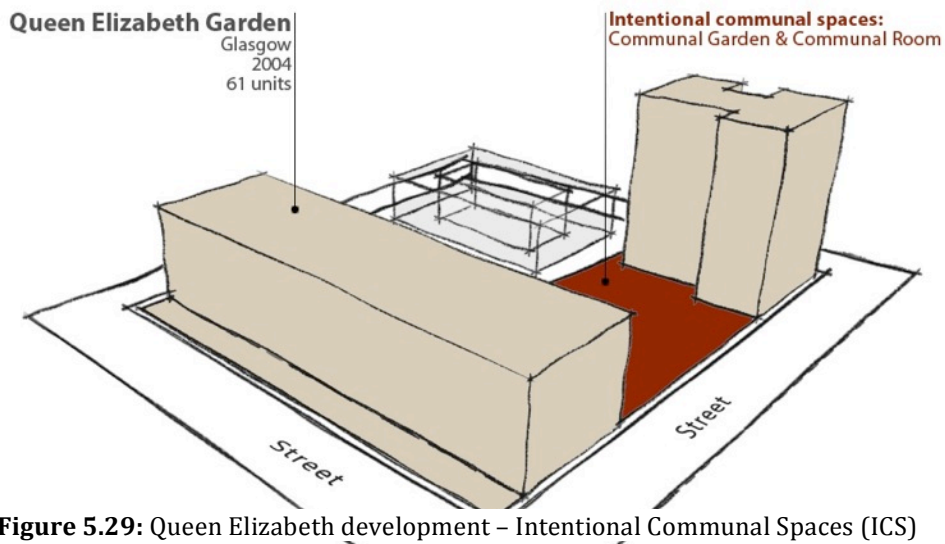


Figure 5.29: Queen Elizabeth development – Intentional Communal Spaces (ICS)

Each residential block has a separate entrance to the streets surrounding the development (see Figure 5.30).

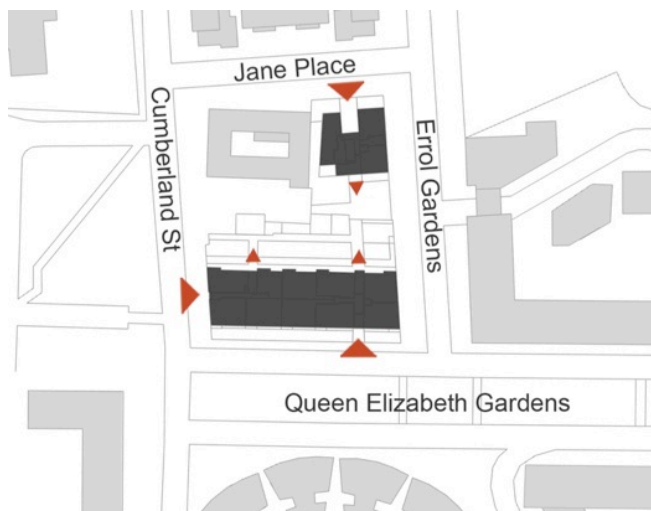


Figure 5.30: Queen Elizabeth development - entrances

The Queen Elizabeth development is an example of mixed tenure urban developments in Scotland. Privately owned residential units are located in a tower block with an indoor communal room and the rental units are located on the other side of the site in two blocks of five storeys. Also significant in terms of communal spaces is the size and lighting of internal corridors and stairs. The development benefits from very bright and spacious corridors on

each floor. Some of the measures of intentional and unintentional communal spaces within the Queen Elizabeth development have been summarised in Table 7.

Table 7: Measures of intentional and unintentional communal spaces in the Queen E. development

		Fun-Dis*	Integration Value	V-AR**	V-Units***	Daylight Level	Lighting Level	No. of Colours	Safety at Night	View	No. of Reported Contacts	F-U-Index+	I-S-Index**
Unintentional Communal Spaces (UCS)	Max.	25	1.3	16	12	4	4	4	4	2	14	2.4	1
	Min.	0	0.9	0	0	0	1	2	2	0	0	0.1	0
Entrances		0	1.1	16	4	4	3	4	4	2	14	1.8	1
Entrance Halls		0	1.1	16	2	4	3	3	4	1	10	1.8	0.6
Corridors		0	1.1	1	0	3	3	3	4	1	14	1.1	1
Lift		0	1.1	5	0	0	4	2	4	0	11	1.6	0.7
Stairs		4	1.3	4	0	3	2	3	4	1	8	1	0.5
Front Garden		10	0.9	10	10	4	1	4	3	2	0	0.4	0
Communal Laundry		4	1.2	0	0	1	3	2	4	0	3	0.5	0.2
Drying Areas		19	1.2	0	12	4	1	3	2	1	2	0.1	0.1
Bin Storages		20	1.2	0	12	4	1	3	2	1	2	2.4	0.1
Sheltered Area		25	1.2	0	12	4	1	3	2	1	0	0.1	0
Intentional Communal Spaces (ICS)	Max.	12	1.8	2	27	4	3	4	4	1	3	0.8	0.2
	Min.	7	1	1	5	4	1	3	2	1	3	0.4	0.2
Courtyard		12	1.8	1	27	4	1	4	2	1	3	0.8	0.2
Communal Room		7	1	2	5	4	3	3	4	1	3	0.4	0.2

* Functional distance from the main access route (m)

** Visibility from the main access route (%)

*** Number of dwelling units visible from (integer)

+ Frequency of use Index

** Interational space Index

5.4.5 Case 5: 2-20 McNeil Street (Mc Neil)

The 2-20 McNeil Street residential development was designed by Austin-Smith:Lord LLP as part of the New Gorbals master plan for New Gorbals Housing Association (see Figure 5.31). Completed in 2012, it is located in the south east of Glasgow fairly close to the city centre (see Figure 5.32). The 49 flats in four blocks of four levels and one seven storey block are being managed and maintained by New Gorbals Housing Association.



Figure 5.32: McNeil development designed by Austin-Smith:Lord LLP



Figure 5.31: McNeil development - location

In addition to the normal service spaces such as a lift, stairs, corridors and entrances, the development benefits from a communal back garden which is accessed through closes and stairs. The back garden is intentionally designed to facilitate social interaction among residents while accommodating spaces for necessary activities such as a drying area and bin storage.

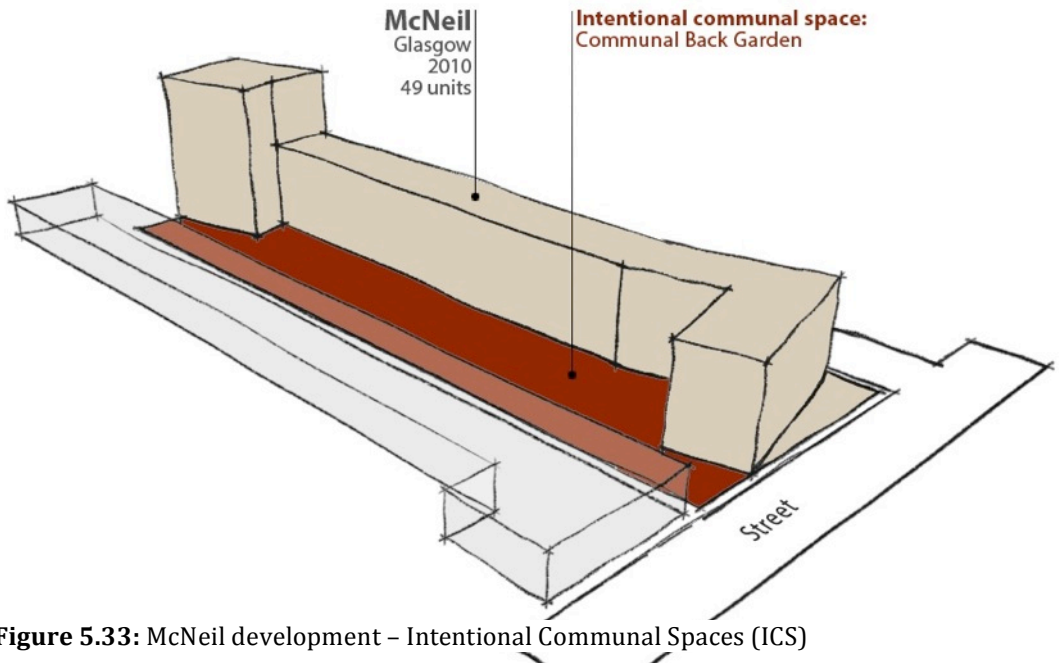


Figure 5.33: McNeil development – Intentional Communal Spaces (ICS)

The development consists of five blocks of residential units, and each is accessible through a separate entrance from the main street (see Figure 5.34). The dwellings on the ground floor have access to private outdoor spaces at the front and back.

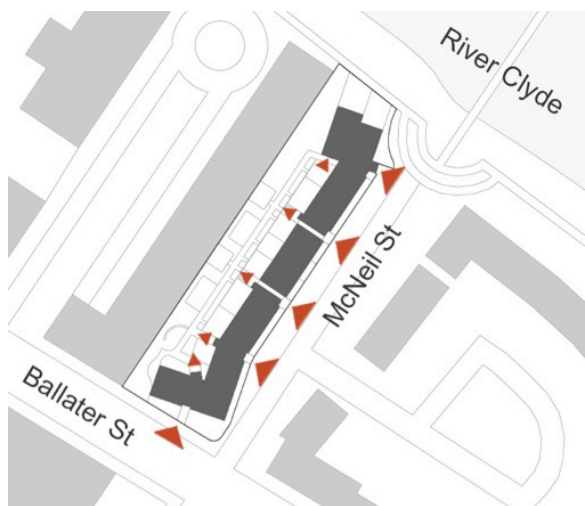


Figure 5.34: McNeil development - entrances

The McNeil development is another example of mixed tenure urban developments in Scotland. Privately owned residential units are located in the tower block and the rental units

are located in another four blocks along the site. Table 8 represents some measures of intentional and unintentional communal spaces within the McNeil development.

Table 8: Measures of intentional and unintentional communal spaces in the McNeil development

		Fun-Dis*	Integration Value	V-AR**	V-Units***	Daylight Level	Lighting Level	No. of Colours	Safety at Night	View	No. of Reported Contacts	F-U-Index*	I-S-Index**
Unintentional Communal Spaces (UCS)	Max.	19	1.6	11	6	4	4	5	4	2	14	3.1	1.3
	Min.	0	1.2	0	0	0	2	2	3	0	0	0.4	0
Entrances		0	1.5	11	6	4	3	4	3	2	14	1	1.3
Entrance Halls		0	1.3	9	6	4	3	4	3	2	3	0.8	0.3
Closes		2	1.2	1	2	2	3	3	3	2	0	0.4	0
Lift		0	1.6	6	0	0	4	2	4	0	2	0.8	0.2
Stairs		0	1.2	4	0	2	4	3	4	1	3	0.4	0.3
Back Entrances		10	1.6	2	6	4	3	5	3	1	0	0.4	0
Communal Laundry		4	1.4	0	0	1	3	2	4	1	3	1.4	0.3
Corridors		1	1.3	0	0	3	4	3	4	1	0	1	0
Drying Areas		19	1.5	0	6	4	2	4	3	1	3	2	0.3
Bin Storage		13	1.5	0	6	4	2	4	3	1	6	3.1	0.6
Intentional Communal Spaces (ICS)	Max.	6	2.5	1	26	4	2	6	3	1	2	1.1	0.2
	Min.	-	-	-	-	-	-	-	-	-	-	-	-
Courtyard		6	2.5	1	26	4	2	6	3	1	2	1.1	0.2

* Functional distance from the main access route (m)

** Visibility from the main access route (%)

*** Number of dwelling units visible from (integer)

* Frequency of use Index

** Interactional space Index

5.4.6 Case 6: 125, 127, 129 and 131 Lindsay Road (Lindsay)

Designed by Patience and Highmore Architects, 125, 127, 129 and 131 Lindsay Road are located in the Leith area, North Edinburgh (see Figure 5.35). The development was completed in 2012 and since then it has been maintained and managed by Port of Leith Housing Association (see Figure 5.36). The total number of 111 residential units in six residential blocks up to seven storeys are a combination of social rent and mid-market rent.



Figure 5.36: Lindsay development - location



Figure 5.35: Lindsay development designed by Patience and Highmore Architects

In addition to the normal service spaces such as stairs, corridors, entrances and a parking area, the building benefits from a communal courtyard at the back, intentionally designed by the architect for social interaction among residents (Figure 3).

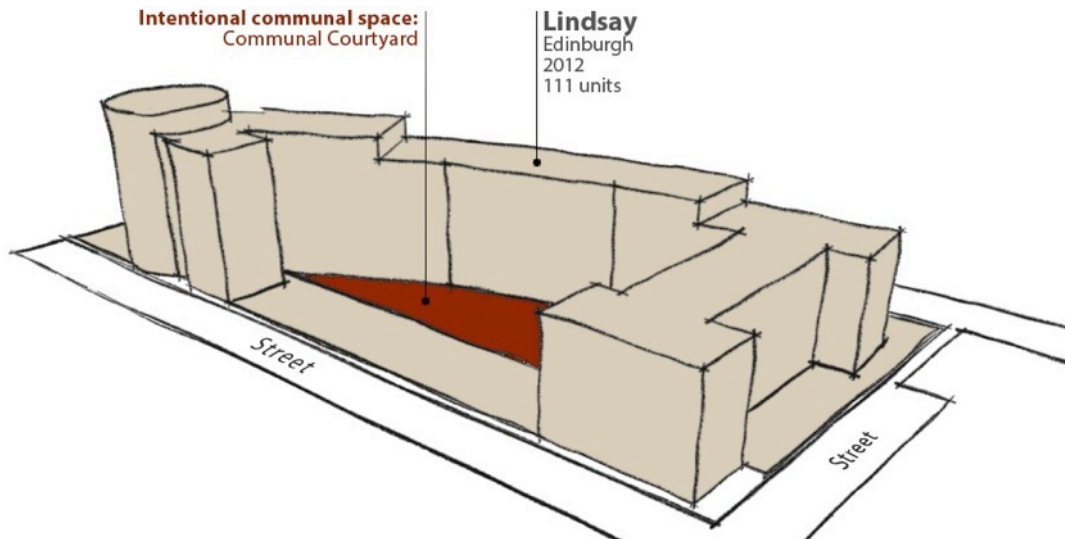


Figure 5.37: Lindsay development – Intentional Communal Spaces (ICS)

The development comprises six residential blocks. Each block has two entrances from the front and back (see Figure 5.38). The dwellings on the ground floor have access to private outdoor spaces at the back (see Figure 5.39).

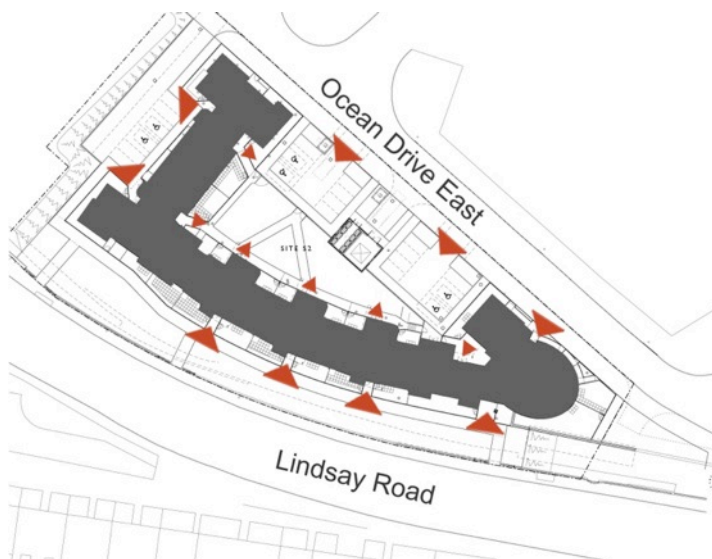


Figure 5.38: Lindsay development - entrances



Figure 5.39: Lindsay development – private outdoor spaces

The Lindsay Road development is an example of combining necessary activities with social spaces. The back garden which was intentionally designed for social interaction is located next to the parking area and accommodates a shared drying area, bin storage and bike storage. Seats are provided in different spots across the back garden. Some of the measures of intentional and unintentional communal spaces within the Lindsay development have been summarised in Table 9.

Table 9: Measures of intentional and unintentional communal spaces in the Lindsay development

		Fun-Dis*	Integration Value	V-AR**	V-Units***	Daylight Level	Lighting Level	No. of Colours	Safety at Night	View	No. of Reported Contacts	F-U-Index*	I-S-Index**
Unintentional Communal Spaces (UCS)	Max.	38	1.5	27	47	4	4	4	4	2	22	2.4	0.9
	Min.	0	0.9	0	0	0	2	2	3	0	1	0.1	0
	Parking Areas	10	1.5	18	47	4	4	2	3	1	6	1.9	0.2
	Bin Storage	38	1.2	0	47	1	4	2	3	0	2	2.4	0.1
	Drying Area	4	1.2	27	47	4	4	3	3	1	1	0.4	0
	Courtyard Stairs	6	1.4	25	32	4	4	3	3	1	2	0.9	0.1
	Bike Storage	35	0.9	0	9	0	2	2	3	1	1	0.1	0
	Front Garden	3	1.3	7	44	4	3	4	4	2	12	2.8	0.5
	Corridors	1	1	1	0	3	4	2	4	0	14	1.8	0.5
	Lifts	0	0.9	3	0	0	4	2	4	0	22	1.8	0.9
	Stairs	3	1	0	0	3	3	2	4	0	12	0.2	0.5
	Lift Lobbies	0	0.9	2	0	2	4	2	4	1	10	1.6	0.4
	Mail Lobbies	0	1	4	0	3	4	2	4	1	15	1.6	0.6
	Entrance Areas	0	1.1	6	4	4	4	3	4	1	15	1.2	0.6
	Back Entrances	0	1.2	24	6	4	4	3	4	1	17	1.2	0.6
Intentional Communal Spaces (ICS)	Max.	4	1.6	25	47	4	4	4	3	1	11	1.4	0.5
	Min.	-	-	-	-	-	-	-	-	-	-	-	-
	Courtyard	4	1.6	25	47	4	4	4	3	1	11	1.4	0.5

* Functional distance from the main access route (m)

** Visibility from the main access route (%)

*** Number of dwelling units visible from (integer)

* Frequency of use Index

** Interactional space Index

5.4.7 Case 7: 54 & 56 Byron Street, 4 Harmsworth Street and 7 Inchholme Street (Byron)

The Byron Street development consists of four residential blocks sharing a parking area at the back designed by Collective Architecture. Completed in 2010, the development is located in the west of Glasgow. A total of 44 residential units in four blocks of five storey residential units are managed and maintained by Partick Housing Association and Whiteinch & Scotstoun Housing Association.



Figure 5.41: Byron Street development designed by Collective Architecture



Figure 5.40: Byron street development - location

The development comprises three shared terraces on the 4th and 5th floors in addition to normal service spaces such as stairs, a lift, corridors and a parking area (see Figure 5.42). The communal terraces have been designed intentionally to facilitate social interaction among residents.

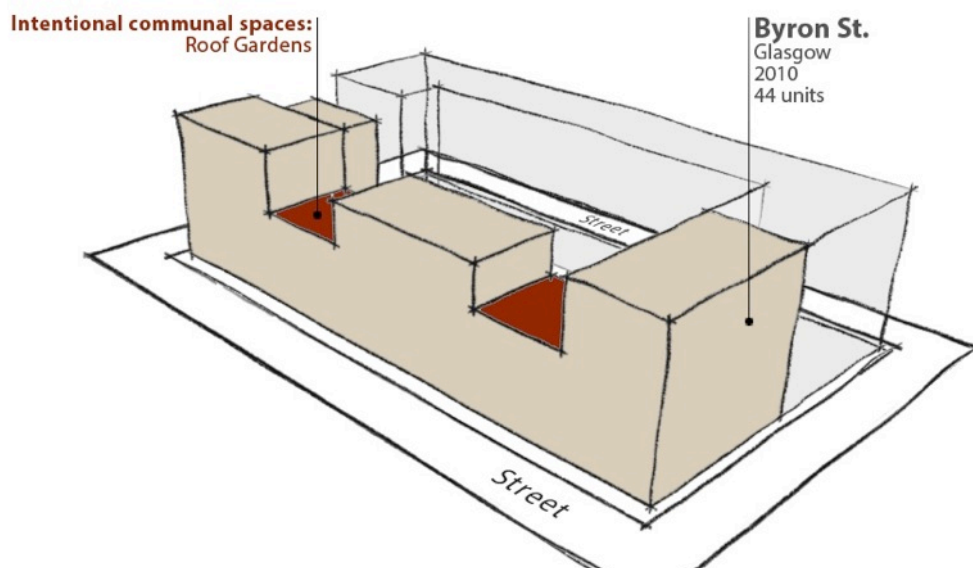


Figure 5.42: Byron Street development – Intentional Communal Spaces (ICS)

Each of the four residential blocks has two entrances; one from the street and one from the parking area at the back (see Figure 5.43).



Figure 5.43: Byron Street development - entrances

The Byron Street development has exposed roof terraces, which accommodate a drying area and seats that are accessible via the stairs. Table 10 represents some measures of intentional and unintentional communal spaces within the Byron development.

Table 10: Measures of intentional and unintentional communal spaces in the Byron development

		Fun-Dis*	Integration Value	V-AR**	V-Units***	Daylight Level	Lighting Level	No. of Colours	Safety at Night	View	No. of Reported Contacts	F-U-Index ⁺	I-S-Index ⁺⁺
Unintentional Communal Spaces (UCS)	Max.	60	1.4	14	22	4	4	4	4	1	10	3.1	1.3
	Min.	0	0.9	0	0	0	1	2	2	0	0	0.5	0
Entrances		0	1.2	4	4	4	4	4	3	1	10	2.7	1.3
Entrance Halls		0	1	14	0	3	4	4	4	1	2	2.7	0.2
Lifts		0	0.9	8	0	0	4	2	4	0	4	2.2	0.5
Stairs		4	0.9	1	0	3	4	2	3	0	4	0.8	0.5
Parking Entrance		60	1.3	2	0	4	1	2	2	1	0	2	0
Parking Area		4	1.6	6	22	4	1	2	4	1	0	1.7	0
Bin Storage		3	1.4	0	22	4	2	2	3	1	1	3.1	0.1
Back Entrances		0	1.4	10	14	4	3	3	3	1	0	2	0
Parking Walkway		1	1.3	5	22	4	3	3	4	1	0	1.1	0
Bike Racks		10	1.4	6	22	4	2	2	4	1	0	0.5	0
Corridors		2	0.9	0	0	3	4	4	4	1	5	1.7	0.6
Intentional Communal Spaces (ICS)	Max.	9	0.9	0	0	4	2	4	3	2	2	0.5	0.2
	Min.	2	0.9	0	0	4	2	4	3	2	0	0	0
West Roof Terrace		2	0.9	0	0	4	2	4	3	2	0	0	0
East Roof Terrace		2	0.9	0	0	4	2	4	3	2	2	0.5	0.2
Top Roof Terrace		9	0.9	0	0	4	2	4	3	2	0	0.2	0

* Functional distance from the main access route (m)

** Visibility from the main access route (%)

*** Number of dwelling units visible from (integer)

⁺ Frequency of use Index

⁺⁺ Interactional space Index

5.5 Demographic patterns of selected samples

This section presents the data regarding the demographic and socio-economic features of the samples collected by the household questionnaires.

5.5.1 Age

Table 11 represents the breakdown of respondents between six age groups. Overall, more than half of the respondents were between 45 and 74 years old, slightly over 30% were between 25 and 44 years old and around 10% belonged to the two marginal age groups of under 24 and above 75. While the breakdown shows approximately similar patterns in Byron, Lindsay and McNeil, the proportions are quite different for the other four developments. Since the Brandfield development is a care home and all the residents are over 50, the pattern is the most extreme. The Cowgate development with over 60% of respondents under 44 has the youngest population. This could be related to the central location of the Cowgate development in the city centre. With more than half of the respondents under 44, the Moore development also has a relatively young population. In the Queen Elizabeth development the proportion of respondents over 45 is significantly high, i.e. more than 85%, which means the population is older. It should be considered that due to the time consuming nature of questionnaires, the proportion of older respondents is usually higher than the actual population.

Table 11: Age group of respondents

Age Group	Overall	Moore	Cowgate	Brandfield	Queen E.	McNeil	Lindsay	Byron
Under 24	3	0	16	0	0	0	0	0
25 to 34	15	42	33	0	7	12	13	15
35 to 44	16	15	16	0	7	22	27	28
45 to 59	28	28	25	0	26	44	50	15
60 to 74	30	15	10	58	53	22	10	42
Above 75	8	0	0	42	7	0	0	0

5.5.2 Gender

The overall proportion of female respondents is more than of male respondents, i.e. 58% females and 42% males (see Table 12). This ratio is approximately the same for all cases,

except for McNeil, where the proportion of male respondents is 56%, which is significantly higher than the female proportion.

Table 12: Gender of respondents

Gender	Overall	Moore	Cowgate	Brandfiel	Queen E.	McNeil	Lindsay	Byron
Female	58	57	58	50	53	44	68	57
Male	42	43	42	50	47	56	32	43

5.5.3 Household size

Overall, more than half of the respondents were living alone, while around one third of households consisted of two people and less than 10% had more than two occupants (see Table 13). This pattern is approximately consistent across all developments except Moore Street where around one third of respondents were living in households with more than two occupants.

Table 13: Household size of respondents

Household Size	Overall	Moore	Cowgate	Brandfield	Queen E.	McNeil	Lindsay	Byron
1	57	28	58	58	60	67	50	71
2	34	42	26	34	40	22	36	29
3	3	15	8	8	0	0	0	0
4	3	15	8	0	0	0	4	0
5 or more	3	0	0	0	0	11	10	0

5.5.4 Tenure

Since all the developments are properties owned and managed by housing associations, it is obvious that the majority of respondents have rented their units from housing associations (see Table 14). However, there are a few respondents who are buying their unit and a few who are outright owners and also a few respondents who have rented their unit from a private landlord. It is argued that tenants have lower levels of place attachment in comparison with owners (Lindsay 2010). This can affect social interaction patterns among residents.

Table 14: Tenure breakdown of respondents

Tenure	Overall	Moore	Cowgate	Brandfield	Queen E.	McNeil	Lindsay	Byron
Outright owner	3	0	0	0	7	0	4	15
Buying with a mortgage or loan	3	0	0	0	7	11	0	15
Part rent, part mortgage (shared ownership)	0	0	0	0	0	0	0	0
Rent (private landlord)	3	15	0	0	13	0	0	0
Rent (housing association)	91	85	100	100	73	89	96	70
Live rent-free	0	0	0	0	0	0	10	0

5.5.5 Occupation

Table 15 shows that overall more than 40% of respondents are either unemployed or retired, while around one third of respondents work full-time and 12% work part-time. Adding those who work part-time to retired and unemployed respondents, the proportion of respondents who spend more time at home (in comparison with those who work or study full-time) exceeds half of the sample population. It is argued that the social interaction level is higher among these three categories of people because they have more time to interact with neighbours or to use communal spaces (Buonfino, Hilder 2006). However, this pattern of occupational status is different for some of the developments. The proportion of full-time employed respondents is significantly higher in Lindsay and Moore developments. In Byron and Brandfield the proportion of respondents who work full-time is less than 15%.

Table 15: Occupation status of respondents

Occupation	Overall	Moore	Cowgate	Brandfield	Queen E.	McNeil	Lindsay	Byron
Full-time Employed	34	42	33	8	20	22	59	15
Part-time Employed	12	15	17	0	7	11	14	28
Self-employed	3	0	8	0	7	0	0	15
Full-time Student	2	0	0	0	0	22	0	0
Unemployed	19	28	34	0	20	34	18	0
Retired	28	15	0	92	40	11	9	42
Others	2	0	8	0	6	0	0	0

5.5.6 Length of residency

It is argued that living in a development for longer can increase the level of place attachment and affect people’s perceptions of their surroundings (Tobey, Wetherell et al. 1990). On the other hand, it is difficult to settle and form social networks in a development in less than two years (Lindsay 2010). Overall, 40% of the respondents are new residents, i.e. they have lived there for less than 2 years, and almost one fifth of the respondents are old residents who have lived there for more than five years. However, this pattern is not the same for all cases (see Table 16). In Byron, Moore and Queen Elizabeth the portion of respondents who are old residents is significantly higher. All respondents from Lindsay are new residents, while in Brandfield almost all respondents moved there at the same time.

Table 16: Length of residency of respondents

Length of Residency	Overall	Moore	Cowgate	Brandfield	Queen E.	McNeil	Lindsay	Byron
Less than 2 years (New)	42	43	25	8	20	22	100	15
2 to 5 years (Average)	39	14	42	92	27	78	0	15
5 years or more (Old)	19	43	33	0	53	0	0	70

5.6 Conclusion

The information provided in this chapter aims to build up an overall picture of each development as a basis for more detailed case studies in the following chapters. It can be observed that the cases are different in terms of the morphological characteristics of communal spaces and demographic patterns of residents but they also have similarities such as density that makes the comparisons more valid. Table 17 represents a summary of the characteristics of all seven developments.

All the selected developments have been occupied between 3 to 10 years and they are all located close to the city centre of either Edinburgh or Glasgow. The Lindsay development is the biggest development with more than hundred dwelling units while the Brandfiel is the smallest development with only twenty-two dwelling units. Although the number is dwelling units is quite different, the density is quite same in all seven developments. In terms of typology of intentional communal spaces, the seven developments have been selected to

cover all the four typologies. Moore and Lindsay represent “Central Courtyard” typology while Byron, Cowgate and Brandfield belong to the typology of “Roof Terrace”. Two developments of Brandfield and Queen Elizabeth also represent “Communal Room” typology. Queen Elizabeth also belongs to the typology of “Back Gardens” together with McNeil development. The average household size in all seven developments is one person except the Moore development where the average is two persons per household.

Table 17: Summary of the characteristics of all seven developments

Development	Year	City	Number of Units	ICS typology	Age*	Gender*	Household Size*	Tenure*	Occupation*	Length of Residency
Moore	2008	Glasgow	22	Central Courtyard	Young	Female	2	HA rent+	Full-time Job	Old + New
Cowgate	2006	Edinburgh	35	Roof Terrace	Young	Female	1	HA rent+	Unemployed	Average
Brandfield	2011	Edinburgh	20	Communal Room Roof Terrace	Old	Equal	1	HA rent+	Retired	Average
Queen Elizabeth	2004	Glasgow	67	Back Garden Communal Room	Old	Equal	1	HA rent+	Retired	Old
McNeil	2012	Glasgow	49	Back Garden	Middle	Male	1	HA rent+	Unemployed Students	Average
Lindsay	2012	Edinburgh	111	Central Courtyard	Middle	Female	1	HA rent+	Full-time Job	New
Byron	2010	Glasgow	44	Roof Terrace	Middle	Female	1	HA rent+	Retired	Old

* Average or most common value among residents of each development

+ Rented from Housing Association

on of their residents. While respondents from Brandfield, Queen Elizabeth and Byron are mostly retired, respondents from Lindsay and Moore are mostly employed with full-time jobs. The situation is different in McNeil and Cowgate where most of the respondents are unemployed. Overall, the residents of Brandfield and Queen Elizabeth are older while the residents of Moore and Cowgate are mostly young individuals. As it can be seen, the residents of seven developments are different in terms of length of residency. There are more residents who have moved to the development in the last two years in Moore and Lindsay developments. Finally, all the seven developments are managed and maintained by housing associations and almost all respondents have rented their property from housing associations.

Chapter 6: Patterns of social interaction within communal spaces

6.1 Introduction

This research aims to provide designers with empirically evidenced insights about how residents interact within the communal spaces of urban residential developments through establishing “if and how the design of urban residential developments can facilitate social interaction between residents in Scotland”. As discussed previously, three main areas are investigated, namely “social interaction patterns”, “use of space patterns” and “direct and indirect effects of design qualities on social interaction”. This chapter explores the first two areas through answering the following research questions:

- Research question 3: What are the existing and potential patterns of social interaction between residents of urban residential developments in Scotland?
- Research question 4: What are the existing and potential patterns of use of communal spaces for social interaction between residents in urban residential developments in Scotland?

The discussion in this chapter is mostly based on content analysis of the qualitative data collected by semi-structured interviews and open answer questions (ending section of questionnaires). In order to address the two research questions, the total number of 21 interviews and 88 completed questionnaires, collected from 89 respondents, is labelled against these four main categories for seven selected case studies:

- **The quality of social interaction and level of neighbouring:**
Perceptions, attitudes and feelings of residents about their neighbours and their relations
- **Motivators and barriers for social interaction:**
The residents’ reasons for interacting or avoiding neighbours; what motivates or discourages them from interacting more with their neighbours
- **Existing and potential patterns of activities and interactions:**

The incidents of social interaction between residents; the participants, locations, time, frequency and the involved activities

- **Expectations of residents about communal spaces:**

What residents like or dislike about the communal spaces; what they value or expect from these spaces

In addition, the reported contact between residents is mapped to create a picture of how residents use communal spaces for social interaction.

6.2 Quality of social interaction and neighbouring level

As discussed in Chapter 2, this study is focused on face-to-face interactions among people, whether they are residents or non-residents within the boundaries of communal spaces. The quality of social interaction has different dimensions. One of these dimensions, which have been studied repeatedly before, is neighbouring level. The term “Neighbouring” refers to social relations between people living in close proximity (Buonfino, Hilder 2006, Harris, Gale 2004, Talen 1999). To determine the “Neighbouring Level” for each respondent, the suggested spectrum of neighbouring in contemporary Britain by Harris (2006) has been used. Creating comprehensive and in depth information about the quality of social interaction among residents was beyond the scope of this research, but the existing theoretical frameworks and benchmarks have been used to understand the level of neighbouring for each respondent which is one aspect of understanding the quality of social interaction among residents.

Going through all the interviews and open answer questions, those statements related to residents’ perceptions, attitudes and feelings towards their neighbours and their relations have been extracted. Using the data from the questionnaires and interviews the type of interaction has been recorded for each respondent, which varies from very lightweight interactions such as smiling and saying hello to stronger interactions such as friendship relations, regular visits and the exchange of materials. Also, the Neighbouring Index and frequency of help to/from neighbours has been considered to determine the position of each respondent within the spectrum of “neighbouring level”. Where sufficient information was not available the neighbouring level has been left as “undecided”. Table 18 represents the determined “neighbouring level” for all respondents based on the statements, type of interaction, frequency of help to/from neighbours and neighbouring index (the darker shades of grey represent the higher level of neighbouring).

Table 18: Neighbouring level of respondents for seven case studies

Development	Unit	Gender	Statements	Interaction type	Help to/from neighbours	N-Index	Neighbouring level
Moore	101	F	<ul style="list-style-type: none"> •I am happy not socialising •I don't have time 	Saying hello to some and short chat with a few	Not at all	17	Passively Positive
	106	F	<ul style="list-style-type: none"> •Neighbours are lovely •I am a private person •The relationship is good •I am satisfied with how it is 	Saying hello to all and smile, Short chat with a few and one friendship	Not at all	10	Passively Positive
	203	M	<ul style="list-style-type: none"> •I don't have time •No space for socialising •I wish for more interaction 	Saying hello to some and short chat with few and two friendships	Most of the time	22	Passively Supportive
	206	M	<ul style="list-style-type: none"> •Neighbours are quite •Neighbours are easy to get on with •Most neighbours are perfect •The relationship is good •Minor issue is solved •I don't have time •I have other interests 	Saying hello to most people, Short chat with some people and three friendships	Most of the time	24	Passively Supportive
	206	F	<ul style="list-style-type: none"> •I speak to neighbours in passing •I am satisfied with how it is •I don't have time 	Saying hello and short chat with few people	Not at all	12	Passively Positive
	302	M	<ul style="list-style-type: none"> •We meet quite often •I am satisfied with how it is 	Saying hello to some and short chat with a few and one friendships	Quite often	30	Passively Supportive
	401	F	<ul style="list-style-type: none"> •I don't have time •I can't communicate in English well •I wish for more interaction 	Saying hello to some and short chat with a few	Hardly ever	17	Passively Positive
	402	M	<ul style="list-style-type: none"> •Neighbours are friendly enough •I don't see them •I don't have much to deal •Minor issue is solved 	Saying hello to some and short chat with a few	Insufficient data	I.D.	Passively Positive
Cowgate	203	F	<ul style="list-style-type: none"> •I keep myself to myself •I don't have time 	Saying hello and small chat with a few	Hardly ever	4	Passively Positive
	305	F	<ul style="list-style-type: none"> •There is nowhere to socialise 	Saying hello to all	Hardly ever	6	Passively Positive
	307	M	<ul style="list-style-type: none"> •They keep themselves to themselves 	Saying hello to a few and one friendship	Quite often	20	Passively Positive
	504	F	<ul style="list-style-type: none"> •Neighbours are friendly •I keep myself to myself •The relationship is fine •I am satisfied with how it is 	Saying hello and chat with some people and exchanging magazines with one	Hardly ever	17	Passively Positive
	505	F	<ul style="list-style-type: none"> •Neighbours are nice •I keep things at a fairly distant level •I don't have time •I do help them if they need 	Smiling to all, saying hello and chat with some people and exchanging magazines with one	Quite often	18	Passively Supportive
	601	M	<ul style="list-style-type: none"> •I don't talk to them •I don't know how they get on •Neighbours are distant •I wish for more interaction 	Saying hello to a few	Not at all	13	Passively Positive
	602	M	<ul style="list-style-type: none"> •I don't have time •Neighbours are not my type 	Saying hello to a few	Not at all	10	Passively Negative
	702	M	<ul style="list-style-type: none"> •No relations due to being new •I keep myself to myself 	Saying hello and small chat with one neighbour and lending goods to him/her	Not at all	18	Passively Positive
301	F	<ul style="list-style-type: none"> •I don't see them •I would like more interaction 	Saying hello to a few	Not at all	11	Passively Positive	

	501	M	Insufficient data	No interaction	Not at all	28	Undecided
	202	F	•I don't want to socialise more	Saying hello to some people and small chat with one	Hardly ever	19	Passively Positive
	801	F	•I don't have time •I wish for more interaction	Saying hello and small chat with most people and four friendships with regular visits	Hardly ever	9	Passively Positive
Brandfield	101	F	•Neighbours are friendly •We always keep changing stuff. •We always help one another. •We gather and discuss communal decisions among ourselves •We have social events and gatherings	Saying hello and small chat to all, scheduled gatherings with all, exchange of goods and materials, mutual help	Most of the time	32	Interactive and Supportive
	102-1	M	•We do socialise but we are not nosy •If we can help them we will help	Saying hello and small chat to all	Not at all	27	Passively Supportive
	102-2	M	•If I can help anyone I will and I am confident the same applies to me •I am satisfied with how it is	Saying hello and small chat to all and one friendship	Hardly ever	26	Passively Supportive
	202	F	•I am satisfied with how it is	Saying hello to some and small chat with few people	Hardly ever	20	Passively Positive
	203	F	•I don't believe in getting too involved but I will if I can help them with a problem •I'm friendly to all of them •I'm a private person •I do some shopping for them •I take the rubbish out if they need	Saying hello and small chat to all and eight friendships and mutual help to some people	Quite often	24	Interactive and Supportive
	301	F	•I am friendly with all my neighbours •I am not around a lot of the time •We get on but we are not friends •I would be there if a neighbour needed help •I value my privacy	Saying hello to some and small chat with a few people	Hardly ever	18	Passively Supportive
	401	F	•Bad health reason for not mixing	Saying hello to all, small chat with some people and two friendships	Quite often	17	Passively Positive
	402	M	•It is quite difficult as I am still working •I wish for more interaction	Saying hello to all, small chat with some people and ten friendships and three regular visits	Constantly	26	Passively Supportive
	502	M	•I very seldom see them •If you need they are there	Saying hello and small chat to all	Not at all	26	Passively Positive
	503	M	•I spend most of my social time at my local bowling club	Saying hello and small chat to some people and four friendship	Hardly ever	17	Passively Positive
	601	M	•It would be nice to know each other better •I wish for more interaction	Saying hello to all, small chat with some people and ten friendships and two regular visits	Quite often	22	Passively Supportive
602	F	•I don't like socialising •I will help them if they want •Only if there is a special occasion I socialise with them	Saying hello to all, small chat with some people and three friendships	Not at all	33	Passively Positive	
Queen Elizabeth	105	F	•Neighbours are quite and nice •The relationship is pleasant •There is age and lifestyle difference	Talking to one neighbour	I.D.	I.D.	Passively Positive
	108	F	•I don't know any of them because I am new	Saying hello to a few people	Not at all	12	Passively Positive
	110	M	•I don't know any of my neighbours •There was a conflict and I deliberately avoided contacting neighbours	No interaction	Not at all	6	Passively Negative

		•Neighbours are not nice					
112	M	•I am satisfied with how it is	Say hello and short chat with a few and two friendships	Hardly ever	25	Passively Positive	
201	F	•I am busy with work •I am a shy person	Saying hello and chat with a few people	Quite often	21	Passively Positive	
202	M	•We don't socialise	Say hello to some people and short chat with a few	Not at all	18	Passively Positive	
211	F	I.D.	Say hello and friendship with all and short chat with a few	Not at all	10	Passively Positive	
213	M	• The relationship is cordial •Most people prefer their privacy •We will all help one another in case of emergency	Saying hello to all and short chat with one	Hardly ever	21	Passively Supportive	
302	F	•I don't see neighbours because of my work hours •I don't have time •I wish for more interaction	Saying hello to some people, short chat with a few and three friendships	Not at all	22	Passively Positive	
310	M	•I don't have time •Neighbours are quite tolerant to each other •Neighbours are friendly •Neighbours are helpful if needed and I have tried to be helpful to them •I am satisfied with how it is	Saying hello and chat with a few people	Hardly ever	20	Passively Supportive	
312	M	•Sometimes we go to other neighbours' doors to ask something	Saying hello to all, chat with some people and ten friendships	Quite often	24	Passively Supportive	
402	F	I.D.	Saying hello and chat with some people	Hardly ever	21	Passively Positive	
408	F	•I am new and I haven't met anyone •I wish for more interaction	Saying hello to a few	Not at all	10	Passively Positive	
411	F	•I don't interfere with neighbours' daily routines	Saying hello to some people, small chat with a few and one friendship	Hardly ever	22	Passively Positive	
413	M	•We only interact when passing	Saying hello and chat with a few people and five friendships	Hardly ever	25	Passively Positive	
603	F	•I am a private person •I am unable to attend anything •I am satisfied with how it is	Saying hello and chat with some people and two friendships	Hardly ever	22	Passively Positive	
McNeil	108	M	•I wish for more interaction •I rarely socialise with neighbours	Saying hello and small chat with a few and four friendships	Hardly ever	17	Passively Positive
	111	M	•Very happy and satisfied	Saying hello and chat with some people and six friendships	Not at all	31	Passively Positive
	201	M	•They don't socialise with neighbours •They only say hello •I wish for more interaction	Saying hello and small chat with a few and three friendships	Not at all	15	Passively Positive
	302	M	•We don't have common interests •I enjoy my privacy •Neighbours are not considerate and damage the space •If I see them I do say hello	Saying hello to few	Hardly ever	10	Passively Negative
	304	M	•Neighbours are nice •Neighbours are friendly •I wish for more interaction •I am not feeling part of community	Saying hello and chat with some people, one friendship, visiting, having party and celebrating together	Quite often	16	Passively Supportive
	310	F	I.D.	Saying hello and chat with some people and five friendships	Not at all	27	Passively Positive
	405	F	I.D.	Saying hello to some people and chat with a few and two friendships	Quite often	23	Passively Supportive
	407	F	•I don't go out but if I do I say	Saying hello and small chat	Not at all	23	Passively

		hello if people say hello to me	with a few			Positive	
502	F	<ul style="list-style-type: none"> •It's been quite lonely •There are couple of nice neighbours •Some people look at me as an outsider •I don't like it here •There is lack of community integration 	Saying hello to a few	I.D.	I.D.	Passively negative	
602	F	<ul style="list-style-type: none"> •Different work-live patterns makes it difficult to make friendship 	Saying hello and small chat with a few	Not at all	13	Passively Positive	
Lindsey	115	F	<ul style="list-style-type: none"> •I wish for more interaction 	Saying hello to all and small chat with a few	Not at all	16	Passively Positive
	202	M	<ul style="list-style-type: none"> •Rarely bump into neighbours. 	Saying hello to a few, small chat and friendship with one	Hardly ever	9	Passively Positive
	207	M	<ul style="list-style-type: none"> •Neighbours are very good •I tend to prefer to get on with everybody and you can all look out for each other. •People are very shy, they don't put effort. •I am satisfied with how it is 	Saying hello to all, small chat with some people and six friendships and six regular visits	Much of the time	30	Passively Supportive
	209	F	I.D.	Saying hello to few	Not at all	12	Undecided
	210	F	<ul style="list-style-type: none"> •I am satisfied with how it is •I socialise with some neighbours 	Saying hello to some people, small chat with a few people, two friendships and two regular visits	Much of the time	24	Passively Positive
	211	F	<ul style="list-style-type: none"> •I do enjoy a chat in passing •I really like to keep to myself 	Saying hello to a few people, small chat with two people, one friendships and one regular visits	Quite often	24	Passively Positive
	214	F	<ul style="list-style-type: none"> •I don't have time •I wish for more interaction 	Saying hello to some people, small chat with one and two friendships	Hardly ever	21	Passively Positive
	218	M	<ul style="list-style-type: none"> •I am busy •I wish for more interaction 	Saying hello to some people and small chat with two	Hardly ever	24	Passively Positive
	305	F	<ul style="list-style-type: none"> •I have no time 	Saying hello to two	Not at all	10	Passively Positive
	308	F	<ul style="list-style-type: none"> •Not all neighbours •I'm happy with the neighbours I do socialise with. 	Saying hello and small chat with a few people, two friendships and one regular visits	Hardly ever	26	Passively Positive
	309	F	<ul style="list-style-type: none"> •I don't actually know them all •I have two good friends here •I am on really friendly terms with the couple of neighbours •Acquainted with the few more. 	Saying hello and small chat with a few people, two friendships and one regular visits	I.D.	I.D.	Passively Positive
	311	M	<ul style="list-style-type: none"> •The neighbours are good 	No interaction	I.D.	I.D.	Undecided
	313	F	<ul style="list-style-type: none"> •We all live busy lives •I am satisfied with how it is 	Saying hello to some people, small chat with a few and one friendship	Hardly ever	20	Passively Positive
	408	M	<ul style="list-style-type: none"> •I have no time 	Saying hello to a few	Not at all	19	Passively Positive
	410	M	<ul style="list-style-type: none"> •I have no time •I wish for more interaction 	Saying hello to a few and four friendships	Hardly ever	27	Passively Positive
	412	F	<ul style="list-style-type: none"> •I think we must have reunions •I wish for more interaction 	Saying hello to all and small chat with a few people	Hardly ever	15	Passively Positive
418	F	N. I.	Saying hello to some people, small chat with a few people and one friendship	Hardly ever	23	Passively Positive	
503	F	<ul style="list-style-type: none"> •Neighbours don't want me to bother them 	Saying hello to one	Hardly ever	9	Passively Negative	
508	M	<ul style="list-style-type: none"> •People like to keep to themselves when at home 	Saying hello to a few people and small chat with one	Not at all	10	Passively Negative	
509	F	<ul style="list-style-type: none"> •I like my own company. •I am satisfied with how it is 	Saying hello and small chat with a few people, four friendships and one regular	Hardly ever	18	Passively Positive	

			visit				
511	F	<ul style="list-style-type: none"> •Neighbours are good •I don't need to mix with other people because I am very busy •I wish for more interaction 	Saying hello	Hardly ever	17	Passively Positive	
604	F	<ul style="list-style-type: none"> •I don't have time 	Saying hello to all and two friendships	Hardly ever	11	Passively Positive	
704	F	<ul style="list-style-type: none"> •I don't want to spend time with neighbours •Neighbours are inconsiderate 	Saying hello to a few	Not at all	7	Passively Negative	
801	M	<ul style="list-style-type: none"> •It is best not to socialise with neighbours •I am always friendly but keep boundaries. 	Saying hello to all	Not at all	9	Passively Negative	
Byron	101	F	<ul style="list-style-type: none"> •Usually my neighbour comes in to my house. •I am satisfied with how it is 	Saying hello to two people, small chat with one and one friendship	Hardly ever	9	Passively Positive
	104	M	<ul style="list-style-type: none"> •I am busy •We have different interests •The relationship is ok •We just get along •I wish for more interaction •If they need help I will help 	Saying hello to all, small chat with a few people and two friendships	Quite often	27	Passively Supportive
	202	F	<ul style="list-style-type: none"> •I am busy 	Saying hello to some people, small chat with a few people and one friendship	Hardly ever	23	Passively Positive
	208	M	<ul style="list-style-type: none"> •I am satisfied with how it is 	Saying hello to a few	Not at all	9	Passively Negative
	301	F	<ul style="list-style-type: none"> •Neighbours are friendly •I smile at them and say good morning and hello 	Saying hello to all, small chat with a few people and three friendships	Hardly ever	22	Passively Positive
	307	F	<ul style="list-style-type: none"> •I am satisfied with how it is 	Saying hello and small chat with a few people, and two friendships	Quite often	23	Passively Positive
407	M	I.D.	Saying hello to few	Hardly ever	17	Undecided	

According to Harris (2006), where there is no acknowledgement or deliberate avoidance of neighbours has been stated, the respondent has been positioned into the “**Passively Negative**” neighbouring level. The Neighbouring Index of these respondents is lower than 10, which shows the negative impression of the respondent towards the neighbouring level in their residence. The respondents have been categorised as “**Passively Positive**” neighbours if there is a non-committal acknowledgement but also an emphasis on privacy by using statements such as ‘I keep myself to myself’ or ‘I am a private person’. In these cases the respondents have reported either no or very limited occasions of help to/from their neighbours. “**Passively Supportive**” respondents are those who have reported frequent occasions of help to/from their neighbours while using positive expressions about their neighbours such as ‘Neighbours are very good’ or ‘They are nice people’. These people have a relatively high Neighbouring Index (15 to 30), which shows their positive impression towards the neighbouring level in their residence. Finally, a small number of residents who have clearly stated the mutual help and interest in socialising with neighbours have been categorised as “**Interactive and Supportive**” respondents. None of the respondents have

reported any intentional antisocial behaviour towards neighbours (Proactively negative) and none of them stated any proactive interference with neighbours (Intrusive and nosy). Table 19 represents the “neighbouring level” of residents for each case study.

Table 19: Overall neighbouring level of seven case studies

	Proactively negative	Passively Negative	Passively Positive	Passively Supportive	Interactive & Supportive	Intrusive & Nosy
Moore						
Cowgate						
Brandfield						
Queen E.						
McNiel						
Lindsey						
Byron						

The following are some of the primary results regarding the level of neighbouring and quality of social interaction among residents of the selected developments.

6.2.1 Passively positive neighbouring

The vast majority of respondents fall into the category of “Passively Positive” neighbours. The only exemption is the Brandfield development, which has many “Passively Supportive” residents as well as a few “Interactive and Supportive” residents. This might be related to the demographic patterns of the residents as well as the very low turnover of residents in this development. Overall, it can be argued that, unless there are special conditions (i.e. residents are all belong to a specific age group), in the context of today’s urban residential developments in Scotland, the dominant neighbouring level is “Passively Positive”. Although residents have a positive perception regarding their neighbours and relationship with them, they hardly ever offer help or support. This can also be interpreted as “Detached Neighbouring” in which people keep themselves to themselves and there is little interaction (Buonfino, Hilder 2006). In such an environment, people may know all their neighbours and exchange greetings with each other on a daily basis but they may not be interested in participating in social activities with their neighbours.

6.2.2 Satisfaction

Most respondents (42%) stated clearly that they are satisfied with their current level of interaction with neighbours. Only 20% have reported some level of dissatisfaction and ‘desire for more interaction’. While the remaining 38% have made either neutral or no comments. This suggests that while creating a suitable environment might raise the overall neighbouring level, the change is not going to be dramatic because of the personal attitudes

and preferences of most residents. It can be argued that in such an environment it is very important to avoid the design decision, which forces people to have more interaction with neighbours.

6.2.3 Lightweight interaction

A significant number of respondents stated that it does not matter if they know people or not, they say hello to everyone when they bump into them within the communal spaces of the residence. This is the minimum level of social interaction with neighbours for 96% of respondents. Only three respondents stated that they have absolutely no interaction with their neighbours. Nearly half of the respondents, i.e. 44 out of 89 stated that they consider at least one neighbour as a “friend”. Although the meaning of friendship may vary for different people, it can be argued that in comparison with weak ties like smiling and saying hello, friendship is a stronger social tie. This result suggests that although strong social ties do exist among neighbours, weak ties and lightweight interaction types such as exchanging greetings are dominant. This calls for more attention to weak ties and lightweight types of social interaction over strong ties and more formal types of social interaction.

6.2.4 Privacy

Overall, around one third of respondents expressed a clear sensitivity regarding their privacy in contrast to having more interaction with neighbours, using statements such as *“I keep myself to myself”, “I enjoy my own company”* or *“I don’t believe in getting too involved in their lives”*. This may confirm the findings from previous studies about the importance of the balance between “privacy” and “exposure” (Lindsay 2010). As mentioned by Hertzberger (1998), having control over social interaction is a critical factor in creating encouraging environments for social interaction. The ideal settings should provide residents with an adjustable level of interaction to achieve an appropriate balance between privacy and engaging in social interaction with neighbours.

6.2.5 Role of housing associations

In the case of conflicts between neighbours, the respondents who have been involved have stated that the problem has been taken care of through the housing association. Rather than direct negotiation or conversation, in almost in all cases the involved respondents reported the problem to the housing association. It can be argued that the presence of the housing association as a third party in relationships between neighbours might decrease the need for

interaction with neighbours among residents. While preventing negative conflicts between residents, housing associations might actually decrease the level of social interaction among residents.

6.3 Motivators and barriers for social interaction

The data has been analysed using the content analysis method in order to find the factors, which have been reported by residents as motivators or barriers for social interaction with neighbours. Going through all the interviews and open answer questions, those statements related to residents' reasons for interacting or not interacting with their neighbour have been extracted. Every statement has been labelled using initial labels. Table 20 represents the extracted statements and initial labels for the residents of each development.

Table 20: Initial labelling of data in order to find out the motivators and barriers for social interaction

Case	Unit	Gender	Statement	Labels	+/-
Moore	101	F	I work all day and stay in at home at night	Time (Work)	-
	106	F	I'm a very private person, not a very sociable person	Personal Attitude	-
	203	M	Long working hours. No place to meet socially	Time (Work)	-
				Lack of Space	-
	206-1	M	Not enough time due to work or other interest Well, the good thing about this is the layout because when people are coming in to here you can see them if you are outside you can see them so it's easier to talk to them. If you are just outside your door you can see everybody else who is coming in so it's easier to interact, you know, you don't actually have to go and visit them, you can see them coming in and out	Time (Other Interests)	-
				Layout of Space	+
				Visibility	+
				Informal / Visual Contacts	+
	206-2	F	Work leaves little time to socialise	Time (Work)	-
	302	M	We meet quite often	Frequent Contacts	+
401	F	I am always busy looking after my children. I also have difficulty with communicating in English.	Time (Other Commitments)	-	
			Diversity (Language)	-	
402	M	I don't really see them. I think it's because I am up here. I don't have much to deal.	Physical Distance	-	
			Lack of Contacts	-	
			Lack of Pretext	-	
Cowgate	202	F	I have no desire to socialise more	Personal Attitude	-
	203	F	Generally I keep myself to myself. I work irregular hours to spend time socialising	Personal Attitude	-
				Time (Work)	-
	301	F	Don't really see any of my neighbours.	Lack of Visual Contacts	-
	305	F	There is nowhere to socialise. They [neighbours] change so very often. One of the terraces could be used as a playground for the kids who lies here which would involve even more adults will meet and get to know each other.	Lack of Space	-
				High Turnover of Residents	-
				Space (For Children Play)	+
	307	M	It's just they keep themselves to themselves	Personal Attitude	-
	504	F	I just really keep myself to myself	Personal Attitude	-
505	F	I don't have time to socialise with my neighbours, I prefer to keep things at a fairly distant level	Personal Attitude	-	
			Time	-	

	601	M	People have become distant from one another within communities. This could be due to Thatcherism, individualism and privatisation of property etc.	Personal Attitude	-
				Socio-Political Changes	-
	602	M	Firstly I don't have the time. Secondly the neighbours I may meet in the lift are not people I would wish to socialise with	Time	-
				Diversity	-
	702	M	No, have been here less than six months. Still need to introduce myself.	Time (Newcomer)	-
			I tend to keep myself to myself and I am ok with that	Personal Attitude	-
	801	F	I feel that I don't have the time	Time	-
			Young neighbours leaving home and moving in see this building as a 24 hour party building. Better insulation and more families will make this building	Homogeneity (Age)	+
Brandfield	101	F	It makes a big difference if you were here when it first opened as we all grew up here	Time (Old Resident)	+
				Low Turnover of Residents	+
	102-1	M	If we can help them we will help	Personal Attitude	+
			They are all from a same age group. I think it is important. Because obviously you don't want to be living with 20 and 30 year olds who like heavy music and most of them like parties	Homogeneity (Age)	+
			People do tend to keep themselves to themselves especially when they get to our age group	Personal Attitude	-
	102-2	M	If I can help anyone I will and I am confident the same applies to me.	Personal Attitude	+
	203	F	I don't believe in getting too involved ... I'm friendly to all of them but I'm a private person	Personal Attitude	-
	301	F	I have a busy life. I am not around a lot of the time ...	Time	-
			I value my privacy. I love my home and at the moment I am able to be independent	Personal Attitude	-
	401	F	... husband died and bad health reasons for not mixing	Health Problem	-
402	M	It is quite difficult as I am still working full time	Time (Work)	-	
502	M	I very seldom see them. If you need them they are there	Lack of Visual Contacts	-	
		I've been rather busy myself	Personal Attitude	+	
			Time	-	
	503	M	I spend most of my social time at my local bowling club	Time (Other interests)	-
	601	M	There should be more social situations to happen. It would be nice to know each other better.	Social Event	+
				Interaction Pretext	+
	602	F	I don't like socialising. I will help them if they want	Personal Attitude	-
			I just like them to be neighbours and just be friendly with them. I don't want to get any more involved. I don't want to get too friendly with them		
Queen E.	105	F	I work quite a lot and I don't have time. Because I am working a lot and I don't see them. And maybe age I guess. They are all family and I am not.	Time (Work)	-
				Diversity (Age)	-
	108	F	I don't know any of them well enough. Because I have only lived here for a few months.	Time (Newcomer)	-
	110	M	They must have known they had flooded me but they never apologized or tried to contact me.	Personal Attitude	-
	201	F	Busy hours of work + shyness.	Time (Work)	-
				Personal Attitude	-
	213	M	Most people prefer their own privacy. I am sure if there was an emergency we will all help one another that comes naturally	Personal Attitude	-
			TV for example is a killer and magazines and books	Technology	-
	302	F	By the time I come home, all my neighbours are usually at work themselves. Then I have to go to my bed early because of my work, so that means I don't see many neighbours because of the unusual hours that I work.	Time (Work)	-
	310	M	I am normally out at work	Time (Work)	-
			I think because you don't know them well enough so you don't know their timetables. You don't know if they are awake or they are at home. I don't meet them in social or public areas so I wouldn't accidentally make friends and know where they live	Lack of Informal Contacts	-
		I think if we could have a communal event, it would be good to get to know people, a barbeques or something similar	Lack of Pretext	-	
		I think it's more of that people need to motivate themselves to do things rather than spaces. I think there is enough space I just don't think there is enough motivation	Social Event	+	
			Interaction Pretext	+	
			Personal Attitude	-	
408	F	I'm new to the building and haven't properly met any of my neighbours yet	Time (Newcomer)	-	
411	F	Most neighbours have carers, home helps and families, so I	Personal Attitude	-	

		don't interfere with their daily routines			
	603	F	I am a private person. Really housebound. Unable to attend anything. But like my privacy anyways	Personal Attitude - Health Problem -	
McNeil	201	M	People don't socialise with their neighbours like they did when I was growing up	Personal Attitude -	
	302	M	I don't think I have anything in common with my neighbours. I am a private person who enjoys my privacy	Diversity - Personal Attitude -	
	304	M	Community is dispensed because there are no socialising events. I don't feel like part of the Gorbals community We have different backgrounds. So its almost like a distress and we are supposed to be more understanding of each other. Because of different cultures I think we could enjoy something together like having a grill or something like that but there is nothing happening so I was quite surprised Maybe something like a social club so we could organise something for people with particular hobbies so they can enjoy it and they get to know each other	Lack of Social Event - Diversity - Lack of Community - Integration - Interaction Pretext +	
	407	F	I don't keep well so I don't go out much	Health Problem -	
	502	F	There is a lack of understanding in the community especially towards a person who has a disability and it is rough And also for people with disability there is a lack of community integration The newcomers are strange to them and not easily accepted	Lack of Community - Integration - Personal Attitude - Diversity -	
	602	F	I work full-time – shift pattern 12 hours – night shifts + day shift. Do not see neighbours that often. Days off I catch up with family and friends outside my home residence. The majority of my neighbours do not work (SS+Over) so I do not see them on a daily basis which makes it impossible to make friendships	Time (Work) - Diversity (Age) - Lack of Visual Contacts -	
	Lindsey	202	M	Work shifts so rarely bump into neighbours	Time (Work) - Lack of Informal Contacts -
		207	M	People are very shy. People don't make the effort they used to. They tend to come in and shot the door. People just tend to live on their own. I think it's also because people work It is important to know your neighbours. Get to meet your neighbours and that was the idea for the picnic so that people instead of walking and passing saying "who was that?" You actually know people. And it just builds up that sense of "we all belong together"	Personal Attitude - Time (Work) - Social Event + Interaction Pretext +
		211	F	I really like to keep to myself	Personal Attitude -
		214	F	I don't have time	Personal Attitude -
218		M	I am busy with my family and look after a little one who is 3 years old	Time (Other Commitments) -	
305		F	I am working night shift and sleeping during the day	Time (Work) -	
309		F	These neighbours might work all day so you don't see them if you are in. And I think it's because you don't pass in the stair really because I use the lift because of my medical condition. So you don't tend to pass people in the stairwell	Time (Work) - Lack of Visual Contacts -	
313		F	We all live busy lives. Working + bringing up a family means we don't have much free time	Time (Work) - Time (Other Commitments) -	
408		M	I work a 3-shift pattern, therefore I work sociable hours	Time (Work) -	
410		M	I have no time, as I am a full time carer	Time (Work) -	
503		F	Do my neighbours want someone bothering them? More than likely not	Personal Attitude -	
508		M	People like to keep to themselves when at home	Personal Attitude -	
509		F	I like my own company	Personal Attitude -	
511		F	I don't need to mix with other people because I am very busy with my children. Actually nowadays communication between people has become virtual and I usually speak to my relatives in Bangladesh with via Skype. Different cultures.	Time (Other Commitments) - Diversity (Culture) - Technology -	
604		F	Due to work commitments this makes it difficult	Time (Work) -	
704		F	I don't spend time with my neighbours through choice	Personal Attitude -	
801	M	Sometimes you can end up liking them – or friendships can turn into disputes. It is difficult to then live next to someone	Personal Attitude -		

		you are not on talking terms with			
Byron	104	M	I'm too busy and we have different interests Racism. There is too much racism in this area. Generally people from this country are very racist	Time	-
				Diversity (Interests)	-
				Personal Attitude	-
	202	F	I'm busy	Time	-
	301	F	When you see them in the lift, when you see them even in the street they do smile at you and they say hello and you don't know if they don't stop because maybe they have got something that they are going to do. I mean some people are quietly friendly and some people are more talkative I suppose because we are not on the same landing so you don't get to know them so you don't get to see them that much	Personal Attitude	+ -
				Time	-
			Physical Distance	-	
			Lack of Visual Contacts	-	

Repeating the review process, the initial labels have been modified and grouped into nine main themes. Figure 6.1 shows the main themes and their subcategories as well as the number of respondents in each residence who have mentioned any specific factor.

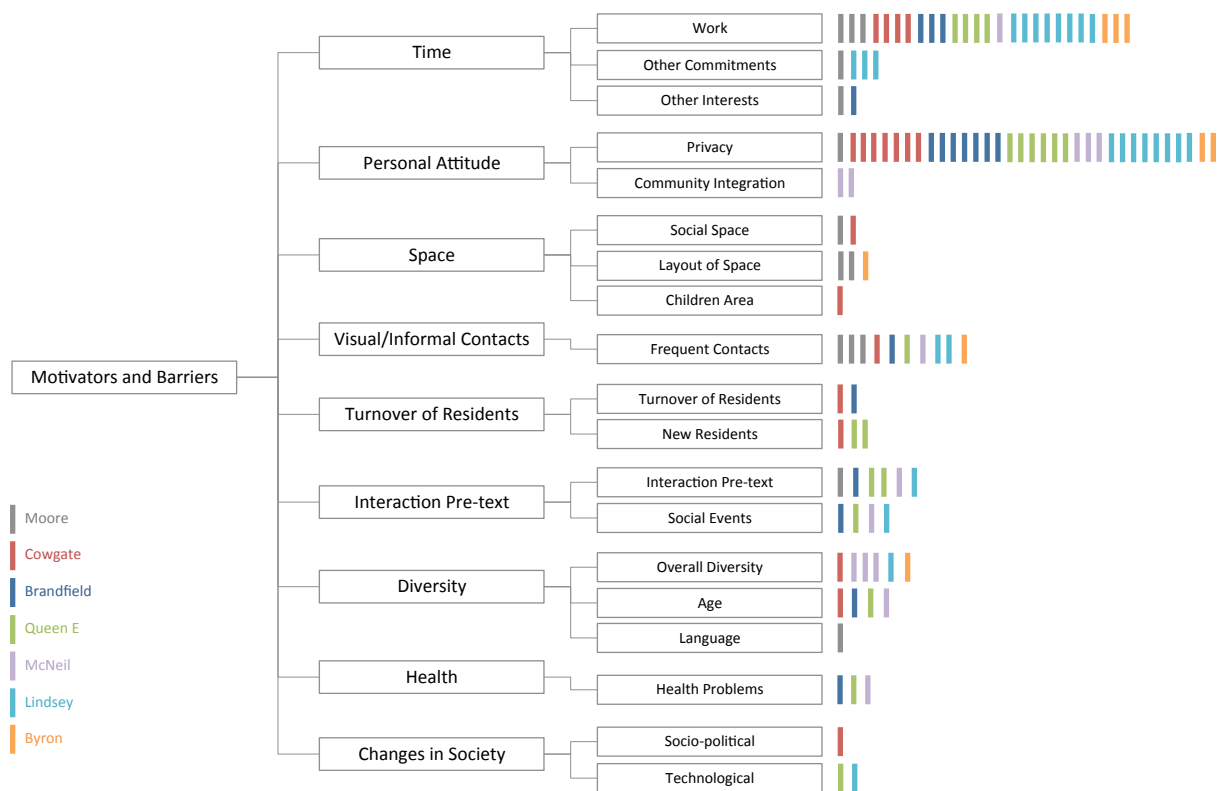


Figure 6.1: Motivators and barriers for social interaction with neighbours (each line represents one respondent)

Time, personal attitude, visual/informal contacts and diversity have been mentioned by residents from all seven developments while other themes have only been reported by the residents of some developments. This might reveal the importance of these four themes but the other themes should not be undermined even if they have only been mentioned once. This applies especially to those themes which can be related directly to the built environment or that can be affected by the design of communal spaces such as space and interaction

pretext. Figure 6.2 represents the themes mentioned by the residents of each development. It can be seen that in most developments the two main themes are time and personal attitude. The only exemptions are Moore and McNeil. The residents of Moore reported time and visual/formal contacts more, while the respondents from McNeil mentioned personal attitude and diversity.

6.3.1 Personal attitude

The main reason, which has been reported by the residents of all seven developments, is personal attitude, specifically the concern for privacy or preferring privacy to socialising. Whether it is their own personal preference or their perception of their neighbours' attitudes, a significant number of residents expressed that personal attitudes/preferences is their main reason for their current level of interaction with neighbours with statements such as *"I keep myself to myself"*, *"I prefer to keep things at a fairly distant level"*, *"I have no desire to socialise more"*, *"They keep themselves to themselves"* and *"people have become distant from one another"*. Moreover, some residents of McNeil reported that a lack of community integration has stopped them from interacting with neighbours. This is due to the conflicts between the old residents of the neighbourhood and the newcomers.

6.3.2 Time

Another major factor reported by many residents from all seven developments is the lack of time for socialising. A significant number of respondents stated that they don't have enough time for interaction with neighbours because of their work, while a few other residents mentioned that they have other commitments or other interests, which makes them busy. In some cases, the respondents stated that they do not meet neighbours in passing because they work night shifts or at weekends.

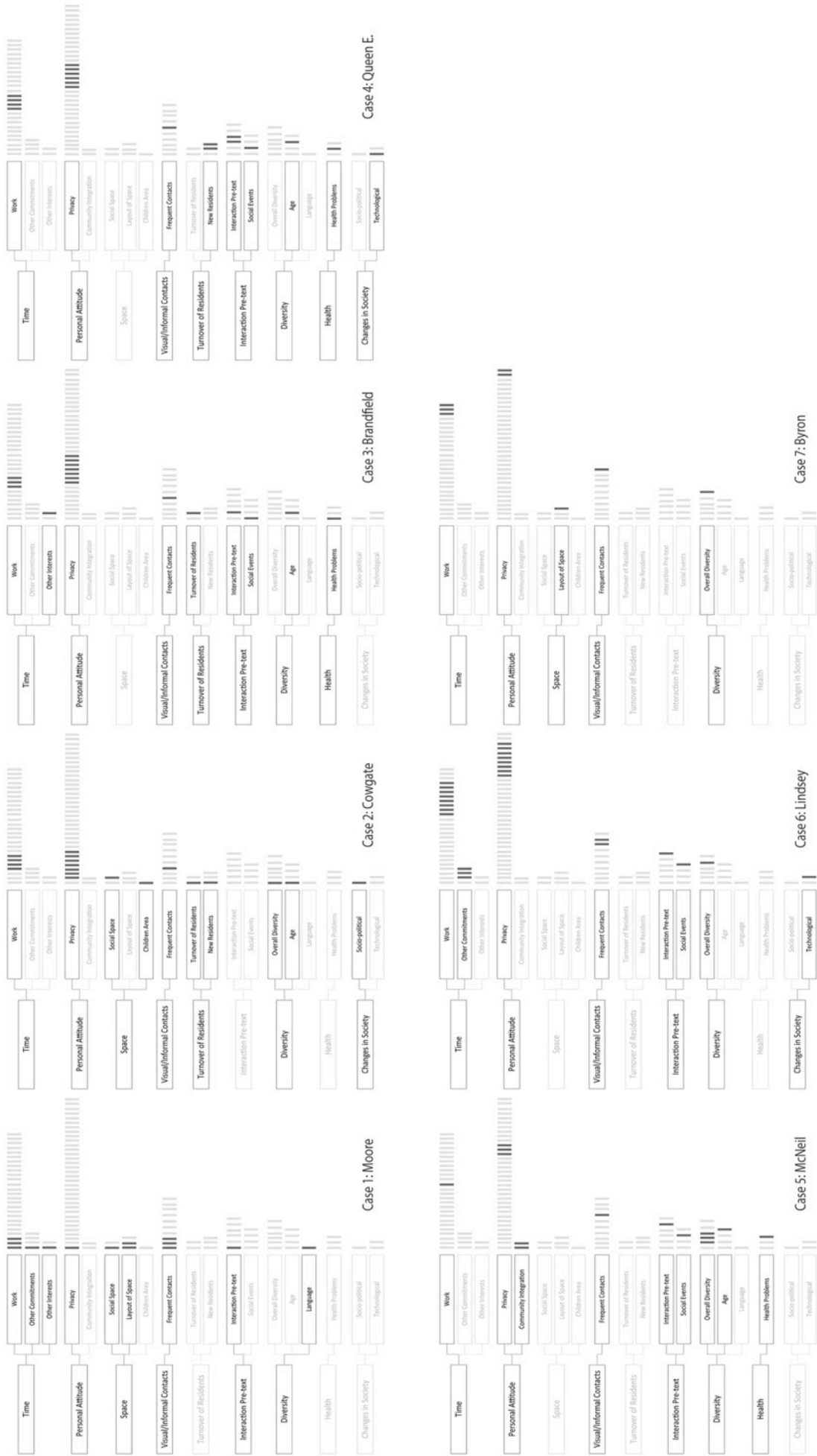


Figure 6.2: Motivators and barriers of social interaction in seven developments (each line represents one respondent)

6.3.3 Space

Residents from three developments, Moore, Cowgate and Byron, clearly mentioned that the built environment can affect their interaction with neighbours. Lack of social space in Moore and Cowgate has been reported as a barrier for more social interaction by using statements such as *“There is nowhere for socialising”*. More visibility of communal spaces caused by the design layout has been mentioned as a regulator factor, which can affect social interaction between residents through increasing the visual contacts. A resident of Moore development described this effect: *“If you are just outside your door you can see everybody else who is coming in so it’s easier to interact, you know, you don’t actually have to go and visit them, you can see them coming in and out.”* Moreover, two residents of Moore and Cowgate mentioned that the functional physical distance caused by the design layout has been a barrier to their interaction with some neighbours. Finally, one respondent from Cowgate development stated that having a dedicated space for children playing would help to create more interaction among neighbours.

6.3.4 Visual contacts

Respondents from all seven developments revealed the importance of frequent visual and informal contacts with residents by using statements such as: *“you don’t get to know them because you don’t get to see them that much”*, *“I do not see them on a daily basis which makes it impossible to make friendships”* and *“I don’t meet them in social or public areas so I wouldn’t accidentally make friends”*. It has been emphasised that the informality of encounters within communal spaces can create the opportunity for more interaction with neighbours.

6.3.5 Turnover of residents

A respondent from Cowgate has stated that *“the neighbours change so very often”*, while another respondent from Brandfield mentioned that the stability of residents has helped the neighbours to interact more *“as we all grew up here”*. Some other residents stated that they have not had the chance to develop any relationship with neighbours because they have just moved in recently.

6.3.6 Interaction pretext

Having common interests, having basic information about each other, attending social events and getting to know each other as a “pretext” for social interactions have been reported to be

effective factors. Lack of interaction pretexts has been reported to be a barrier to more social interaction. For example, a respondent from Queen E. stated, “... because you don’t know them well enough so you don’t know their timetables. You don’t know if they are awake or they are at home.” Also, many respondents from different developments suggested that holding a social event such as a barbeque or bingo night would create a chance to “get to know each other” and provide them with an interaction pretext.

6.3.7 Diversity

Whether it is diversity in terms of age, culture, language or lifestyle, many respondents reported that diversity has created problems for more interaction with their neighbours. Almost all respondents saw the diversity as a negative factor. It has either been assumed as the main reason for stress and conflicts among neighbours: “Young neighbours leaving and moving in see this building as a 24 hour party building. Better insulation and more families will make this building better” or as a discouraging factor for interaction: “They are all family and I am not.”

6.3.8 Health

Some elderly people in Brandfield, Queen E. and McNeil have stated that the main barrier for their interaction is their health problems.

6.3.9 Changes in society

Some residents stated that socio-political changes in society and the technological advancements such as the Internet and TV have discouraged them from more interaction or eliminated their need for more interaction with neighbours: “I usually speak to my relatives in Bangladesh via Skype.”

6.4 Existing and potential patterns of activities and interactions

The same data analysis methods have been applied in order to find the existing and potential types of social interaction and activities and their location within communal spaces. Going through all the interviews and open answer questions, those statements related to the instances of social interaction or activities within communal spaces have been extracted. The statements have been labelled using initial labels. Table 21 represents the extracted

statements and the initial labels in each development. Instances of social interaction have been separated from individual activities. The grey shade has been used for existing interaction types and activities in contrast with potential ones.

Table 21: Initial labelling of data in order to find patterns of activities and social interactions

Case	Unit	Gender	Statement	Interaction/ Activity	Type	Location	Existing/ Potential
Moore	106	F	<p>We say hello and smile</p> <p>I usually meet neighbours in the courtyard</p> <p>I think it might be a good idea to like, maybe hold some neighbour gatherings, you know maybe in the summer like a barbeque or you know something like that for all the neighbours to interact and get to know each other properly</p> <p>The only thing I have observed is the children playing in the back area when you come in first thing</p> <p>There is no seating or anything for the neighbours to sit and talk to each other, so let me be a sitting area for the residents where they can go down in the summer and sit together.</p>	Interaction	Greetings	-	E
					Smiling	-	E
					Visual Contact	Entrance Courtyard	E
					Gathering (i.e. Barbeque)	-	P
				Activity	Children Playing	Central Courtyard	E
					Sitting and Talking	Central Courtyard	P
					Sitting Outside	Central Courtyard	P
					Access	Entrance Courtyard	P
206-1	M	<p>Well, the good thing about this is the layout because when people are coming here you can see them if you are outside you can see them so it's easier to talk to them</p> <p>In the summer, you have a bit of a problem with some of the kids but really realistically they are not allowed to do. The only area they have got is the entrance courtyard</p> <p>Well, most people talk to each other in the courtyard because that's where you meet everybody</p>	Interaction	Visual Contact	Entrance Courtyard	E	
				Face-to-Face Conversation	Entrance Courtyard	E	
				Children play	Central Courtyard	E	
			Activity	Sitting outside	Balconies	E	
206-2	F	<p>I speak to neighbours in passing</p> <p>I would like to move to a property with a small garden to look after</p>	Interaction	Face-to-Face Conversation	-	E	
			Activity	Gardening	Small Garden	P	
402	M	<p>We say hello on the way but that's all</p> <p>Kids are playing and that's all over there. They are playing with their bikes. People hang their washing out in the community</p> <p>I have stood there for a while talking to neighbours. But it's not like you can see them in the winter, everybody stays in their home</p> <p>Something like that where you can sit and you can observe your weans</p>	Interaction	Greetings	-	E	
				Visual Contact	Stairs	E	
				Children Play	Central Courtyard	E	
				Face-to-Face Conversation	Entrance Courtyard	E	
			Activity	Hanging laundry	Drying Area	E	
				Sitting Outside	Central Courtyard	P	
Cowgate	305	<p>Also, the noise from pubs and clubs – people at night is terrible. Making nun-urinal in stairs.</p> <p>One of the terraces could be used as a playground for the kids who live here which would involve even more adults meeting</p>	Interaction	Children Play	Roof Terraces	P	
			Activity	Urinating on Wall	Close	E	

		and getting to know each other					
Brandfield	307	M	I would prefer a terrace for when I have friends around so we can stay outside	Interaction	Hosting Non-Residents	Terrace	P
				Activity	Standing Outside	Terrace	P
	504	F	I see Linda across the patio, she is there, I see her quite a lot so I speak to her quite a lot. And I get the magazines off my mum once a week and once I've read them I pass them on to her so she reads them so I see her quite a lot Well, along the corridor. Sometimes last summer the guy used to sit out at night with his friends and drink beer. But that's been all about really	Interaction	Visual Contact	Terrace 4 th Floor	E
					Face-to-Face Conversation	Terrace 4 th Floor	E
					Exchanging Magazine	Terrace 4 th Floor	E
					Hosting Non-Residents	Outdoor Corridors	E
				Activity	Sitting Outside	Outdoor Corridors	E
					Drinking	Outdoor Corridors	E
	505	F	People from the workspace on the ground floor of the building come into the stairs, smoke cigarettes and leave paper and mess. I'd just like to add that the people who come into the stair are not residents of the building. They attend the work/learning space. They also congregate in the close and I have seen a few of them urinating in the doorways etc.	Interaction	Smiling	-	E
					Face-to-Face Conversation	-	E
					Greetings	-	E
				Activity	Smoking	Entrance Stairs	E
					Leaving Rubbish	Entrance Stairs	E
					Urinating on Wall	Stairs & Close	E
	601	M	A place where people can meet to have a chat. Maybe a place just like chairs where people can sit down and have a chat with each other like a social space	Interaction	Face-to-Face Conversation	-	P
				Activity	Sitting Outside	-	P
	602	M	...Neighbours I may meet in the lift are not people I would wish to socialise with If I do meet a neighbour, usually in the lift, we say hello and have a nice day and that is it, no further discussions	Interaction	Visual Contact	Lift	E
					Greetings	Lift	E
702	M	My neighbour is using [...] and it is stolen at the moment so they just asked me if they could use mine for a while and I said yea just once or twice as I was hosing friends and they can use it for cigarettes	Interaction	Face-to-Face Conversation	Indoor Corridors	E	
				Exchanging Materials	Indoor Corridors	E	
				Hosting Non-Residents	Terrace 6 th Floor	E	
			Activity	Standing Outside	Terrace 6 th Floor	E	
				Smoking	Terrace 6 th Floor	E	
	102-1	M	Leona lives upstairs. I was talking to her yesterday because I met her at the doctor she was waiting for the nurses and I was waiting to go inside. There is that exchange of greetings. There used to be a regular coffee morning every Thursday but that sort of died away. Now, I think they have had something for New Year, for hegemony. And for the firework display they usually have something on, and for the festival and the fire works, because we have an extremely good view of the fireworks. They might have washing and putting up. I was always going to, I mean a couple of	Interaction	Face-to-Face Conversation	Local GP	E
				Visual Contact	Entrance Lobby	E	
				Greetings	Entrance Lobby	E	
				Weekly Gatherings	Sunroom	E	
				Gathering (new year)	Sunroom	E	
			Activity	Watching Fireworks	Sunroom	E	

		times I have been up but I have just been there on my own. Sitting and enjoying the sun.		Hanging Laundry	Drying Green	E
				Sitting Outside	Sunroom	E
101	F	It is great if you sit outside in the sun. And she said to me "can we sit there?" "Of course, you can. You can sit wherever you want." I said. "I've found couple out there, they drink it there and they didn't worry about it." "Are we allowed to drink?" She said. "Of course you are aloud to drink." I said. You see, one of my neighbours just brought my stick back. We always keep changing stuff. We always help one another. Tom, next door, he is putting some plants again. They put their laundries inside all the time.	Interaction	Exchanging Materials	Corridor	E
				Visual Contact	Corridor	E
				Face-to-Face Conversation	Corridor	E
				Playing Together	Sunroom	E
				Discussing Decisions	Sunroom	E
				Gathering (Anniversary)	Sunroom	E
			Activity	Sitting Outside	Drying Green	E
				Sitting Outside	Sunroom	E
				Drinking	Drying Green	E
				Decorating	Entrance Lobby	E
				Hanging Laundry	Drying Green	E
203	F	I see my neighbours more in the nice weather sitting on the sunroof on the drying green when some of us sit in the sun	Interaction	Visual Contact	Sunroom	E
				Visual Contact	Drying Green	E
			Activity	Sitting Outside	Sunroom	E
				Sitting Outside	Drying Green	E
402	M	Extend the sunroom and install a dance floor, as this will allow us to have our 60's discos! People have moved out due to the constant Friday to Sunday noise caused by the occupants of the 80 flats opposite, which are utilised for hen and stag parties!	Interaction	Gathering (60's Discos)	Sunroom	P
			Activity	Dancing	Sunroom	P
502	M	We were just passing the stairs. They chat on the stairs. Did you see the flowers when you came in? Bill is responsible for all that, for the entrance lobby. The only time that I did a particular activity was when my niece, a wee girl, was here. She wanted to go up to see there, the sunroom and the garden upstairs, she loves it out there, so I spent time with her up there. I have watched the fireworks from there.	Interaction	Visual Contact	Stairs	E
				Visual Contact	Corridors	E
				Greetings	Stairs	E
				Greetings	Corridors	E
				Face-to-Face Conversation	Stairs	E
				Hosting Non-Residents	Sunroom	E
			Activity	Decorating	Entrance lobby	E
				Watching Fireworks	Sunroom	E
602	F	We usually go alone but nine times out of ten there is other people who are using the sunroom and the garden out there as well. We just sit and talk and drink tea.	Interaction	Face-to-Face Conversation	Corridors	E
				Face-to-Face Conversation	Drying Green	E
			Activity	Sitting Outside	Drying Green	E
				Drinking Tea	Drying Green	E
Que 105	F	I met some guy here at the door. He was asking about Wi-Fi if it is working or not. He	Interaction	Face-to-Face Conversation	Corridors	E

		seemed very pleasant. We just talked in the corridor.	Activity	Taking Bins Out	Courtyard	E		
		I only take the bins out. That's it.		Taking Bins Out	Bin Storage	E		
		I have seen someone doing a little bit of gardening, which was really cool.		Gardening	Courtyard	E		
110	M	I wonder how many are dropped by my neighbours smoking on their balconies.	Activity	Smoking	Balconies	E		
201	F	A marked outdoor smoking area for residents + visitors.	Activity	Smoking	Marked Area	P		
213	M	Occasionally, I have been there and I left magazines there but people threw them away. I used to get National Geographic.	Activity	Decorating	Communal Room	E		
				Sitting Outside	Communal Room	E		
310	M	I see them in passing every day and I just say hello and greetings. I've spoken to the lady next door. I go to the same church as the lady next door so I often meet her when we walk to church on a Sunday morning. I just use them for access. There is nothing in these areas. As you can see there is no reason to stop. There are no flowers or paintings to look at or enjoy or seats to sit outside. I have only used the courtyard to access the bin areas. I have seen one or two children playing outside and have monitored people with animals, dogs particularly. I think if we could have like a communal event, it would be good to get to know people, like barbeques or something similar.	Interaction	Visual Contact	Corridors & Lift	E		
				Greetings	Corridors & Lift	E		
				Face-to-Face Conversation	Street	E		
				Children Play	Courtyard	E		
				Gathering (i.e. barbeque)	-	P		
			Activity	Access	-	E		
				Sitting Outside	-	P		
				Taking Bins Out	Courtyard	E		
				Taking Bins Out	Bin Storage	E		
				Dog Walking	Courtyard	E		
312	M	Sometimes, we go to other neighbours' doors to ask about things.	Interaction	Face-to-Face Conversation	Corridors	E		
408	F	+Gym - good for health and fitness, also sociable.	Interaction	Visual Contact	Gym	P		
				Face-to-Face Conversation	Gym	P		
			Activity	Exercise	Gym	P		
McNeil	302	M	If I see a neighbour on the stairs or at the entrance I do say hello to them. Some people let their dogs go to the toilet there and children play there when the weather is fine. Some people disregard the non-smoking policy and leave ashes inside the close. Also parents let their children make a mess of the walls and leave sweet wrappers in the close.	Interaction	Visual Contact	Stairs	E	
					Greetings	Stairs	E	
					Children Play	Courtyard	E	
				Activity	Dog Walking	Courtyard	E	
					Smoking	Close	E	
					Vandalism	Courtyard	E	
	304	M		There is no place to sit. No benches etc. Sometimes we visit each other for example people from next door. We see each other and sometimes we celebrate by having parties. Yes we do greet each other and say hello. In different places. Sometimes in the courtyard, corridors or outside the building. I sometimes go there to put my washings out or walk my dog for a second because he likes the courtyard. I think small children go outside sometime outside. I think we could enjoy something together like having a grill or something. There are no benches to sit on and read some books for example. There is no place to have something like a barbeque or a place to put something like that there. Because for example if I am going to walk my dog, I would like to stay there and watch him, he likes to stay outside but there is nowhere to sit, you know. So I could read a	Interaction	Party & Celebration	Neighbour's Home	E
						Paying Visit	Neighbour's Home	E
						Visual Contact	Courtyard, Corridors or Street	E
						Greetings	Courtyard, Corridors or Street	E
			Children play		Courtyard	E		
			Gathering (i.e. barbeque)		Courtyard	P		
			Social Club		-	P		
		Activity	Sitting Outside		Courtyard	P		
			Dog Walking		Courtyard	E		
			Hanging Laundry		Courtyard	E		
			Reading	Courtyard	P			

small book there and watch him when he is playing.

Lindsey	407	F	I just say hello if people say hello to me.	Interaction	Greetings	-	E
	207	M	Drying area is great. It's where most women meet. In the courtyard also mums usually sit and watch their children playing You only see people when they hang up their washing. We saw Kate last week. She came for a coffee last week. And we saw Craig in lunch time and we saw Lyn. Just literally putting out the rubbish. In the summer we had two picnics out the front there on the grass. We are looking at building up for children some garden space at the back for children. And then if we can get enough children interested, then the picnic event will happen once a year. And in December we are having a get together more for the residents but I want the children there to learn about what can be recycled and the waste. It's not gonna be a big discussion or anything. It's gonna be a drop-in cup of tea or coffee or anything and a bit of cake. We stood there and talked to other tenants seated on the seats. Because the children play out there. The idea of people running outside for a cigarette just at the door and unfortunately leaving their cigarettes behind is not such a great idea. But if it was covered over perhaps, a shed or something, then people could actually .. you know.. I'll have a cigarette there but there is also an opportunity for a barbeque area. And that would actually then attract more people to come down.	Interaction	Visual Contact	Drying Area	E
					Face-to-Face Conversation	Drying Area	E
					Children Play	Courtyard	E
					Face-to-Face Conversation	Courtyard	E
					Paying Visit	Neighbour's Home	E
					Face-to-Face Conversation	ASDA	E
					Gathering (picnic)	Front Green	E
					Gathering (workshops)	Courtyard	P
					Gathering (barbeque)	Courtyard	P
					Activity	Sitting Outside	Courtyard
	Watching Children	Courtyard	E				
	Hanging Laundry	Drying Area	E				
	Taking Bins Out	Courtyard & Bin Storage	E				
	211	F	...but do enjoy a chat in passing. I often feel it would be nice if the front of the block was gated because people use it as a shortcut through to ASDA and there is litter and dog fouling.	Interaction	Face-to-Face Conversation	-	E
					Activity	Access	Back Parking
	309	F	Sometimes we have a coffee inside my flat or inside my neighbour's flat, the one downstairs. If not, I speak to them on a daily basis. I usually phone through. Anne doesn't keep very well and I always phone her in the morning to see how she is. Just going in and out for shopping and things like that. There have been a couple of communal picnics last year for which we used that space at the front. And children are also play at the back. Just to speak to neighbours. Just to speak to people in passing. I don't use the washing area but you see people using the washing area and chatting to each other. But it's usually just going in and out when you meet people, you know, just talking to children. I have seen people sitting in the courtyard. During summer it's usually full of kids running about and playing. It's not always great for sitting and chatting. Some people have gardens there.	Interaction	Paying Visit	Neighbour's home	E
Phone Call					Neighbour's Home	E	
Gathering (picnic)					Front Green	E	
Children play					Courtyard	E	
Face-to-Face Conversation					Drying Green	E	
Visual Contact					Lift & Corridors	E	
Face-to-Face Conversation					Lift & Corridors	E	
Face-to-Face Conversation					Courtyard	E	
Activity					Access	-	E
					Hanging Laundry	Drying Green	E
	Sitting Outside	Courtyard	E				
311	M	Conversation in corridors. Children sometimes play in the courtyard.	Interaction	Face-to-Face Conversation	Corridors	E	
				Children Play	Courtyard	E	

	508	M	Children can be noisy in summer	Interaction	Children Play	Courtyard	E				
	511	F	.. just saying hello. Conversation in the lift. Yes, they are sitting on the benches and children playing and ride bikes.	Interaction	Greetings	-	E				
Face-to-Face Conversation					Lift	E					
Children Play					Courtyard	E					
Activity				Sitting Outside	Courtyard	E					
					Watching Children	Courtyard	E				
	604	F	Outdoor areas are lovely with lots of children.	Interaction	Children Play	Courtyard	E				
	801	M	I say hello to everyone I meet; I talk to people in the lift and say hello	Interaction	Greetings	Lift	E				
					Face-to-Face Conversation	Lift	E				
Byron	104	M	If we had a lift I could go and sit there when the sun is out but now I go to the park or go somewhere else. In the community centre. I usually have my lunch there. And I see some of my neighbours there. A few times. Just in the corridor or the street. Because everybody here knows me since I have been here for a long time and I know every single person who walks or passes. Like that local shop at the corner knows me. If the back garden has the sun there could be an area where people could go there and sit. You could have a cup of tea outside and enjoying the sunshine.	Interaction	Visual Contact	Community Centre	E				
					Face-to-Face Conversation	Community Centre	E				
					Visual Contact	Corridor or Street	E				
					Face-to-Face Conversation	Corridor or Street	E				
								Activity	Sitting Outside	Roof Terrace	P
									Sitting Outside	Local Park	E
									Sitting Outside	Courtyard	P
									Drinking Tea	Courtyard	P
					301	F	I find children playing on the landing sometimes. Just the other day, I had just come in and there were a couple of them talking and I ended up talking to them. There were four of us talking in the corridor on the ground floor. I knew them all when I see them but some of them I haven't had any proper conversation with. I smile at them and say good morning and hello if I see them. When you see them in the lift, when you even see them in the street they do smile at you and they say hello and you don't know. Because Nadia was showing me a new wee kitten and then she was showing me different things like her mum's wallpaper. And Christine took some parcels for me yesterday. So most of these things happened in the corridors. But the children do play on the car park over there but it is a car park. Some of the people I have spoken to them, they said they have had a barbeque or something like that up there. There is someone on the ground floor who is on the wheelchair. They were telling me themselves some nights when it's nice in the summer in the garden they had a wee barbeque there. It's alright passing people speaking to them in the lift on the landings and that but if the roof garden was a little better and people did go up you could maybe meet and we could make tea and coffee and you could sit there and speak to them and have a cup of tea.	Interaction	Children Playing	Corridors	E
				Face-to-Face Conversation					Entrance & Corridors	E	
Visual Contact	Entrance & Corridors	E									
Smiling	Lift	E									
								Greetings	Lift	E	
								Exchanging Material	Corridors	E	
								Children Playing	Car Park	E	
								Gathering (barbeque)	Roof Terrace	E	
								Face-to-Face Conversation	Roof Terrace	P	
				Activity				Drinking Tea	Roof Terrace	P	
					Sitting Outside	Roof Terrace	P				

Repeating the review process, the initial labels have been modified and grouped into four main groups, namely “existing interactions”, “potential interactions”, “existing activities” and “potential activities”. Figure 6.3 shows these four groups and the modified labels as well as the number of respondents in each residence that have mentioned any specific interaction type or activity.

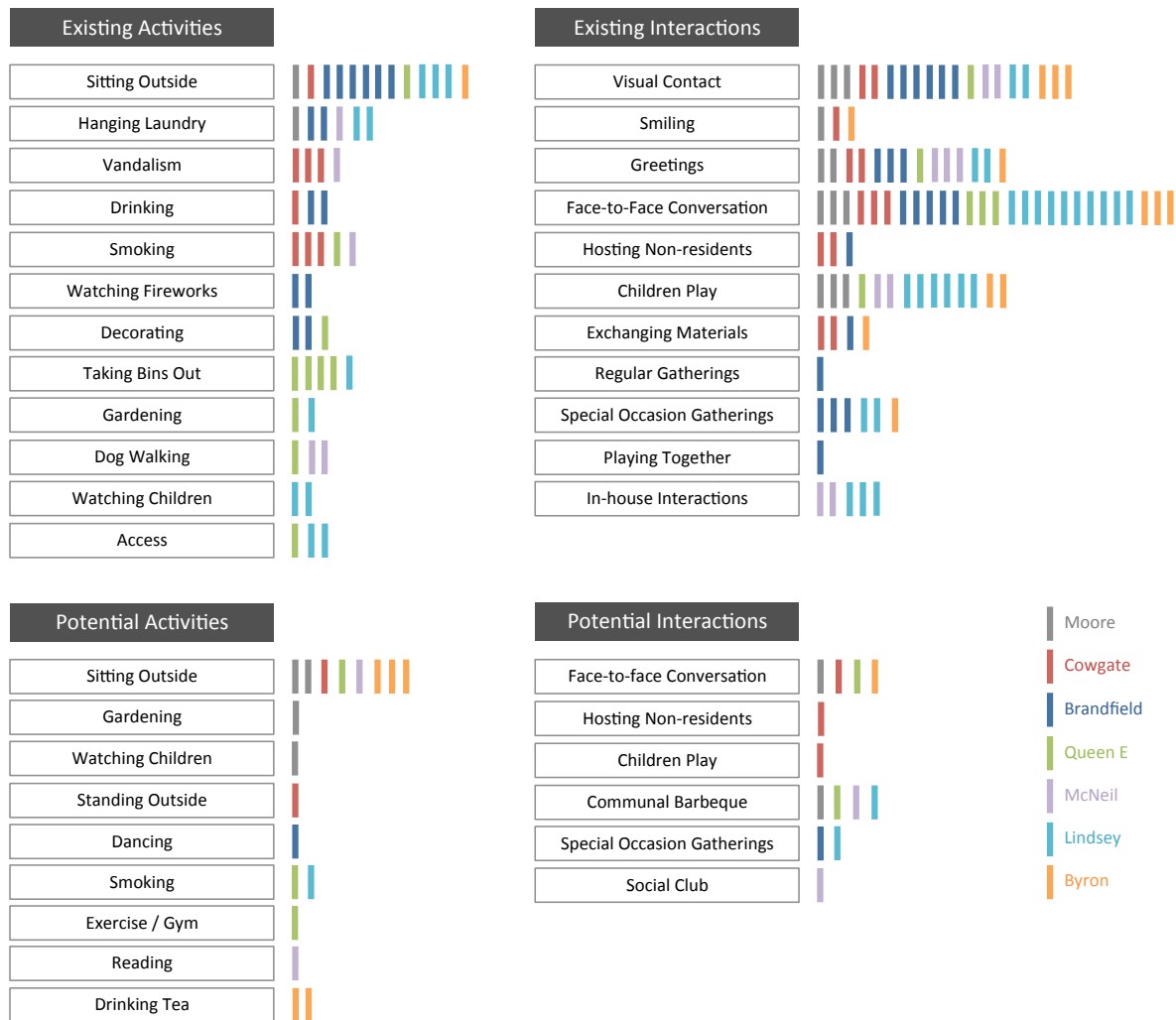


Figure 6.3: Existing and potential interaction types and activities in seven selected developments (each line represents one respondent)

6.4.1 In-passing interactions

Considering that visual contact, smiling and greetings all happen when people are passing and usually there is no stopping, these three types of interaction have been grouped as in-passing interactions. Visual contacts and greetings are the only existing interaction types, which have been reported by the residents of all seven developments. This category of interaction is the most common one in all seven developments. Among 86 respondents from the seven developments, only four of them do not say hello to any of their neighbours. These

types of interaction have been reported mostly within the spaces on the access routes such as corridors, lifts, stairs and entrances. However, in some cases, these in-passing interactions have happened outside the residence in places such as nearby streets and local grocery shops.

6.4.2 Face-to-face conversation

Short chats or discussions between neighbours are the most reported interaction type among the residents of all developments except McNeil. Face-to-face conversations happened in a wide range of locations depending on the length of the conversation and the subject.

Conversations related to asking a favour from a neighbour or seeking information, which usually happened at the door and inside the corridors: *"I met some guy here at the door. He was asking about Wi-Fi, if it is working or not"*. Another type of conversation happens during necessary activities such as hanging laundry, for example a respondent stated: *"I don't use the washing area but you see people using the washing area and chatting to each other"*. Also, the same as in-passing interactions, in some cases, face-to-face conversations have been reported in nearby streets or at the local community centre.

6.4.3 Children playing

It has been observed that in almost all developments (except from Brandfield which is elderly accommodation) children playing has been reported either as an existing interaction type or as a potential interaction type. This has happened within the courtyards or in some cases, such as Byron, where some children play in the corridors.

6.4.4 Hosting non-residents

In two developments, Cowgate and Brandfield, it has been reported that residents interact with their non-resident friends and family members within the communal areas. In the case of the Cowgate development, the central location of the development might have encouraged this type of interaction.

6.4.5 Special occasion gatherings and communal barbeques

Although only the residents of Brandfield, Lindsey and Byron have reported existing special occasion gatherings, many respondents from other developments have also stated that they would love to have a gathering with neighbours such as a communal barbeque or bingo nights: *"I think if we could have like a communal event, it would be good to get to know people, like barbeques or something similar"*.

6.4.6 Individual activities within communal spaces

Although individual activities are not social interaction instances, these activities may increase the chance of encounters and social interaction among residents by keeping neighbours in communal spaces for a certain length of time. Moreover, it is argued that these individual activities can provide an interaction pretext for social interaction among residents (Henriksen, Tjora 2013). The following are the most common types of existing individual activities across all seven developments in descending order in terms of importance.

6.4.6.1 *Sitting outside*

Among all the existing and potential activities mentioned by residents, sitting outside is the most frequently reported one by far. The residents of almost all seven developments expressed their desire to sit for a while within the communal spaces, especially within the intentional communal spaces such as courtyards and roof terraces. Many different activities such as watching children, reading, chatting and drinking tea have been reported as joint activities, which can happen during the time people spend sitting outside. In some cases, the respondents stated that the existing spaces could be suitable for sitting if certain conditions were provided: *“If the back garden has the sun there could be an area where people could go there and sit. You could have a cup of tea outside and enjoying the sunshine”*.

6.4.6.2 *Necessary activities*

Hanging laundry, taking bins out and smoking are some necessary activities, which have been reported as existing activities by many residents. These activities usually happen either in private outdoor spaces such as balconies or designated communal spaces such as drying areas and bin storage within courtyards. In some cases, smoking occurs in outdoor corridors or closes which can create conflicts with other neighbours: *“some people disregard the non-smoking policy and leave ash inside the close”*.

6.4.6.3 *Optional activities*

Many different activities such as gardening, decorating, dog walking, watching fireworks, exercising and reading have been reported by residents either as existing or potential activities within communal spaces. Most of these activities have been happening or are expected to happen within the intentional communal spaces if certain conditions are provided.

6.4.6.4 *Vandalism*

In Cowgate and McNeil instances of activities have been reported where the communal areas have been vandalised. In Cowgate, the instances were specifically related to the presence of

strangers inside the building spaces such as the close and outdoor stairs, while in McNeil, children or neighbours have performed such activities. In both cases, the maintenance and physical appearance of the space have been violated: *“people from the workspace on the ground floor of the building come into the stairs, smoke cigarettes, leave paper and mess”*.

6.4.7 Places of contact

The locations of reported social interaction incidents among residents have been mapped on isometric plans for each development (see Figure 6.4 to Figure 6.10). Three different colours of dots represent three different types of contacts among residents. In addition to the places of regular interactions between neighbours (regular contacts), the respondents were asked to mark those communal spaces where they first met a neighbour (first contacts) and also those communal spaces where they have had formal gatherings (formal contacts).

6.4.7.1 Entrances

By far the most important places of contact in all seven developments are entrances, facilitating the first, regular and formal contacts between residents. Even in developments such as Byron with a very limited number of contacts, entrances are still places of contact. This can be explained by the increased chance of passive encounters between residents as a result of high frequency of use. These spaces are naturally places of contacts due to their function. Many different types of interactions have been reported, varying from very lightweight interactions such as smiling and exchanging greetings to scheduled gatherings with other neighbours to discuss problems with the building.

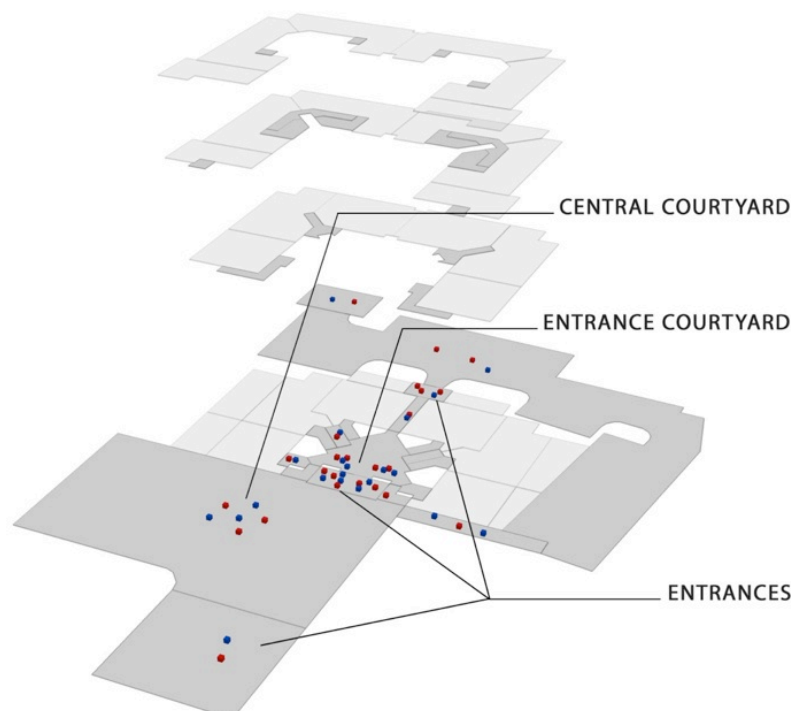


Figure 6.4: Places of contact in Moore development (red dots: regular contacts; blue dots: first contacts; green dots: formal contacts)

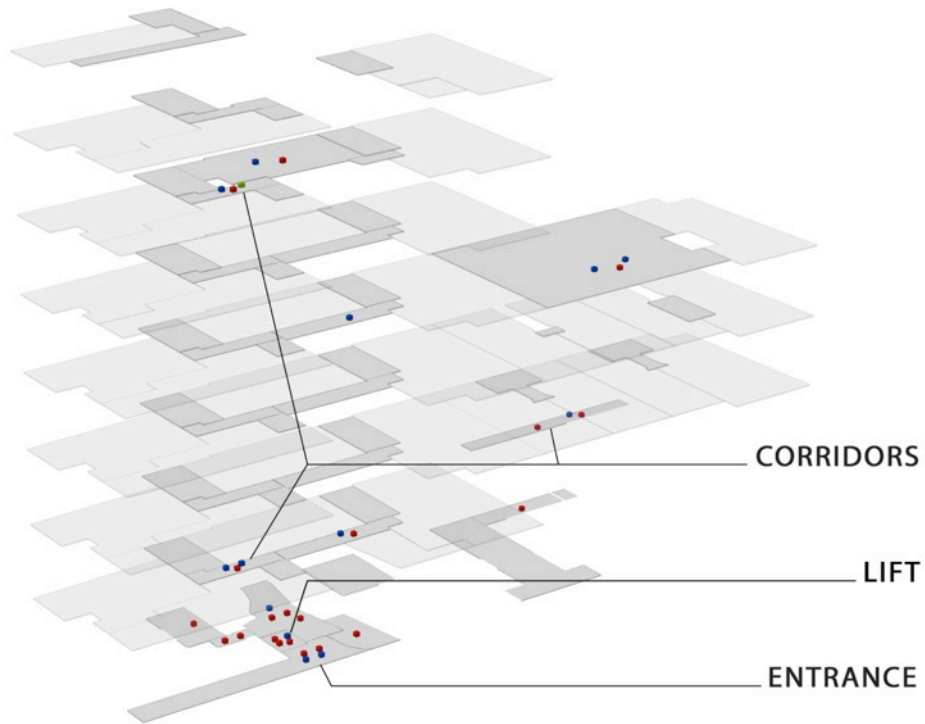


Figure 6.5: Places of contact in Cowgate development (red dots: regular contacts; blue dots: first contacts; green dots: formal contacts)

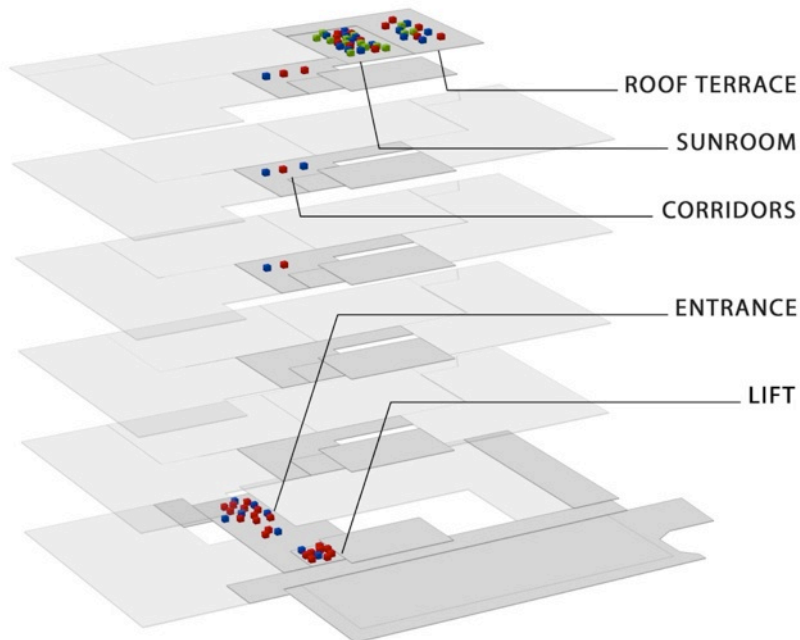


Figure 6.6: Places of contact in Brandfield development (red dots: regular contacts; blue dots: first contacts; green dots: formal contacts)

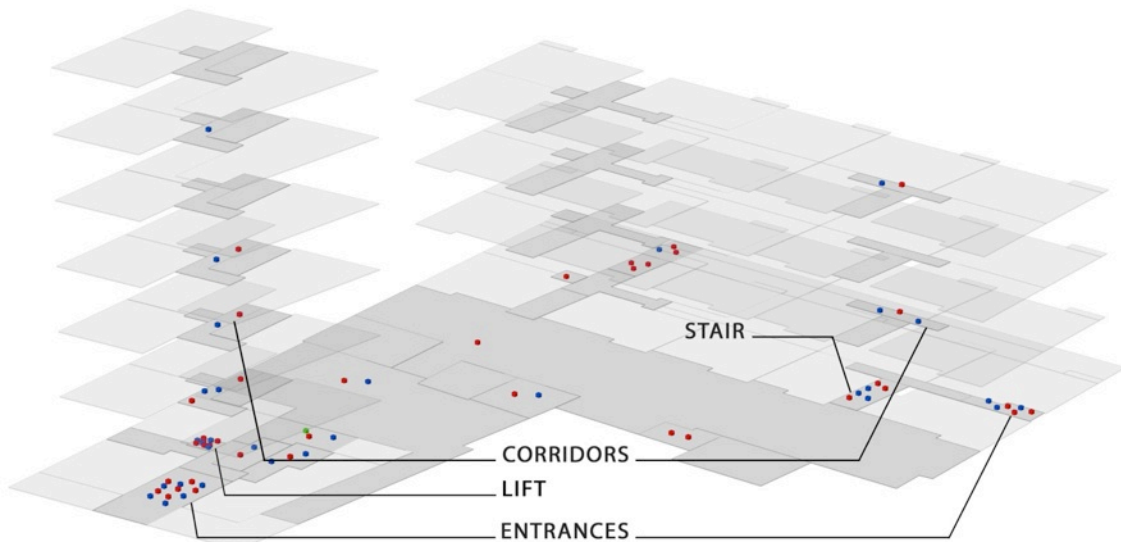


Figure 6.7: Places of contact in Queen Elizabeth development (red dots: regular contacts; blue dots: first contacts; green dots: formal contacts)

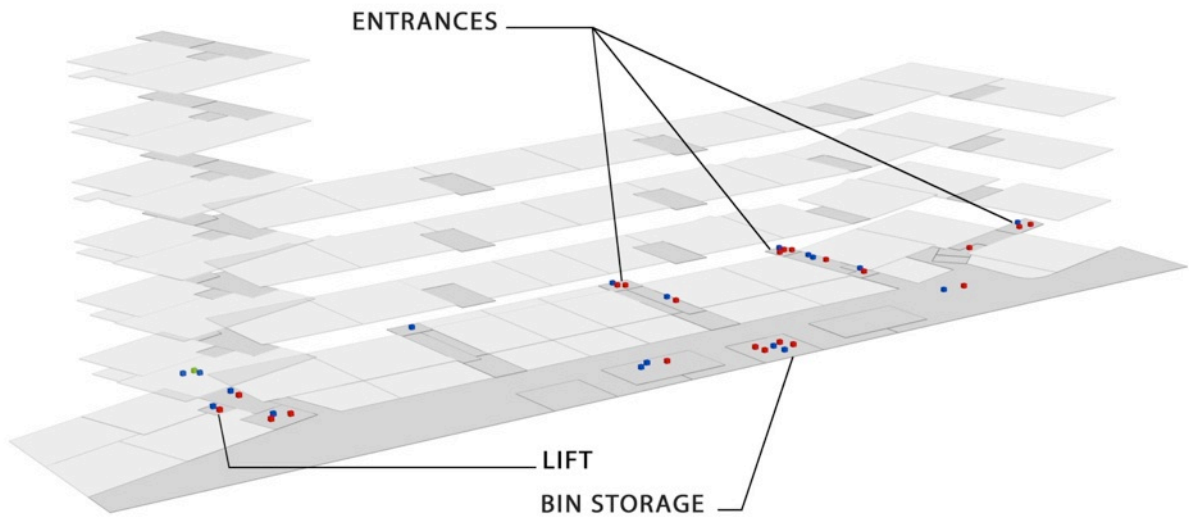


Figure 6.8: Places of contact in McNeil development (red dots: regular contacts; blue dots: first contacts; green dots: formal contacts)

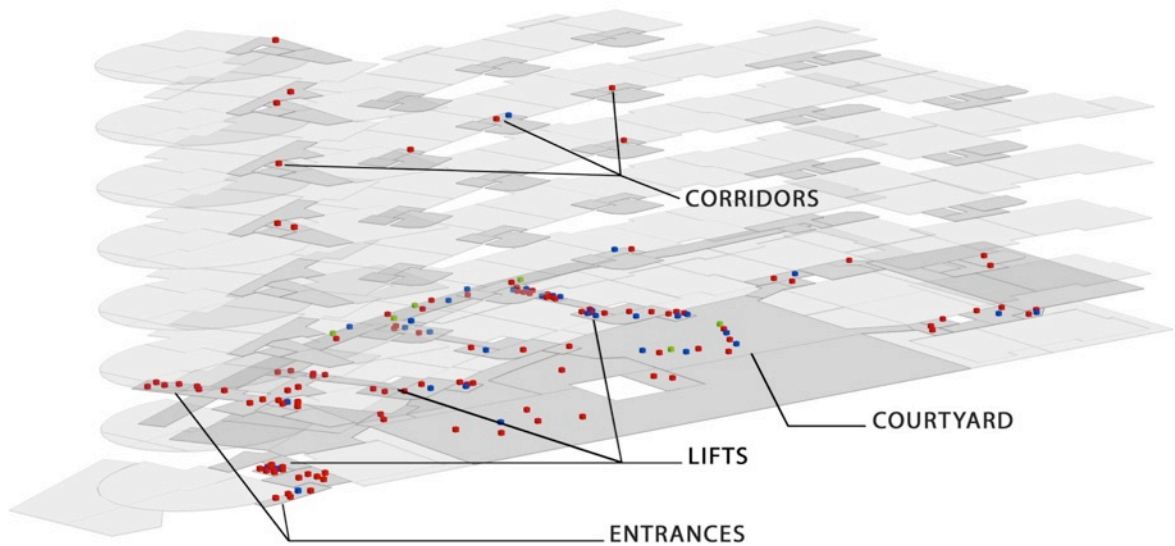


Figure 6.9: Places of contact in Lindsay development (red dots: regular contacts; blue dots: first contacts; green dots: formal contacts)

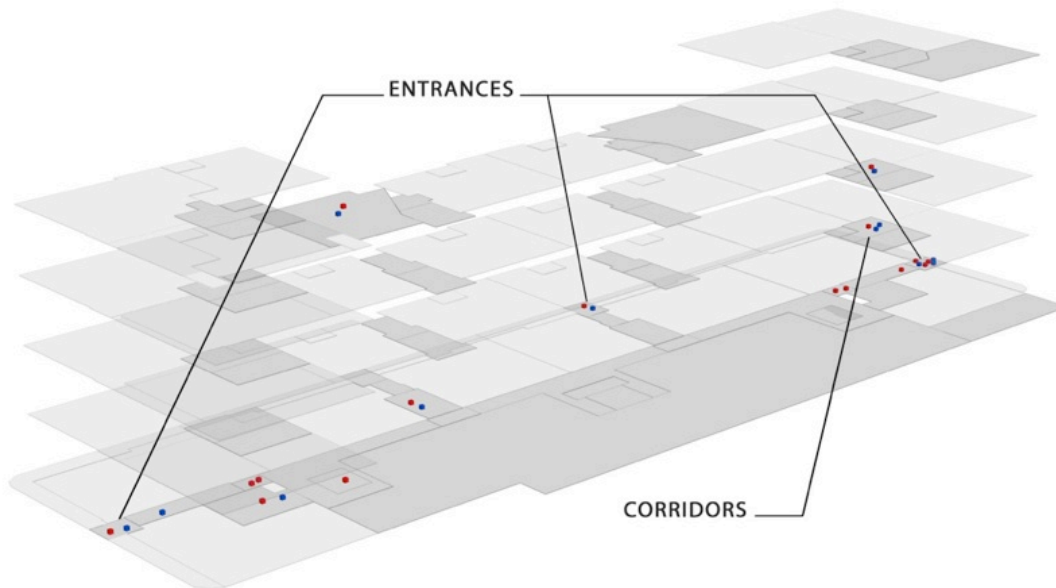


Figure 6.10: Places of contact in Byron development (red dots: regular contacts; blue dots: first contacts; green dots: formal contacts)

6.4.7.2 Lifts

In developments where there is a lift, it facilitates a significant portion of contacts among residents. In the same way as entrances, lifts are natural places of contact due to their function. Interactions inside the lifts are usually limited to in-passing interactions and very short conversations.

6.4.7.3 Corridors

In four developments out of seven, corridors have been reported by respondents as places of contact. The residents reported a wide range of interaction types such as in-passing interactions, exchanging materials, face-to-face conversations, smoking and drinking with non-resident friends (outdoor corridors) and children playing. It is also in line with findings from previous studies (Abdul Aziz, Sani Ahmad et al. 2012) about near home spaces and the importance of corridors.

6.4.7.4 Courtyards

Apart from the sunroom and the roof terrace in Brandfield development, which have been exceptionally successful intentional communal spaces, the only type of intentional communal space which is reported as a place of contact by residents is the courtyard. The courtyards in both Lindsay and Moore developments facilitate a range of interactions among residents including in-passing interactions, face-to-face conversations, children playing and scheduled gatherings. This may be considered as confirmation of the previous findings regarding the

capabilities of this type of intentional communal space in facilitating social interaction among residents (Alexander, Ishikawa et al. 1977).

6.4.7.5 Bin storage

Interestingly, in the McNeil development, bin storage has been reported as a place where residents meet their neighbours and exchange greetings or have face-to-face conversations. It can be argued that service spaces such as bin storage or drying areas, which serve necessary activities, are potential places of contacts due to their function.

6.5 Expectations of residents about communal spaces

The data has been analysed using the content analysis method in order to find out the expectations of residents about communal spaces including what they like and what they dislike about the communal areas of their residence. The respondents were asked to describe in their opinion what makes a pleasant and comfortable space for social interaction. Also, they were asked to list what they like and dislike about the communal spaces and if they want to add or change anything about the communal spaces. Going through all the answers, the statements have been labelled using initial labels. Table 22 represents the extracted statements and initial labels in each development. The labels are functions, physical attributes in some cases the perceptions of communal spaces. Using the previously identified design qualities, each label has been linked to one of the design qualities of the built environment.

Table 22: Initial labelling of data in order to find out residents' expectations about communal spaces

Case	Unit	Gender	Statement	Labels	Design Quality
Moore	106	F	I would like to have somewhere for children to play	Children's Play Area	Affordance
			The main gates are too big and too heavy and this hand of mine doesn't really work properly so if I'm trying to carry something and go in and out of these gates it is impossible for me so mostly I use this	Usable for Disabled People (detail)	Affordance
			A sitting area for the residents where they can go down in the summer and sit together	Seats	Affordance
			An indoor space would be good because then you could use it in all weathers	Sheltered Area	Affordance
203	M	More for children. And a car park area. People drag all the slate from the car park to their houses and it sticks to the car mats	Children's Play Area	Affordance	
			Car Park	Affordance	
			Maintenance (detail)	Others	
206-1	M	I would remove the chips and replace them with slates. The good thing about this is the layout because when people come in to here you can see them if you are outside	Maintenance (detail)	Others	
			Layout	Visibility	

		you can see them so it's easier to talk to them Somewhere just specifically for children	Children's Play Area	Affordance Affordance
	206-2	F	Small garden to look after	Gardening Space Affordance
	401	F	Central courtyard should be child friendly. A cement floor is always dangerous for children in my opinion	Safety (detail) Affordance Others
	402	M	There is nothing for children. I don't hang my washings there because it's far away down there. The stairs, they are very rarely dry because of the way the walls are, you know. Because there is not much sunlight gets into the stairs because it's about the walls in the front so it takes a long time for them to dry. There is nowhere sheltered out there either, where you can sit and you can observe your weans. I am up here. By the time I get there it is too late If they go on that way you cannot see them	Children's Play Area Affordance Affordance Distance Physical Proximity Maintenance (detail) Others Seats Affordance Sheltered Area Affordance Visibility Visibility
Cowgate	202	F	Terrace rooftop feeling more accessible, as it feels more for the people on that floor. When I have been up there it feels as if I am on someone else's balcony	Layout Physical Proximity Privacy
	203	F	The door at the back. I would change it as it's constantly getting kicked in	Security (detail) Physical Proximity Privacy
	305	F	There is nowhere to socialise No space for children I wish I had access to the terrace for my kids They could be cleaner. The close is disgusting. Also the noise from pubs and clubs and people at night is terrible. Making nun-urinal in stairs Façade stairs are quite dangerous, accidents often happen there There is nowhere for kids to go play here nearby. One of the terraces could been used as an play ground for the kids who lies here, which would involve even more adults who could meet and get to know each other	Social Space Affordance Children's Play Area Affordance Affordance Accessibility Physical Proximity Safety (detail) Other Maintenance Physical Proximity Privacy Noise Insulation Privacy
	307	M	Would prefer a terrace for when I have friends around so we stand outside.	Social Space Affordance
	505	F	The main entry gate. It is constantly broken and never secure (I have reported it several times). People from the workspace on the ground floor of the building come into the stair, smoke cigarettes, leave paper and mess. The people who come into the stair are not residents of the building. They attend the work/learning space, They also congregate in the close and I have seen a few of them urinating in the doorways etc.	Security (detail) Physical Proximity Privacy Layout Physical Proximity Privacy
	601	M	A place where people can meet to have a chat There could be a communal space for people to meet up, just to discuss things. I didn't know the terrace existed! Chairs where people can sit down and have a chat with each other like a social space	Social Space Affordance Visibility Visibility Seats Affordance
	702	M	It's just how inviting spaces are because it can be quite cold depending on the environment. It is like a warm open area so maybe in the summer out in the terrace	Thermal comfort Affordance Inviting Visual attractiveness
	801	F	Drying area Add garage CCTV, Add camera answer machine for door, Add triple glazing for noise levels, Insulation for noise. There are a lot of problems with noise.	Drying Area Affordance Car Park Affordance Security (detail) Physical Proximity Privacy Noise Insulation Privacy
Bran	102-1	M	I want to add a toilet and a kitchenette (sink) close to the sunroom.	Facilities Affordance
	102-2	M	I would suggest a small kitchen area and a toilet be added	Facilities Affordance

			to the sunroom for obvious reasons.		
	203	F	It would be nice to have a sink in the sunroom, if there is a social gathering we have to take dishes down to our own flats to wash. It's a nuisance sometimes.	Facilities	Affordance
	402	M	Extend the sunroom, install dance floor, for this will allow us to have our 60's discos! People have moved out due to the constant Friday to Sunday noise caused by the occupants of the 80 flats opposite, which are utilised for Hen and Stag parties!	Dance Floor Noise Insulation	Affordance Privacy
	502	M	How convenient it is, how they have extra wide doors, low light switches the safety cards with the alarm system and things like that	Usable for Disabled People (detail) Safety (detail)	Affordance Affordance
	503	M	Although I no longer drive I find it very difficult to find a parking space for visitors who are also quite elderly.	Car Park	Affordance
	601	M	In the sunroom/terrace we need a toilet and washing facilities to be available. People at the moment have to go down to their own flats for the toilet.	Facilities	Affordance
	602	F	Just noise. Also It would be good to have a sink with water and a toilet for sunroom. my bedroom is there and it's back to back to the sunroom and when they were going out using the toilet the door was banging. I think this building has been built the wrong way but even if it wasn't my bedroom there, the fire door bangs all the time	Facilities Noise Insulation (detail) Layout	Affordance Privacy Privacy
Queen E.	105	F	It should be clean. You should feel safe in it, no one goes to a dangerous place.	Maintenance Safety	Visual attractiveness Other Other
	108	F	Make sure that no pets here allowed to foul the courtyard (Block1).	Maintenance	Other
	110	M	Are you sure these spaces are in this building? I have never heard of a communal room, a communal laundry or a tower. If they do exist how do I not know?	Visibility	Visibility
	201	F	A marked outdoor smoking area for residents + visitors.	Smoking Area	Affordance
	213	M	It just needs to be pleasant.	Visual Attractiveness	Visual attractiveness
	302	F	I feel there is plenty space and room already.	Size	Affordance
	310	M	The communal spaces are soulless. As you can see there is no reason to stop. There are no flowers or paintings to look at or enjoy or a seat to sit outside. There is nothing. It is purely an access. I think nice facilities in the garden, maybe a nice barbeque area in the garden would be good.	Visual Attractiveness Seats Barbeque Area	Visual attractiveness Affordance Affordance
	408	F	+Gym - good for health and fitness, also sociable.	Gym	Affordance
McNeil	302	M	The space round the back is wasted on the residence.I think the housing association should charge a bit extra on rent so the walls can be cleaned say every 2 months.	Maintenance	Other
	304	M	There is no place to seat. No benches etc. We have like lovely trees flowers and etc. but there are for example no benches to sit on and read some books for example. There is no place to have something like a barbeque or a place to put something like that there. Maybe we should put some benches. Because for example if I am going to walk my dog, I would like to stay there and watch him, he likes to stay outside but there is nowhere to sit, you know. So I could read a small book there and watching him when he is playing.	Seats Barbeque Area	Affordance Affordance
	405	F	Secure storage for bikes.	Bike storage	Affordance
	502	F	We don't have any drying space here.	Drying Area	Affordance
Lindsey	202	M	Play area for children, it's only a matter of time before a child is hit by car	Children's Play Area	Affordance
	115	F	Larger bins	Capacity	Affordance
	207	M	Drying area is great. It's where most women meet. In the	Drying Area	Affordance

		courtyard mums also usually sit and watch their children playing but unfortunately the courtyard doesn't get much sun	Sunshine	Affordance	
		It's warm enough for the children but I wouldn't say it was warm enough in the afternoon onwards to sit out there in the courtyard	Thermal Comfort	Affordance	
		Probably building more covered area. A bit of a sheltered area. The idea of people running outside for cigarette just at the door and unfortunately leaving their cigarettes behind is not such a great idea. But if it was covered over perhaps, a shed or something, then people could actually .. you know.. I'll have a cigarette there but there is also an opportunity for a barbeque area. And that would actually then attract more people to come down.	Sheltered Area	Affordance	
		For me personally the drying area is the best.	Smoking Area	Affordance	
			Barbeque Area	Affordance	
209	F	More bins.	Capacity	Affordance	
210	F	More seating in the courtyard area.	Seats	Affordance	
211	F	It would be nice if the front of the block was gated because people use it as a shortcut through to ASDA and there is litter and dog fouling	Layout	Physical Proximity Privacy	
218	M	If a communal space can be set up with a children's playground that would be great.	Children's Play Area	Affordance	
308	F	Add more bins	Capacity	Affordance	
309	F	The space is there but we could have more seats. There are only two seats. You know, they did put but just two small ones there and it's not really enough. Some people have gardens there. It used to be beautiful out when we first came. There were lovely trees and lovely flowerbeds down there.	Seats Capacity Green Area	Affordance Affordance Visual attractiveness	
311	M	Just a beautiful space	Visual Attractiveness	Visual attractiveness	
408	M	The development would benefit from more refuse bins	Capacity	Affordance	
410	M	Not enough car spaces because of work vans taking up the spaces	Car Parks	Affordance	
503	F	A drying area, I didn't realise it was communal? Wouldn't risk using it	Drying Area Accessibility	Affordance Physical Proximity	
508	M	Children can be very noisy particularly in summer, possibly create a space for them.	Children's Play Area Noise Insulation	Affordance Privacy	
509	F	More drying area	Drying Area	Affordance	
511	F	There the space is very small and there is nothing for them to do. They love to do slide and etc. I wish the lift would work properly all the time. Sometimes it doesn't work and it means I am unable to go outside because I am still using pushchairs for my children.	Children's Play Area Size Maintenance	Affordance Affordance Other	
604	F	More space for seats could be better.	Seats	Affordance	
704	F	Make car-parking areas more secure – lockable car parks.	Security (detail)	Physical Proximity	
801	M	Doors are not secure, they can be forced open Finish the steps at the left of the main door for block number 131. Then you could get from the front to the back of the building without going through the building.	Security (detail) Access Route	Physical Proximity Physical Proximity	
Byron	104	M	If we had a lift I could go and sit there when the sun is out but now I go to the park or go somewhere else. I don't use the entrance area. I know it might sound stupid but because of my disability I use a wheelchair so I use this door (pointing to the front garden door). I can't use the entrance door. I think they could consult disabled people during the design and ask them what they need. There is no actual place where people go and sit. This is a wee suntrap during the day. If the back garden has the sun there could be an area where people could go there and sit. You could have a cup of tea outside and enjoying the sunshine	Usable for Disabled People (detail) Seats Sunshine Safety (detail)	Affordance Affordance Affordance Other

		The doors are big and heavy and it's a big problem using them when you are on a wheelchair. A sliding door would be much better If I was in my bed and this place was on fire, there is nowhere I could go		
101	F	Access to roof garden for wheelchair, access to front space big enough for wheelchair to go out or to get past front step at front door. I have a private outdoor space at the front of the door but can't access it with a wheelchair. I can't get access to roof gardens in wheelchair due to steps.	Usable for Disabled People (detail)	Affordance
202	F	The flooring of the roof garden is slippery.	Safety (detail)	Other
301	F	I don't know who it was that decided to put wood down up there but I think it would have been better to put in something quitter. The least little things dropping makes a lot of noise. Because they are not allowed to play in the roof garden without an adult. Because I would say the wall around the roof garden is not very high, particularly if children have toys and things that they can stand on. If I had design that I would have had a slightly higher wall but the whole thing is children are not suppose to be up there without an adult. I don't like the flooring up there either. I don't even think the flooring is safe because it is really slippery. And I don't need to fall. I wouldn't start putting a shelter on it because some people might sleep there. Maybe go up and have a few drinks and then they fall slep there. I wouldn't put a cover on it. It is supposed to be a roof garden and garden's don't have covers on them and as I said I think it could be abused if it ha a cove on it. I strongly think that there should be a play area for children of some kind because as far as I am concerned I just don't think this is a safe place for children to play outside because of the traffic.	Noise Insulation (detail) Safety (detail) Children's Play Area	Privacy Affordance Affordance
307	F	The roof garden is nice but living underneath is a nightmare in the summer. It is not sound proof at all. The houses are very small with no storage.	Noise Insulation (detail) Storage	Privacy Affordance

Using the previously identified design qualities (based on the literature review), each label has been linked to one of the design qualities of the built environment. Figure 6.11 shows these design qualities and the number of respondents in each residence that have mentioned anything related to that quality. **Error! Reference source not found.** shows the modified labels and the detailed expectations of residents related to each design quality.

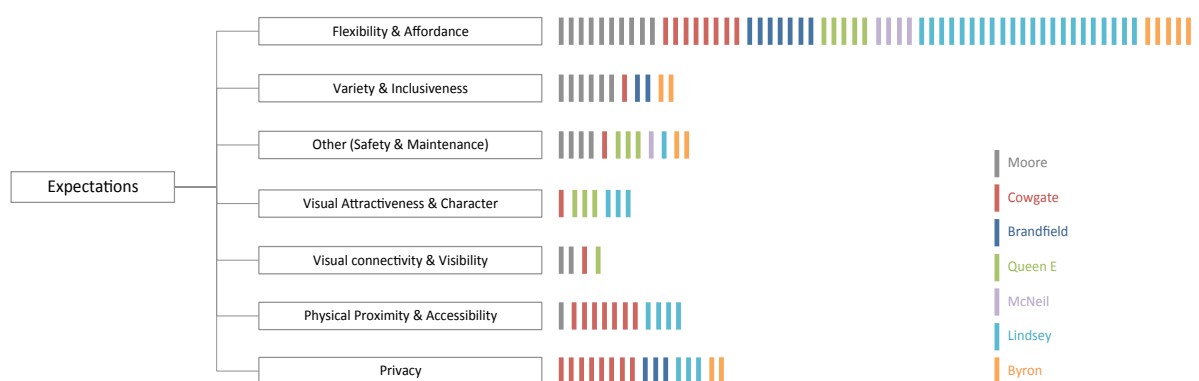


Figure 6.11: Effective design qualities of the built environment (each line represents one respondent)

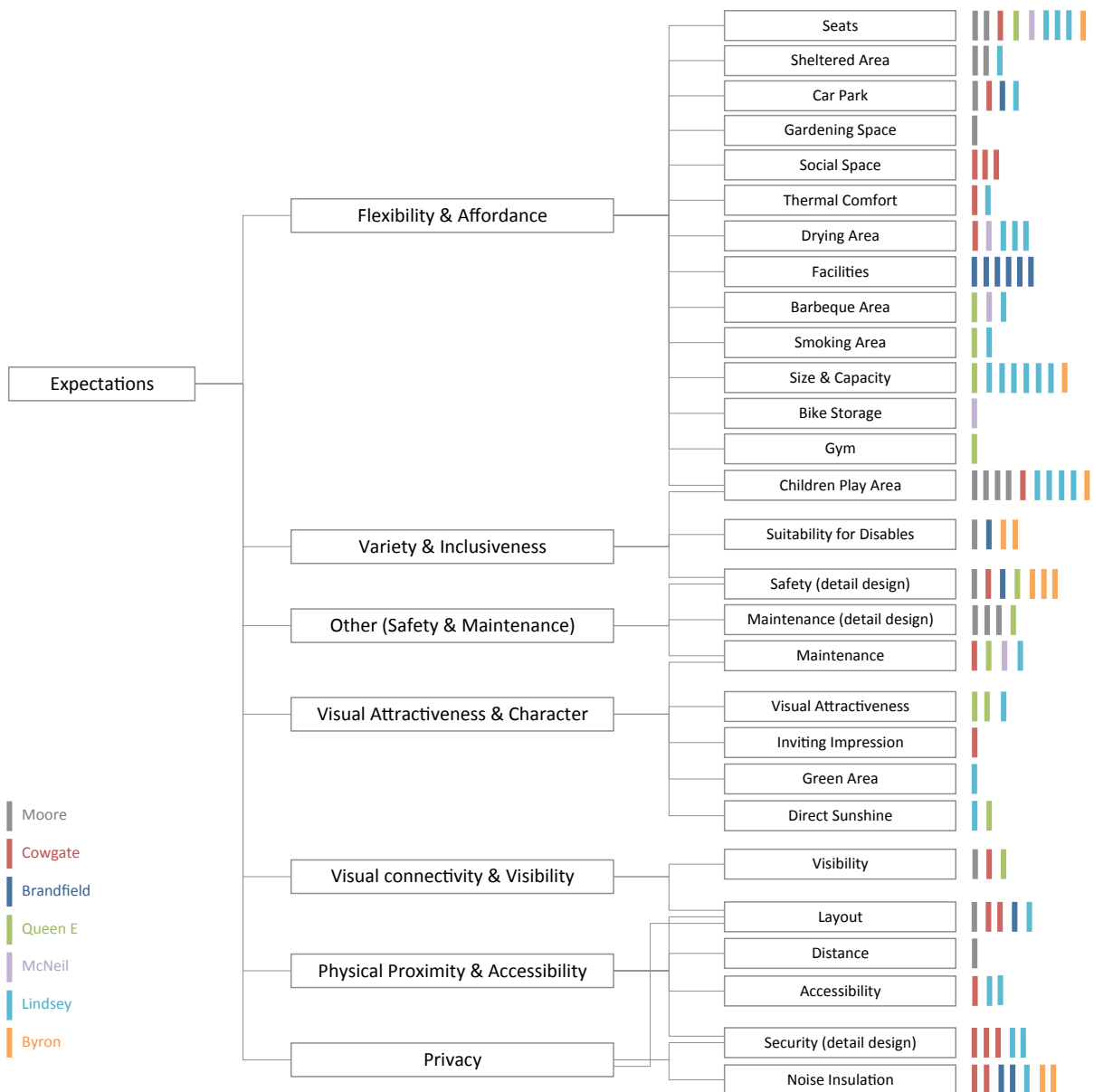


Figure 6.12: Expectations of residents about the communal spaces (each line represents one respondent)

6.5.1 Affordance

By far the most frequently mentioned expectations are connected to the affordance of communal spaces. Many respondents have requested seats in communal areas, especially within intentional communal areas such as courtyards. Also, many residents have expressed the need for an appropriate dedicated space for children to play within the communal area. It has been suggested that the intentional communal spaces should include designated areas for specific functions such as a barbeque, drying area, smoking area, gym, bike storage, gardening space and social space. Some residents have mentioned the usability of communal

space during winter because *"It's quite wet here"*. In some cases, such as Brandfield where the intentional communal space has been used frequently, residents have requested to have facilities such as a toilet and sink close to the space. A few residents have also asked for a space suitable for socialising and hosting non-resident friends.

In terms of inclusiveness which can also be considered as an affordance of the space to accommodate the needs of disabled people and children, the respondents from Moore, Brandfield and Byron mentioned that some communal areas are not usable for people with disabilities. Overall, many respondents mentioned that the communal areas should be safe and usable for children and disabled people in order to increase the use of space and probably to increase the chance for social interaction between neighbours.

6.5.2 Privacy

Many respondents mentioned that the communal areas need better sound insulation and security considerations to avoid the misuse of the spaces. This is especially the case in Cowgate which is a very central location where the nightlife on nearby streets and the presence of strangers at night have created serious problems for residents. Three of the residents in Cowgate asked for more secure entrance gates and CCTV to prevent non-residents from entering the communal spaces. Also, in some cases it was mentioned that undefined territorial boundaries within communal spaces have discouraged some residents from using communal spaces, as one of the residents clarified why she is not using the communal roof terrace in Cowgate: *"When I have been up there it feels as if I am on someone else's balcony"*.

6.5.3 Safety and maintenance

Some residents mentioned the need for suitable and easy to maintain finishing materials in different areas of communal spaces such as soft flooring for the children's play area, replacing small stones in the central courtyard and non-slip materials for stairs, especially when water is frozen on the surface during winter. Unsuitable finishing materials such as the slippery flooring of the roof terrace is another example of a design detail which has affected the use of these spaces by residents especially children and the elderly: *"I don't even think the flooring is safe because it is really slippery. And I don't need to fall"*. At least six respondents showed either direct or indirect concerns about the maintenance of the building, especially those residents who live on the ground floor.

6.5.4 Physical proximity

Respondents from Moore, Cowgate and Lindsey mentioned the role of physical proximity in the use of communal spaces. One resident living on the top floor has never used the drying area and also complained about the lack of contacts with neighbours because of the physical distance between his unit and the communal courtyards. It has also been mentioned that the proximity of the children's play area is important because "parents cannot see their children and if anything happens by the time parents get there it's too late."

6.5.5 Visual attractiveness

Some residents showed sensitivity to the appearance of the communal areas regarding whether they look beautiful and inviting or not. One of the residents described the communal areas as "soulless" and suggested flowers and paintings to encourage staying there.

6.5.6 Visual connectivity

Visibility and transparency have been reported as a factor that could increase the use of communal spaces. One of the respondents stated that he is very satisfied with the layout of the communal spaces and the transparency of access routes because "You don't have to actually go and visit neighbours, you can see them coming in and out and it's easier to talk to them." Another resident living on a lower floor has never used the communal terrace in Cowgate because he didn't know about it and he has never seen it.

Finally, it is quite interesting to see that the residents of all seven selected areas residents share similar concerns about having more seats, a suitable dedicated play area for children, safety issues within communal areas and noise insulation.

6.6 Conclusion

The qualitative data collected through interviews and open answer questions were analysed to investigate social interaction and the use of space patterns within seven selected developments in Glasgow and Edinburgh. Determining the level of neighbouring for each respondent based on their perception about their neighbours and relationships between them, this study has found that the majority of respondents are "Passively Positive" neighbours. The residents tend to "keep themselves to themselves" while they have a positive impression about their neighbours and they do exchange greetings in passing. Lightweight interactions such as smiling, saying hello and small chats are strongly dominant despite the significant number of friendships. Considering the neighbouring level alongside the

emphasis of most residents on their privacy, it can be argued that weak ties are favoured over strong social ties among the residents of these developments. The majority of the respondents may not be interested in collective activities while seeking more freedom to adjust the balance between their privacy and social interaction according to their personal preferences.

In terms of the motivators and barriers for social interaction among residents, it is not a surprise to find that by far the most frequently mentioned reason for not having more interactions with neighbours is favouring privacy over socialising, which falls into the personal attitude category. Personal attitude and lack of time are the two main barriers stated by the residents of all developments. Apart from these two non-environmental reasons, lack of social space is the most important factor related to the built environment mentioned by the residents of three developments. Considering the fact that the selected developments all have intentional communal spaces specifically designed for social interaction, it can be argued that many intentional communal spaces might not be capable of facilitating social interaction among residents in reality, although residents do want to interact with their neighbours.

The most common type of interaction among residents is in-passing interactions, which includes visual contacts, smiling and greetings. Short chats and brief conversations have also been reported as a common type of interaction among residents. Except in Brandfield, which is elderly accommodation, the respondents mentioned children playing either as an existing or potential type of interaction. Other types of existing and potential interaction are hosting non-resident friends or family members and special gatherings with neighbours such as a communal barbeque or bingo nights. In addition to the existing and potential interaction types among residents, individual activities within communal spaces were also studied as a potential interactional pretext or reasons that increase the amount of time people spend in communal spaces. Sitting outside is by far the most frequently mentioned activity within communal spaces. Necessary activities such as hanging out laundry, taking bins out and smoking are also mentioned by many residents of the selected developments. Some of the optional activities mentioned by the respondents include gardening, decorating, dog walking, watching fireworks, exercising and reading. Looking at the variety of interaction types and activities within communal spaces it can be argued that most of them are based on very simple and basic daily life activities. Simply by facilitating basic activities such as talking to neighbours, sitting, children playing alongside daily routines, designers can meet the needs of the majority of residents.

Entrances, lifts and corridors are reported as the most important places of contact facilitating a wide range of interactions among residents including in-passing interactions, exchanging materials, face-to-face conversations, smoking and drinking with non-resident friends (outdoor corridors) and children playing. While among intentional communal spaces, courtyards (in Moore and Lindsay developments) are the only actual places of contact facilitating a significant number of reported contacts among residents. This calls for more attention to the design of unintentional communal spaces, especially those on access routes, as actual places of contact.

In terms of the respondents' expectations from communal spaces, affordance and its related aspects are the most frequently mentioned concerns among the respondents of all seven developments. Having enough seats, a dedicated area for different activities such as children playing, barbeque and smoking are some examples of what respondents have stated in response to the question about what they would like to add or change about the communal spaces within their developments. Privacy is another concern regarding communal spaces alongside safety and maintenance issues. Overall, the design qualities, which have been mentioned by residents, are affordance, privacy, physical proximity, visibility and visual attractiveness of communal spaces. The following chapter investigates the effect of these design qualities on social interaction and the use of communal spaces in more detail.

Chapter 7: The relations between design and social interaction

7.1 Introduction

This research aims to establish “if and how the design of urban residential developments can facilitate social interaction between residents in Scotland”. This chapter addresses this aim by investigating the fifth research question:

What are the impacts of design on the quality and quantity of social interaction between residents of urban residential developments in Scotland?

In order to answer the research question, five design qualities are selected based on an extensive literature review as discussed previously in Chapter 3. For each design quality, several physical attributes of the communal spaces are chosen and the relationship between these physical attributes with social interaction level and the use of communal spaces is investigated. Either an existing assumption or a hypothesis extracted from literature is tested using statistical charts, GIS maps and content analysis of the interviews.

7.2 Association between design qualities and social interaction

The design qualities have been found to have both a direct and an indirect effect on social interaction patterns (see Figure 7.1). For each design quality, selected physical attributes of communal spaces have been examined to identify their direct and indirect effects on social interaction among residents.

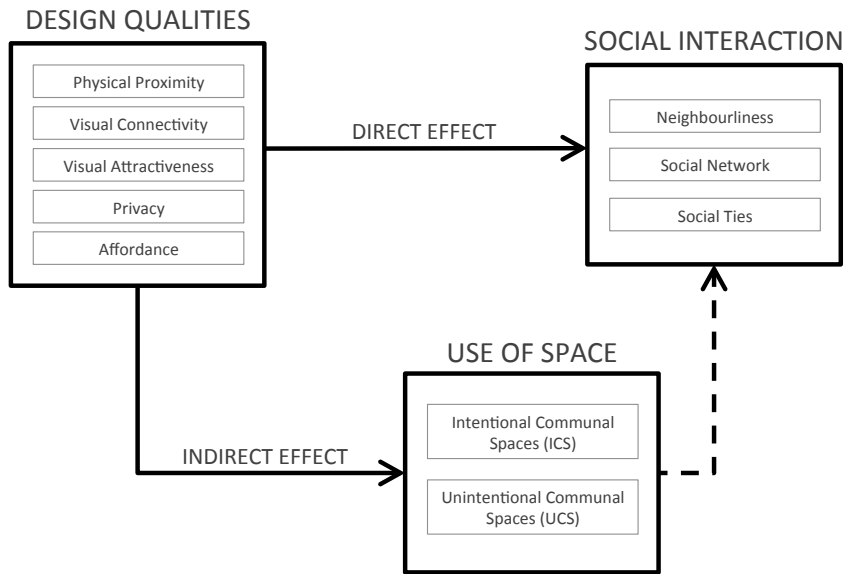


Figure 7.1: Direct and indirect effects of design qualities on social interaction between residents – Continuous arrows represent those relationships that are investigated in this research and dashed arrow shows the relationship, which is based on the literature

7.2.1 Physical proximity

Many researchers have studied the effect of physical proximity and connectivity on how people use spaces and their social interaction in different scales (e.g. Raman 2010, Kenen 1982, Fischer 1977, Hillier, Hanson 1984, Fleming, Baum et al. 1985, Cooper Marcus, Sarkissian 1986, Gehl 1996, Sengul, Enon 1990, Shaftoe 2008). Within the existing literature, two different aspects of proximity have been investigated concerning “density” and “location”. This study focuses on the later aspect, location, while choosing urban developments of the same density as case studies. In other words, attributes such as “proximity of the dwellings” have not been included in this study. As discussed in Chapter 3, based on an extensive literature review, three main design attributes, including “proximity to the main access route”, “proximity to the dwelling units” and “integration value”, have been selected for the purpose of this research. The relationships between these three design attributes with the use of communal spaces and social interaction among residents have been explored through a descriptive analysis of data using GIS maps and statistical charts.

7.2.1.1 Proximity to the main access route

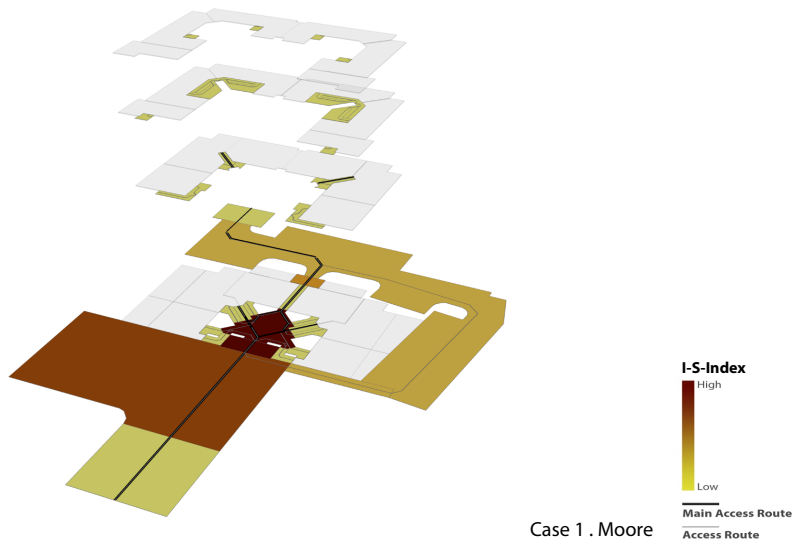
The overall hypothesis is that the physical proximity of communal spaces to the main access route can affect the use of these spaces and social interaction among residents positively (Al-Homoud 2003, McCamant, Durrett 1988, Raman 2010, Shaftoe 2008).

In order to explore the impact of the physical proximity to the main access route, several correlations have been tested.

- **The I-S-Index/F-U-Index and functional distance to the main access route:**

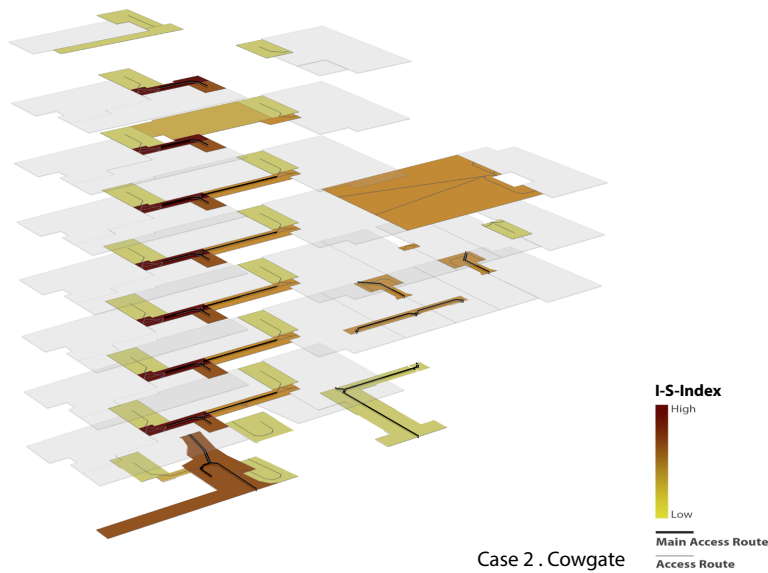
Overlaying the places of contact within both intentional and unintentional communal spaces and the main access routes for all seven cases, it can be seen that in most cases, the places of contact are located very close to the main access routes, however there are a number of exemptions (see Figure 7.2 to Figure 7.8). This is in line with findings from previous studies on the neighbourhood scale (Raman 2010). However, in contrast with larger scales where isolated public spaces have been found abandoned (Shaftoe 2008), at building scale, the effect of proximity to the main access route has been made weaker by other factors such as serving necessary activities or the presence of a strong sense of community among residents. Since those service spaces serving necessary activities will be used regularly regardless of their proximity and accessibility, there might be a case where a service space facilitates social contacts despite the distance from the main access route like the case of bin storage and drying areas in the McNeil development. Also, in Brandfield, the sunroom on the top floor, which is quite distant from the main access route, facilitates the highest number of contacts among residents. The residents of Brandfield are all at the same stage of their life and they live a similar lifestyle, which can encourage participation in social activities (Hunter 1979, Fischer 1984) and affect the use of communal spaces. While these two exemptions reinforce the idea that under certain conditions, such as the presence of a strong sense of community among residents or serving a necessary activity, relatively remote communal spaces can facilitate social interaction among residents (Talen 1999). In all seven cases, along the main access routes, certain spaces such as entrances, lifts and stairs, have been reported as places of contacts (higher I-S-Index).

Looking at intentional communal spaces, which serve only optional and social activities, it can be observed that functional distance to the main access route has a negative correlation with both the I-S-Index and F-U-Index (see Figure 7.9). This can support the findings from previous studies (Lansdale, Parkin et al. 2011, Al-Homoud 2003, McCamant, Durrett 1988) regarding the positive impact of physical proximity and movement patterns on forming passive encounters and facilitating social contacts between people especially regarding intentional communal spaces where people have the choice to not use the space at all.



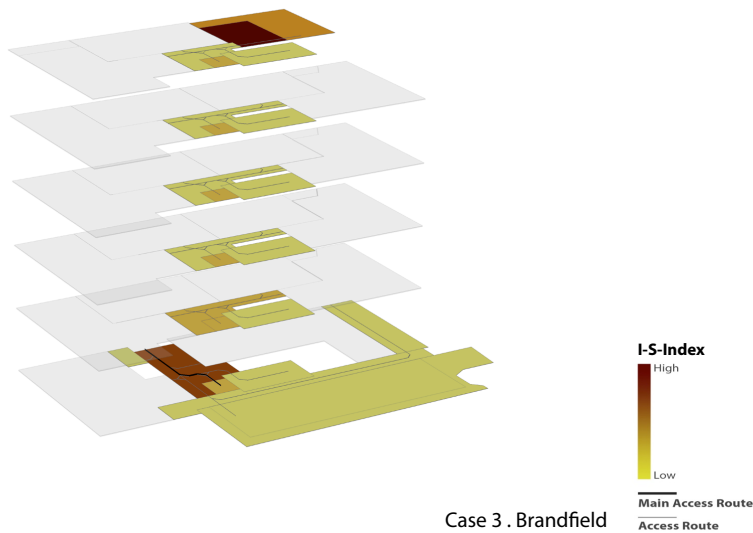
Case 1 . Moore

Figure 7.2: The I-S-Index and the main access route – Moore development



Case 2 . Cowgate

Figure 7.3: The I-S-Index and the main access route – Cowgate development



Case 3 . Brandfield

Figure 7.4: The I-S-Index and the main access route – Brandfield development

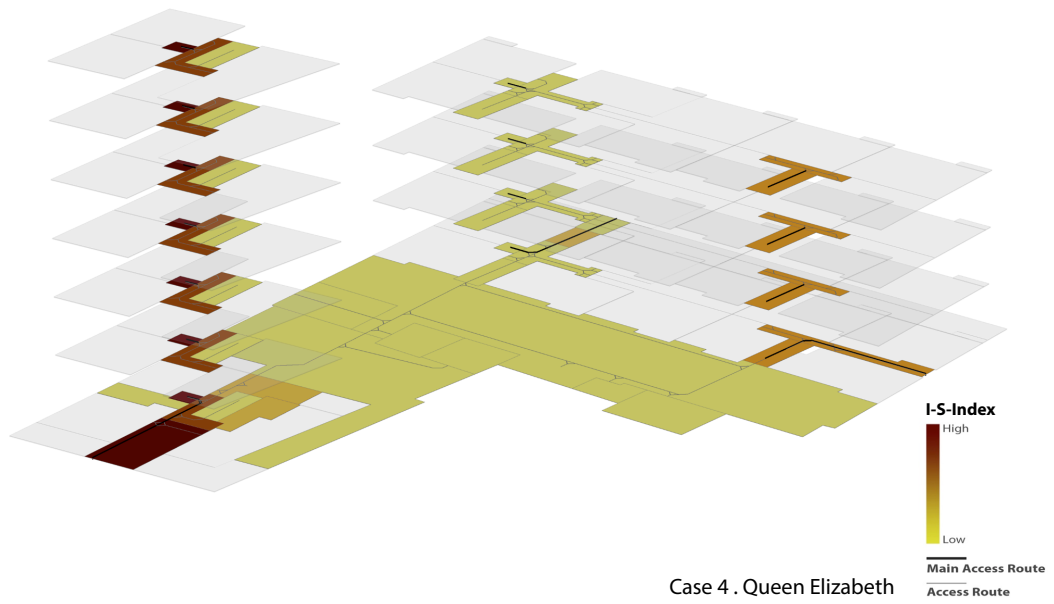


Figure 7.5: The I-S-Index and the main access route – Queen Elizabeth development

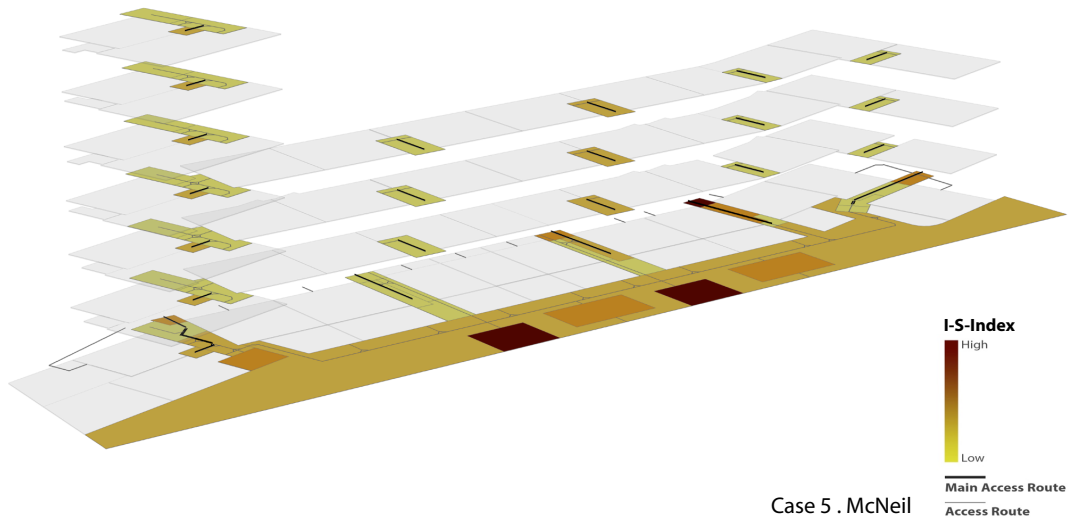


Figure 7.6: The I-S-Index and the main access route – McNeil development

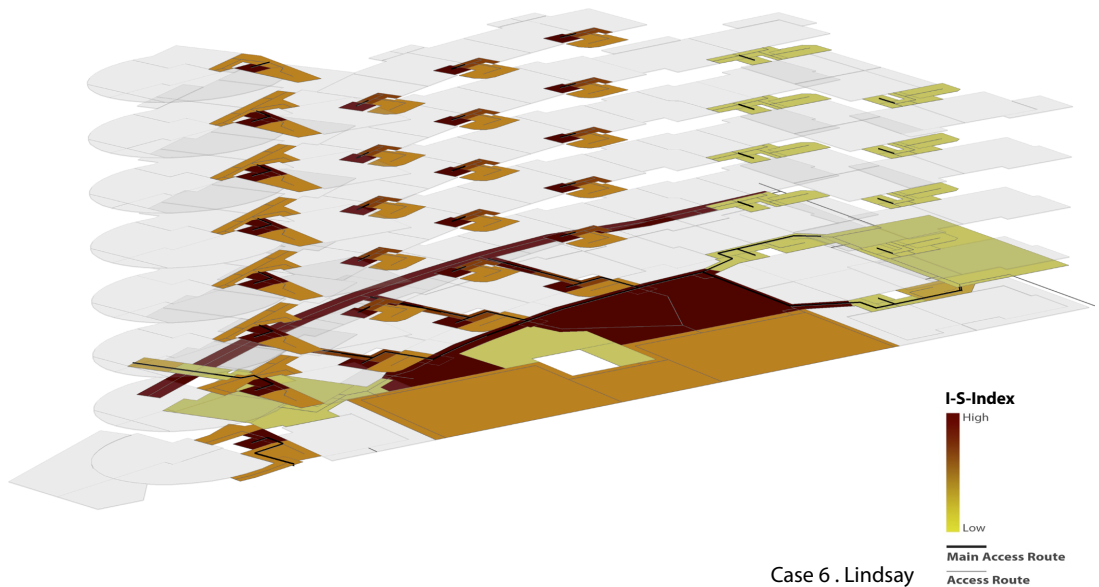


Figure 7.7: The I-S-Index and the main access route – Lindsay development

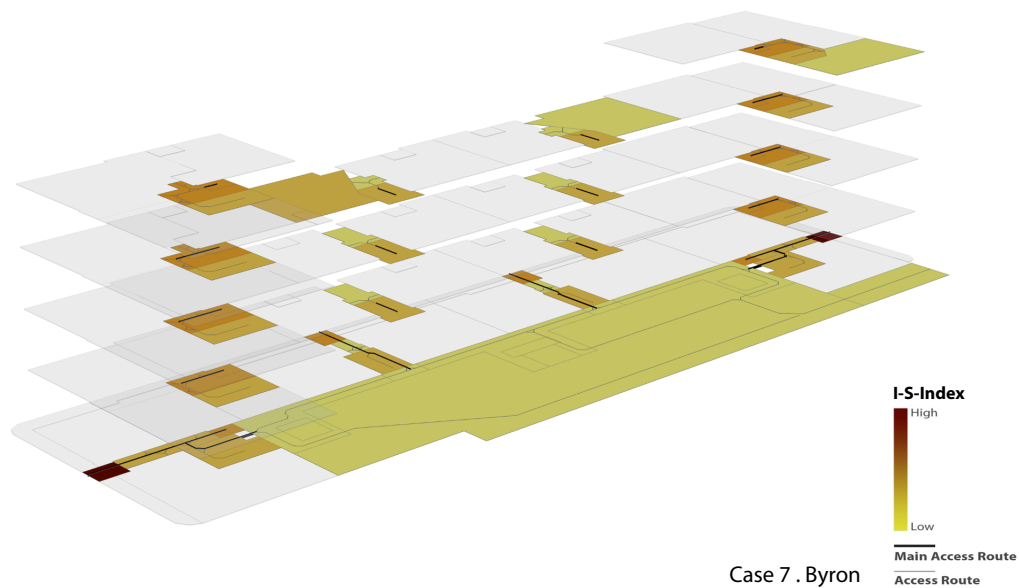


Figure 7.8: The I-S-Index and the main access route – Byron development

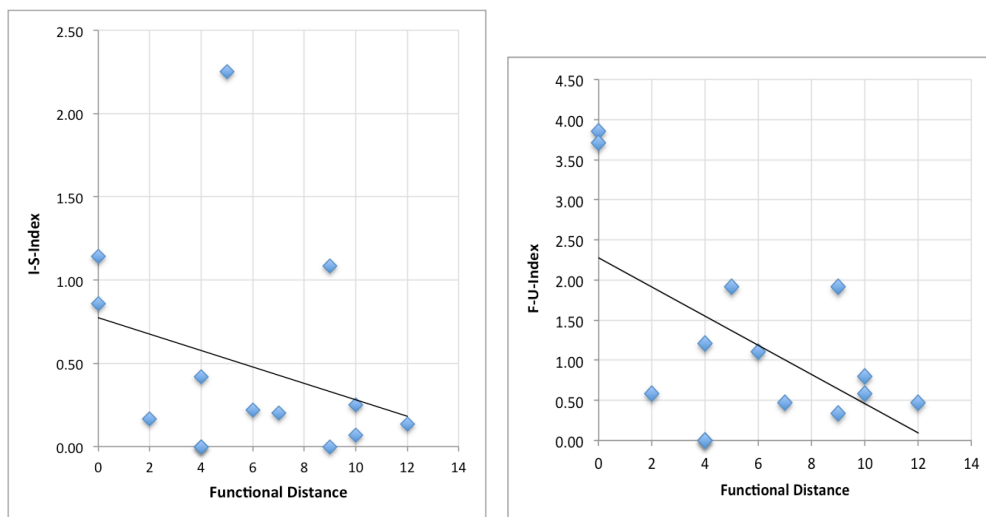


Figure 7.9: Correlations between the I-S-Index and F-U-Index of intentional communal spaces (ICS) and functional distance from the main access route

- **The N-Index/S-N-Index and functional distance to the main access route:**

Overlaying the N-Index for residents of residential units and the main access routes for all seven cases, no particular pattern or relation is identified between these two factors (see Figure 7.10 to Figure 7.16). The same conclusion is derived from mapping the distribution of a higher S-N-Index in all seven case studies (see Figure 7.17 to Figure 7.23). In other words, no relationship was identified between the residents' perception of the neighbouring level (N-Index) or the size of their social network (S-N-Index) and the proximity of their dwelling unit to the main access route or entrance. The dwelling units with the highest N-Index and S-N-Index are not

necessarily close to the main access route or the ground level. This is in contrast with the findings of previous studies (Homans 1973, Baum, Valins 1977) which suggested that residents of units located next to the stairs and those who lived on lower levels are more socially active. Abu-Gazzeh (1999), in his study of midrise urban developments, also mentioned that the impact of height on social activities is not significant. This may suggest that the effect of the proximity of the dwelling unit to the main access route and the height is significant only in the case of high-rise or large-scale residential states while it remains insignificant for midrise residential developments.

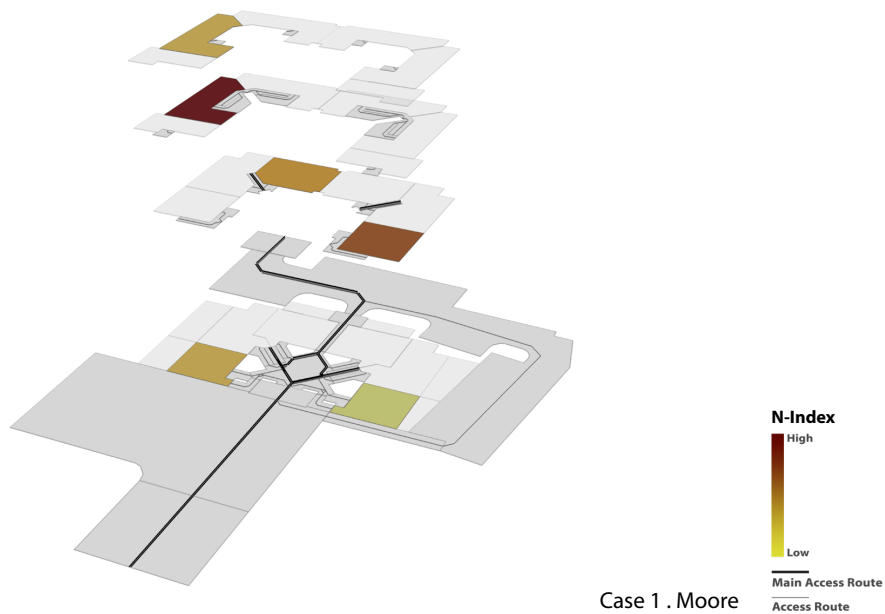


Figure 7.10: The N-Index and the main access route – Moore development

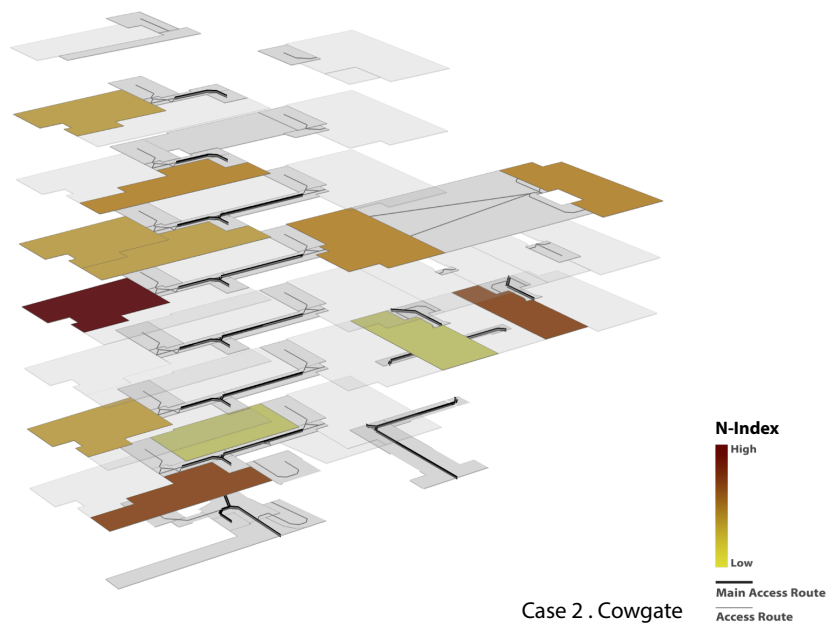


Figure 7.11: The N-Index and the main access route – Cowgate development

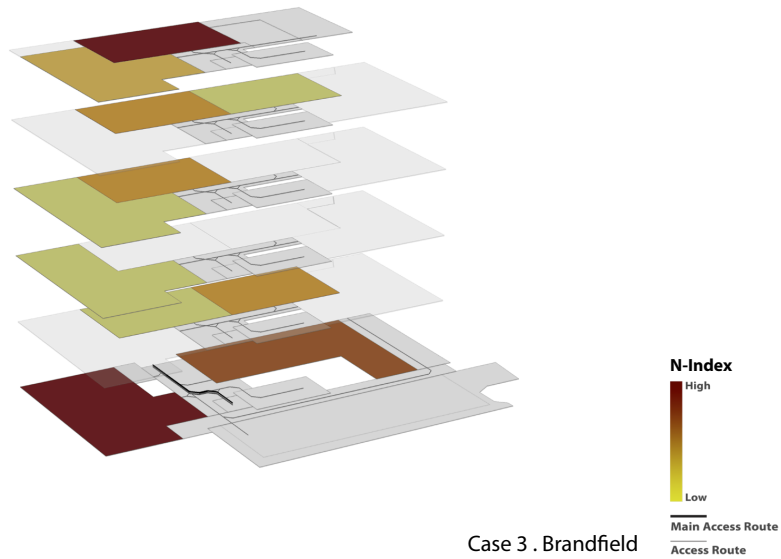


Figure 7.12: The N-Index and the main access route – Brandfield development



Figure 7-13: The N-Index and the main access route – Queen Elizabeth development

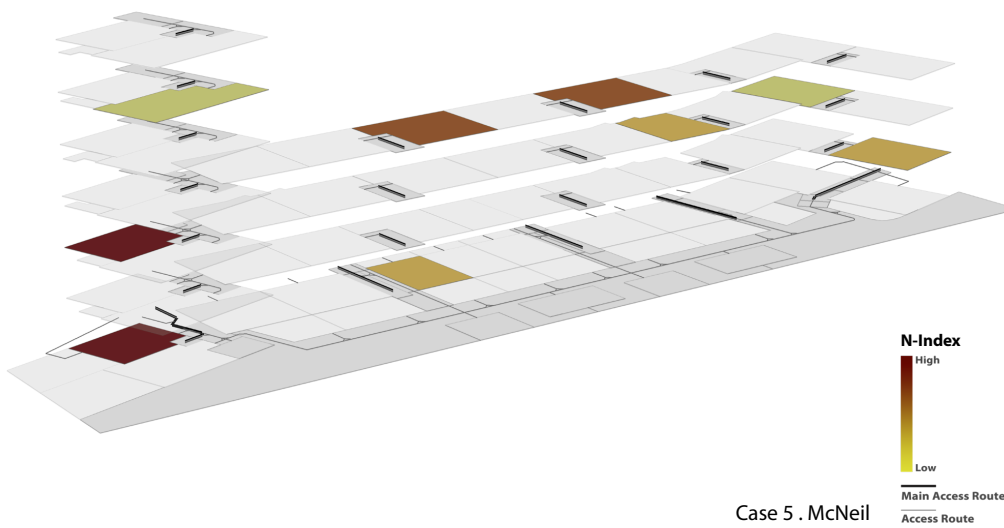
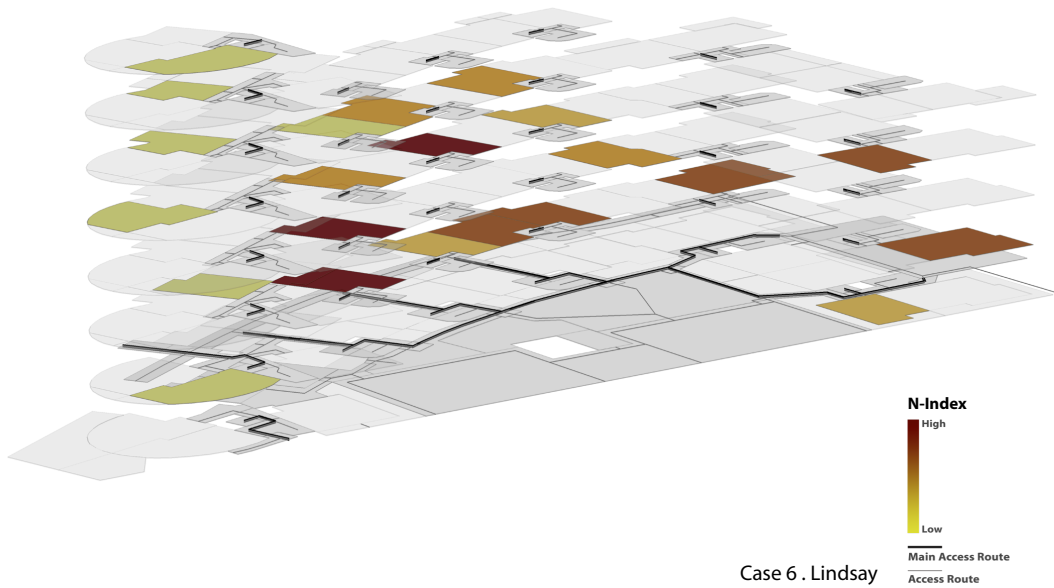
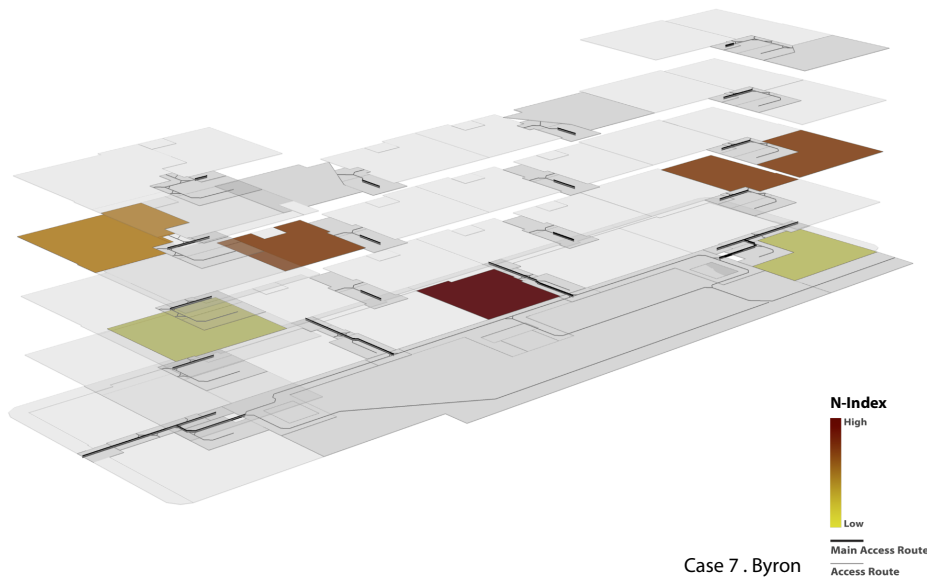


Figure 7.15: The N-Index and the main access route – McNeil development



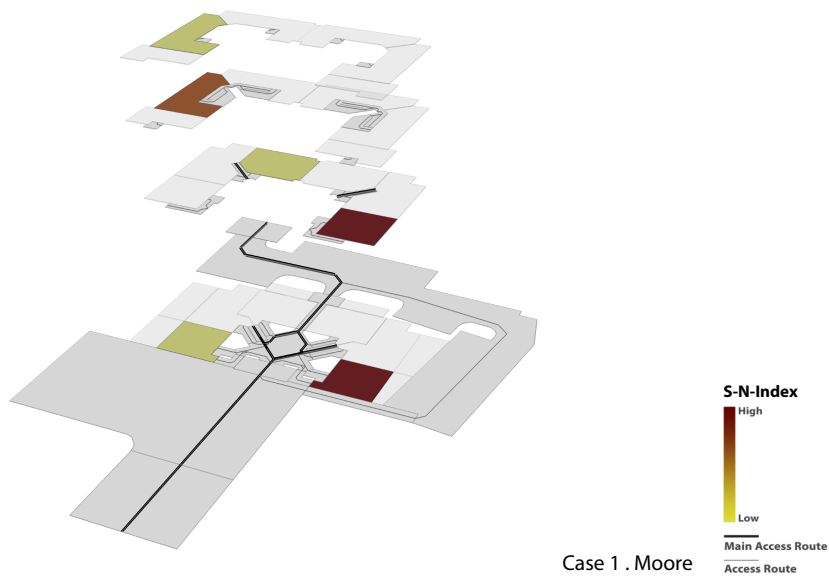
Case 6 . Lindsay

Figure 7.16: The N-Index and the main access route – Lindsay development



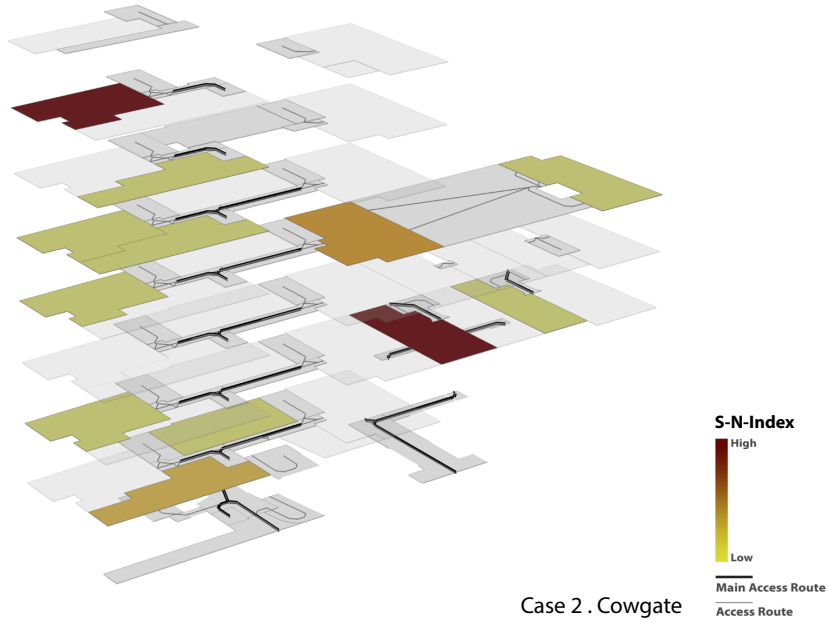
Case 7 . Byron

Figure 7.17: N-Index and the main access route – Byron development



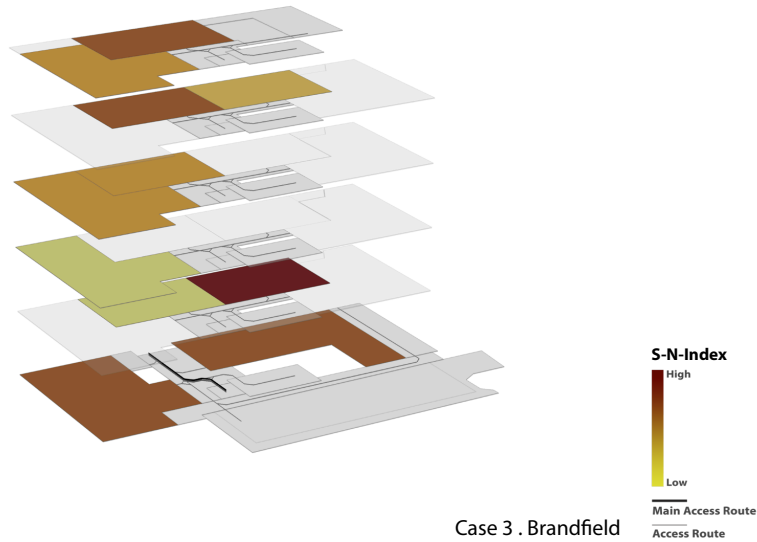
Case 1 . Moore

Figure 7.18: The S-N-Index and the main access route – Moore development



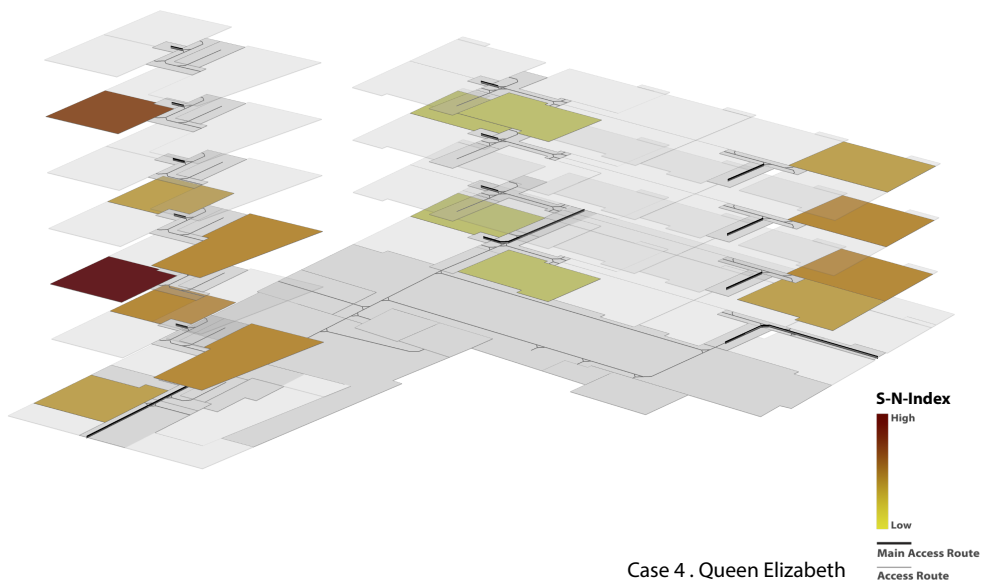
Case 2 . Cowgate

Figure 7.19: The S-N-Index and the main access route – Cowgate development



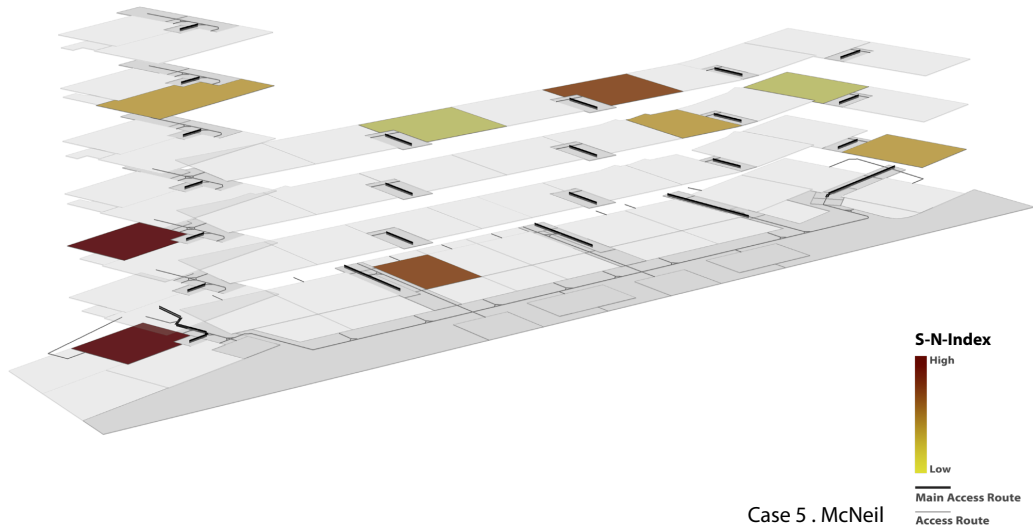
Case 3 . Brandfield

Figure 7.20: S-N-Index and the main access route – Brandfield development



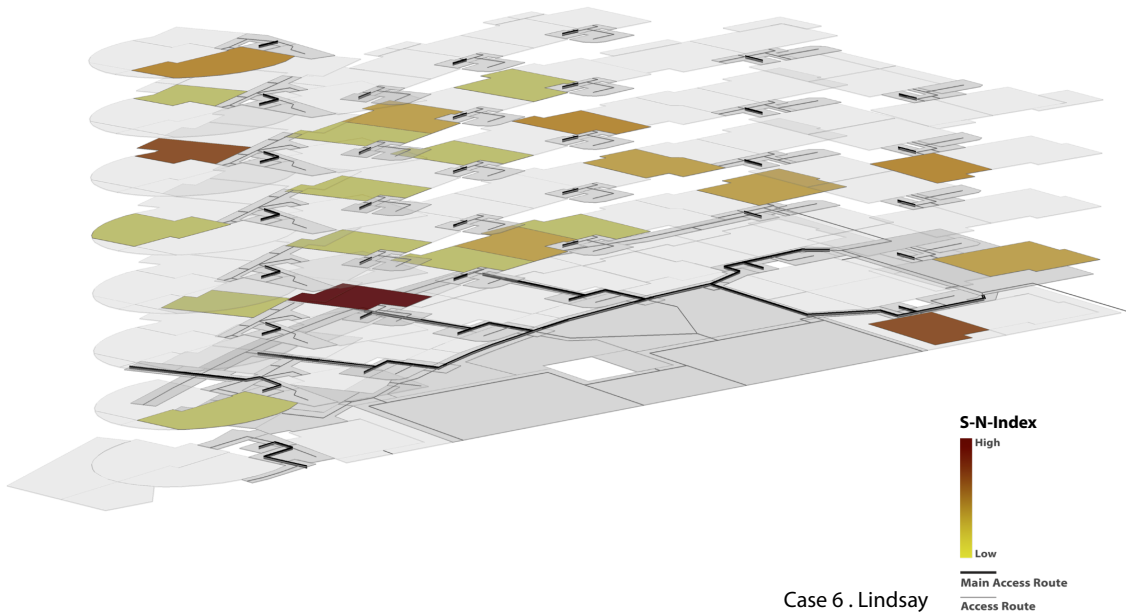
Case 4 . Queen Elizabeth

Figure 7.21: The S-N-Index and the main access route – Queen Elizabeth development



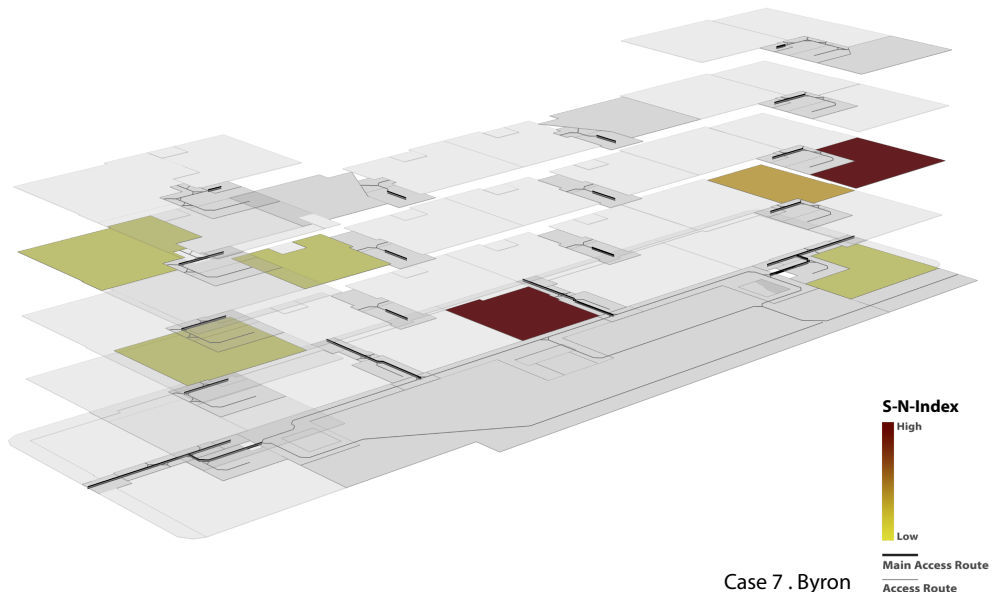
Case 5 . McNeil

Figure 7.22: The S-N-Index and the main access route – McNeil development



Case 6 . Lindsay

Figure 7.23: The S-N-Index and the main access route – Lindsay development



Case 7 . Byron

Figure 7.24: The S-N-Index and the main access route – Byron development

Overall, it can be suggested that while the proximity of the communal spaces to the main access route can affect the use of these spaces, there is no evidence of any relationship between the proximity of dwellings to the main access route or the ground level and the neighbouring or social interaction level of residents.

7.2.1.2 Proximity to the dwelling units

Previous studies suggest that physical proximity to the dwelling units can affect the use of communal spaces and social interaction among residents positively (Abu-Ghazzeah 1999, Al-Homoud 2003, Abdul Aziz, Sani Ahmad et al. 2012, Williams 2005, Raman 2010).

In order to explore the impact of physical proximity to the main access route, several correlations have been tested.

- **The N-Index/S-N-Index and functional distance between the unit and intentional communal space (ICS):**

Overlaying the N-Index for residents of residential units and the intentional communal spaces (ICS) for all seven cases, no particular pattern or relation is identified between these two factors (see Figure 7.24 to Figure 7.30). The same conclusion is derived from mapping the distribution of a higher S-N-Index in all seven case studies (see Figure 7.31 to Figure 7.37). The dwelling units with a higher N-Index and/or S-N-Index are not necessarily closer to the intentional communal spaces. This is in contrast with the findings of Al-Homoud (2003) within the urban neighbourhoods of Amman, which suggested the residents of dwellings closer to the open spaces and mosques are more socially connected to their neighbours. In some cases like Byron and Brandfield, residents of the units closer to the intentional communal spaces have reported conflicts with their neighbours because of the noise. Living closer to intentional communal spaces can be associated with lack of privacy, which has been found to have a negative impact on social interaction level (Lindsay 2010).

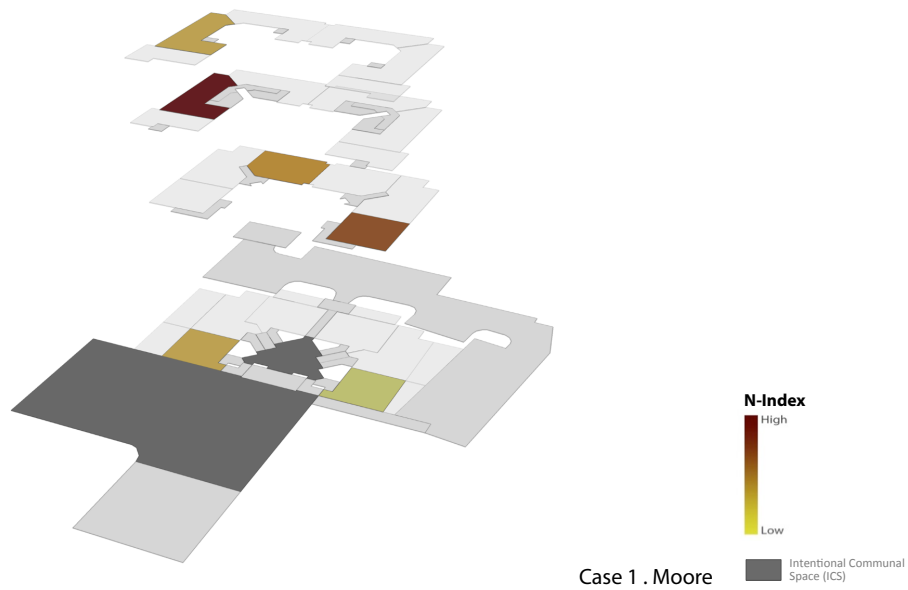


Figure 7.25: The N-Index and intentional communal space (ICS) – Moore development

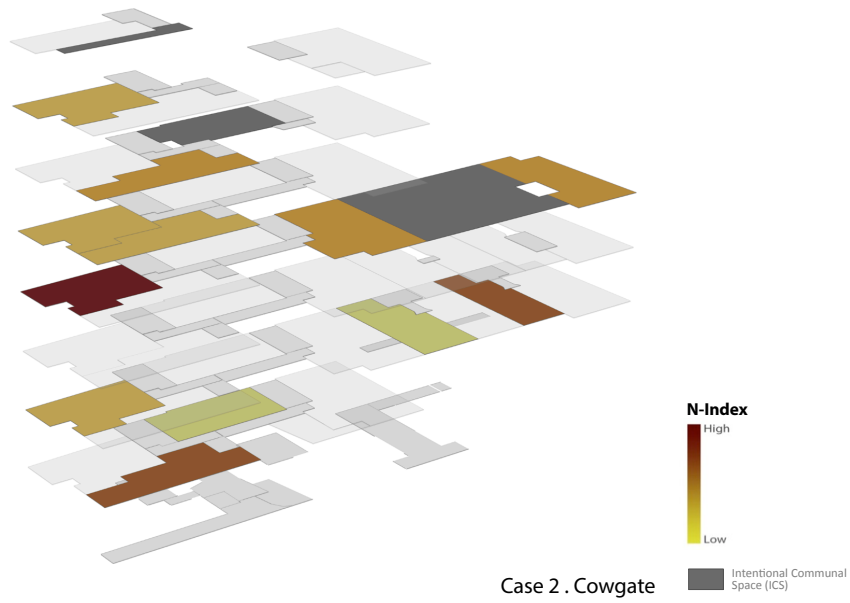


Figure 7.26: The N-Index and intentional communal space (ICS) – Cowgate development

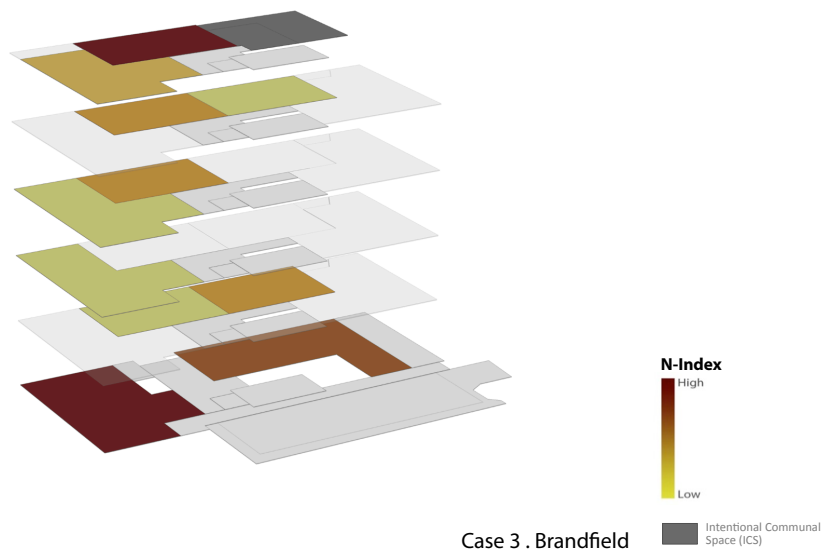


Figure 7.27: The N-Index and intentional communal space (ICS) – Brandfield development

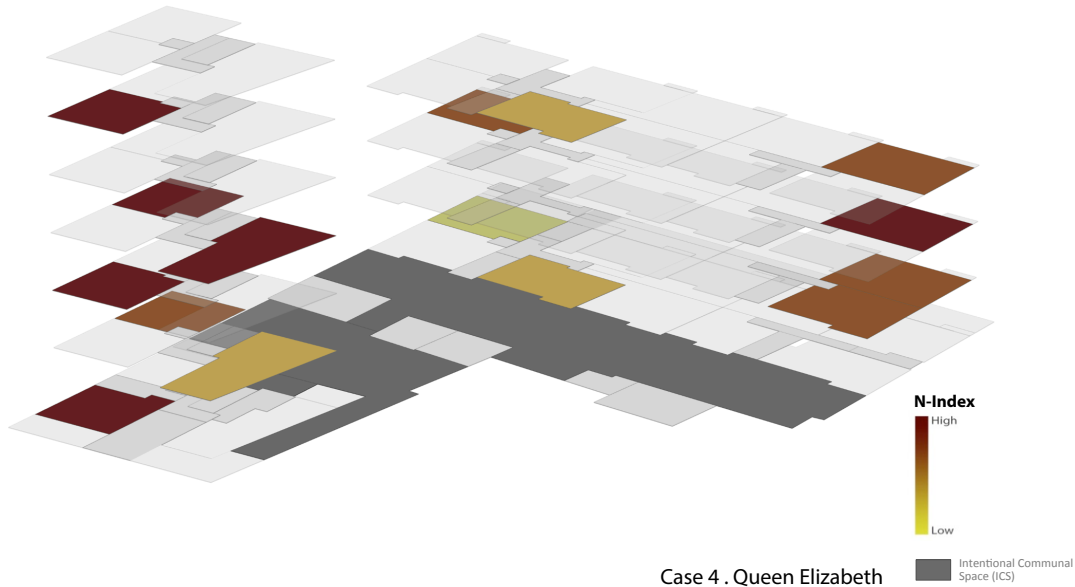


Figure 7.28: The N-Index and intentional communal space (ICS) – Queen Elizabeth development

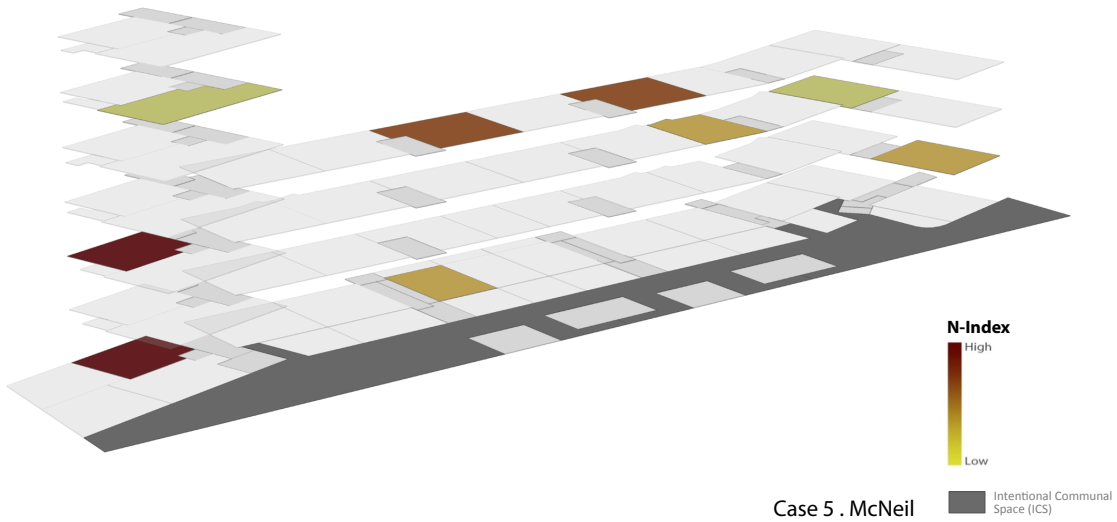


Figure 7.29: N-Index and intentional communal space (ICS) – McNeil development

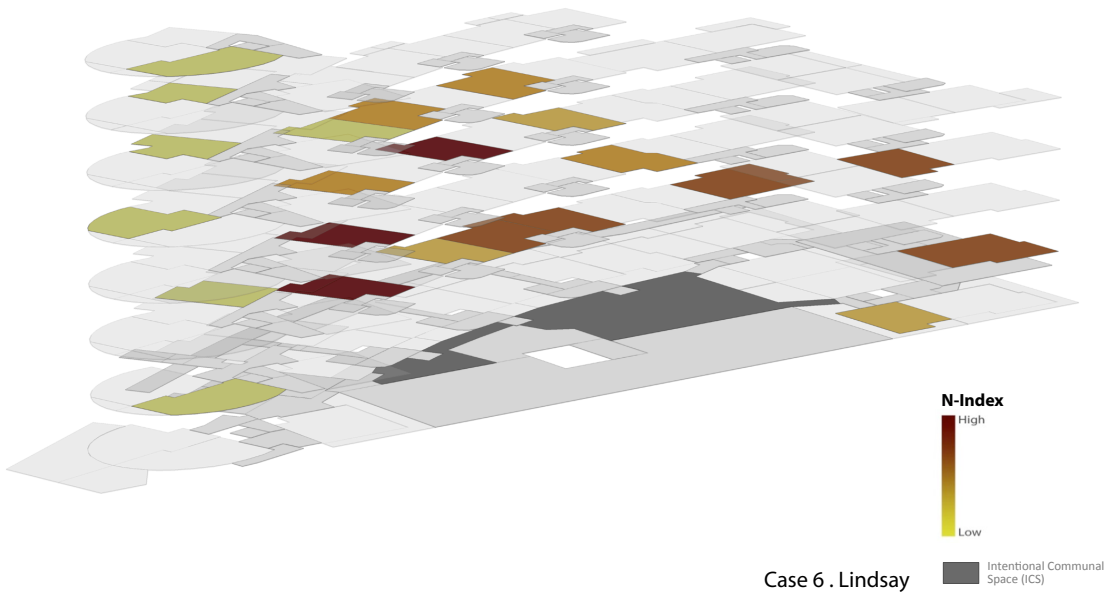


Figure 7.30: The N-Index and intentional communal space (ICS) – Lindsay development

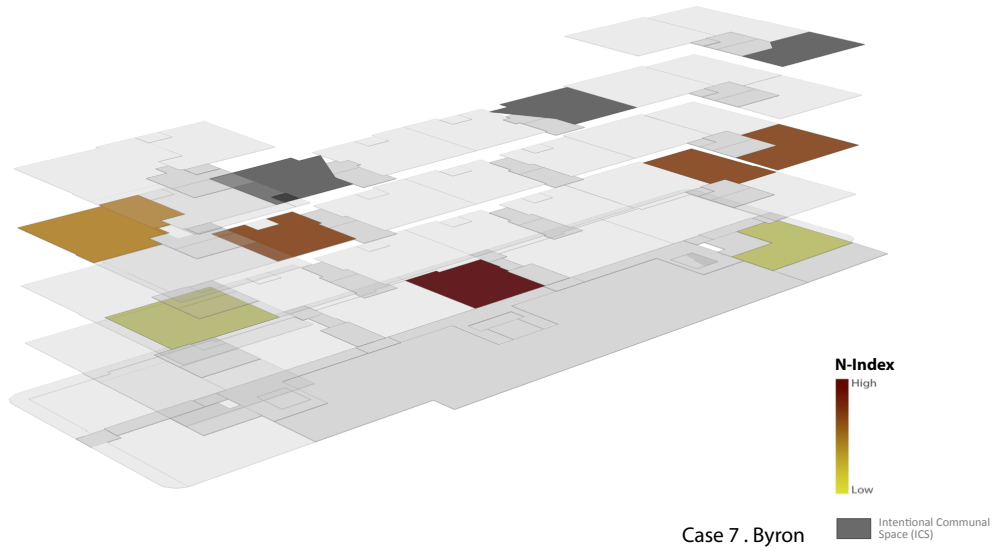


Figure 7.31: The N-Index and intentional communal space (ICS) – Byron development

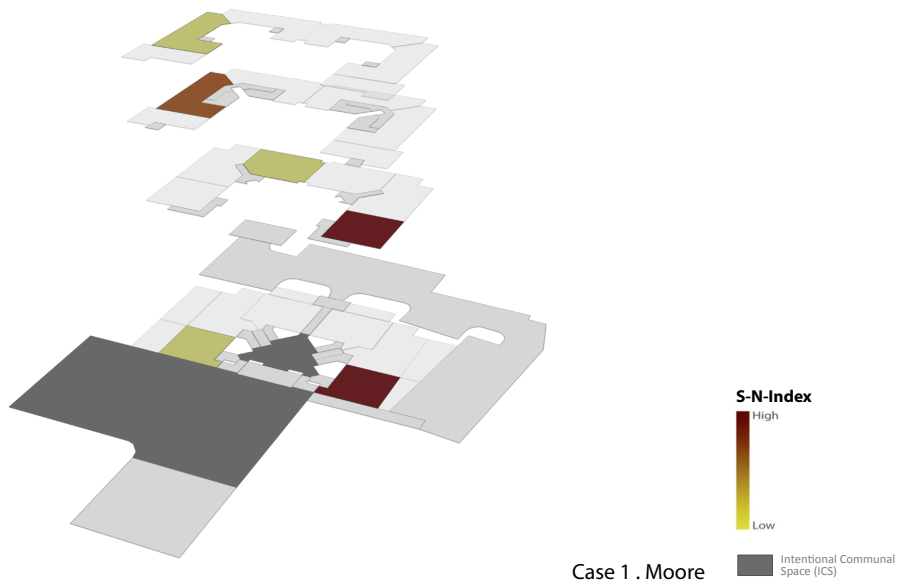


Figure 7.32: The S-N-Index and intentional communal space (ICS) – Moore development

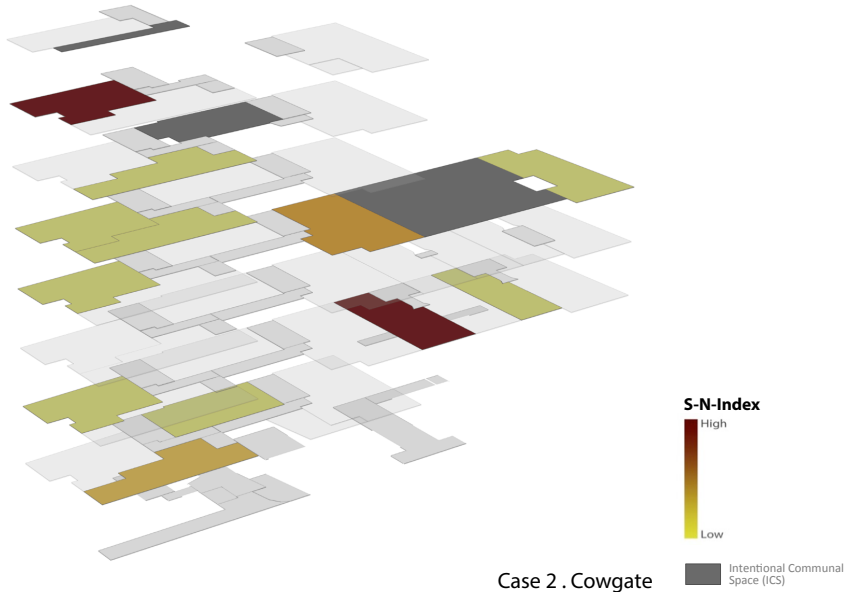


Figure 7.33: The S-N-Index and intentional communal space (ICS) – Cowgate development

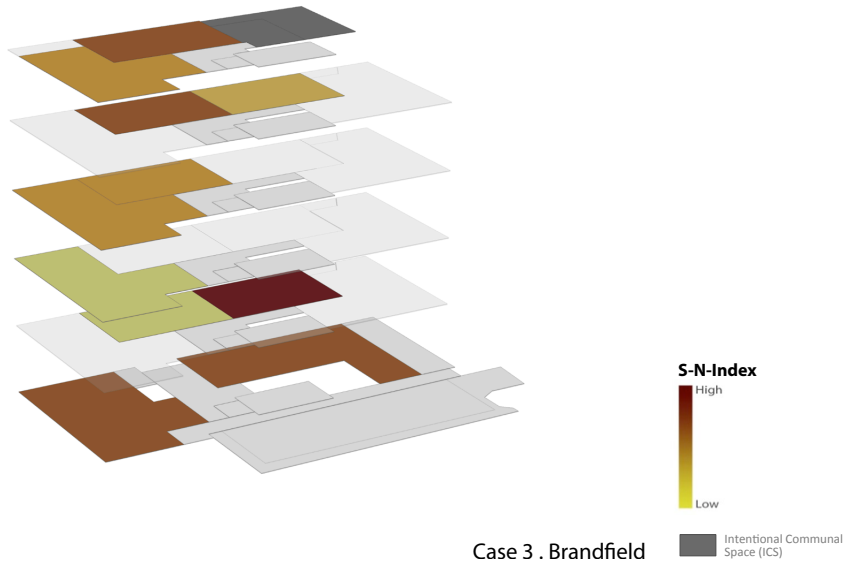


Figure 7.34: The S-N-Index and intentional communal space (ICS) – Brandfield development



Figure 7.35: The S-N-Index and intentional communal space (ICS) – Queen Elizabeth development

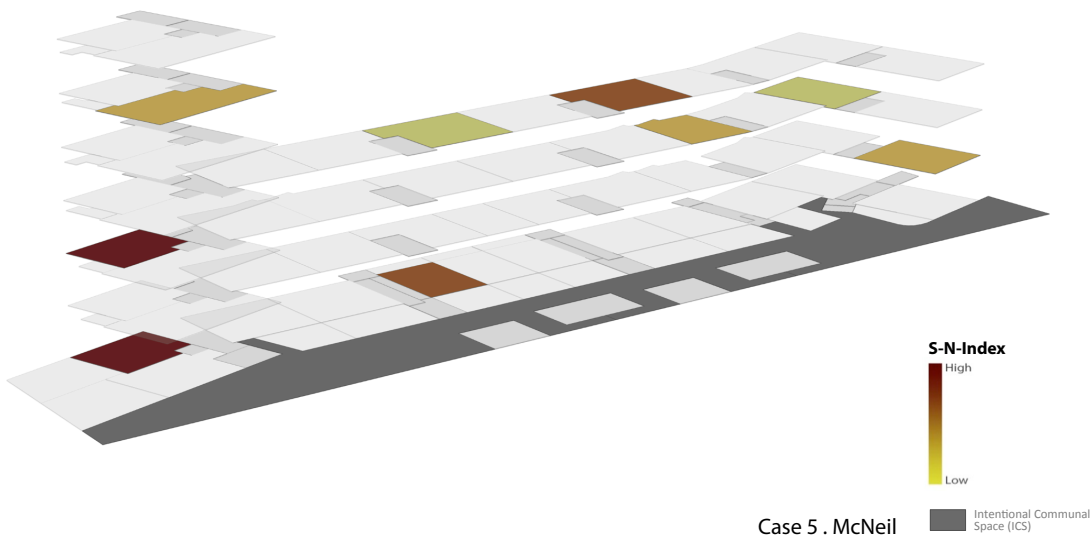


Figure 7.36: The S-N-Index and intentional communal space (ICS) – McNeil development

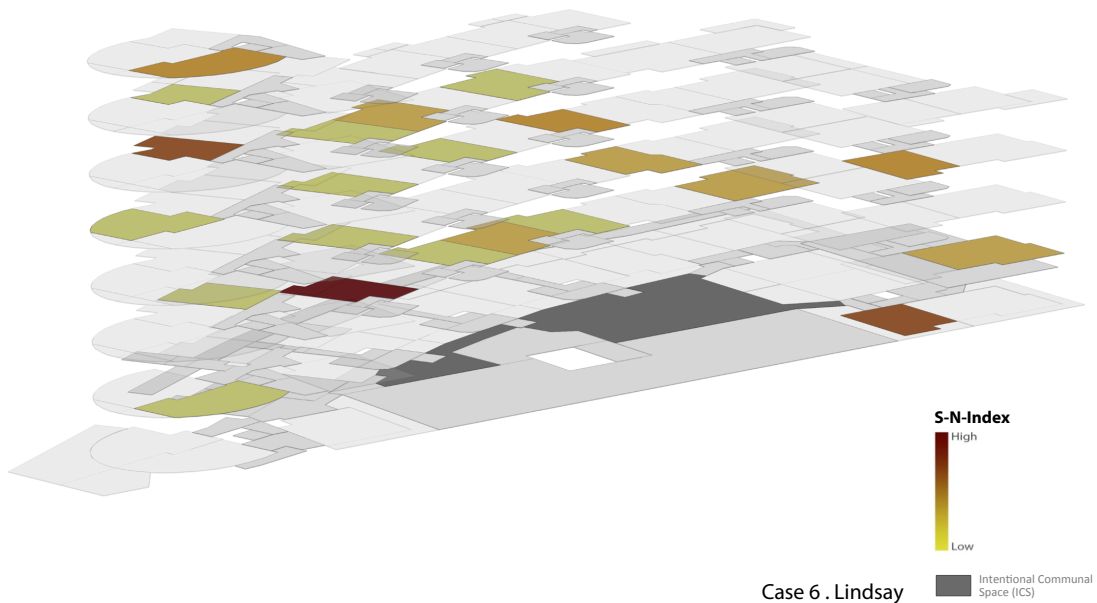


Figure 7.38: The S-N-Index and intentional communal space (ICS) – Lindsay development

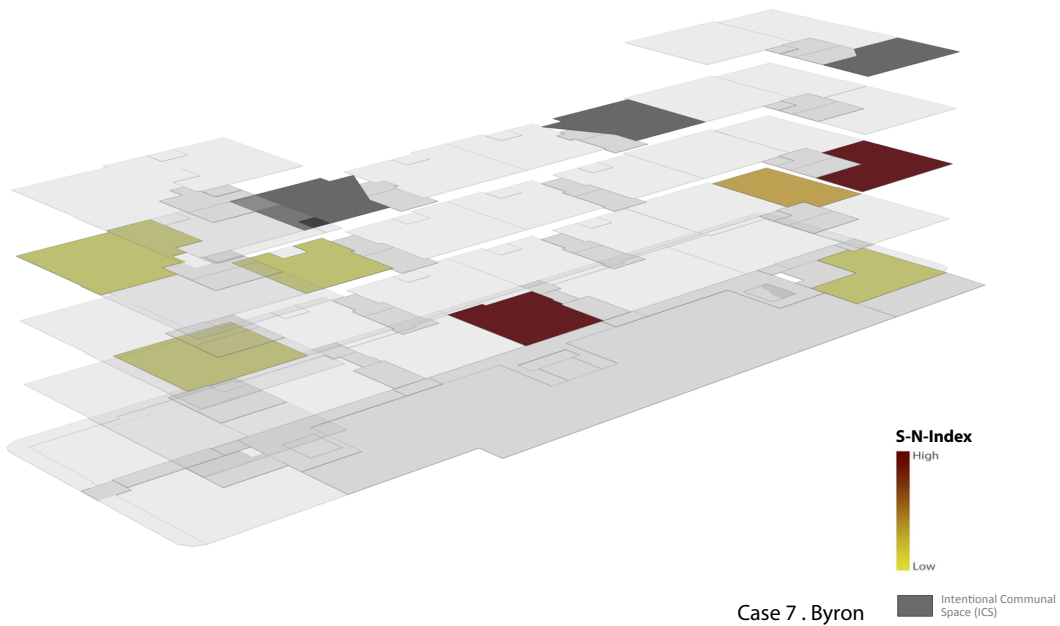


Figure 7.37: The S-N-Index and intentional communal space (ICS) – Byron development

- **Distance of first/regular/formal contacts to the units:**

Reported contacts (first, regular, formal) among residents have been mapped based on the functional distance between the participants' dwelling unit and the location of the contacts (see Figure 7.38). Looking at the spatial distribution of the contacts, it can be observed that most of the interactions happen close to the dwelling units, within a distance of less than 20 metres. In some developments such as Brandfield, Cowgate and Queen Elizabeth, more than sixty per cent of contacts happen within a

10 metres distance from the dwelling units. These findings are in line with the findings of Abdul Aziz & Sani Ahmad et al. (2012) from apartment flats in Malaysia.



Figure 7.39: Distance of regular, first and formal contacts from dwelling units (each line represents one reported contact between residents)

Also, it can be the case that where there are less semi-private spaces like balconies and gardens, like Brandfield, Cowgate and Queen Elizabeth, social contacts are even more squeezed into the corridors and communal areas closer to the dwelling units as extensions of private spaces (Williams 2005).

- **Use of space (daily, weekly, ...) and functional distance between the unit and intentional communal spaces (ICS):**

Looking at the intentional communal spaces of all seven developments and the residents who have used each space, it can be observed that while in some of the development units closer to these spaces, residents have used them more while in

some other developments there is no evidence for such a relationship (see Figure 7.39 to Figure 7.45). Specifically, in Cowgate, Byron and Queen Elizabeth, those units closer to the intentional communal spaces have used them more. This supports the findings from previous studies (Raman 2010). In the case of Brandfield, it can be suggested that non-environmental factors such as demographic patterns and place attachment have created a situation where all the residents do use the communal spaces frequently regardless of their functional distance to the space. This can be another confirmation of what Talen (1999) has suggested in terms of the importance of non-environmental factors. In the case of Moore and Lindsay, it can be argued that since the communal spaces serve necessary activities such as access, they have been used by all residents not out of choice but because they have to use these spaces regularly.

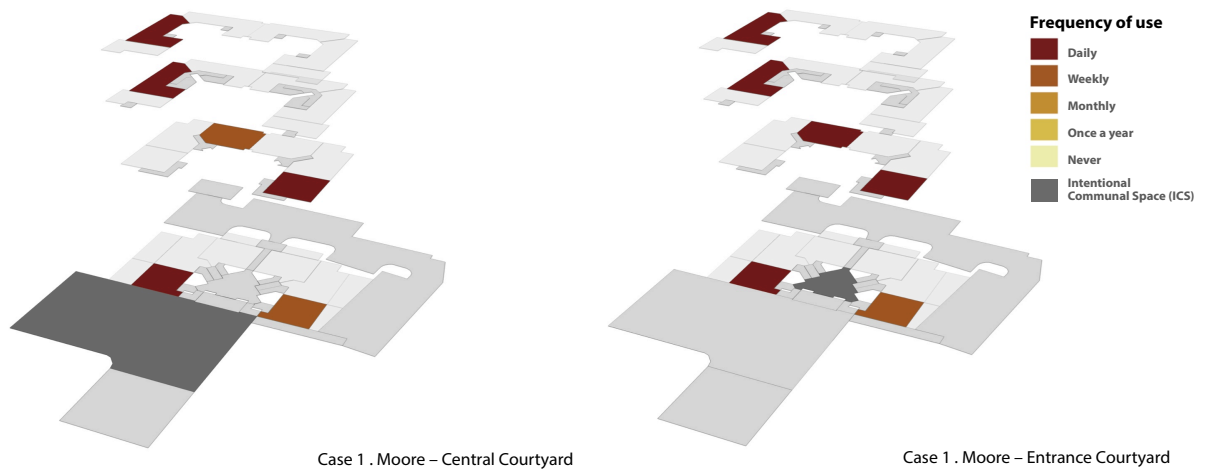


Figure 7.40: Frequency of the use of intentional communal spaces (ICS) - Moore development

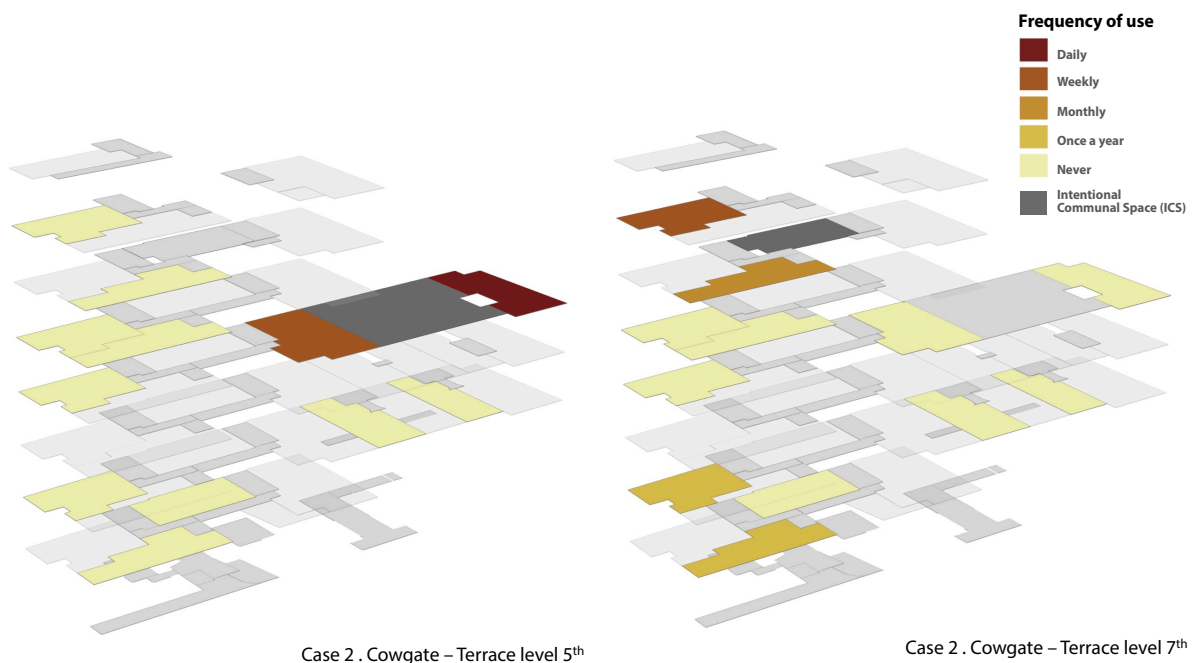
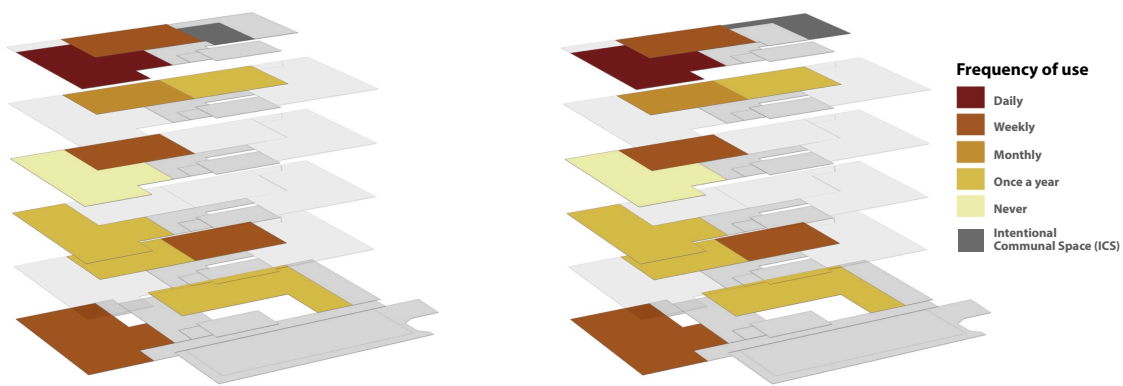


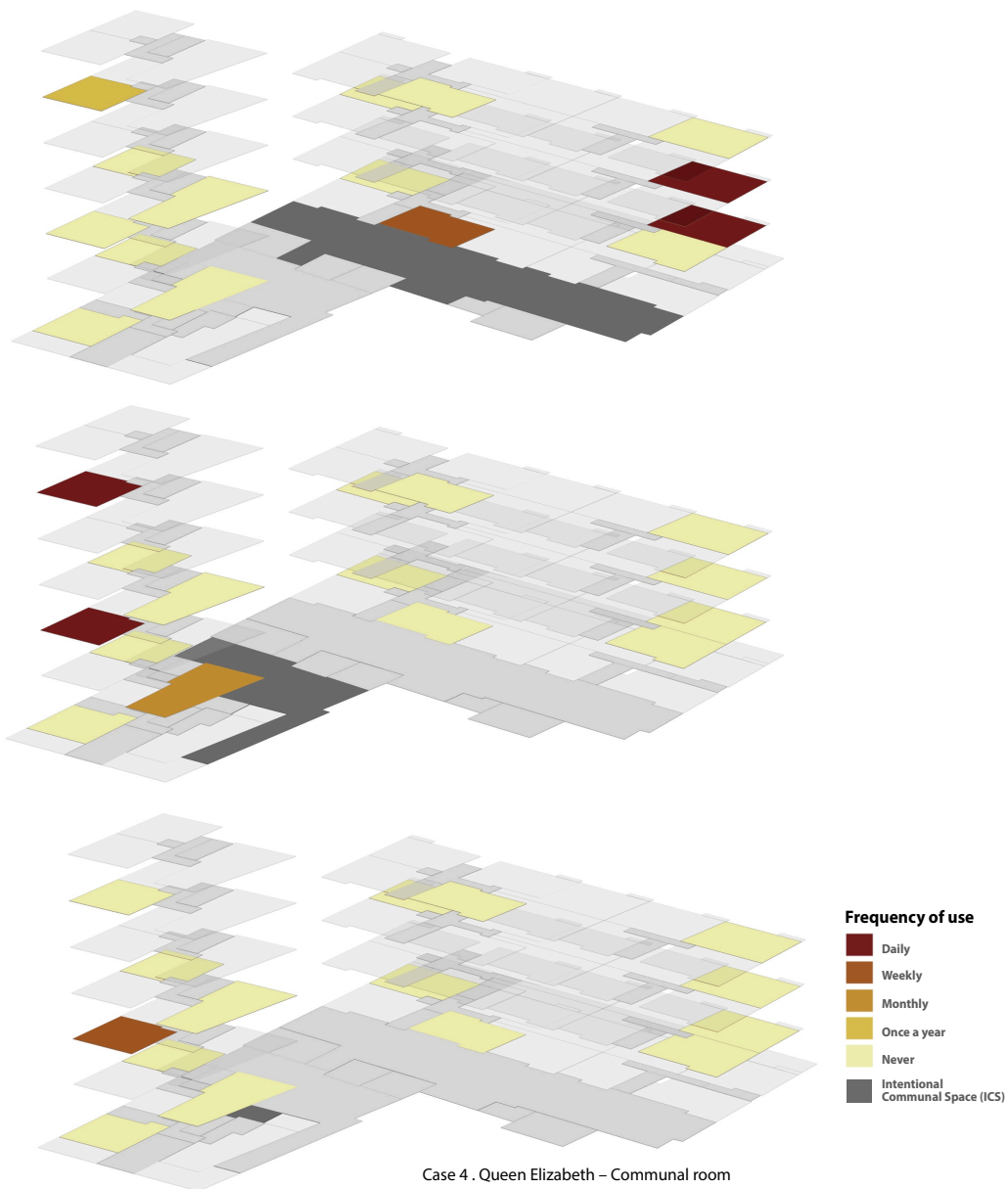
Figure 7.41: Frequency of the use of intentional communal spaces (ICS) - Cowgate development



Case 3 . Brandfield – Sunroom

Case 3 . Brandfield – Roof Terrace

Figure 7.42: Frequency of the use of intentional communal spaces (ICS) - Brandfield development



Case 4 . Queen Elizabeth – Communal room

Figure 7.43: Frequency of the use of intentional communal spaces (ICS) – Queen Elizabeth development

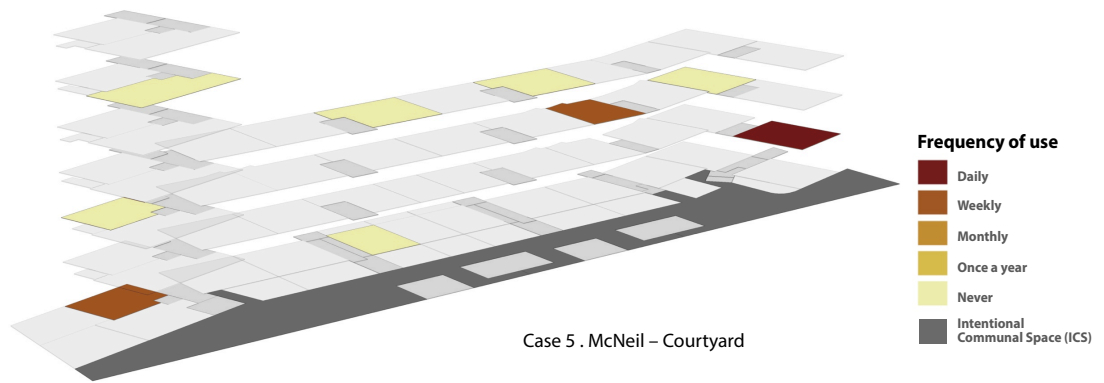


Figure 7.44: Frequency of the use of intentional communal spaces (ICS) – McNeil development

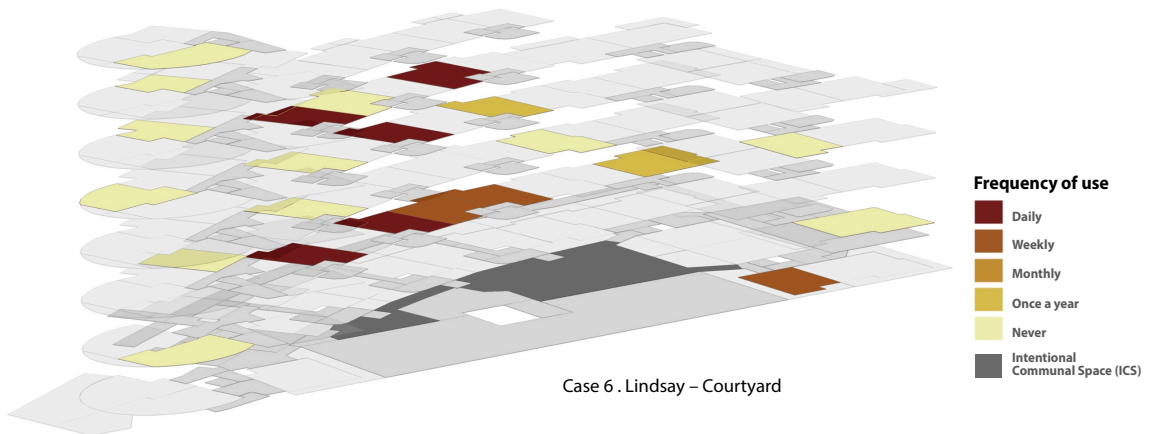


Figure 7.45: Frequency of the use of intentional communal spaces (ICS) – Lindsay development



Figure 7.46: Frequency of the use of intentional communal spaces (ICS) – Byron development

Overall, it can be suggested that most social interaction happens closer to the dwelling units and where the use of space is optional, residents closer to intentional communal spaces use these spaces more frequently. However, there is no evidence of any relationship between the proximity of dwellings to the intentional communal spaces and the neighbouring or social interaction level of residents.

7.2.1.3 Integration value

The overall hypothesis is that integration value can affect the use of communal spaces for social interaction among residents positively (Raman 2010).

In order to explore the impact of integration value, several correlations have been tested.

- **I-S-Index and the integration value of communal space:**

Looking at all communal spaces within the seven residential developments, no relationship could be identified between the integration value of the space and I-S-Index (see Figure 7.46). This can be explained by considering the different functions of the communal spaces in terms of necessary and optional activities. Some communal spaces such as bin storage are being used regularly and therefore facilitate interaction between residents although they are not very well connected to other spaces (low integration value). On larger scales such as a neighbourhood or city (Raman 2005, Dempsey 2006) the effect of the function might be less, while for the residents of a residential development, function comes first and integration value has less effect.

- **The I-S-Index and the integration value of intentional communal space:**

Looking at only the intentional communal spaces of all seven developments, it can be observed that, except in the Brandfield development, the I-S-Index of well integrated intentional communal spaces is higher (see Figure 7.47). It can be argued that in the case of Brandfield development, some non-environmental factors such as demographic patterns have interfered with the positive relationship between the integration value and the I-S-Index. These findings are in line with the findings from previous studies on the scale of neighbourhood and city (Raman 2010).

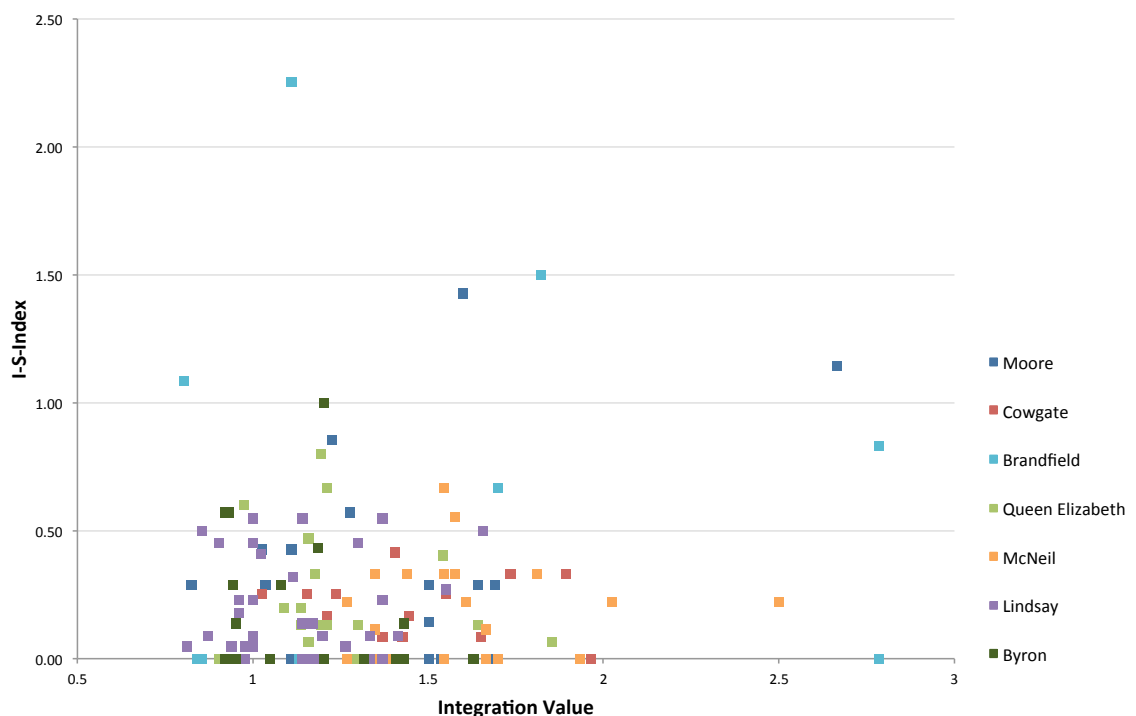
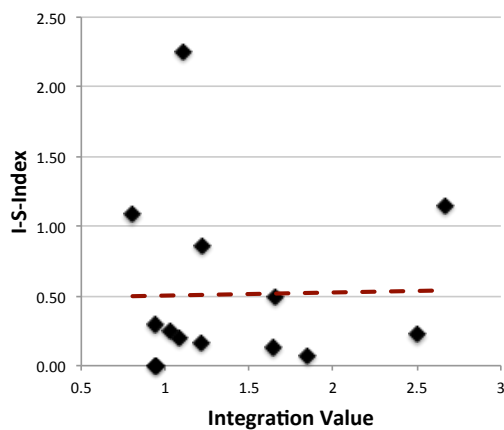
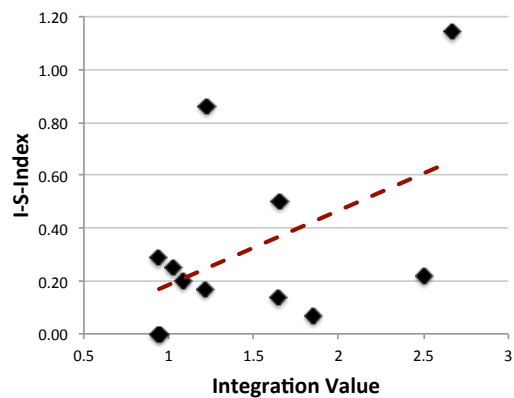


Figure 7.47: The I-S-Index and the Integration value of communal spaces for all seven developments



Intentional communal spaces (ICS) of all seven developments



Intentional communal spaces (ICS) of six developments (Brandfield excluded)

Figure 7.48: The I-S-Index and the Integration value of intentional communal spaces (ICS)

Overall, it can be suggested that while the integration value of intentional communal spaces can increase the chance of social interaction among residents within an intentional communal space, there is no evidence of any relationship between the integration value of unintentional communal spaces and the use of these spaces for social interaction.

7.2.2 Visual connectivity

The relationship between the visual connectivity and the way people use spaces has been studied previously within cities, neighbourhoods and buildings (e.g. Jacobs 1961, Newman 1973, Evans, McCoy 1998, Eves, Olander et al. 2009, Skjaeveland, Garling 1997, Williams 2005). As mentioned in Chapter 3, three different approaches have been identified as a result of an extensive literature review including natural surveillance, visual contacts and privacy. Among these three aspects, the first two have been explored in this section under the title of visual connectivity, while the last one is discussed in the section under the headline of privacy. In connection with visual contacts, instead of a visibility analysis of all the communal spaces which has been done frequently by other researchers, this study focuses on “visibility from the main access route” which has been suggested previously by Raman (2010) in his studies of English neighbourhoods. In terms of natural surveillance, “visibility from dwellings” has been studied in relation to the use of space and social interaction patterns using a descriptive analysis of data using GIS maps.

7.2.2.1 Visibility from the main access route

The overall hypothesis is that visibility from the main access route can affect the use of communal spaces and social interaction among residents positively (Raman 2010, Evans, McCoy 1998, Eves, Olander et al. 2009, Skjaeveland, Garling 1997, Williams 2005).

Overlaying the places of contact within communal spaces and the level of visibility from the main access route for all seven cases, no particular pattern or relation is identified between these two factors (see Figure 7.48 to Figure 7.54). Many residents have reported contacts with neighbours while using some communal spaces for necessary activities (such as bin storage in the McNeil development) although some of these spaces are not visible from the main access route. This result is in contrast with the findings of previous research on larger scales such as neighbourhood (Skjaeveland, Garling 1997, Raman 2010) and public buildings (Eves, Olander et al. 2009) where the visibility of stairs has been found to have a positive impact on the frequency of use. It can be argued that on larger scales or public buildings, the information obtained visually about the space and other users is more important in comparison with smaller scales like residential buildings where residents are already familiar with communal spaces. However, further studies are required to confirm this result.

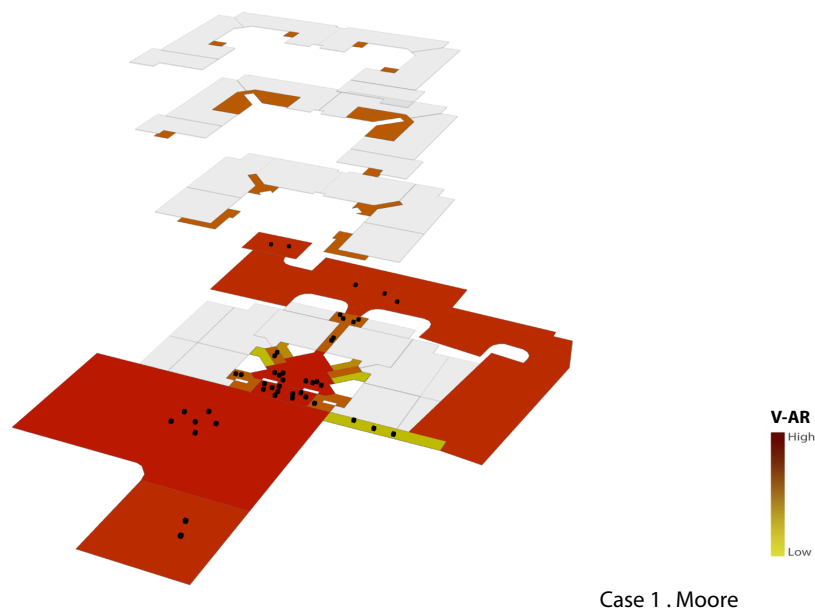
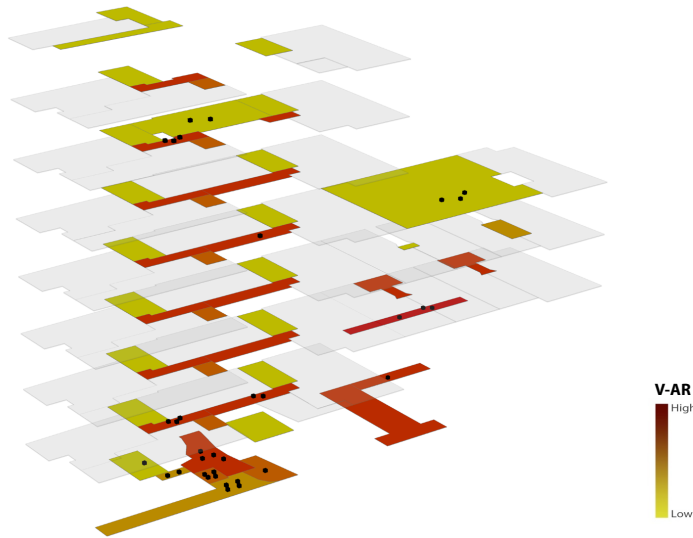
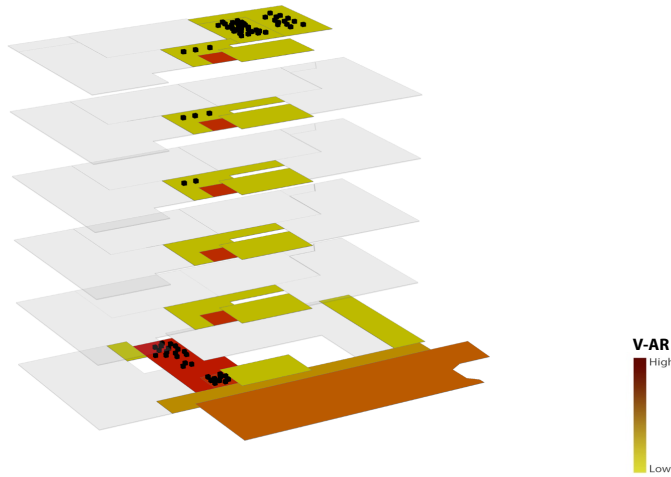


Figure 7.49: Visibility from the main access route (V-AR) and places of contact – Moore development (each dot represents one reported contact between residents)



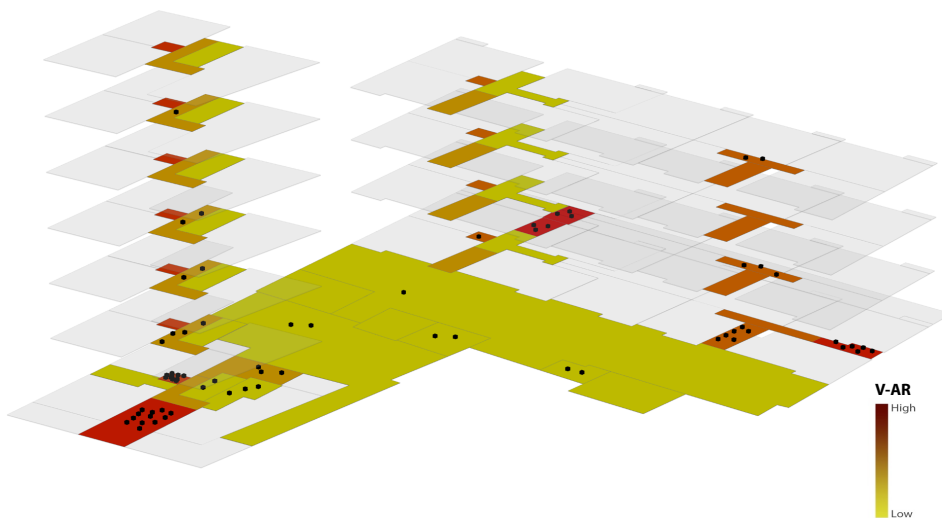
Case 2 . Cowgate

Figure 7.50: Visibility from the main access route (V-AR) and places of contact – Cowgate development (each dot represents one reported contact between residents)



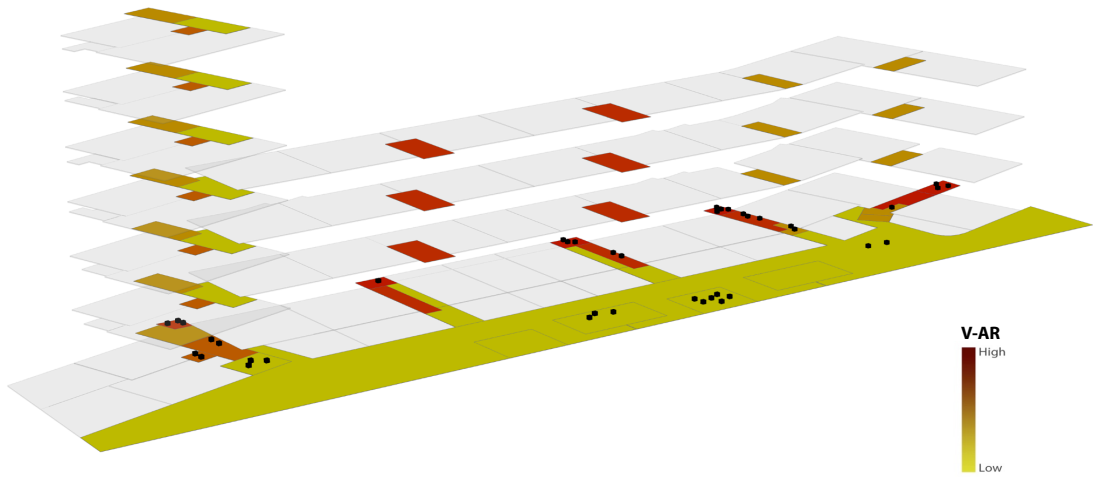
Case 3 . Brandfield

Figure 7.51: Visibility from the main access route (V-AR) and places of contact – Brandfield development (each dot represents one reported contact between residents)



Case 4 . Queen Elizabeth

Figure 7.52: Visibility from the main access route (V-AR) and places of contact – Queen Elizabeth development (each dot represents one reported contact between residents)



Case 5 . McNeil

Figure 7.53: Visibility from the main access route (V-AR) and places of contact – McNeil development (each dot represents one reported contact between residents)

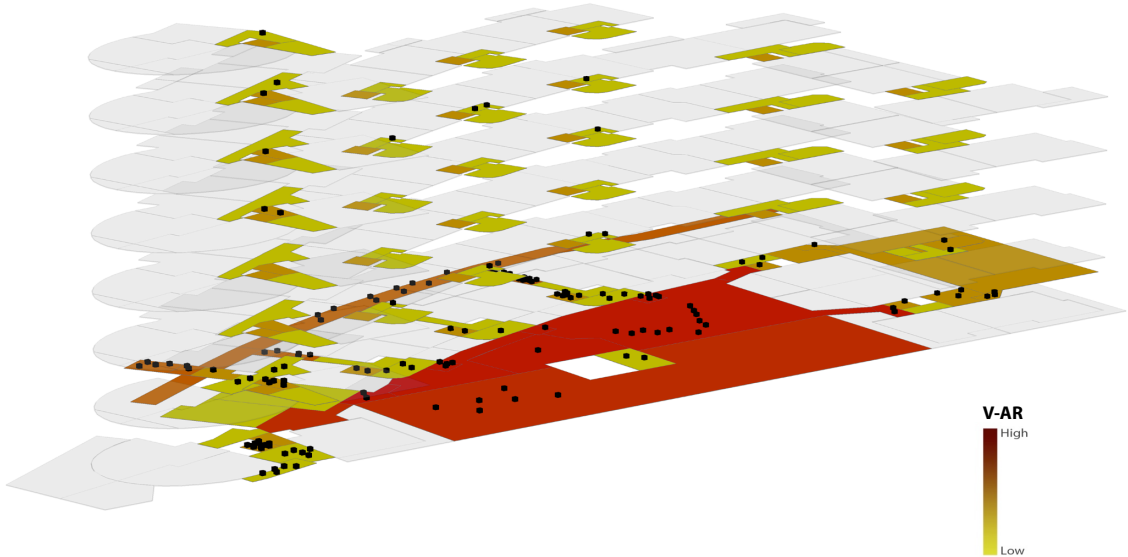


Figure 7.54: Visibility from the main access route (V-AR) and places of contact – Lindsay development (each dot represents one reported contact between residents)

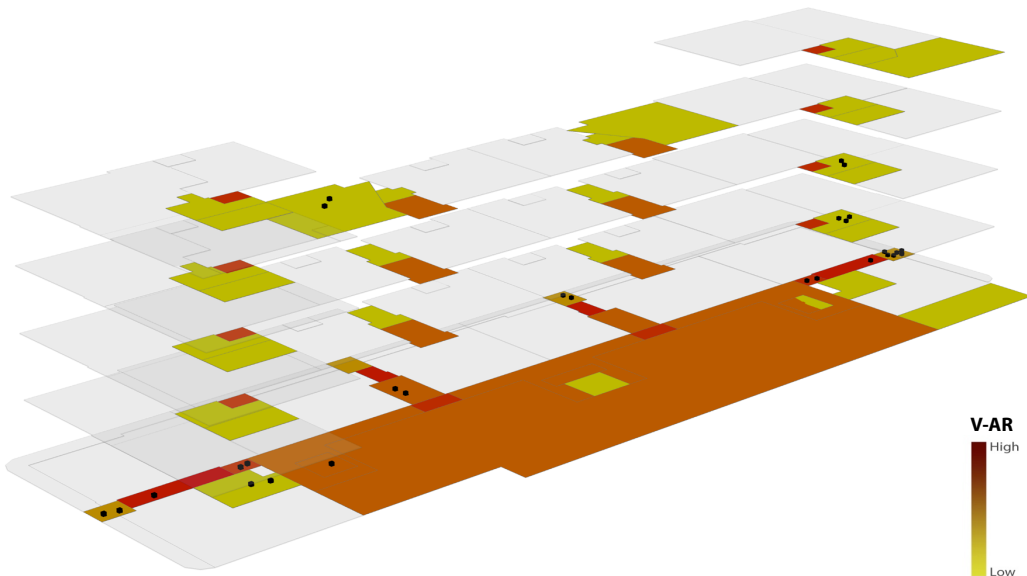


Figure 7.55: Visibility from the main access route (V-AR) and places of contact – Byron development (each dot represents one reported contact between residents)

It is not possible to draw any conclusion about intentional communal spaces in particular since the studied samples are lacking in variety. Only in two cases intentional communal spaces are visible from the main access route where they are actually located on the main access route. In all the other cases the intentional communal spaces are either not visible at all or are only visible from very limited spots on the main access route.

7.2.2.2 Visibility from dwelling units

The overall hypothesis is that visibility from the dwelling units can affect the use of communal spaces and social interaction among residents positively by affecting the sense of safety (Evans, McCoy 1998, Jacobs 1961, Newman 1973, Foster, Giles-Corti et al. 2011, Abu-Ghazze 1999).

Overlaying the places of contact within communal spaces and the level of visibility from the dwelling units for all seven cases, no particular pattern or relation is identified between these two factors (see Figure 7.55 to Figure 7.61). This is in contrast with many previous findings (Evans, McCoy 1998, Jacobs 1961, Newman 1973) regarding the relationship between visibility from dwelling units and sense of safety and accordingly use of space. It can be argued that while on larger scales, sense of safety may vary from place to place, on smaller scales such as a building, residents are familiar with the communal spaces within their residence and they have a sense of safety regardless of visibility level.

Also, in the case of intentional communal spaces, no relationship between the visibility of intentional communal spaces from dwelling units and the level of social interaction among residents could be identified (see Figure 7.62). In some cases such as the communal courtyard in Queen Elizabeth, although the space is visible from many dwelling units it has a very low I-S-Index. This is again in contrast with previous findings (Foster, Giles-Corti et al. 2011, Abu-Ghazze 1999). However, it could be the case that our sample size is too small and it is not representative which calls for further studies.

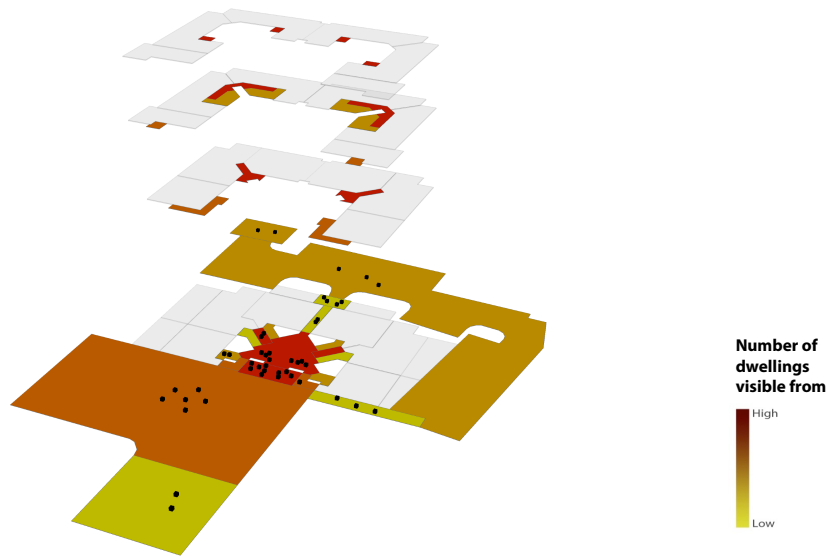


Figure 7.56: Number of dwellings visible from and places of contact – Moore development (each dot represents one reported contact between residents)

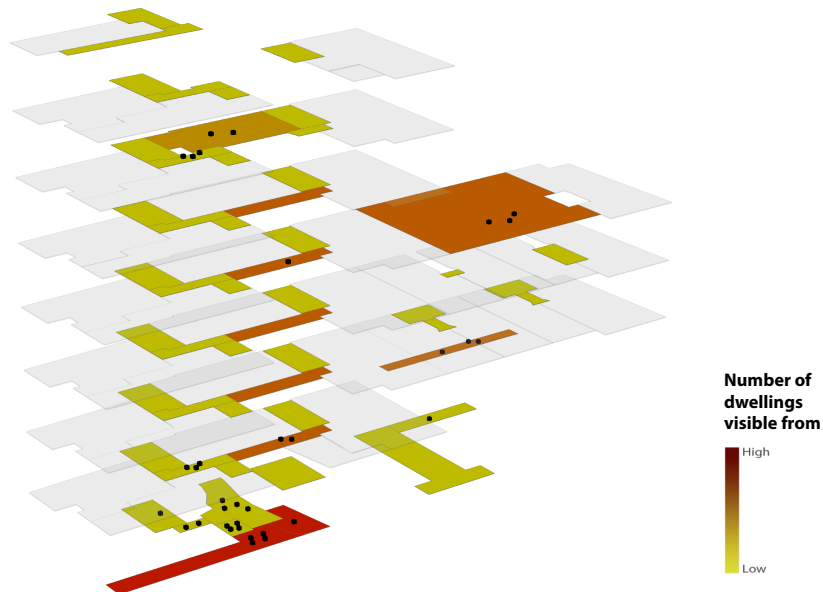


Figure 7.57: Number of dwellings visible from and places of contact – Cowgate development (each dot represents one reported contact between residents)

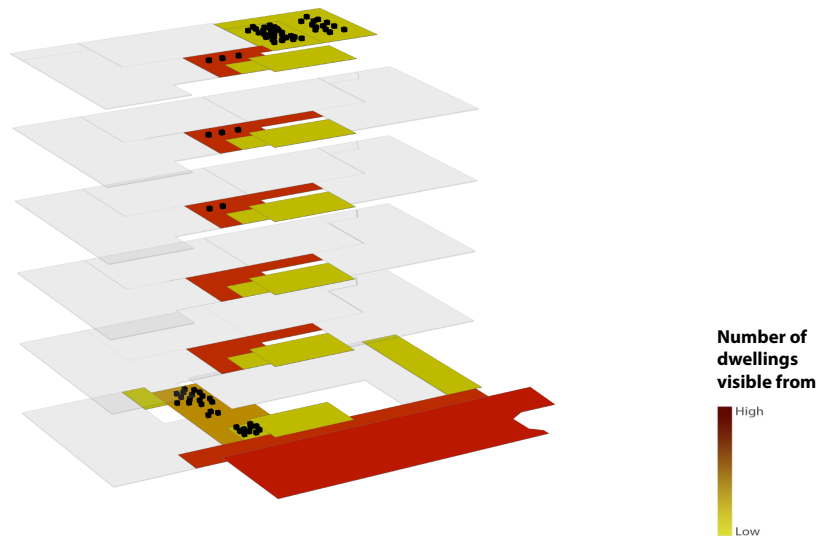


Figure 7.58: Number of dwellings visible from and places of contact – Brandfield development (each dot represents one reported contact between residents)

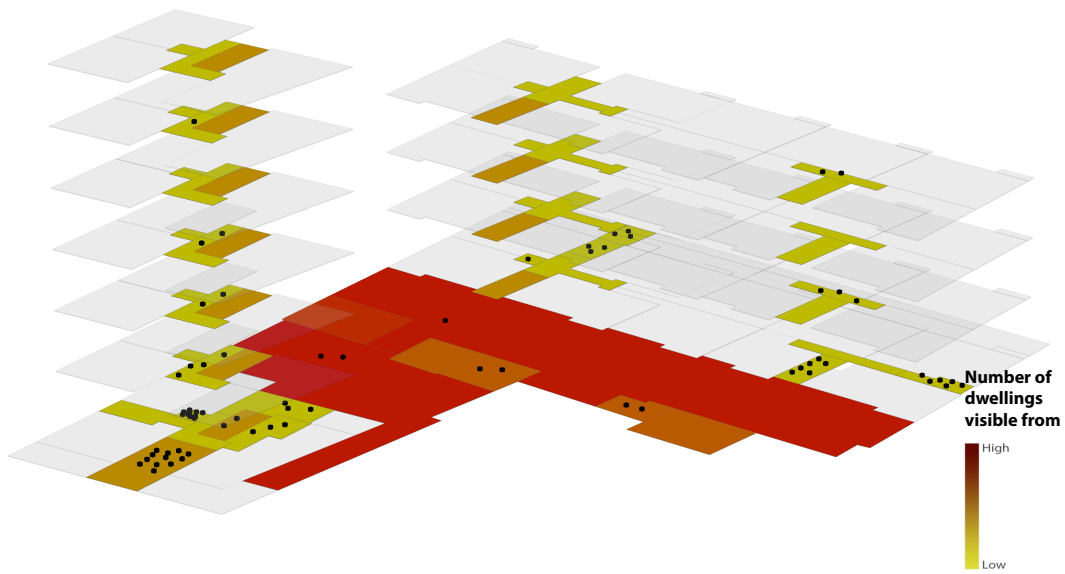


Figure 7.59: Number of dwellings visible from and places of contact – Queen Elizabeth development (each dot represents one reported contact between residents)

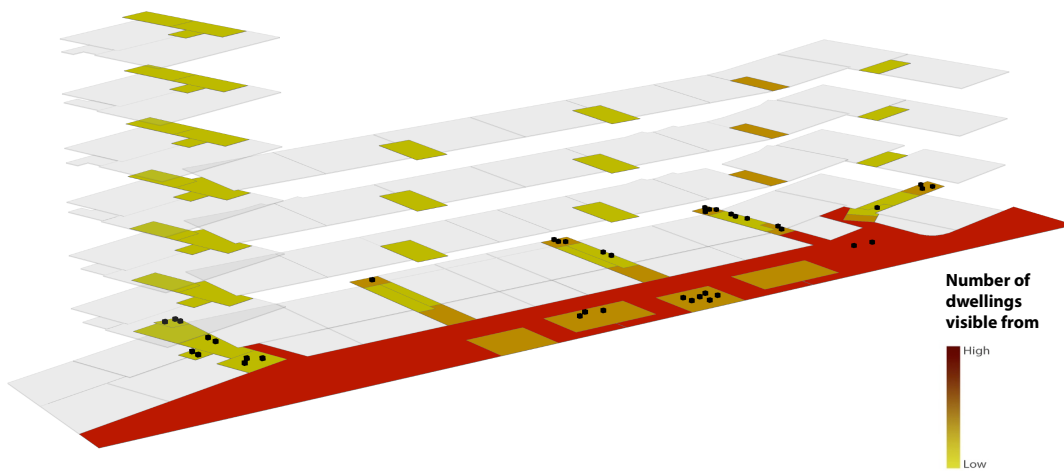


Figure 7.60: Number of dwellings visible from and places of contact – McNeil development (each dot represents one reported contact between residents)

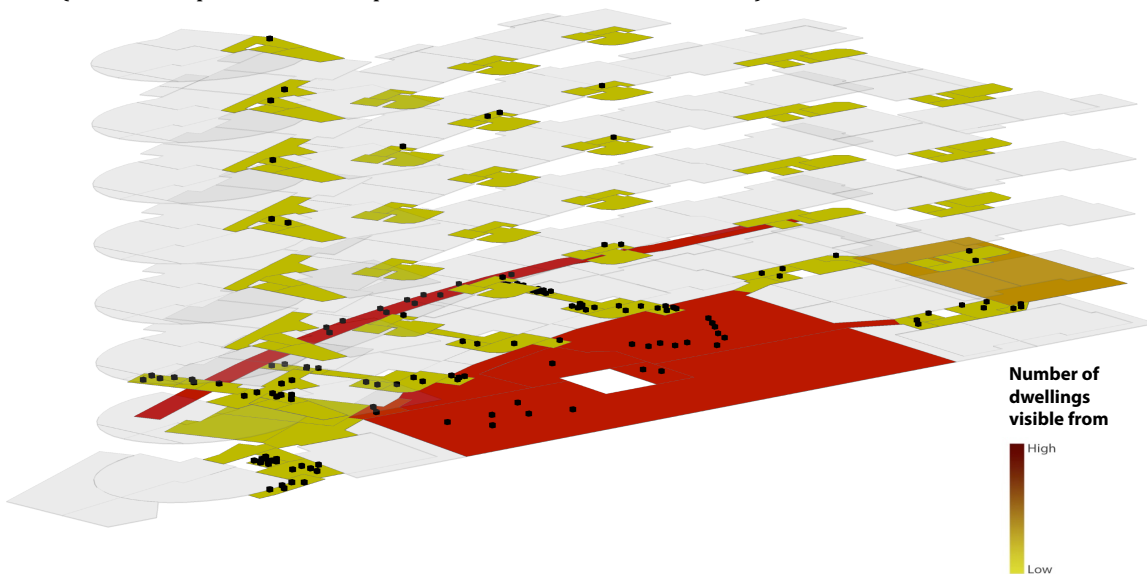


Figure 7.61: Number of dwellings visible from and places of contact – Lindsay development (each dot represents one reported contact between residents)

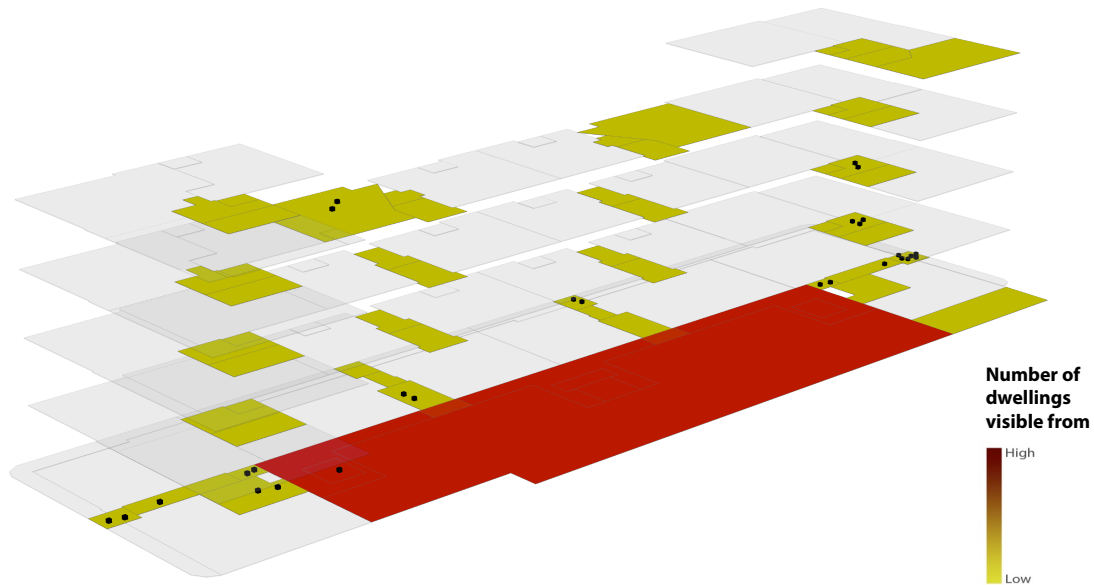


Figure 7.62: Number of dwellings visible from and places of contact – Byron development (each dot represents one reported contact between residents)

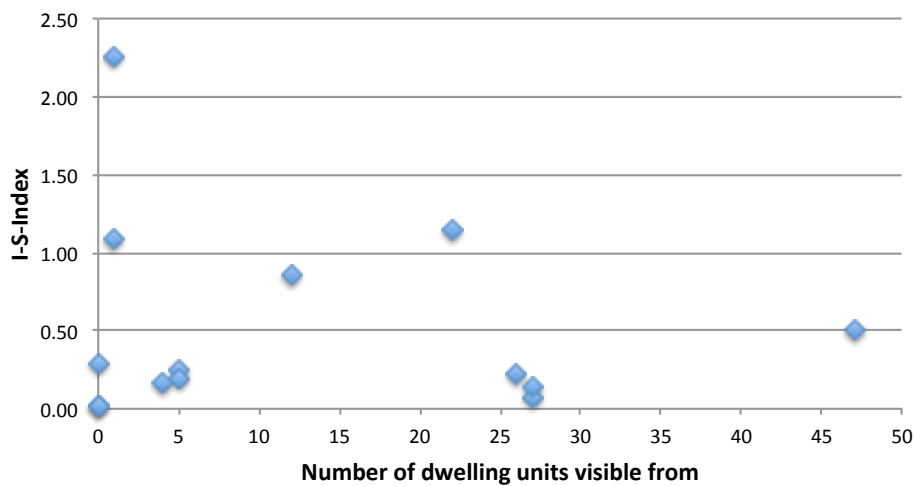


Figure 7.63: Number of dwellings visible from and the I-S-Index of intentional communal spaces (ICS)

Overall, it can be suggested that in contrast with the important role of visual connectivity on larger scales or public buildings, in residential buildings other factors may reduce the impact of visual connectivity. In this study no evidence of any relationship between visibility from the main access route and visibility from the dwelling unit and the use of space has been identified. However, further studies are required to confirm these findings.

7.2.3 Visual attractiveness

Previous studies have found a relationship between the visual appearance of spaces and how people use these spaces (e.g. Hur, Nasar et al. 2010, Kuo, Sullivan et al. 1998, Huang 2006, Cooper Marcus, Sarkissian 1986, Kaplan, Kaplan et al. 1989, Nasar 1994, Skjaeveland, Garling

1997, Weenig, Staats 2010, Becker 1974). While some studies have discussed maintenance and identity as part of visual attractiveness (Nasar 1994, Skjaeveland, Garling 1997) in this study only those physical attributes implemented through design decisions have been considered. As discussed in Chapter 3, four attributes have been selected including colour, view, light and greenery. The relationships between these four design attributes with the use of communal spaces and social interaction among residents have been explored through a descriptive analysis of the data using GIS maps and statistical charts.

7.2.3.1 Colour

The overall hypothesis is that colourful intentional communal spaces attract more residents to use them and this can affect social interaction among residents positively (Yildirim, Cagatay et al. 2014, Weenig, Staats 2010, O'connell, Harper et al. 1985).

A colour pallet was created for each intentional communal space and then this was connected to the I-S-Index and the F-U-Index for each intentional communal space. No particular pattern or relation has been observed (see Figure 7.63 and Figure 7.64). Some of intentional communal spaces with a wider variety of colours have been used less than some other monotonous spaces. However, we suggest further research to confirm this result due to the lack of variety in our sample.

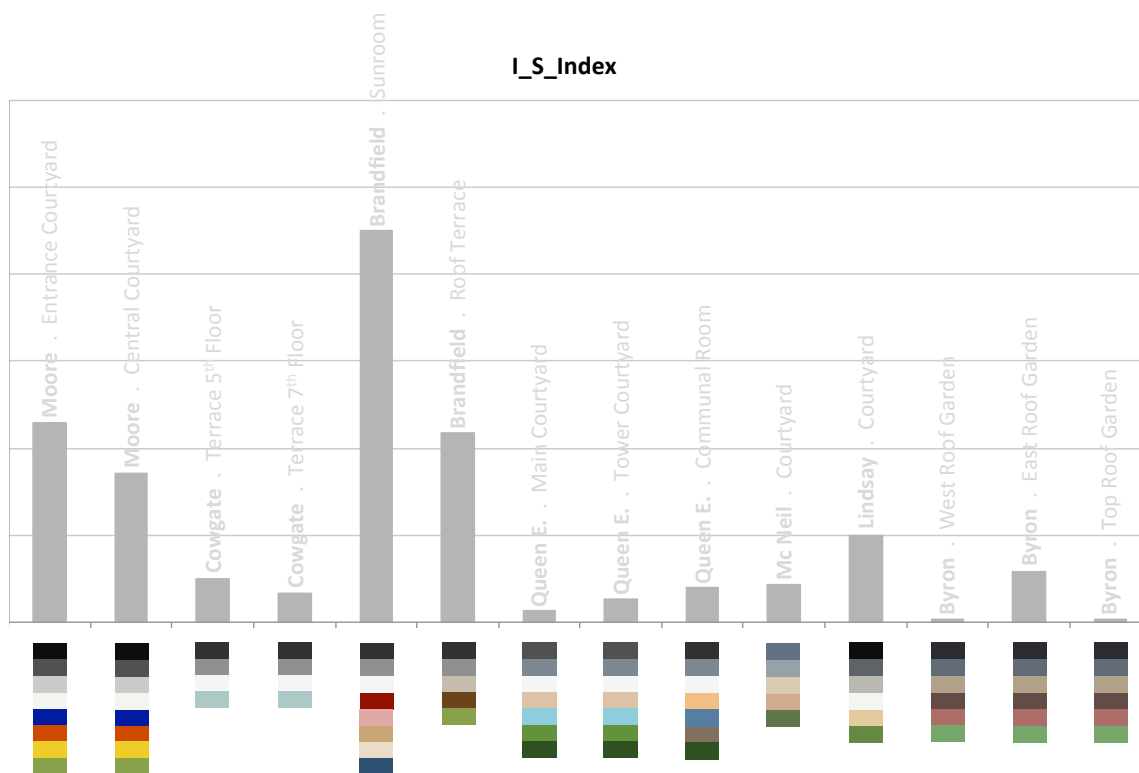


Figure 7.64: The I-S-Index and colours of finishing materials for intentional communal spaces (ICS)

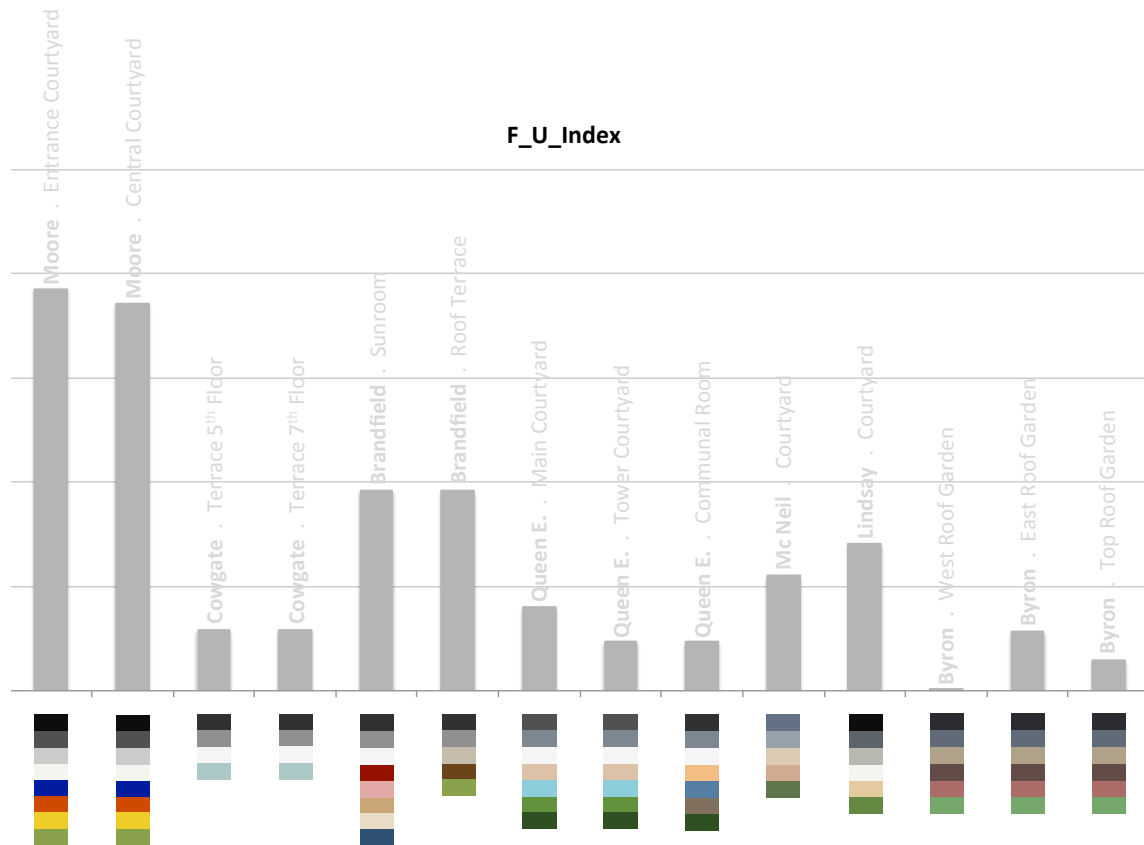


Figure 7.65: The F-U-Index and colours of finishing materials for intentional communal spaces (ICS)

7.2.3.2 View

The overall hypothesis is that the depth of view from inside the communal spaces can affect the use of space by making intentional communal spaces more attractive for residents (Borst, Miedema et al. 2008, Hur, Nasar et al. 2010, Nasar, Julian et al. 1983).

Looking at the depth of view from intentional communal spaces and the I-S-Index and the F-U-Index for each space a negative relationship can be identified (see Figure 7.65). Intentional communal spaces with deeper views have been used less by residents and have a lower I-S-Index. This is in contrast with the findings of Nasar and Julian et al. (1983) about more uses of space due to increasing the sense of safety within the space where the views are more open. However, this can be explained by considering the fact that in this study those intentional communal spaces with deeper views are all terraces. As a typology of intentional communal spaces, terraces are used least by residents. In order to confirm these findings further studies with a greater variety of samples from the same typology are suggested.

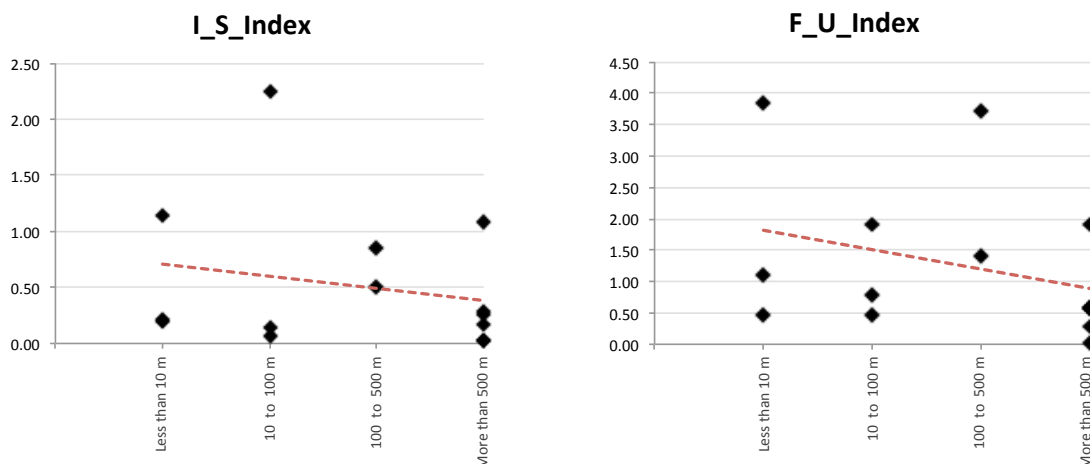


Figure 7.66: View from intentional communal spaces and the I-S-Index and F-U-Index

7.2.3.3 Light

The overall hypothesis is that light can affect the use of communal spaces for social interaction among residents positively (Weenig, Staats 2010, Evans 2003).

In order to explore the impact of light, three correlations have been tested.

- **Places of contact and average daylight of communal spaces:**

Overlaying the average daylight within each communal space with locations of reported social interactions among residents, no particular pattern or relationship between these two factors has been identified (see Figure 7.66 to Figure 7.72). Some communal spaces which serve necessary activities such as lifts, have been used frequently although they have no daylight, while some other spaces with plenty of daylight such as courtyards have only been used by a few people.

- **Places of contact and average artificial light of communal spaces:**

Overlaying the average lighting during the night within each communal space with locations of reported social interactions among residents, it can be observed that in most cases, communal spaces with a good lighting level have facilitated more social interactions among residents (see Figure 7.73 to Figure 7.79).

There are exceptions where the space serving necessary activities such as bin storage in McNeil is fairly dark but it has been used frequently.

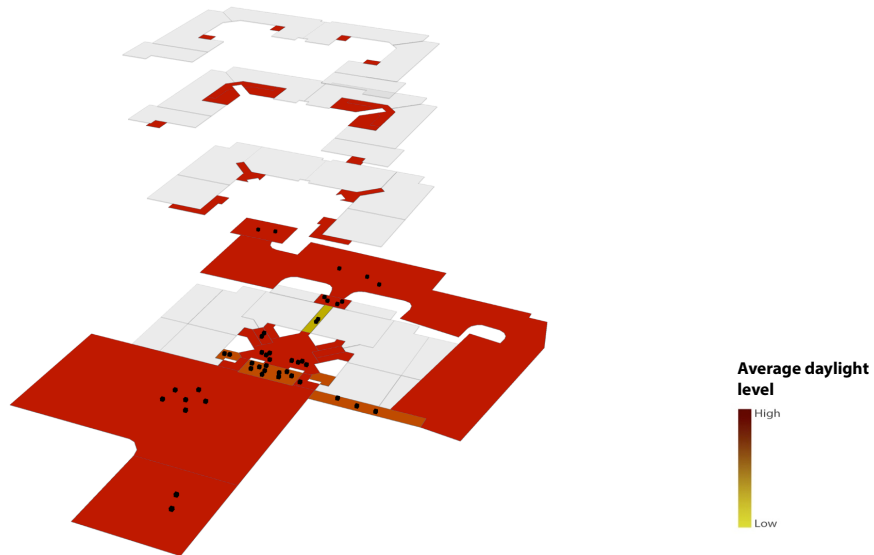


Figure 7.67: Average daylight level and places of contact – Moore development (each dot represents one reported contact between residents)

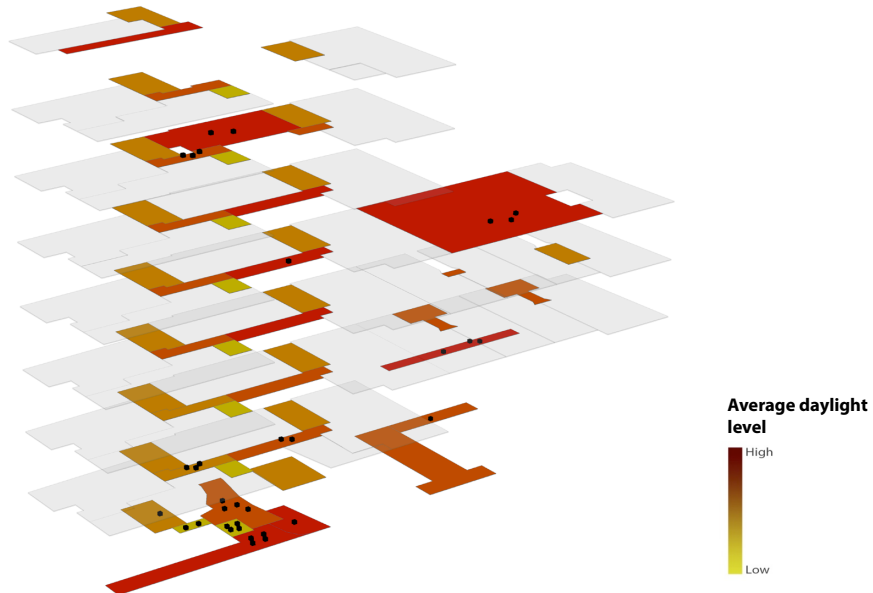


Figure 7.68: Average daylight level and places of contact – Cowgate development (each dot represents one reported contact between residents)

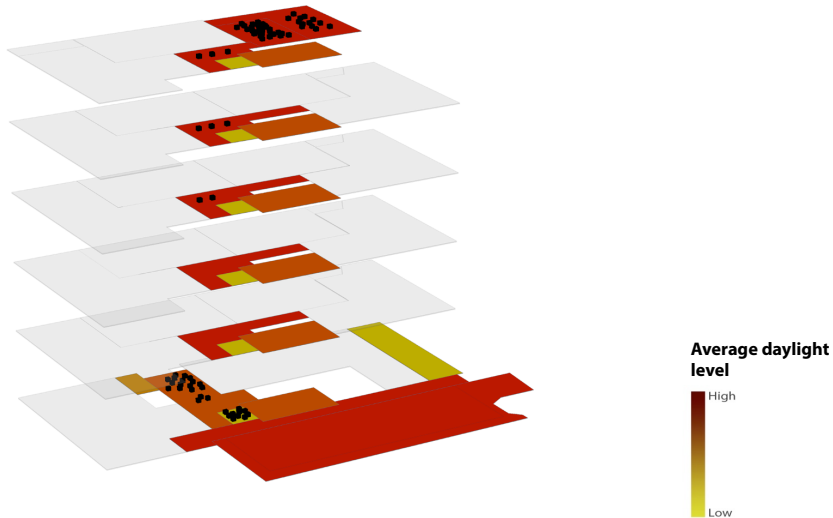


Figure 7.69: Average daylight level and places of contact – Brandfield development (each dot represents one reported contact between residents)

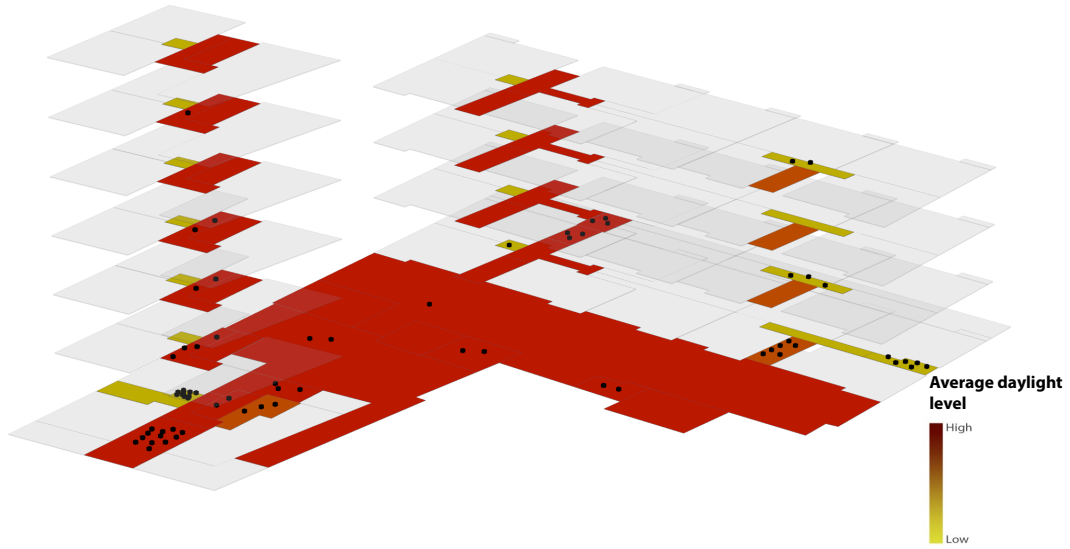


Figure 7.70: Average daylight level and places of contact – Queen Elizabeth development (each dot represents one reported contact between residents)

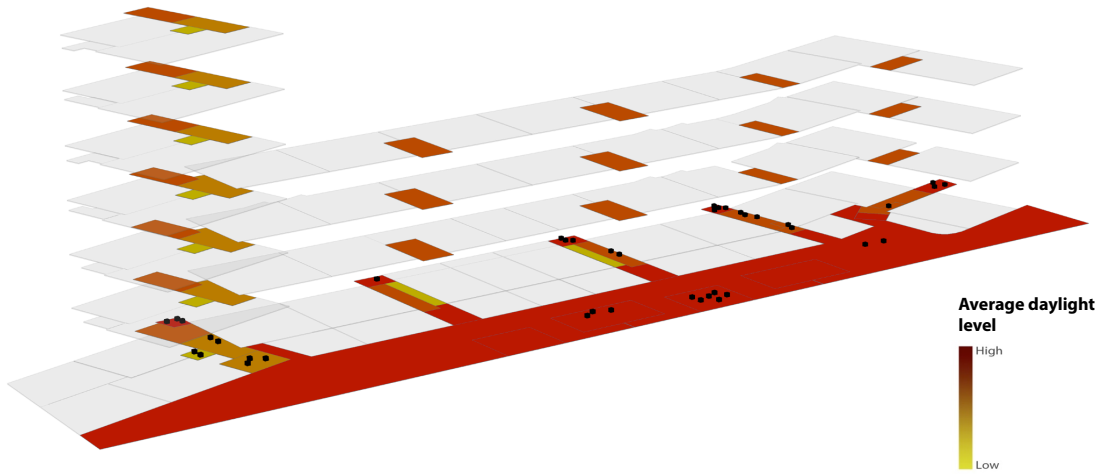


Figure 7.71: Average daylight level and places of contact – McNeil development (each dot represents one reported contact between residents)

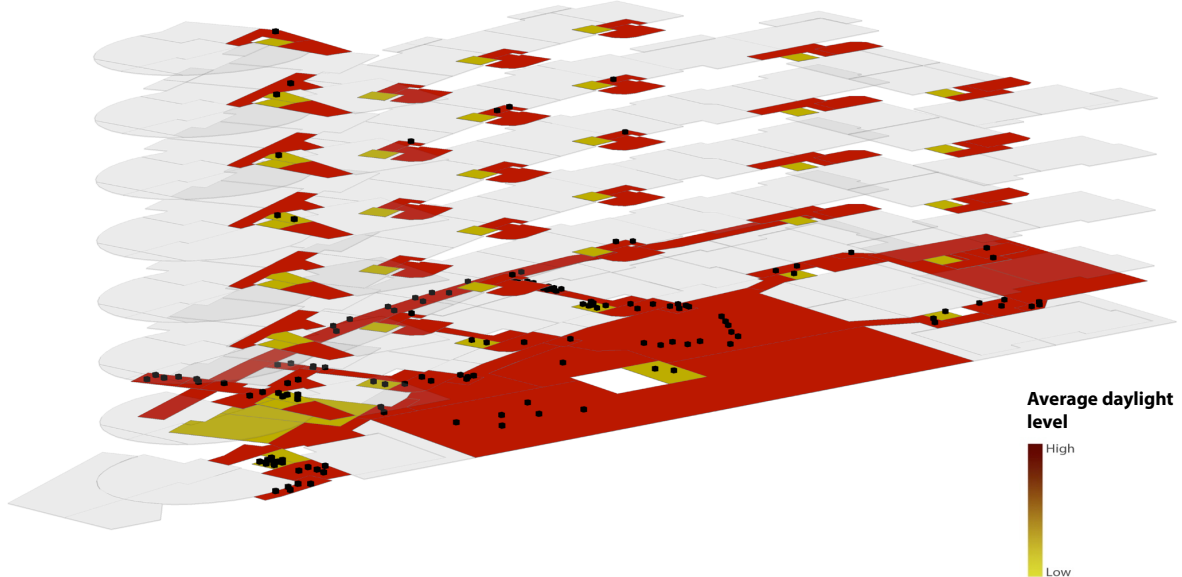


Figure 7.72: Average daylight level and places of contact – Lindsay development (each dot represents one reported contact between residents)

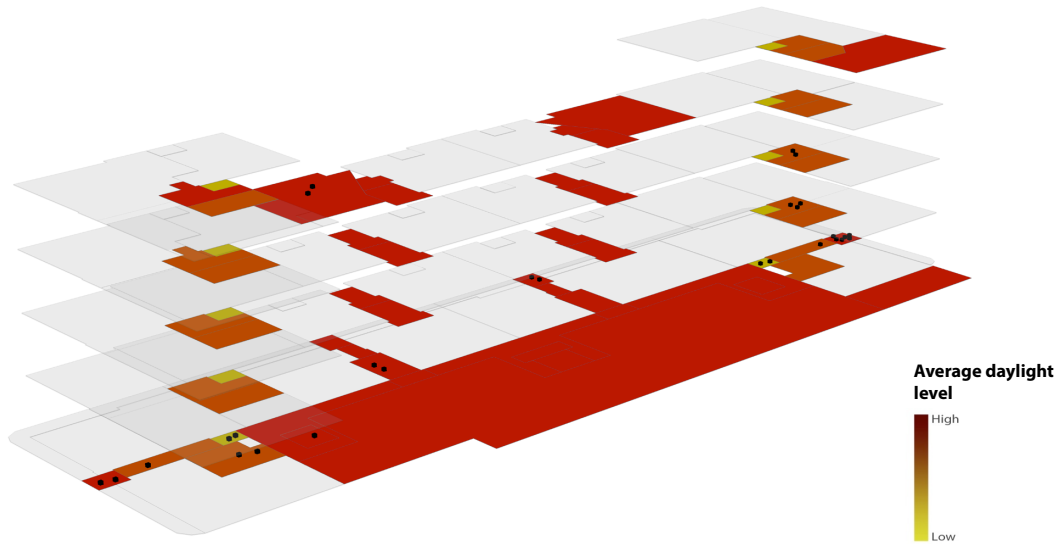


Figure 7.73: Average daylight level and places of contact – Byron development (each dot represents one reported contact between residents)

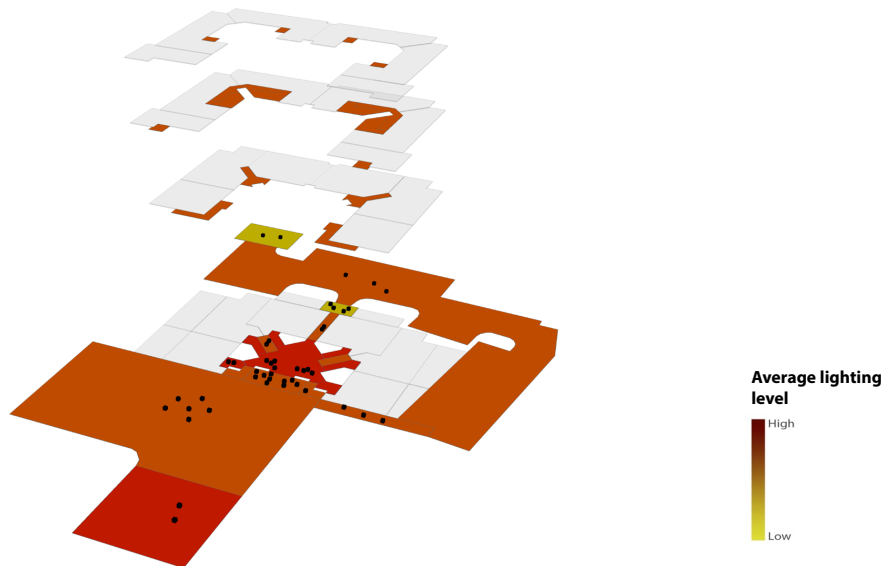


Figure 7.74: Average lighting level and places of contact – Moore development (each dot represents one reported contact between residents)

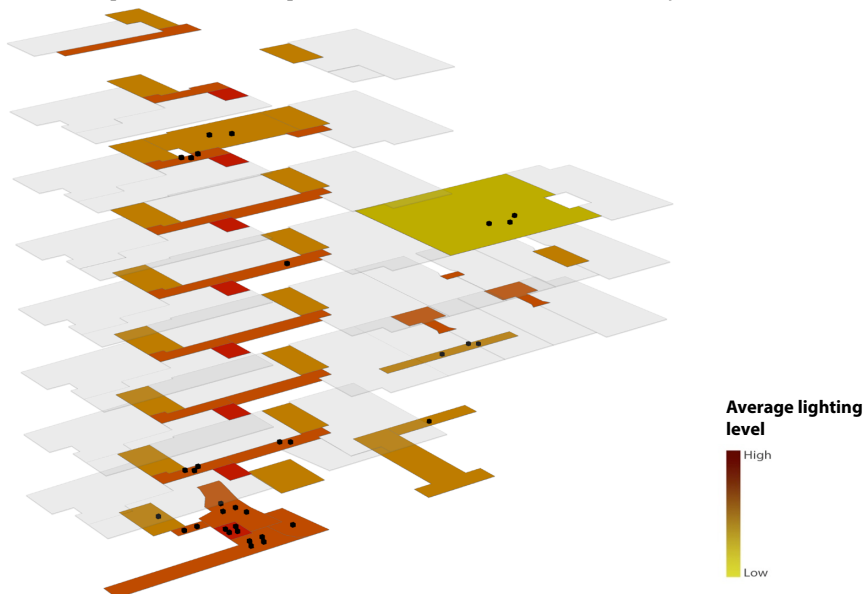


Figure 7.75: Average lighting level and places of contact – Cowgate development (each dot represents one reported contact between residents)

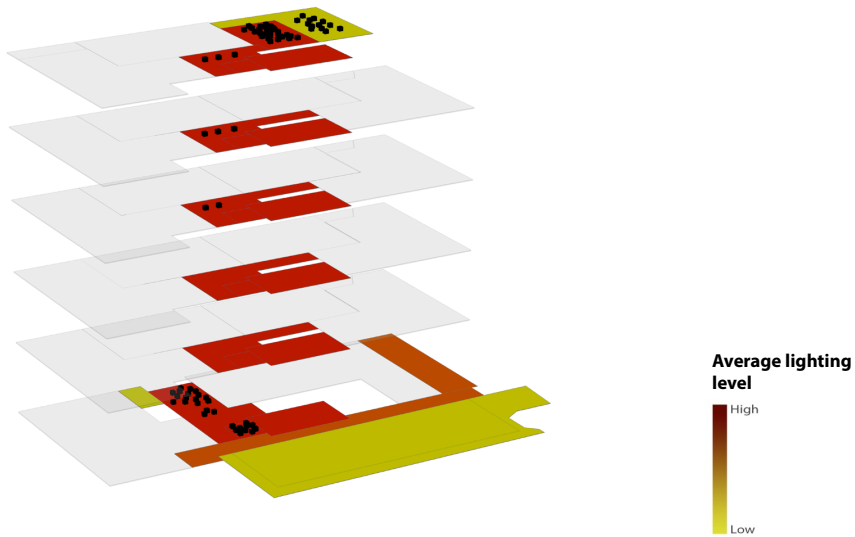


Figure 7.76: Average lighting level and places of contact – Brandfield development (each dot represents one reported contact between residents)

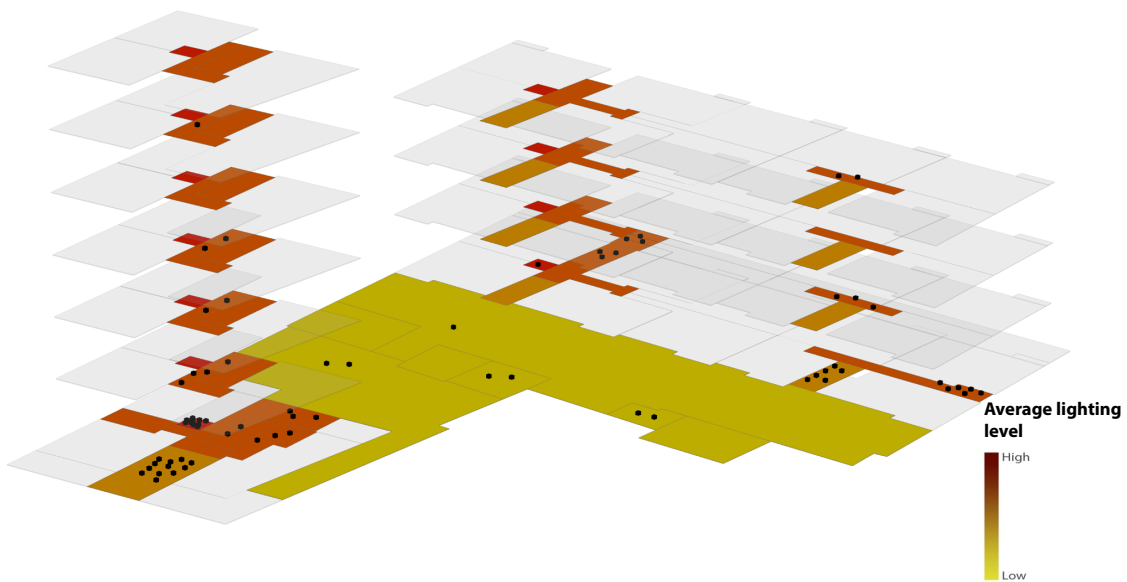


Figure 7.77: Average lighting level and places of contact – Queen Elizabeth development (each dot represents one reported contact between residents)

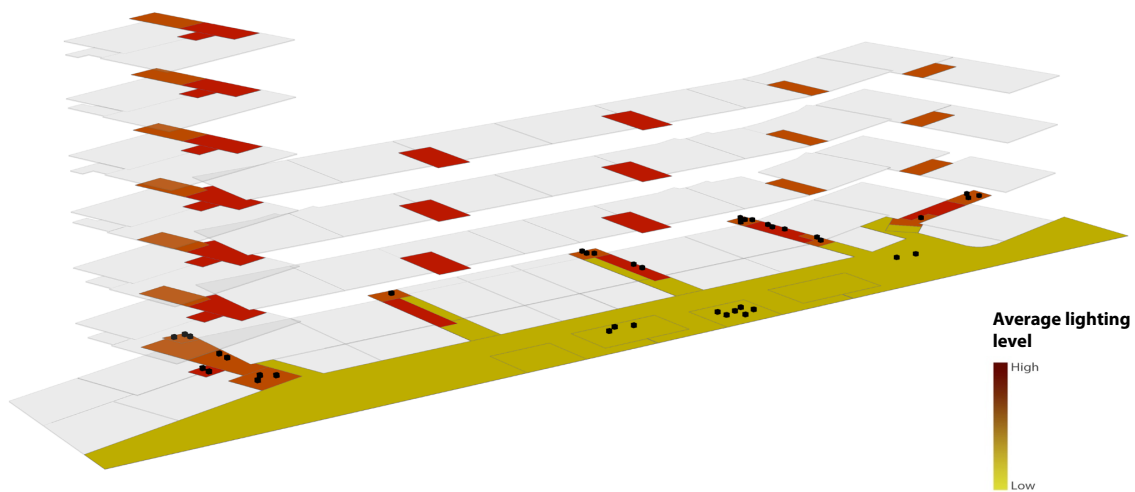


Figure 7.78: Average lighting level and places of contact – McNeil development (each dot represents one reported contact between residents)

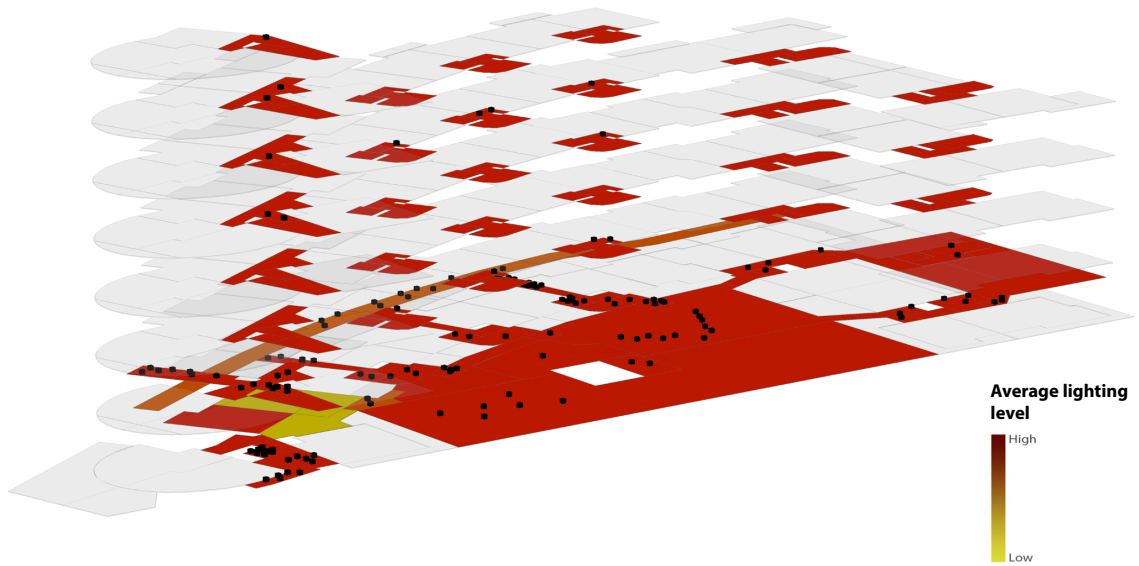


Figure 7.79: Average lighting level and places of contact – Lindsay development (each dot represents one reported contact between residents)

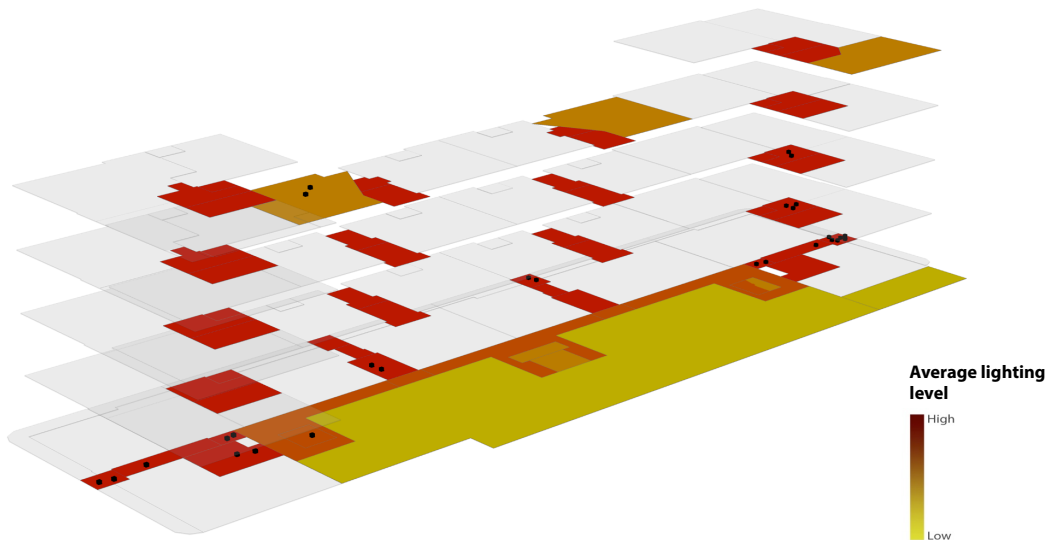


Figure 7.80: Average lighting level and places of contact – Byron development (each dot represents one reported contact between residents)

- **Places of contact and the presence of direct sunshine within communal spaces:**

Overlaying the average sunshine within each communal space with locations of reported social interactions among residents, no particular pattern or relationship between these two factors has been identified (see Figure 7.80 to Figure 7.86). Many communal spaces with direct sunshine have been abandoned, while some other spaces with no direct sunshine have been used frequently.

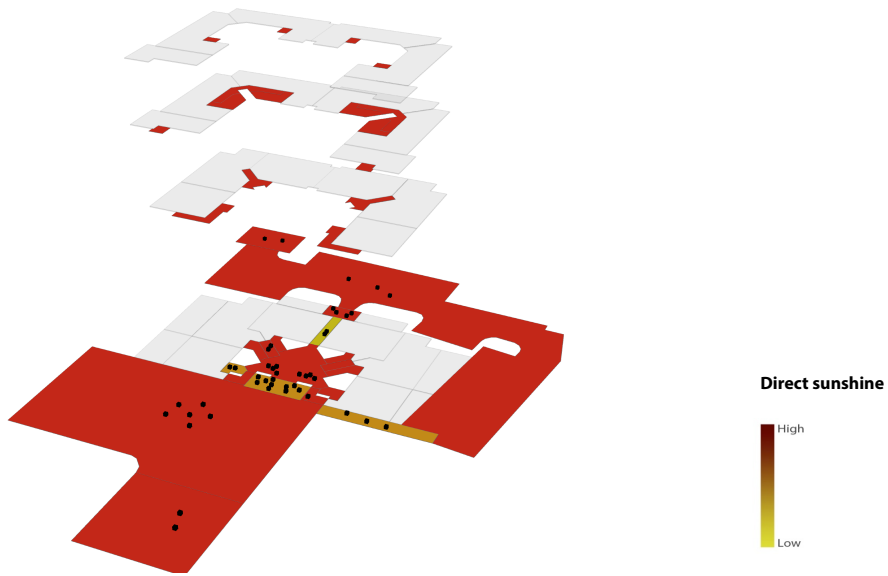


Figure 7.81: Direct sunshine and places of contact – Moore development (each dot represents one reported contact between residents)

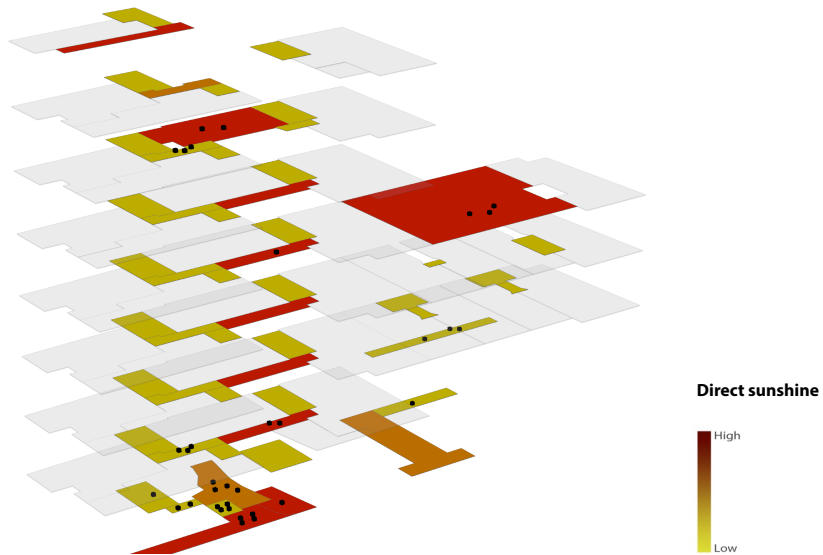


Figure 7.82: Direct sunshine and places of contact – Cowgate development (each dot represents one reported contact between residents)

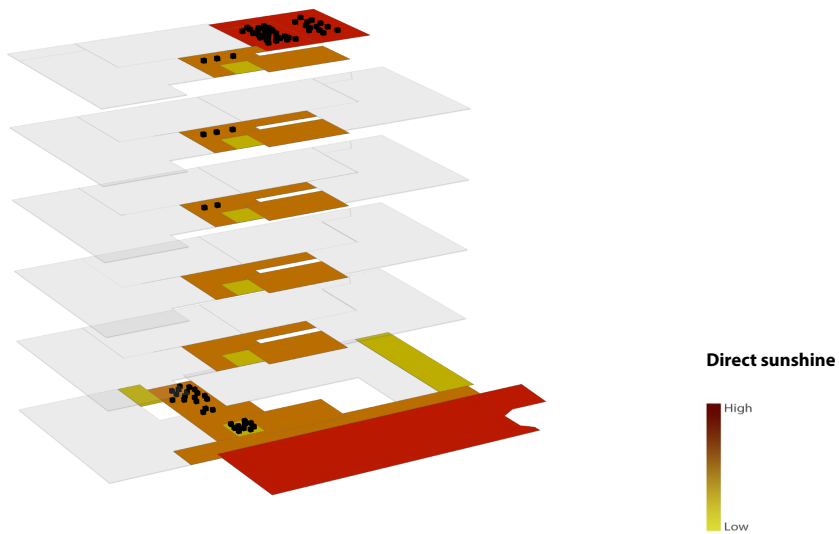


Figure 7.83: Direct sunshine and places of contact – Brandfield development (each dot represents one reported contact between residents)

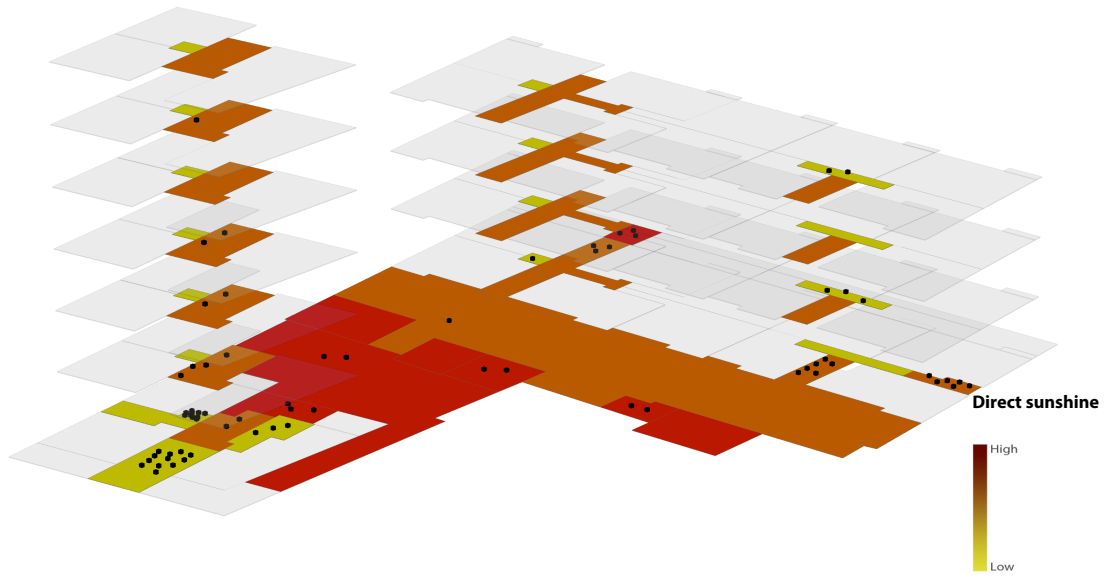


Figure 7.84: Direct sunshine and places of contact – Queen Elizabeth development (each dot represents one reported contact between residents)

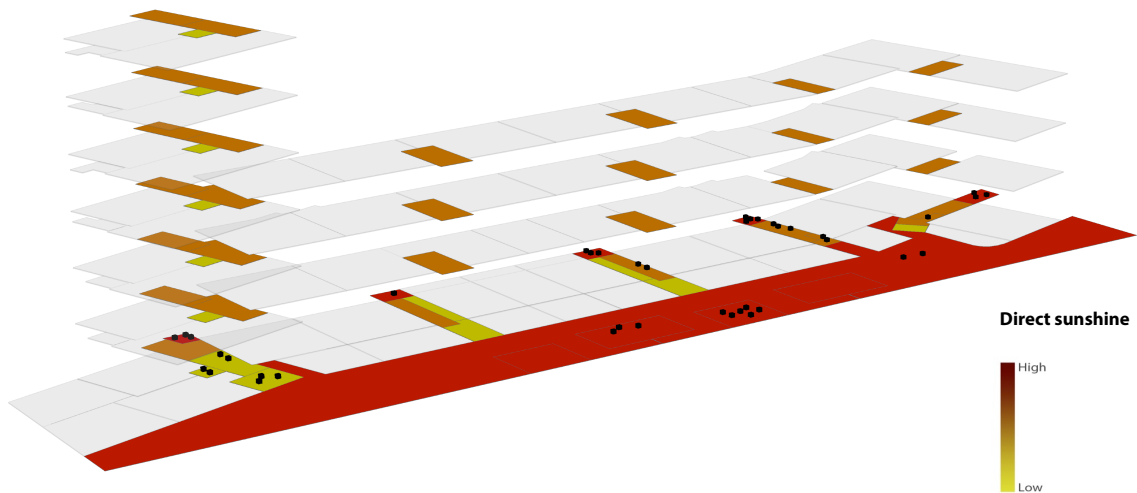


Figure 7.85: Direct sunshine and places of contact – McNeil development (each dot represents one reported contact between residents)

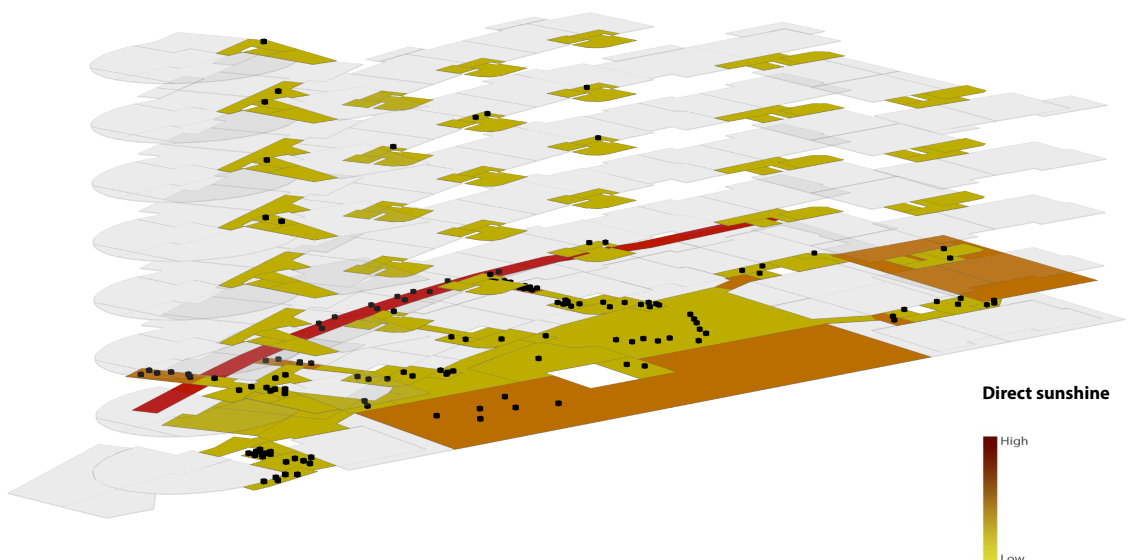


Figure 7.86: Direct sunshine and places of contact – Lindsay development (each dot represents one reported contact between residents)

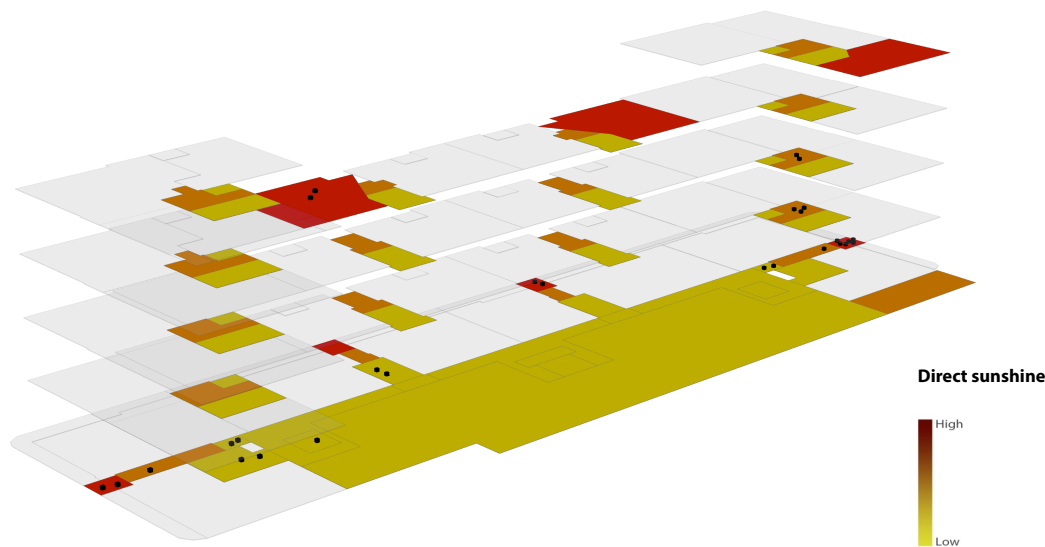


Figure 7.87: Direct sunshine and places of contact – Byron development (each dot represents one reported contact between residents)

Overall, it can be suggested that while artificial lighting during the night has a positive impact on the use of communal spaces, there is no evidence of the impact of direct sunshine or daylight on social interaction among residents.

7.2.3.4 Green space

The overall hypothesis is that the presence of greenery can affect the use of communal spaces for social interaction among residents positively (Kaplan, Kaplan et al. 1989, Skjaeveland, Garling 1997, Borst, Miedema et al. 2008, Cooper Marcus, Sarkissian 1986, Huang 2006, White, Gatersleben 2011).

Overlaying places of contact and green spaces within the communal spaces of all seven developments, it can be observed that less contacts have been reported within the two developments with no or very limited green areas but green areas are not necessarily places of contacts (see Figure 7.87 to Figure 7.93). This is in line with other findings on the neighbourhood scale that suggest presence of greeneries can increase social interaction among people by attracting them to use communal areas (Skjaeveland, Garling 1997, Kaplan, Kaplan et al. 1989). However, there was no evidence that residents would prefer green spaces over built spaces for social interaction which is in contrast with the findings of Borst and Miedema et al. (2008) about streets and parks.

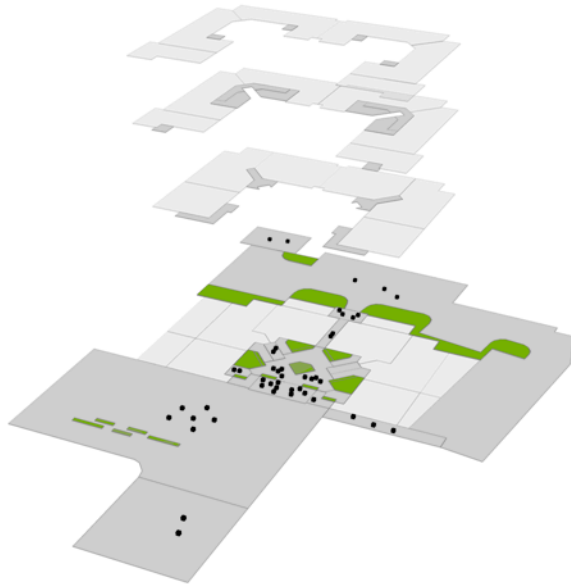


Figure 7.88: Green areas and places of contact – Moore development (each dot represents one reported contact between residents)

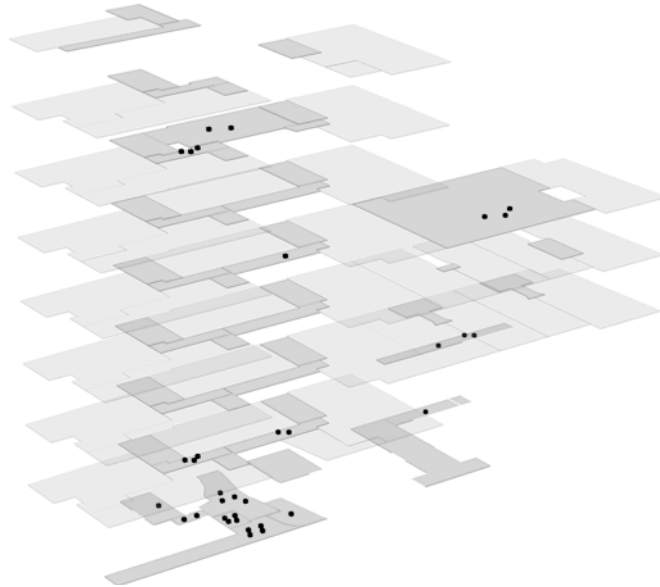


Figure 7.89: Green areas and places of contact – Cowgate development (each dot represents one reported contact between residents)

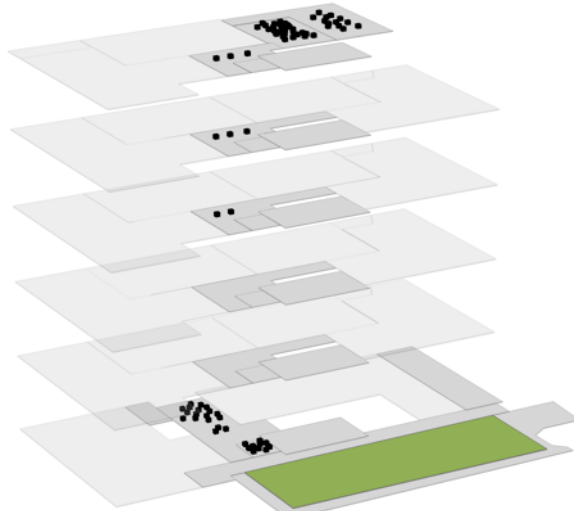


Figure 7.90: Green areas and places of contact – Brandfield development (each dot represents one reported contact between residents)

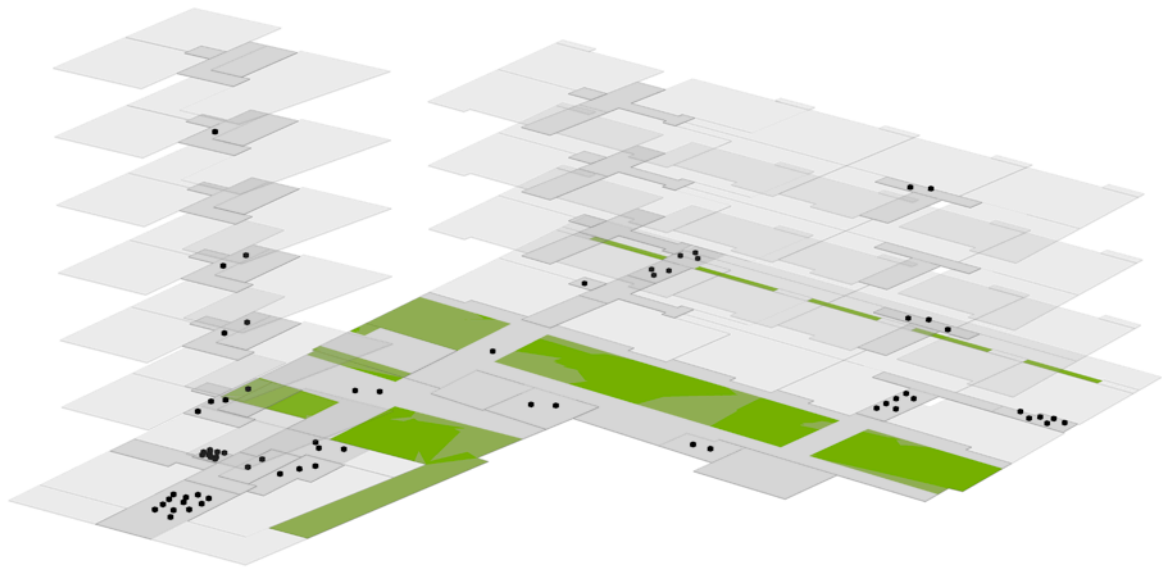


Figure 7.91: Green areas and places of contact – Queen Elizabeth development (each dot represents one reported contact between residents)

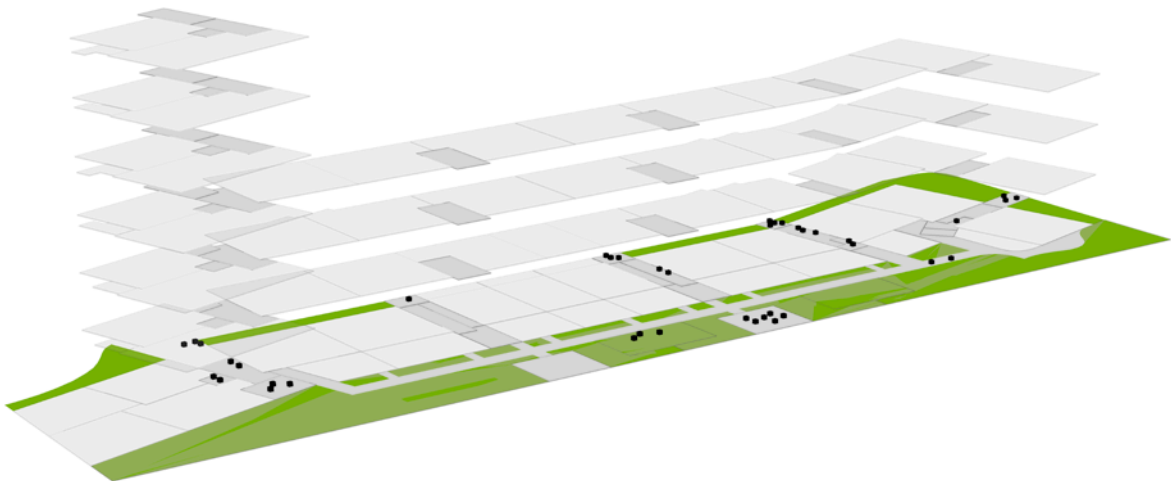


Figure 7.92: Green areas and places of contact – McNeil development (each dot represents one reported contact between residents)

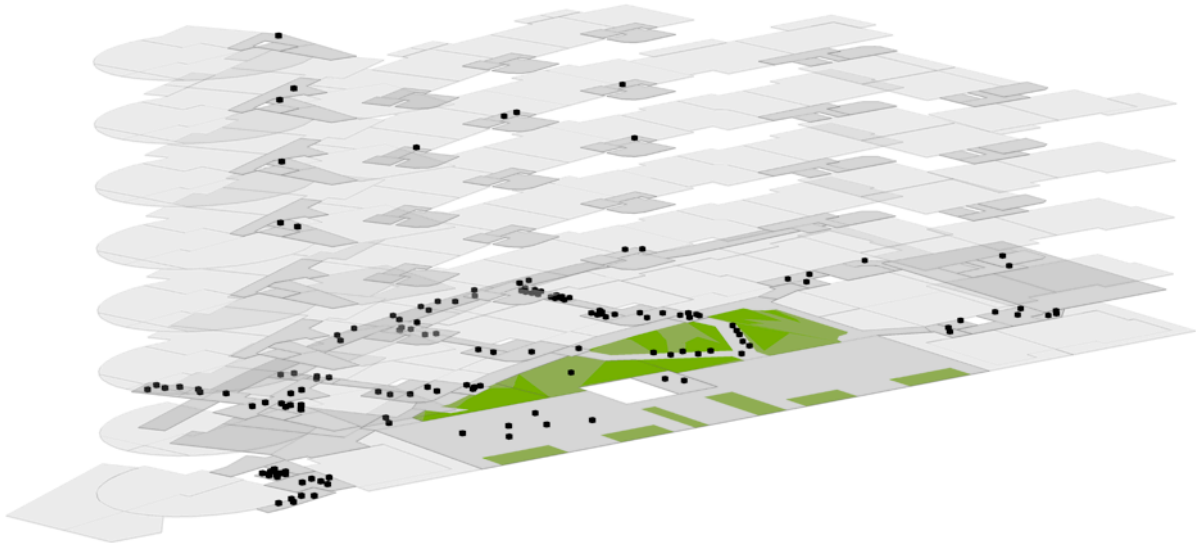


Figure 7.93: Green areas and places of contact – Lindsay development (each dot represents one reported contact between residents)



Figure 7.94: Green areas and places of contact – Byron development
(each dot represents one reported contact between residents)

Overall, it can be suggested that among the many different factors which have been found to affect the visual attractiveness of communal spaces on larger scales, two elements of the presence of greenery and good lighting during the night can be more effective regarding the level of social interaction among the residents of urban residential developments in Scotland. However, the effect of colour and view needs more investigation using a better variety of samples.

7.2.4 Privacy

Previous studies have explored the relationship between privacy and the use of communal spaces as well as the social interaction level among people (e.g. Evans, McCoy 1998, Goffman 1959, Lindsay 2010). As discussed previously in Chapter 3, in this study, “privacy” is used as a term for different mechanisms of controlling either access to space or exchanging information between individuals or groups of people (Kupritz 1998, Altman 1975). Based on this definition of privacy, other aspects such as security and territories have also been investigated in this section. After reviewing the literature extensively, two design attributes have been selected including “privacy inside the dwelling” and “privacy inside communal spaces”. The relationships between these two design attributes with the use of communal spaces and social interaction among residents have been explored through a descriptive analysis of data using statistical charts and content analysis of interviews.

7.2.4.1 Privacy inside the dwelling

The overall hypothesis is that having privacy inside the dwelling can affect the quality and quantity of social interaction among residents positively (Marshall 1972, Nemecek,

Grandjean 1973, Stokoe, Wallwork 2003, Lindsay 2010). In order to understand this effect, the relationships between the N-Index and S-N-Index with the P-Index have been explored.

- **The N-Index and P-Index for residents:**

Looking at the N-Index and P-Index for the residents of all seven developments, it can be observed that residents who are satisfied with the level of privacy inside their units have a higher N-Index (see Figure 7.94). This means that there is a positive relationship between residents' perception of privacy inside their dwellings and their perception of the neighbouring level within their residence. This supports the findings of Lindsay (2010) regarding the importance of privacy at home within urban residential developments.

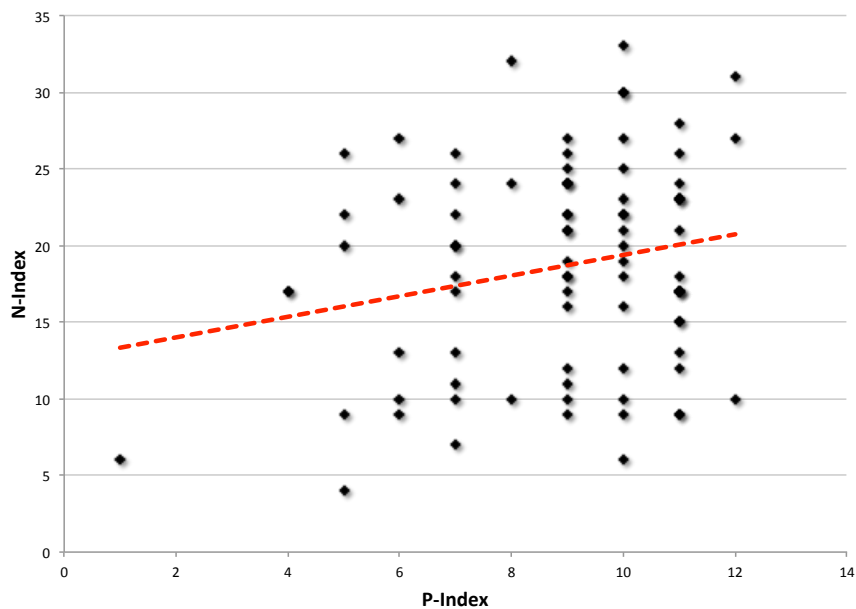


Figure 7.95: The N-Index and level of privacy inside the dwellings for all seven developments

- **The S-N-Index and P-Index for residents:**

On the other hand, the P-Index has been found to have a negative relationship with the S-N-Index. The S-N-Index is representative of the size of residents' social network within their residence (see Figure 7.95). The negative relationship can be the result of less information exchange among residents while they are inside their dwellings. Not being able to see or hear anything while you are inside your dwelling may affect the number of neighbours you interact with negatively while increasing one's perception of privacy. This confirms the findings of Lindsay (2010) regarding the positive and negative effects of privacy.

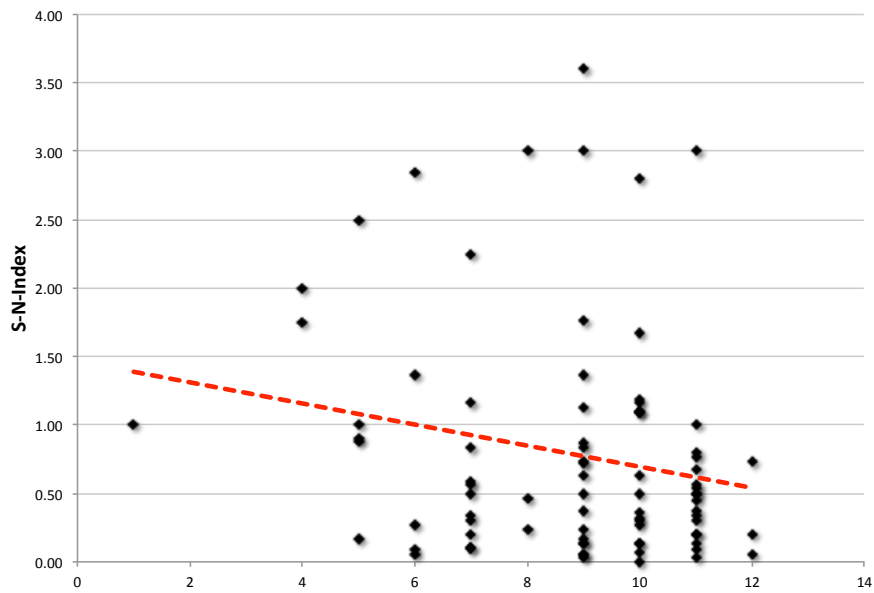


Figure 7.96: the S-N-Index and level of privacy inside the dwellings for all seven developments

- **Noise:**

Lack of sound insulation between dwelling units and intentional communal spaces has been reported as a problem, leading to restrictions in the use of communal spaces. For example, in the Moore development, residents stated that children have been prohibited from playing at the entrance courtyard, which is an intentional communal space, because of noise issues. Also, in the Brandfield development, the access hours of the sunroom, which is again an intentional communal space, have been limited because of the noise problems with adjacent dwelling units. This can be an additional perspective to the existing literature (Marshall 1972, Nemecek, Grandjean 1973, Stokoe, Wallwork 2003) about the negative effects of noise on social interaction within urban residential developments.

Overall, it can be suggested that residents' perception of the level of privacy inside their dwellings can affect different aspects of social interaction among residents both positively and negatively.

7.2.4.2 Well-defined boundaries of communal spaces

The overall hypothesis is that well-defined boundaries of communal spaces can affect the use of space patterns (Evans, Stokols 1976, DeLong 1973, Goffman 1959, Newell 1995, Sundstrom, Altman 1976). Quotes extracted from interviews with the residents have been used to explore this relationship.

- **Territoriality of communal spaces:**

The respondents reported that “clearly defined boundaries” and the “layout” of the communal spaces can increase the chance of using communal spaces by all residents. Communal spaces located very close to one or two dwelling units have been found to be discouraging residents from using them by creating the assumption that they are privately owned. One resident in the Cowgate development answered the question about what they would like to change about the communal spaces within their residence.

“Terrace rooftop feeling more accessible, as it feels more for the people on that floor. When I have been up there it feels as if I am on someone else’s balcony.”

This is in line with previous findings (Evans, Stokols 1976, DeLong 1973, Sundstrom, Altman 1976) about the importance of boundaries and control over space, which has been referred to as territoriality in literature.

- **Public access to communal spaces:**

As part of control over space, security and limiting public access to the communal areas, has been reported as an important factor which can increase the use of communal spaces by residents especially within the developments located close to the city centres. In cases like Cowgate where non-residents have access to the communal areas, misuse of space and vandalism have prevented some residents from using communal areas even for necessary activities such as access.

“People from the workspace on the ground floor of the building come into the stairs, smoke cigarettes, leave paper and mess. I don’t want to bring my grandson passing that to my house.”

Again, this is in line with existing assumptions about the effect of well-defined boundaries as a kind of privacy on the use of space patterns in urban residential developments (Newell 1995, Goffman 1959).

Overall, it can be suggested that well-defined boundaries of communal spaces by controlling public access and territoriality of these spaces will increase the chance of residents using the communal spaces.

7.2.4.3 Private spots within communal spaces

Unfortunately, in the case studies no private spots are provided within communal spaces so we are not able to make any comparison.

Overall, it can be suggested that both privacy inside the dwellings and well-defined boundaries of communal spaces are important factors which can affect how residents use communal spaces and the level of social interaction among them. However, it should be considered that the nature of the balance between privacy and social interaction is not simple and design factors such as the level of privacy inside dwellings can have both positive and negative effects at the same time on different aspects of social interaction among residents.

7.2.5 Affordance

Many researchers have explored the relationship between “affordance”, which is also called “place-capacity” (Hertzberger, Ghait et al. 1998) and “variety” (Bentley 1985), and how people use spaces for social interaction but mainly on neighbourhood and city scales (e.g. Borst, Miedema et al. 2008, Bennet, Yiannakoulis et al. 2012, Huang 2006, Gehl 1996, Skjaeveland, Garling 1997, Burton, Mitchell 2006, Francis, Giles-Corti et al. 2012, Kearney 2006). As discussed in Chapter 3, “inclusiveness” can also be considered as part of the affordance of space to accommodate young children, the elderly and people with special needs. Based on a review of the existing literature, four design attributes have been selected including, “seats”, “children’s play area”, “variety of functions” and “shelter”. The relationships between these four design attributes with the use of communal spaces and social interaction among residents have been explored through a descriptive analysis of the data using GIS maps and content analysis of the interviews.

7.2.5.1 Seats

The overall hypothesis is that seats attract more people and affect the use of communal spaces and social interaction among residents positively (Borst, Miedema et al. 2008, Burton, Mitchell 2006, Gehl 1996, Huang 2006).

Overlaying the location of seats and the places of contact within communal spaces as well as the I-S-Index, no particular pattern or relation is identified between these factors (see Figure 7.96 to Figure 7.102). However, many residents have suggested more seats for communal spaces (especially in the Lindsay and Moore developments). Also, many residents have mentioned “sitting outside”, both as an existing and potential activity within the communal spaces of their residence. Therefore, it can be argued that although there is no evidence of a direct relationship between seats and the use of space, seats can motivate some residents to

spend more time in communal spaces. However, as Borst (2008) has also mentioned, other factors such as shelter and view may affect if and how residents will use the seats. This could be a subject for another study about if and how people use seats within their development or neighbourhood.

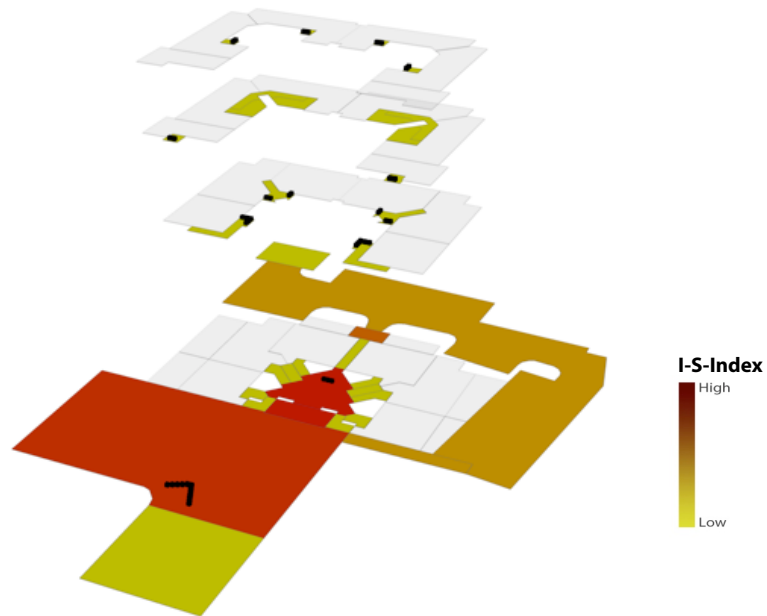


Figure 7.97: I-S-Index and seats (black dots) – Moore development

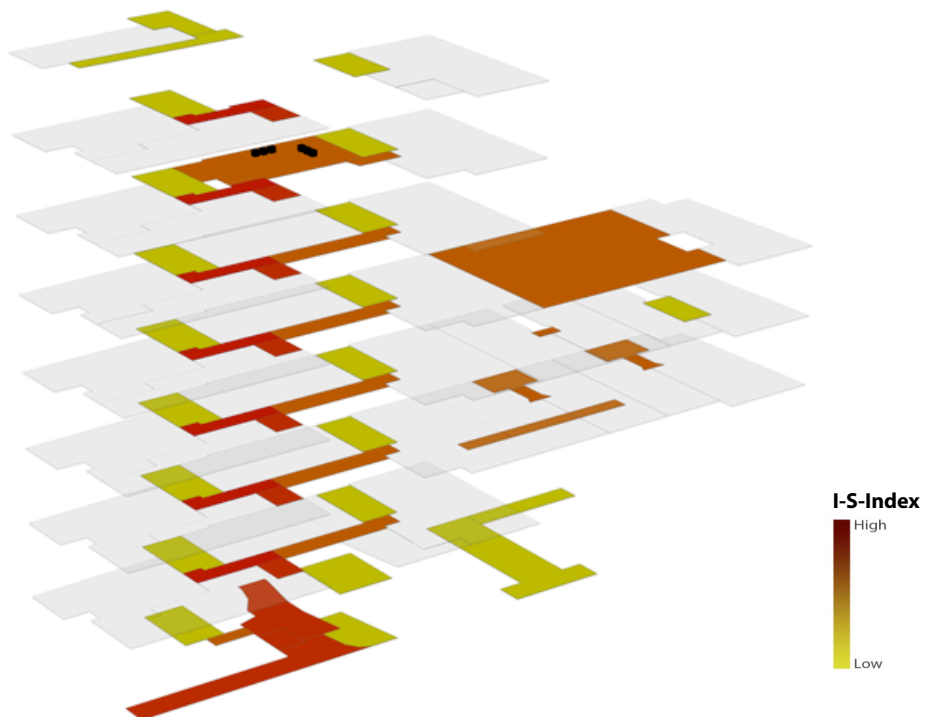


Figure 7.98: The I-S-Index and seats (black dots) – Cowgate development

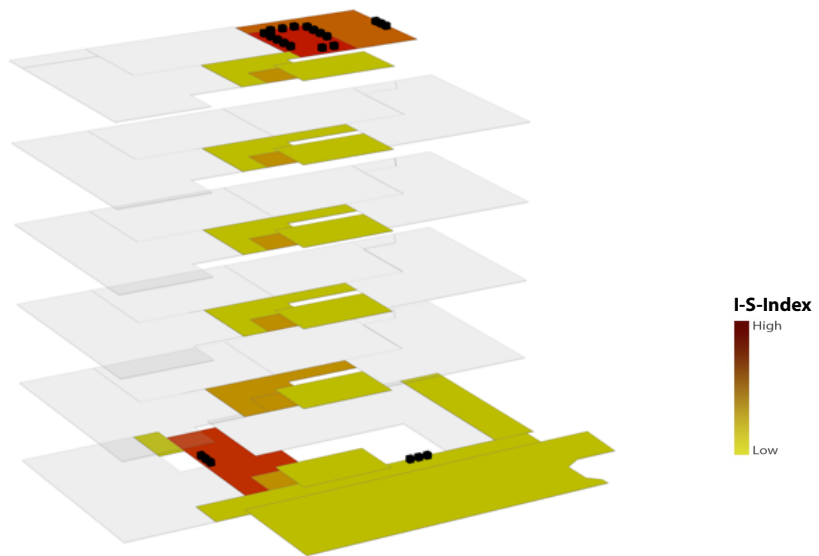


Figure 7.99: The I-S-Index and seats (black dots) – Brandfield development

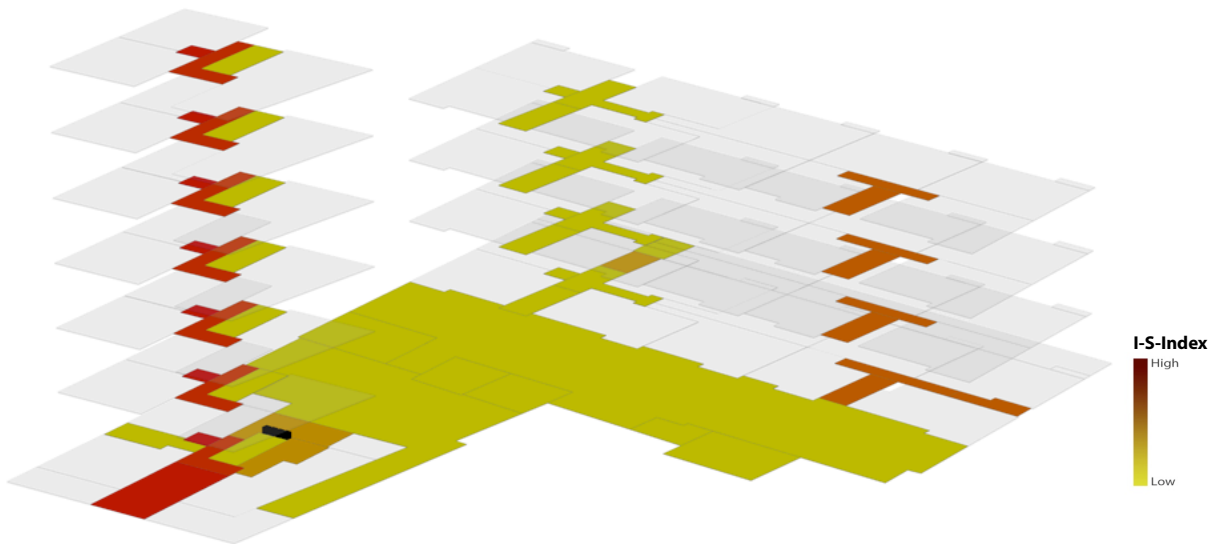


Figure 7.100: The I-S-Index and seats (black dots) – Queen Elizabeth development

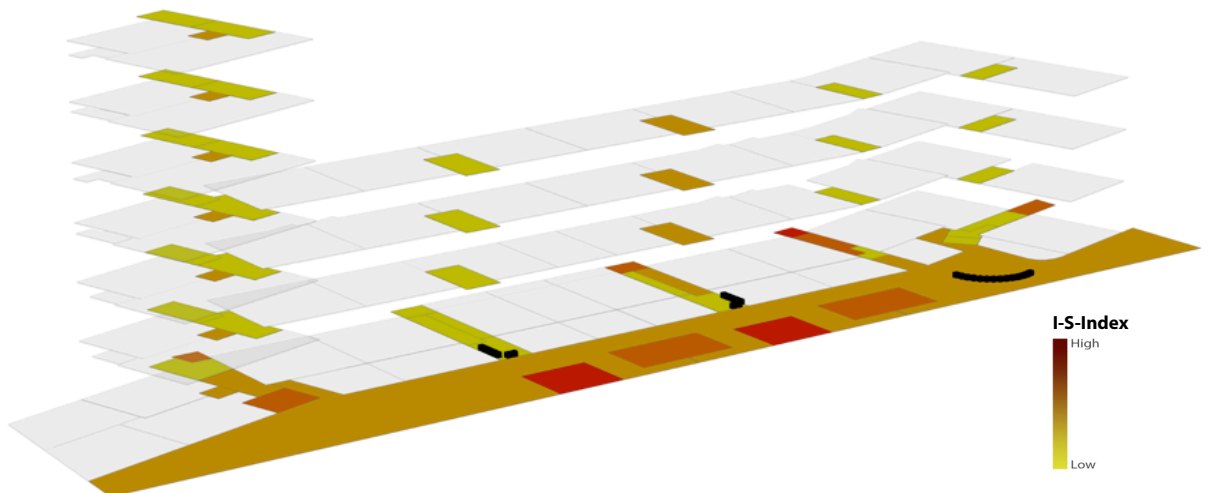


Figure 7.101: The I-S-Index and seats (black dots) – McNeil development

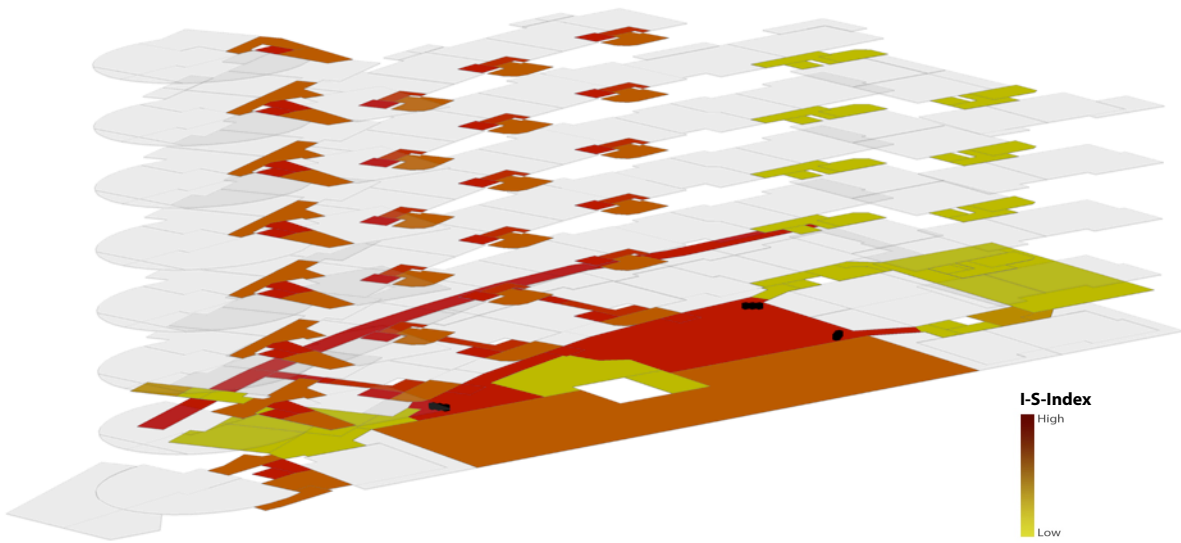


Figure 7.102: The I-S-Index and seats (black dots) – Lindsay development

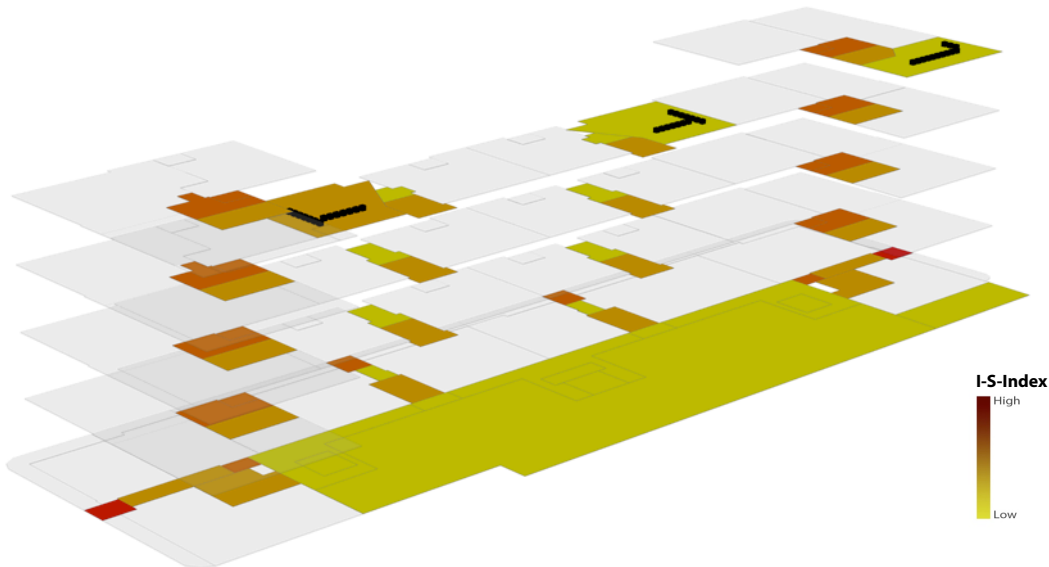


Figure 7.103: The I-S-Index and seats (black dots) – Byron development

7.2.5.2 *Children's play area*

The overall hypothesis is that a children's play area attracts both children and adults and affects the social interaction among residents positively by creating an interactional pretext (Bennet, Yiannakoulis et al. 2012, Cooper Marcus, Sarkissian 1986, Farida 2013, Kearney 2006).

Unfortunately, none of the studied developments have benefited from a well-functioning children's play area. Therefore, it is not possible to draw any conclusion regarding the effect of a children's play area on the level of social interaction among residents. However, many residents have emphasised the importance of a designated area for children to play.

Moreover, for certain reasons, including safety concerns, visibility, physical proximity and noise, the existing communal spaces which were supposed to accommodate children playing, are not suitable for this purpose.

7.2.5.3 Variety of functions

The overall hypothesis is that the greater the variety of functions which can be accommodated in communal spaces means residents will use them more and this will affect social interaction among residents (Kuo, Sullivan et al. 1998, Unger, Wandersman 1985, Huang 2006, Hertzberger, Ghait et al. 1998, Skjaeveland, Garling 1997).

Unfortunately, in the case studies such a variety is not provided within communal spaces so we are not able to make any comparison. However, many residents have mentioned that they would like to have communal spaces for specific activities such as barbeque, smoking, bingo nights, etc.

7.2.5.4 Shelter

The overall hypothesis is that due to the weather conditions, sheltered and indoor communal spaces can accommodate more interactions among residents (Burton, Mitchell 2006, Hertzberger, Ghait et al. 1998).

In order to explore the relationship between shelter and the use of space, the I-S-Index of four different types of communal spaces, including “Outdoor-Exposed”, “Outdoor-Sheltered”, “Indoor-without AC” and “Indoor-with AC”, have been compared for all seven developments (see Figure 7.103). Overall, it can be observed that outdoor-sheltered communal spaces have been used more for social interaction in comparison with outdoor-exposed communal spaces, which is confirmation of the findings from previous studies (Burton, Mitchell 2006). However, the difference between outdoor-sheltered spaces and indoor-without AC spaces is very minimal and it can be argued that these two types are similar. In the case of indoor spaces with air conditioning systems, since there are only two samples, it is not possible to draw any conclusion.

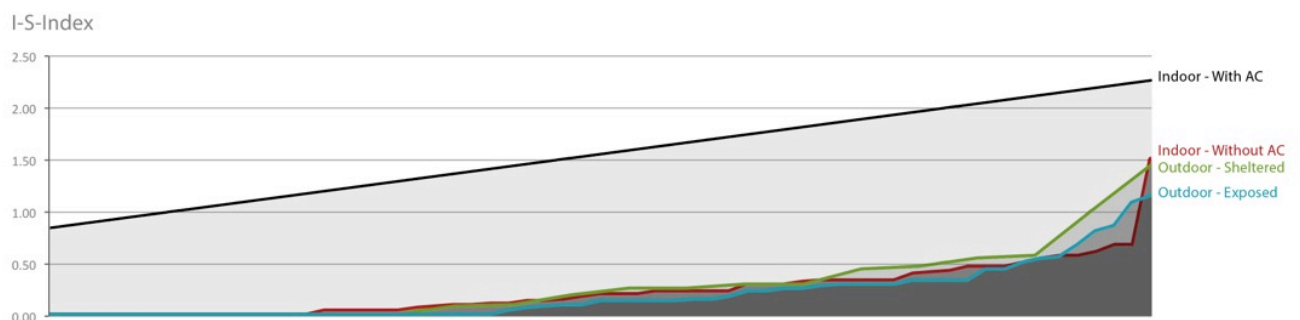


Figure 7.104: The I-S-Index of indoor and outdoor communal spaces for all seven developments

In conclusion, it can be argued that having a shelter which can protect users from rain can affect the use of communal spaces while the thermal comfort is not as effective as a shelter. In other words, being sheltered or exposed is more important than being indoors or outdoors.

Overall, although there is no evidence of the positive effect of seats, a children's play area or suitability for various functions on social interaction among residents, based on interviews with the residents, it can be argued that these factors are important to residents. Design attributes related to the affordance and function of communal spaces are most frequently mentioned by residents in terms of their expectations of high quality communal spaces. The only design attribute that has been found to have a positive effect on social interaction among residents is the presence of shelters to protect them from rain.

7.2.6 Density

Many researchers have studied the impact of density and its relative concepts such as crowding effect and compact cities on social interaction among residents (Burgess, Jenks 2000, Dave 2011, Loo, Ong 1984, Lindsay 2010, e.g. Raman 2010). Because the recent popularity of the topic resulted in extensive empirical and theoretical literature in this area, in this study the density and its relative concepts have been excluded by choosing all the seven case studies from medium density urban developments.

7.3 Association between non-environmental factors and social interaction

7.3.1 Age and gender

Looking at the social interaction indicators, i.e. the S-N-Index, S-T-Index and N-Index, for the male and female residents of all seven developments, the social interaction level among female residents is slightly higher than for male respondents (see Figure 7.104). However, the difference is not significant enough to support the idea of any relation between gender and social interaction level.

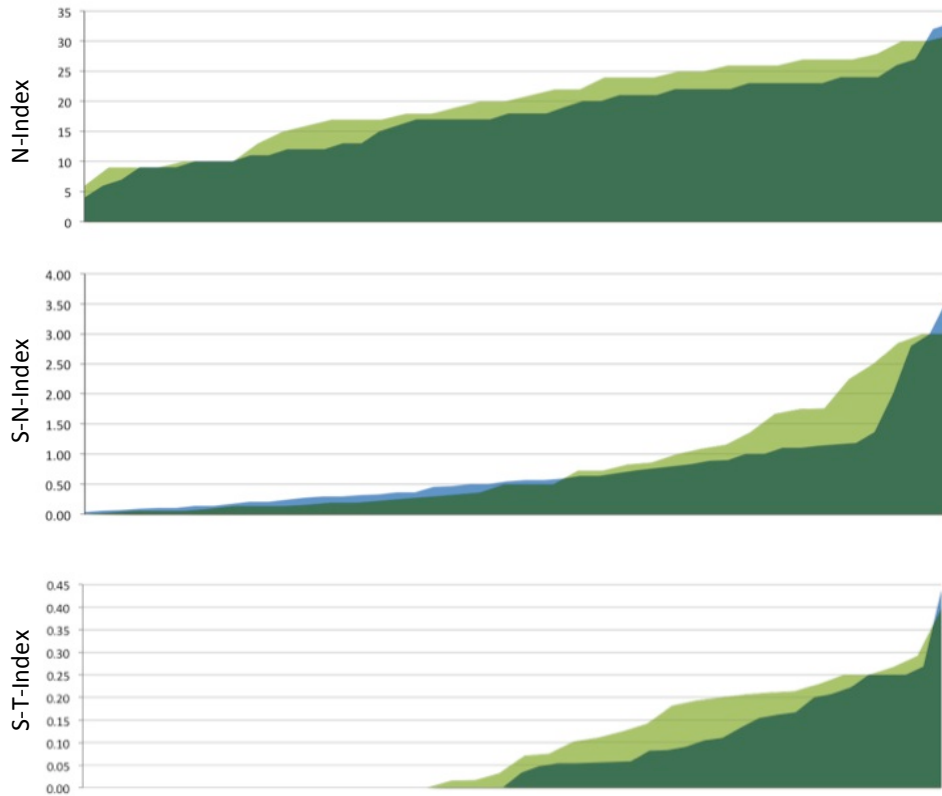


Figure 7.105: Gender and social interaction indicators (blue=male and green=female)

The number of people in the residents' social networks for different age groups shows a major difference between the three categories of age groups; young residents, middle age residents and the elderly (see Figure 7.105). The youngest age group of respondents, i.e. under 24 years old, have the lowest level of the S-N-Index among the residents of all seven developments. The S-N-Index is significantly higher for residents in the three middle age groups, i.e. 25 to 34, 35 to 44 and 45 to 59. In other words, residents between 25 and 59 know more people in comparison with residents under 24. Finally, the last two age groups, i.e. 60 to 75 and above 75, who are mostly retired, have the highest level of the S-N-Index. These findings are in line with previous studies (Buonfino, Hilder 2006) which claim that the elderly and middle age families have more social interaction with their neighbours.

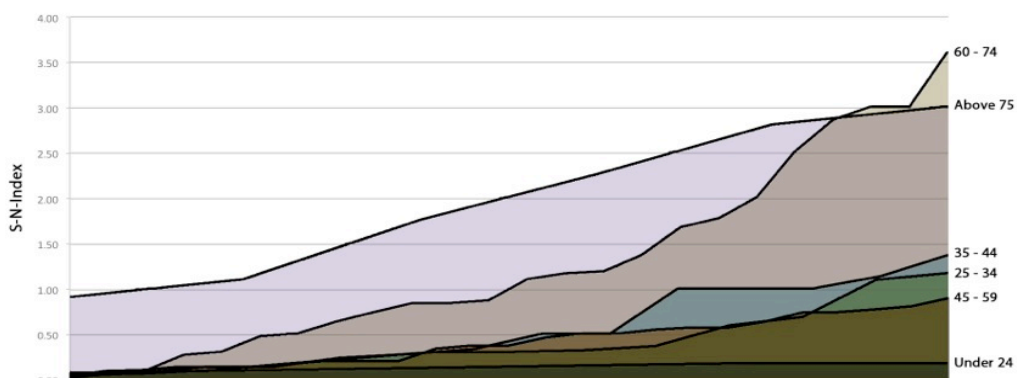


Figure 7.106: The S-N-Index and age groups

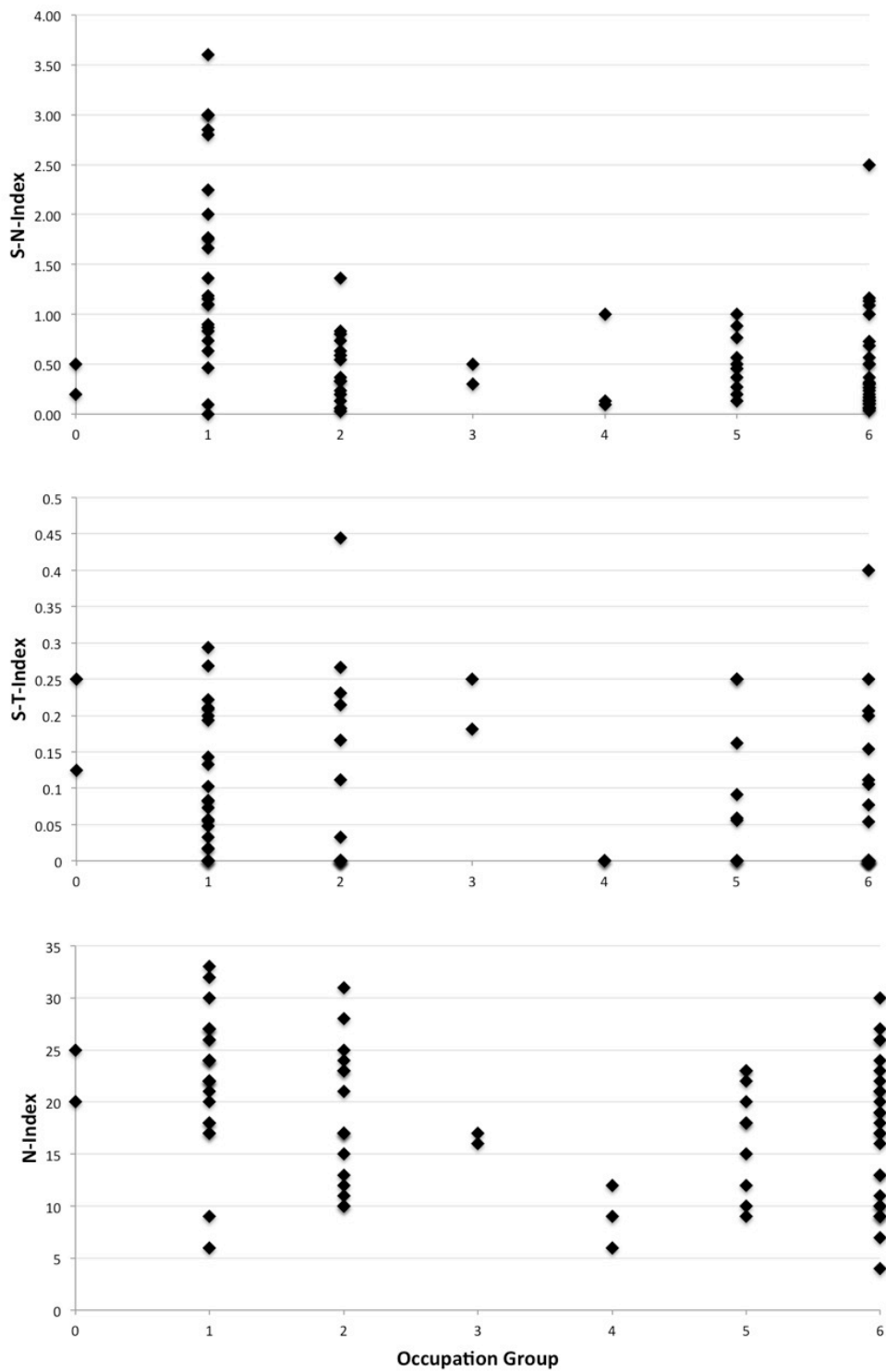
Overall, gender has been found to have no impact on the social interaction level of residents. Also, a positive relationship has been found between age and the number of people respondents know in their residence. However, it has been observed that age has no significant effect on residents' perception of neighbouring level, i.e. the N-Index, within their residence and the strength of social ties, i.e. the S-T-Index, among residents.

7.3.2 Education and occupation

Looking at the social indicators, i.e. the S-N-Index, S-T-Index and N-Index, for different occupation groups, it can be observed that retired residents have a significantly higher S-N-Index level while residents who are employed, unemployed or full-time student have a lower S-N-Index which means they know fewer people in their residence (see Figure 7.106). This is in line with existing assumptions that retired people have more time and interest in developing their social networks within their residence. However, no significant difference between the S-T-Index of different occupation groups has been observed which means the average relative portion of strong ties and weak ties is not different among the various occupation groups (see Figure 7.106). Moreover, it has been observed that residents who are self-employed or full-time students have a lower N-Index in comparison with other occupation groups which means people from these two groups have a worse perception of the neighbouring atmosphere within their residence. Further research is needed in this area to confirm or explain these findings. In contrast with some previous findings (Buonfino, Hilder 2006), full-time employed people have been found to have a very good perception of neighbouring level within their residence.

Education level has been found to have a negative relationship with the S-N-Index which means that residents with higher education know fewer people in their residence (see Figure 7.106). This can be due to their ability to form and maintain social networks outside their residence or neighbourhood. However, in terms of the strength of social ties (S-T-Index) and the perception of neighbouring level (N-Index) no significant difference has been found between residents with different level of education.

Overall, occupation status and education level have been found to have no significant impact on residents' perception of neighbouring level and the strength of social ties among residents. However, retired residents have been found to know more people in comparison with other occupation groups and residents with higher education know fewer people in comparison with less educated residents.



Occupational status; 6=Full-time employed; 5= Part-time employed; 4= Self-employed; 3= Full-time student; 2= Unemployed; 1= Retired; 0= Others

Figure 7.107: Occupation status and social interaction indicators

7.3.3 Diversity

Different types of diversity which have been claimed to affect social interaction among the residents of residential developments include age diversity, cultural diversity and economical diversity. In this research only the first type has been studied due to the lack of cultural and economical diversity within the sample developments. Among the seven samples used for this research, one is an over 55s care apartment, while the remaining samples accommodate a diverse range of residents from students to retired elderly people and families with children. Looking at the overall social interaction indicators for all seven developments, it can be observed that social interaction level and the use of communal spaces are significantly higher in the care apartment where residents are more homogenous in terms of their life stage (age) (see Figure 7.107). In addition, many respondents have mentioned that the homogeneity of residents can affect social interaction among them positively. This is in line with the findings of previous studies (Talen 1999). However, further research is needed with a larger number of samples to confirm these findings.

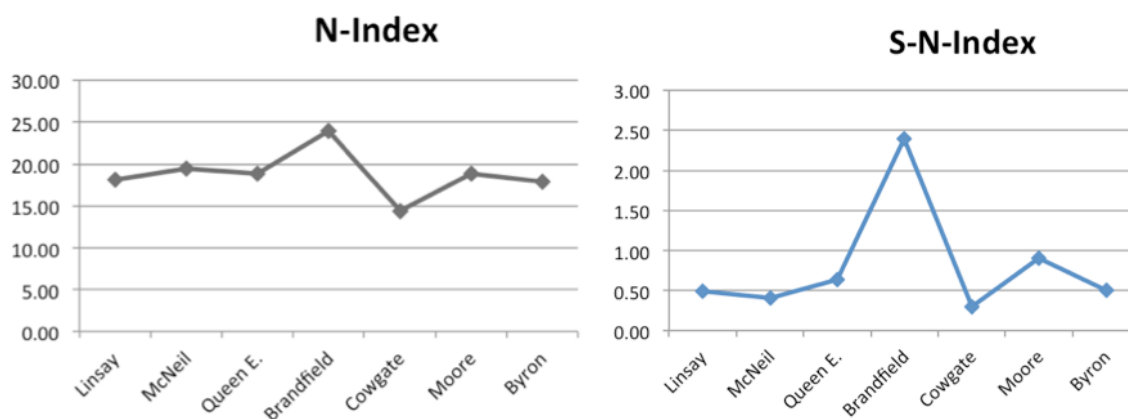


Figure 7.108: The average N-Index and S-N-Index for all seven developments

7.3.4 Household pattern

The existing hypothesis is that the residents of households with children have a higher level of social interaction with their neighbours due to more interactional pretexts and through spending more time within their residence.

Mapping the S-N-Index and N-Index of respondents who have children under 10, no particular pattern has been observed (see Figure 7.108). This is in contrast with previous findings (Bennet, Yiannakoulis et al. 2012), however it can be argued that this is due to the lack of a children's play area within the residential developments. While having children can

create a pretext for more interaction, having access to a functional children’s play area within the development can determine whether this potential turns into reality or not.

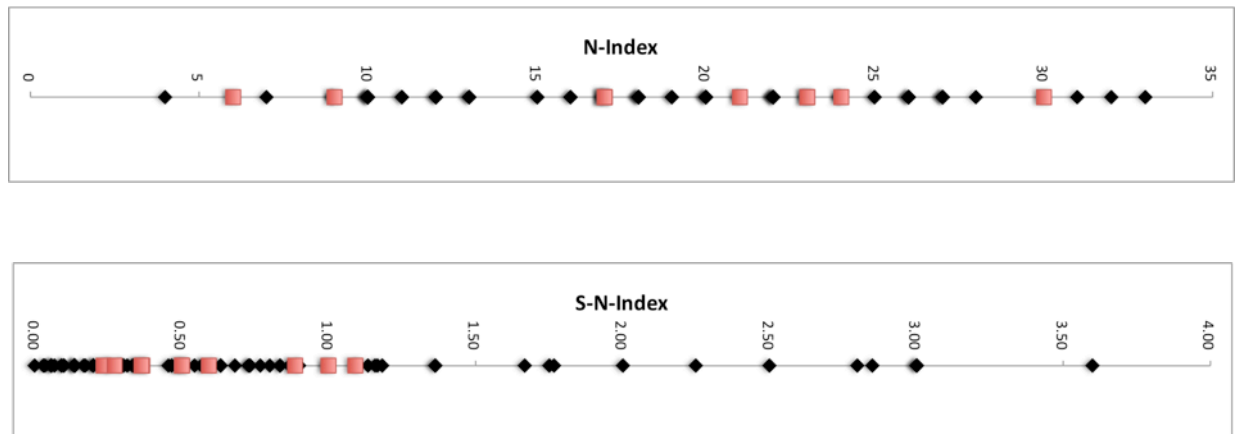


Figure 7.109: The N-Index and S-N-Index of respondents with children (red dots) and without children (black dots)

7.3.5 Length of residency

The overall hypothesis is that people who have lived in a residence for longer have more social interaction with their neighbours in comparison with those residents who have recently moved there (Tobey, Wetherell et al. 1990).

Looking at the S-N-Index of five developments (two of the samples have been excluded due to the lack of variety in the length of residency of their residents), a positive relationship between length of residency and the S-N-Index has been identified (see Figure 7.109). This is in line with the findings of previous studies (Bonaiuto, Aiello et al. 1999) regarding the effect of the length of residency on place attachment and the development of social networks among residents. However, no significant relation between the N-Index and S-T-Index with the length of residency has been found (see Figure 7.109). In other words, people who have stayed longer in their residence know more neighbours but they do not necessarily have stronger social ties or a better perception of neighbouring level.

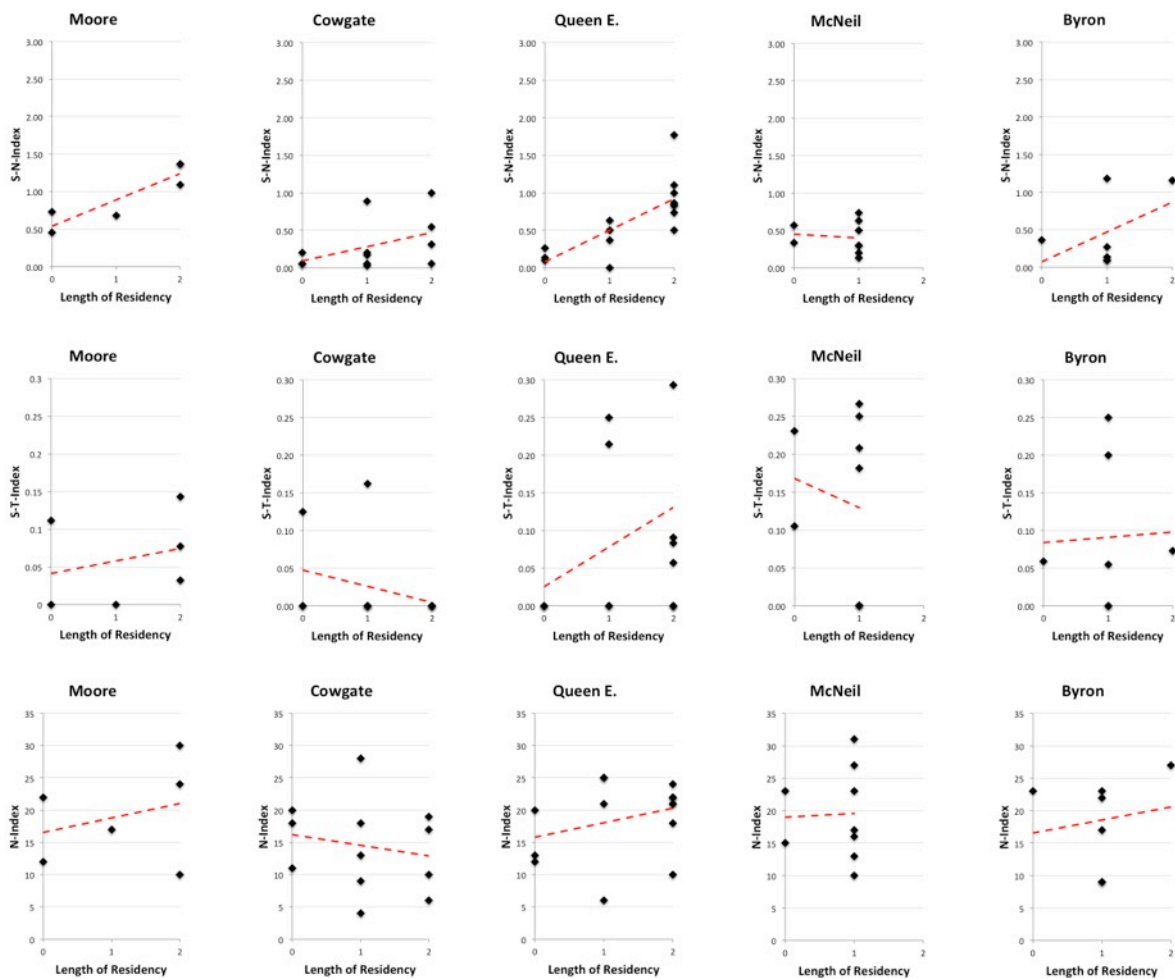


Figure 7.110: Length of residency and social interaction indicators for five developments

7.4 Conclusion

This chapter has investigated the relationship between five selected design qualities and the physical attributes associated with them and both the level of social interaction among residents and the use of communal spaces. The main purpose was to address the fourth research question regarding “whether there is any relationship between the identified physical attributes of communal and service spaces and the quality and quantity of social interaction between residents.” Based on the descriptive analysis of data using GIS maps, statistical charts and content analysis of the interviews, some of the physical attributes have been found to have a direct or indirect impact on social interaction, while no evidence was found to support the effect of some other physical attributes.

Physical proximity and its associated physical attributes have been found to have an indirect effect on social interaction among residents. Higher proximity has increased the frequency of the use of communal spaces as well as the number of reported social contacts within these spaces; however, there is no evidence of any direct effect on social interaction indicators. In the case of intentional communal spaces where the use of space is optional, all three physical attributes associated with physical proximity, i.e. proximity to the main access route and proximity to the dwelling units and the integration value of communal spaces have been found to affect the use of these spaces. The effect of proximity is less on unintentional communal spaces especially those facilitating necessary activities such as bin storage. Moreover, it has been found that most reported social contacts happen closer to the dwelling units. In other words, communal spaces close to the dwelling units such as corridors are found to be important places of contact.

Visual connectivity and its two associated physical attributes, i.e. visibility from the main access route and visibility from the dwelling unit, have been found to have no effect on the use of communal spaces and the level of social interaction among residents. This is in contrast with previous studies on neighbourhood and city scales where visibility was found to be an important factor. This might be due to the fact that regarding building scale, residents' sense of safety is more independent from built environment attributes such as the natural surveillance effect in neighbourhood scale.

Some physical attributes associated with the visual attractiveness of communal spaces have been found to have both a direct and indirect effect on social interaction among residents while there is no evidence of any relationship between some other attributes of visual attractiveness and social interaction among residents. Residents of developments with more green spaces have reported a higher number of social contacts. Also, artificial lighting during the night has been found to increase the use of communal spaces. However, no relationship between direct sunshine and the level of daylight with the use of space was found. However, the effect of colour and view needs more investigation using a better variety of samples.

Privacy and its associated physical attributes have been found to directly affect different aspects of social interaction among residents both positively and negatively. Residents' perception of the level of privacy inside their dwellings has a positive effect on their perception of the neighbouring level in their residence, while it has a negative impact on the number of people they know in their residence. Also, residents have reported negative impacts of the lack of well-defined boundaries of communal spaces on the use of these spaces by residents.

Affordance and its related physical attributes are the most frequently mentioned design quality by residents. Although no evidence of any relationship between the presence of seats and a well-functioning children's play area with social interaction level has been found, many residents have clearly mentioned these two as positive changes that they would like to see within the communal spaces of their developments. The only design attribute that has been found to have a positive effect on social interaction among residents is the presence of shelters to protect them from rain. Having a shelter, which can protect users from rain, can affect the use of communal spaces while the thermal comfort is not as effective as a shelter.

The majority of the physical attributes tested in this chapter have been found to have an indirect effect on social interaction among residents. In other words, these five selected design qualities have been found to mostly affect the use of communal spaces rather than social interaction indicators. The results from this chapter suggest that physical proximity, visual attractiveness, privacy and affordance can affect if and how residents use communal spaces for social interaction. The implication of the findings from this chapter along with the findings from the previous chapter are discussed in the following chapter.

Chapter 8: Conclusion

8.1 Introduction

This research aims to establish if and how the design of urban residential developments can facilitate social interaction between residents in Scotland. Three main areas are investigated to achieve this aim including social interaction patterns, the use of communal spaces and the effect of design qualities on both social interaction and the use of space patterns (see Figure 8.1). Based on the empirical evidence from seven case studies in Edinburgh and Glasgow, this study draws a detailed picture of how residents use communal spaces to interact with their neighbours as well as their individual activities.

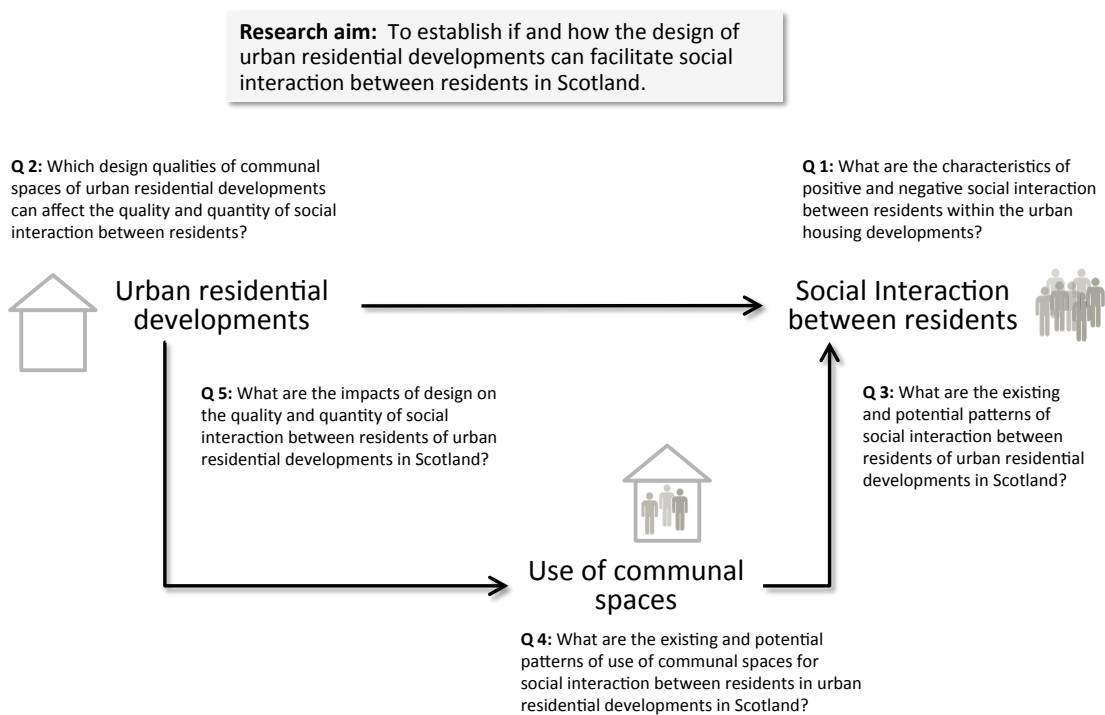


Figure 8.1: Three main areas of the research

The findings of the research show that service spaces and access routes (unintentional communal spaces) facilitate most interaction among residents in comparison with those

communal spaces intentionally designed for social interaction (intentional communal spaces). Physical attributes associated with four design qualities, i.e. physical proximity, visual attractiveness, privacy and affordance have been found to affect social interaction patterns both directly and indirectly (through affecting the use of space patterns).

Empirically investigating the communal spaces of selected urban residential developments in Scotland, this research contributes to the existing knowledge in the areas of sustainable housing and environmental psychology in two ways. First, it provides a high-resolution picture of existing social interaction and the use of space patterns within communal spaces of urban residential developments. Second, it examines the effect of five design qualities and their associated physical attributes on social interaction and the use of space patterns in building scale. The empirical evidence from this research can help the designers and developers of future residential developments to recalibrate their existing knowledge and assumptions about the effect of design on social interaction among residents.

This chapter presents the outcomes of this study in relation to theory and practice. First, a summary of the results is presented, followed by a discussion on the implications of these findings in theory and practice. The contributions of the research to existing knowledge are discussed before reviewing the limitations of the research. Finally, some directions for future research are given before concluding with a summary of the most important outcomes for designing socially sustainable urban residential developments in Scotland.

8.2 Summary of results

The previous chapters provide two sets of findings; one based on the content analysis of qualitative data concerning the patterns of social interaction and the use of communal spaces and the other based on testing the existing hypothesis regarding the effect of five design qualities on social interaction and the use of space patterns. Table 23 summarises the first set of findings regarding the existing patterns of social interaction and the use of communal spaces across seven selected developments. Non-environmental factors such as personal attitude and time are the most important factors, which can motivate or discourage interactions among residents. However, the presence of appropriate space and opportunity for visual contacts are also mentioned by respondents as effective parameters of the built environment. The most common interaction types within communal spaces are peer-to-peer informal interactions including in-passing interactions, face-to-face conversations and children playing. Sitting outside alongside performing necessary activities such as hanging out laundry and taking the bins out are the most frequently mentioned activities within

communal spaces. Entrances, lifts and corridors are the most important places of contacts across all seven developments. The most important quality for all respondents is the capability of communal spaces to facilitate different activities; the quality called affordance. Other frequently mentioned expectations of residents are concerned with privacy, safety and maintenance and physical proximity.

Table 23: Summary of existing patterns of social interaction

Motivators and Barriers	Existing Interaction Types	Potential Interaction Types	Existing Activities	Potential Activities	Places of Contact	Expectations of Residents
Personal Attitude	In-passing interactions	Special occasion gatherings	Sitting outside	Sitting outside	Entrances	Affordance
Time	Face-to-face conversations	Face-to-face conversations	Hanging laundry	Smoking	Lifts	Privacy
Space	Children playing	Children playing	Taking bins out	Drinking	Corridors	Safety and maintenance
Visual contacts	Special occasion gatherings	Children playing	Smoking	Watching children	Courtyards	Physical proximity
Turnover of residents	In-house interactions	Hosting non-residents	Vandalism	Gardening	Bin storage	Visual attractiveness
Interaction pretext	In-house interactions	Social club	Access	Reading	Sunroom	Visibility
Diversity	Exchanging materials		Dog walking	Exercising		
Health	Exchanging materials		Drinking	Dancing		
Changes in Society	Hosting non-residents		Decorating			
	Regular meetings		Gardening			
			Watching children			
			Watching fireworks			

Table 2 represents a brief summary of the second set of findings regarding the direct and indirect effect of five design qualities and their associated physical attributes on social interaction and the use of space patterns. The majority of the physical attributes have been found to have an indirect effect on social interaction among residents. In other words, these five selected design qualities have been found to mostly affect the use of communal spaces rather than directly affecting the social interaction level among residents. The presence of greenery within communal spaces and the level of privacy inside the dwelling units are the only physical attributes directly affecting the social interaction level among residents. Those communal spaces closer to the main access routes, well integrated intentional communal spaces and intentional communal spaces closer to the dwelling units have been found to be used more by residents. The average level of lighting during the night has a positive effect on the use of communal spaces by residents. The use of communal spaces has also been affected

by physical attributes associated with privacy including the level of noise inside the dwellings, territoriality of communal spaces and public access to communal spaces.

Table 24: Summary of direct and indirect effects of design qualities on social interaction

Design quality	Physical attributes	Relationship
Physical proximity	Proximity of communal spaces to the main access route	Indirect effect
	Proximity of dwelling units to the main access route	No effect
	Proximity of dwelling units to intentional communal spaces	Indirect effect
	Integration value of communal spaces	No effect
	Integration value of intentional communal spaces	Indirect effect
Visual connectivity	Visibility of communal spaces from the main access route	No effect
	Visibility of intentional communal spaces from the main access route	Insufficient data
	Visibility of communal spaces from the dwelling units	No effect
	Visibility of intentional communal spaces from the dwelling units	No effect
Visual attractiveness	Number of colours in communal spaces	Insufficient data
	The depth of view from communal spaces	Insufficient data
	Average daylight of communal spaces	No effect
	Average artificial lighting of communal spaces	Indirect effect
	Presence of direct sunshine	No effect
	Presence of greenery within communal spaces	Direct effect
Privacy	Level of privacy inside the dwelling	Dual effect
	Level of noise inside the dwelling	Indirect effect
	Territoriality of communal spaces	Indirect effect
	Public access to communal spaces	Indirect effect
	Private spots within intentional communal spaces	Insufficient data
Affordance	Presence of seats	Indirect effect
	Presence of children's play area	Indirect effect
	Variety of functions for intentional communal spaces	Indirect effect
	Presence of shelter within communal spaces	Indirect effect
	Thermal comfort within communal spaces	No effect

Finally, the presence of seats, a children's play area and sheltered areas alongside with the capability of the space to serve different functions have been found to have a positive effect on how frequently these spaces are used for social interaction. The remaining physical attributes either had no effect on social interaction and the use of space patterns or the evidence was not sufficient to draw any conclusion. In particular, the visibility of communal spaces is found to have neither a direct nor an indirect effect on social interaction among residents.

8.3 Implications of findings for practice and policy

Through many guidelines and regulations, the designers and developers of urban residential developments are encouraged to consider facilitating social interaction among residents in the UK. The findings from this research provide empirical evidence about 'how' designers and developers can achieve these targets, which have been set up by the government and local authorities (*The Egan Review: Skills for Sustainable Communities*. 2004, *Sustainable Communities: Homes for All*. 2005) Overall, looking at the patterns of social interaction and the use of communal spaces in all seven selected developments, it can be argued that in almost all cases, despite the presence of dedicated spaces for social interaction (intentional communal spaces), communal spaces have failed to facilitate some of the basic daily activities as well as natural triggers for social interaction among residents such as children playing and sitting outside. Simply by facilitating basic activities such as talking to neighbours, sitting, children playing alongside daily routines, designers can meet the needs of the majority of residents. Among four types of intentional communal spaces including back garden, courtyard, roof terrace, and communal room, courtyards seem more successful in facilitating social interaction among residents; however, this can change according to the design qualities and some non-environmental factors such as the homogeneity of residents. The followings are some specific implications of the findings from this research mainly in practice and in some cases in policy.

Overall the following recommendations can be made based on the results of this research.

- It is very important to facilitate every single instance of the existing interactions while respecting residents' freedom to adjust their level of interaction according to their personal preferences.
- Create an adjustable balance between privacy and exposure while designing communal spaces.

- Provide maximum control over non-residents' access to communal space as well as maximum control over visual and acoustic permeability of the boundaries between communal spaces and dwelling units.
- Make sure that the activities and interactions within communal areas will not disturb residents' privacy and peace.
- Pay extra attention to noise insulation, well-defined territories and security.
- Provide high level of transparency and visual connectivity within unintentional communal spaces to increase the chance of these informal encounters.
- It is critical to provide a designated area for children to play.
- A children's play area should have certain physical attributes in order to be functionally suitable for their purpose. Noise and sound insulation, health and safety considerations alongside physical proximity and the accessibility of these spaces are some of the most important factors which can affect the use of these spaces by residents.
- Pay more attention to the design of unintentional communal spaces, especially those on the main access routes, as actual places of contact.
- Provide more flexible communal spaces. Usability of the communal spaces during winter, the capacity of the spaces to accommodate gatherings and designated areas for some activities such as barbeque or smoking are some of the most quoted examples of the flexibility and affordance of communal spaces.
- Provide seats within communal spaces, and along the busy routes.
- Place the intentional communal spaces closer to the main access routes and dwelling units.
- Provide more greenery within communal spaces and higher level of artificial lighting during night.

The following sections discuss these recommendations as well as implications of the findings for the policy makers in more detail.

8.3.1 Passively positive neighbours

The analysis of qualitative data collected from the residents of seven selected developments shows that the vast majority of respondents are "Passively Positive" neighbours. Passively positive neighbours may know all their neighbours and exchange greetings on a daily basis; however they prefer to "keep themselves to themselves". These "detached" neighbours may

not be interested in participating in social activities with their neighbours despite their positive impression about their neighbours. Considering the fact that more than 40 per cent of respondents are satisfied with their current level of interaction with their neighbours, the designers and policy makers should not be ambitious about the possibilities of creating dramatic changes in neighbouring level by delivering a high quality residential environment. Setting up unrealistic targets in terms of promoting social interaction among residents may result in the opposite outcome. Since the residents of urban residential developments seem to have very little interaction with their neighbours, it is very important to facilitate every single instance of the existing interactions while respecting residents' freedom to adjust their level of interaction according to their personal preferences.

8.3.2 Privacy

Overall, around one third of the respondents expressed a clear sensitivity over their privacy in contrast to having more interaction with neighbours. Moreover, the lack of privacy is the number one concern of the majority of the respondents when it comes to interaction with neighbours and the use of communal spaces. The level of privacy inside the dwellings is the only physical attribute that has both a direct and an indirect effect on the social interaction level of respondents. According to these findings, it is extremely critical to achieve an adjustable balance between privacy and exposure while designing communal spaces to facilitate social interaction among residents. In particular, it is very important for designers to make sure that the activities and interactions within communal areas will not disturb residents' privacy and peace. Paying extra attention to noise insulation, well-defined territories and security are some examples of creating a balance between privacy and social interaction. It can be suggested that the ideal design should provide residents with maximum control over non-residents' access to communal space as well as maximum control over visual and acoustic permeability of the boundaries between communal spaces and dwelling units. Failing to provide such control and adjustable balance between privacy and exposure may result in the withdrawal of residents from using communal spaces or negative social interaction among residents.

8.3.3 In-passing interactions

Visual contacts, smiling, saying hello and short conversations while passing (in-passing interactions) are the biggest portion of social interaction among the residents of all seven selected developments. Among 86 respondents from the seven developments, only four of them do not say hello to any of their neighbours. Moreover, these informal encounters within communal spaces have been reported as motivators for more social interaction among

residents. Although strong ties do exist among residents, the findings from this study suggest that weak ties and in-passing interactions are dominant types of social interaction among residents. It can be suggested that providing a high level of transparency and visual connectivity within communal spaces can increase the chance of these informal encounters among residents.

8.3.4 Children's play area

Many respondents requested that there should be a place specifically designed for children to play. It has been reported that some of the communal spaces, which have been designed to facilitate this activity, failed to serve this purpose because of safety considerations or because of noise problems for neighbours. In almost all developments (except for Brandfield which is elderly accommodation) children playing has been reported either as an existing interaction type or as a potential interaction type. Children's play areas can also facilitate social interaction among residents by providing an interaction pretext for parents who are present to watch their children. Considering the important effect of these spaces in terms of the mental health and well-being of children, it is critical to provide a designated area for children to play. However, it should be considered that dedicating space for this purpose is just the first step. A children's play area should have certain physical attributes in order to be functionally suitable for their purpose. Noise and sound insulation, health and safety considerations alongside physical proximity and the accessibility of these spaces are some of the most important factors which can affect the use of these spaces by residents.

8.3.5 Unintentional communal spaces (service spaces)

A significant portion of the interactions among residents happens during their daily routines such as going in or out, taking bins out or hanging laundry. Entrances, lifts and corridors are reported as the most important places of contact, facilitating a wide range of interactions among residents including in-passing interactions, exchanging materials, face-to-face conversations, smoking and drinking with non-resident friends (outdoor corridors) and children playing. While these unintentional communal spaces are actual places of contact in almost all seven developments, those communal spaces intentionally designed to facilitate social interaction among residents have been found to be quite unsuccessful. Except in developments where intentional communal spaces are located on the main access route (courtyards in Moore and Lindsay developments) or where non-environmental factors such as homogeneity has affected the use of space patterns (Brandfield as elderly accommodation), in all other cases, unintentional communal spaces facilitate more interactions in comparison with intentional communal spaces. These findings call for more

attention to the design of unintentional communal spaces, especially those on access routes, as actual places of contact. It is questionable whether the residents of high-density urban developments in Scotland need more dedicated spaces for social interaction or whether they could benefit more from having flexible and well-designed corridors and entrances.

8.3.6 Flexible communal spaces

Although all the selected developments for this study have at least one communal space intentionally designed to facilitate social interaction among residents, lack of social space was reported by the residents of three developments as the number one barrier for more social interaction with neighbours. Many intentional communal spaces have failed to accommodate social interaction among residents because of certain physical attributes such as the lack of well-defined boundaries (case of roof terraces in Cowgate), noise (case of entrance courtyard in Moore), the lack of a sheltered area (case of back gardens in Queen Elizabeth and McNeil) and health and safety concerns (case of roof terraces in Byron). In order to facilitate a wider variety of individual activities and social interaction types, it is critical that the designers pay extra attention to details to make communal spaces as flexible as possible. Usability of the communal spaces during winter, the capacity of the spaces to accommodate gatherings and designated areas for some activities such as barbeque or smoking are some of the most quoted examples of the flexibility and affordance of communal spaces.

8.3.7 Seats

Many residents have stated their need or desire to have more seats within the communal areas. Different activities such as watching children play, drinking tea and reading have been associated with sitting outside within the communal areas. Sitting outside is the most frequently mentioned activity among the residents of all seven developments. Seats can affect the time people spend in communal areas and increase the chance of social interactions with neighbours. Where the seats are located next to busy communal areas such as entrances and access routes, they have affected the use of space significantly. It can be suggested that by providing seats within communal spaces, the designers of urban residential developments can make these spaces suitable for a wider range of activities and social interaction types.

8.3.8 Role of housing association

Housing associations can play a critical role in the formation of social capital within urban residential developments through facilitating social events and gatherings. Many respondents have mentioned that holding an event such as a communal barbeque or gathering with neighbours can affect the level of social interaction with neighbours by providing the

opportunity to “get to know each other”. Social events and gatherings can be generators of social interactions among residents by providing residents with an interaction pretext and increasing the chance of social interaction between them. At the same time, it has been observed that in many cases, the involvement of housing officers and housing associations in conflicts between residents has eliminated the chance of face-to-face interactions between neighbours. Although the conflicts have been resolved more easily and negative interactions have been avoided, it can be argued that this mechanism can increase detachment among neighbours. However, addressing the complexity of the role of housing associations in the formation of social capital in social housing in Scotland, further studies are required which was beyond the scope of this research.

8.3.9 Role of research and post occupancy evaluation

The assumptions made by architects are not accurate, especially regarding how people use the communal spaces of urban residential developments. In many cases it has been observed that although the intention is there the communal spaces have failed to facilitate basic social activities such as children playing. Much of the current policy on the sustainable design of the built environment in the UK is based on assumptions rather than rigorously tested evidence on what features do and do not work. Recently, Post Occupancy Evaluation methods have been developed extensively to monitor the energy performance of the buildings, while there are very few examples of the post occupancy evaluation of buildings in areas such as social sustainability and well-being. Very few studies have been conducted to understand how people occupy and use spaces for their daily activities and social interaction with neighbours. The findings of this research show how crucial it is to help the designers and providers to recalibrate their existing knowledge regarding the patterns of social interaction within the communal spaces of urban residential developments.

8.4 Contribution to knowledge

The empirical investigation of social interaction patterns in this thesis was underpinned by a review of theory on local social interaction, environmental psychology and morphology of communal spaces in Scotland. The level of detail in the data collected in this research is significant in comparison with previous studies on the scale of a residential building. Addressing five design qualities which can be considered during the design process of residential buildings, provides the opportunity to understand how each design quality can affect both social interaction and the use of communal spaces. The research’s main four contributions to the existing knowledge are:

1. Understanding patterns of social interaction among residents in urban residential developments in Scotland

Mapping the existing patterns of activities and social interactions within the communal spaces of seven selected urban residential developments in Scotland this study creates a detailed picture of if and how the communal spaces of these developments facilitate social interaction among residents as well as the individual activities of residents. This high-resolution photography of the current situation can contribute to a better understanding of the current needs of residents as well as a post occupancy evaluation of these projects in terms of social sustainability.

2. Testing the existing assumptions regarding the impact of design on social interaction in urban residential developments in Scotland

Testing the existing assumptions regarding the relationship between the design qualities of the communal spaces and social interaction among residents in the context of urban residential developments in Scotland. This research contributes to the much-needed empirical evidence to inform the design of future sustainable housing developments in Scotland.

3. Defining intentional and unintentional communal spaces

Communal spaces usually refer to those spaces which serve specific communal activities such as gatherings or those rooms with communal ownership such as communal laundries. In these definitions, usually the roles of service spaces such as bin storage, lifts or stairs have been undermined. Proposing a new terminology, which considers these neglected service spaces as equally important communal spaces, this study contributes to a new understanding of urban residential buildings.

4. Uncovering the different roles of design attributes in city, neighbourhood and building scale

This study has tested the existing hypothesis about the impact of physical attributes on social interaction within neighbourhoods, in terms of the scale of a building. The findings reveal significant differences between the roles of physical attributes in these two different scales, which calls for more research on this scale.

In addition to the discussed four main contributions, other areas of contribution to the exiting knowledge are:

- **Identifying different typologies of intentional communal spaces of urban residential buildings in Scotland**

Reviewing the historical evolution of communal spaces in Scotland and identifying the existing typologies of intentional communal spaces based on the structure and function of these spaces, this research adds another layer to the existing knowledge about housing typologies in Scotland.

- **Use of GIS in building scale**

Expanding the use of GIS as a powerful platform to integrate spatial and non-spatial data for research in the built environment area in the scale of a building. While GIS has been used for previous research in neighbourhood scale, in this study, three-dimensional analytical maps have been introduced to understand the spatial patterns of social interaction in building scale. The physical attribute measures are overlaid with social interaction and the use of space measures to explore the relationship between design qualities and social interaction patterns.

- **Developing new measures and indicators**

Using the existing indicators and measures, new measures and indicators have been developed specifically to measure the quality and quantity of social interaction as well as the use of communal spaces. Some of the measures, which have been used widely in research about neighbourhoods, were adjusted to be suitable for use with building scale. This set of indicators can be especially useful to other researchers investigating housing developments in building scale.

8.5 Limitations of the research

Using multiple case studies and a mixed method approach provided the opportunity for triangulation while approaching the problem from different angles. However, a significant amount of time and resources have been used to collect and handle data, resulting in less time and consequently lower resolution in other parts of the research. For example, the data could be analysed in more detail using different spatial analysis methods within the ArcGIS software. Future studies may consider focusing on one or two case studies to create the chance to include more details and to add more layers to the analysis.

Using self-completion questionnaires instead of systematic observation has added to the

subjectivity of the data. Although this limitation has been addressed to some extent by putting extra effort into the design of the questionnaires, a complimentary systematic observation could increase the reliability of the data. At the end of the day, what has been captured as social interaction among residents or the use of space patterns in this study is based on residents' perception and self-reported information. Also, some details such as the differences between social interaction patterns and the use of communal spaces during winter and summer time has not been captured which could be included in the case of using other methods such as systematic observation during a certain period of time.

Another limitation of using questionnaires is the relatively low response rate. The length of the questionnaire in this study also affected the response rate. Despite the effort to keep the questionnaire brief and to the point as much as possible, including images of the communal spaces made the questionnaires longer than normal. One solution could be to increase the number of interviews, which needs more time and resources.

Finally, as discussed before, one of the major concerns about using case studies as a research strategy is the possibility of the generalisation of results. It has been argued that case studies offer a very limited possibility for generalisation. However, in practical fields such as architecture where the problem is very complex and difficult to separate from its context, case studies can provide valuable lessons. Although the findings from this study might not be generalised to other countries and cultures, they can provide valuable insights for designers to revisit their assumptions about communal spaces within urban residential developments.

8.6 The potential for future research

This study provides a platform to develop many other directions for future research in related areas. First of all, in order to establish the role of designers and housing associations, it could be a great opportunity to close the loop by communicating the findings of this study to architects and housing associations. Finding the contrasts between their assumptions and the findings of this research and monitoring the impact of such empirical research on their future decisions could be another step towards bridging the existing gap between theory and practice. Working with designers and housing associations towards proposing small interventions within the communal spaces of these developments based on the findings of this research and monitoring the impact of the proposed interventions on the social interaction among residents is one of the possible scenarios to close the loop and to understand the bigger picture.

Moreover, exploring the important role of housing associations, as the official owners who rule and maintain these communal spaces, can be another direction for future research in this area. At least three important areas regarding the potential role of housing associations have been identified in this research including housing associations as mediators in conflicts between residents, housing associations as the facilitators of social events and gatherings and housing associations as owners who rule and maintain communal spaces.

Drawing from the limitations of this research, collecting data from a bigger sample including different socio-economic settings such as high-end private residential developments in cosmopolitan areas like London could provide the opportunity for comparison and statistical analysis of the findings. Combining the quantitative approaches used by other researchers [Lindsay, Raman] with the qualitative methods of investigating social interaction and the use of space patterns will create a better understanding of the relationships between design qualities and social interaction and the use of communal spaces. Additional methods of collecting and analysing data such as systematic observation of communal spaces and visibility graph analysis could be used in further research to add more layers and depth to this picture.

Finally, the relationships between some physical attributes and design qualities, which have remained inconclusive in this study because of insufficient evidence, could be investigated in further research using a wider variety of samples. In particular, physical attributes associated with visual attractiveness and the privacy of communal spaces needs more detailed investigation.

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Appendix A: Household questionnaire



ROBERT GORDON
UNIVERSITY ABERDEEN

IDEAS Research Institute

Scott Sutherland School of
Architecture & Built Environment

Urban Social Sustainability Survey

INTRODUCTION

This survey is part of a PhD research project investigating the impact of the design of urban residential buildings on social sustainability and specifically social interaction between residents. The research aims to help housing providers understand the needs and preferences of the residents of urban housing developments. The outcomes will contribute towards increasing wellbeing and the quality of life of the occupants of future urban housing developments in Scotland. Please be assured that the survey is completely anonymous. All the information you provide will remain confidential and will be used only as anonymous data for statistical analysis for the purpose of this research. I would like you to answer the questions only if you feel comfortable and in as much depth as you decide.

Who should complete the questionnaire?

Any interested person, aged 18 or above, in your household are welcome to participate in this study by completing this questionnaire. Please note that, as for each copy of the questionnaire, only one person must answer all the questions at a time.

How to complete the questionnaire?

Most questions ask you to record your answer by ticking a box. In a few cases you are asked to write in your answers. No special knowledge is needed. For each question instructions are given on how to indicate your response.

How to return the completed questionnaire?

A prepaid envelope has been attached to each questionnaire. You can either post the completed questionnaire using the prepaid envelope or keep the completed questionnaire and the person who delivered it to your home will call to collect it in a few days' time. If you are not present at the time of the visit, the person will call again on another day.

Thank you very much for your help.

It is very much appreciated.

In case of any queries about this questionnaire or if you wish to know about the outcomes of this study, please email to "Azar Farshidi" a.farshidi@rgu.ac.uk.

First we would like to ask you some questions about yourself

1. Please indicate your gender.

Please tick (✓) one box.

- Female Male

2. Please indicate your age group.

Please tick (✓) one box.

- 24 or under 45 – 59
 25 – 34 60 – 74
 35 – 44 75 or over

3. Please indicate your ethnic group.

Please tick (✓) one box.

- White
 Mixed or Multiple Ethnic group
 Asian or Asian Scottish or Asian British
 African
 Caribbean or Black
 Arab
 Other(s) please specify
.....

4. Please indicate your occupational status.

Please tick (✓) one box.

- Full-time employed
 Part-time employed
 Self employed
 Full-time student
 Unemployed
 Retired
 Other(s) please specify
.....

5. Please indicate the highest level of education you have obtained.

Please tick (✓) one box.

- Postgraduate
 University degree
 Higher education
 Secondary education
 Other(s) please specify
.....

6. Please can you tell us how long have you lived in this building?

Please tick (✓) one box.

- Less than 2 years
 2 years or more but less than 5 years
 5 years or more

Now some questions about your household

7. Please say how many people live in your household including yourself and any other adults and children.

Please write the number in the box.

8. Please say how many children aged 10 or less live in your household, if there is no please put "0".

Please write the number in the box.

9. Please say how many children aged between 11 and 18 live in your household, if there is no please put "0".

Please write the number in the box.

10. Please indicate the average of your household's gross annual income.

Please tick (✓) one box.

- Up to £10,000 pa
 £10,001 to £20,000 pa
 £20,001 to £30,000 pa
 £30,001 to £40,000 pa
 £40,001 to £50,000 pa
 Over £50,000 pa

11. Thinking about your home, in which way do you occupy your accommodation? Do you or are you:

Please tick (✓) one box.

- Outright owner of your property
 Buying it with the help of a mortgage or loan
 Pay part rent and part mortgage (shared ownership)
 Rent from a private landlord
 Rent from a housing association, housing trust or local authority
 Live here rent-free
 Other(s) please specify
.....

12. Please say how many cars or vans are owned, or available for use, by your household?

Please tick (✓) one box.

- None Two
 one Three or more

Now some questions about your home

13. Thinking about your home how satisfied are you with the levels of privacy for relaxing and/or peace at your home?

Please tick (✓) one box.

- Very satisfied
 Fairly satisfied
 Neither satisfied nor unsatisfied
 Fairly unsatisfied
 Very unsatisfied
 Don't know

14. When you are inside your home how comfortable are you with the view into your home from outside?

Please tick (✓) one box.

- Very comfortable
 Fairly comfortable
 Neither comfortable nor uncomfortable
 Fairly uncomfortable
 Very uncomfortable
 Don't know

15. Whether or not you find it disturbing, how much noise can you hear from your neighbours when you are inside your home?

Please tick (✓) one box.

- Not at all Much of the time
 Hardly ever Constantly
 Quite often Don't know

Now some questions about living in your residential development

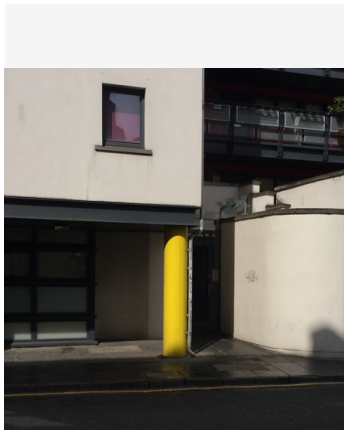
Thinking about the residence where you live, please indicate do you agree or disagree with each of the statements listed below.

Please tick (✓) one box for each statement.

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know
16. I plan to remain a resident of this building for a number of years	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. I feel safe walking around our building during night	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. I am satisfied with the overall maintenance of our building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. I am satisfied with the overall management of our building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. I feel strongly attached to this residence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. I feel at home in this residence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. The friendships and associations I have with other people in my residence mean a lot to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. If I need a little company, I can stop by a neighbour I know	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. If I have a personal crisis, I have a neighbour I can talk to	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. I have made new friends by living here	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. If I don't have something I need for my cooking, I can borrow it from a neighbour	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. This residence is a place where people from different backgrounds get on well together	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. Noise which my neighbours make can occasionally be a big problem	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Now some questions about the communal spaces of your residence

Thinking about the residence where you live, please answer the questions on the following pages about each indicated space, in order to help you remember, one photo of each space has been represented here.



Main Entrance



Entrance Hall



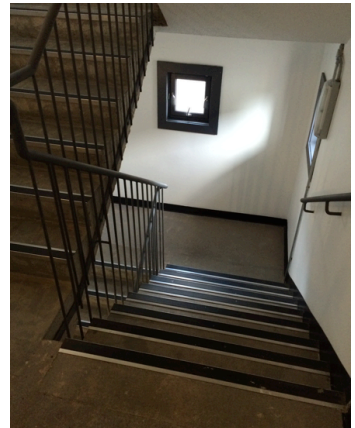
Entrance Stairs



Lift



Entrance Corridor



West Stairs



Back Stairs



The Close



East Stairs



Indoor Corridors



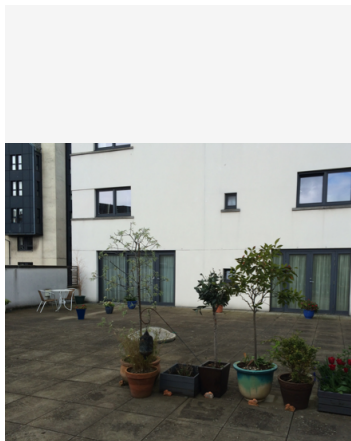
Outdoor Corridors



Facade Stairs



Terrace Stairs



Terrace 4th Floor



Terrace 6th Floor

Please answer the questions about each indicated space. You can use the images on previous pages to recall different spaces.

29. How often do you use each space? Please tick (✓) one box for each space.

	Daily	Weekly	Monthly	Once or twice a year	Never Used before
Main Entrance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Entrance Hall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Entrance Stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lift	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Entrance Corridor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
West Stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Back Stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The Close	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
East Stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Indoor Corridors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outdoor Corridors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Façade Stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Terrace Stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Terrace 4 th Floor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Terrace 6 th Floor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

30. How safe do you think each space is during night? Please tick (✓) one box for each space.

	Very Safe	Fairly Safe	Neutral	Fairly unsafe	Very Unsafe	Don't Know
Main Entrance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Entrance Hall	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Entrance Stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lift	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Entrance Corridor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
West Stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Back Stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The Close	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
East Stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Indoor Corridors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outdoor Corridors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Façade Stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Terrace Stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Terrace 4 th Floor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Terrace 6 th Floor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

31. Still thinking about your residence, can you tell us where do you usually meet your neighbours?

Please tick (✓) all that apply.

- | | |
|--|--|
| <input type="checkbox"/> Main Entrance | <input type="checkbox"/> East Stairs |
| <input type="checkbox"/> Entrance Hall | <input type="checkbox"/> Indoor Corridors |
| <input type="checkbox"/> Entrance Stairs | <input type="checkbox"/> Outdoor Corridors |
| <input type="checkbox"/> Lift | <input type="checkbox"/> Façade Stairs |
| <input type="checkbox"/> Entrance Corridor | <input type="checkbox"/> Terrace Stairs |
| <input type="checkbox"/> West Stairs | <input type="checkbox"/> Terrace 4 th Floor |
| <input type="checkbox"/> Back Stairs | <input type="checkbox"/> Terrace 6 th Floor |
| <input type="checkbox"/> The Close | |
| <input type="checkbox"/> Other(s) please specify | |

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Now few questions about your home

32. Thinking about your home, do you have any private outdoor space?

Please tick (✓) one box.

- Yes No

If you don't have access to any private outdoor space please go to the question 36.

33. Thinking about the private outdoor space available to you, please specify the type of each space.

Please tick (✓) one box for each space.

	Front garden/ yard	Back garden/ yard	Balcony	Roof garden/ terrace
Space 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Space 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

34. Thinking about the private outdoor space available to you how often do you use this space? If more than one space please indicate each one separately.

Please tick (✓) one box for each space.

- | | | |
|----------------------|--------------------------|--------------------------|
| | 1 | 2 |
| Daily | <input type="checkbox"/> | <input type="checkbox"/> |
| Weekly | <input type="checkbox"/> | <input type="checkbox"/> |
| Monthly | <input type="checkbox"/> | <input type="checkbox"/> |
| Once or twice a year | <input type="checkbox"/> | <input type="checkbox"/> |
| Never used before | <input type="checkbox"/> | <input type="checkbox"/> |

35. Thinking about the private outdoor space(s) available to you how satisfied are you with the level of privacy?

Please tick (✓) one box for each space.

- | | | |
|--------------------|--------------------------|--------------------------|
| | 1 | 2 |
| Very satisfied | <input type="checkbox"/> | <input type="checkbox"/> |
| Fairly satisfied | <input type="checkbox"/> | <input type="checkbox"/> |
| Neutral | <input type="checkbox"/> | <input type="checkbox"/> |
| Fairly unsatisfied | <input type="checkbox"/> | <input type="checkbox"/> |
| Very unsatisfied | <input type="checkbox"/> | <input type="checkbox"/> |

Now few questions about your neighbours

36. Thinking about the people living in your residence how many of them do you know by name?

Please write the number in the box.

If you don't know anyone by name in your residence please go to the question 38.

37. Thinking about the people you know by name in your residence where did you first meet?

Please tick (✓) all that apply.

- | | |
|--|--|
| <input type="checkbox"/> Main Entrance | <input type="checkbox"/> The Close |
| <input type="checkbox"/> Entrance Hall | <input type="checkbox"/> East Stairs |
| <input type="checkbox"/> Entrance Stairs | <input type="checkbox"/> Indoor Corridors |
| <input type="checkbox"/> Lift | <input type="checkbox"/> Outdoor Corridors |
| <input type="checkbox"/> Entrance Corridor | <input type="checkbox"/> Façade Stairs |
| <input type="checkbox"/> West Stairs | <input type="checkbox"/> Terrace Stairs |
| <input type="checkbox"/> Back Stairs | <input type="checkbox"/> Terrace 4 th Floor |
| <input type="checkbox"/> At a neighbour's house | <input type="checkbox"/> Terrace 6 th Floor |
| <input type="checkbox"/> Other(s) please specify | |

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38. Still thinking about the people living in your residence how many of them do you say hello to when you meet?

Please write the number in the box.

39. How many of your neighbours do you typically stop and chat with when you run into them?

Please write the number in the box.

40. How many of your neighbours do you consider as friends?

Please write the number in the box.

41. How many of your neighbours do you visit every now and then?

Please write the number in the box.

42. How often do you help your neighbours with small things, or they help you?

Please tick (✓) one box.

- Not at all
- Much of the time
- Hardly ever
- Constantly
- Quite often
- Don't know

43. How often are you irritated with some of your neighbours?

Please tick (✓) one box.

- Not at all
- Much of the time
- Hardly ever
- Constantly
- Quite often
- Don't know

44. Have you ever participated in scheduled gatherings with neighbours?

Please tick (✓) one box.

- Yes
- No

If you have never participated in scheduled gatherings with neighbours please go to the question 46.

45. Thinking about scheduled gatherings with your neighbours, can you tell us where these gatherings usually happen?

Please tick (✓) all that apply.

- Main Entrance
- The Close
- Entrance Hall
- East Stairs
- Entrance Stairs
- Indoor Corridors
- Lift
- Outdoor Corridors
- Entrance Corridor
- Façade Stairs
- West Stairs
- Terrace Stairs
- Back Stairs
- Terrace 4th Floor
- At a neighbour's house
- Terrace 6th Floor
- Other(s) please specify

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Now we would like to know more about your personal experiences of living in this residence

46. Do you think you spend enough time socializing with your neighbours? Please tell us about the reasons.

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47. If you could choose to add/change any communal spaces within your residence what would you suggest? Please also tell us about your reasons.

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Thank you very much for taking part in this survey.

48. If you wish, please use this space to make any additional comments.

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Appendix B: Interview template



ROBERT GORDON
UNIVERSITY ABERDEEN

IDEAS Research Institute

Scott Sutherland School of
Architecture & Built Environment

Urban Social Sustainability Survey

INTERVIEW

I would like you to answer some questions about your residence. The questions are not of a sensitive nature. However, if you feel you are unable, or do not wish, to answer any questions we can move on to the next question. All the information that you give me will be kept strictly private and confidential. The interview will take around half an hour.

1. First, How long have you been living here?
2. How would you describe your residence to someone who has never been here before? And how would you describe the people who live here?
3. How do you describe your relationship with your neighbours?
4. Are you satisfied with the quality and quantity of your relationships with your neighbours? What kind of interaction would you prefer to have with your neighbours? Why?
5. In your opinion, what are the motivators/barriers of interacting with neighbours?
6. During the past few weeks how many times have you had face-to-face conversation with any of your neighbours? What was the occasion? Where did that happen?
7. One of the things we're interested in is what people do in communal spaces and how they use these spaces, during the past few weeks have you stopped for a while or spend some time in communal spaces? What was the occasion? Where did that happen?
8. What about your neighbours? Have you observed any of neighbours stopping or spending time in communal spaces? What was the occasion? Where did that happen?
9. Can you make a list of all the activities you have observed within the communal spaces of your residence (either those you have been involved in or you have not).
10. Have you ever stopped or spent some time in communal terraces?

No, Why?

Yes, What you were doing? Were there other neighbours involved?

11. In your opinion, what makes a pleasant and comfortable environment to interact with neighbours? (like having a chat or doing things together)
12. Thinking about the communal spaces within your residence, how pleasant and comfortable are these spaces for interacting with neighbours?
13. If you could choose to add/change any communal space within your residence what would you suggest? Why?

This is the end of interview. I would like to thank you very much for giving up your time to do this. It is greatly appreciated. As I said the information that you have given me will be kept strictly confidential and anonymous. The analyses and conclusions of the interviews will be published in articles and also in my PhD thesis.

If you wish to know about the outcomes of this study you can contact Robert Gordon University.

Thank you very much for your time and help.

Appendix C: Case study selection process – pool of sample developments

As part of case study selection process, residential developments of medium density in Edinburgh and Glasgow, which have been built and occupied for between 3 and 10 years, have been gathered to create a pool from which seven final case studies have been selected. Table A represent the pool of sample developments.

Table A: List of sample developments – Red shade: main selected developments – Grey shade: back up developments

Number	Code	Name	Location	Age (occupation year)	Architect
1	G 01	Moore Street	Glasgow	2007	Elder and Cannon Architects
2	G 02	Crown Street	Glasgow	2000	Elder and Cannon Architects
3	G 03	The Icon	Glasgow	2004	Elder and Cannon Architects
4	G 04	Queen's Gate	Glasgow	2009	Elder and Cannon Architects
5	G 05	Queen Elizabeth Square	Glasgow	2004	Elder and Cannon Architects
6	G 06	Friary Court	Glasgow	2006	Page/Park Architects
7	G 07	Waddell Street	Glasgow	2007	Page/Park Architects
8	G 08	Moore Street	Glasgow	2007	Page/Park Architects
9	G 09	Byron Street	Glasgow	2010	Collective Architecture
10	G 10	Perth Street	Glasgow	2009	Collective Architecture
11	G 11	Crown Street	Glasgow	2000	Hypostyle Architects
12	G 12	Queen Elizabeth Square	Glasgow	2002	Hypostyle Architects
13	G 13	McNeil Street	Glasgow	2010	Austin-Smith:Lord Architects
14	G 14	Queen Elizabeth Square	Glasgow	2009	Anderson Bell Christie Architects
15	G 15	Charlotte Street	Glasgow	2010	Anderson Bell Christie Architects
16	G 16	Lymburn Street	Glasgow	2010	Anderson Bell Christie Architects
17	G 17	Moore Street	Glasgow	2007	Richard Murphy Architects
18	E 01	St Mark's Quay	Edinburgh	2010	Michael Laird Architects
19	E 02	Edinburgh Quay	Edinburgh	2007	Michael Laird Architects
20	E 03	ST Vincent Place	Edinburgh	2007	Oberlanders Architects
21	E 04	Springside	Edinburgh	2010	Oberlanders Architects
22	E 05	Brandfield Street	Edinburgh	2011	Oberlanders Architects

23	E 06	Belford Road	Edinburgh	2003	Richard Murphy Architects
24	E 07	Cowgate	Edinburgh	2006	Richard Murphy Architects
25	E 08	Torn Square	Edinburgh	2004	Richard Murphy Architects
26	E 09	Hopetoun Street East	Edinburgh	2007	Ian Springford Architects
27	E 10	McDonald Road	Edinburgh	2007	Ian Springford Architects
28	E 11	Greendykes A	Edinburgh	2010	Smith Scop Mullan Associates
29	E 12	Mitchell Street	Edinburgh	2010	Smith Scop Mullan Associates
30	E 13	Elizabeth Maginnis Court	Edinburgh	2011	Smith Scop Mullan Associates
31	E 14	Lindsay Road	Edinburgh	2012	Patience and Highmore Architects

Each development have been reviewed and classified in terms of density, number of dwellings, intentional communal spaces and the typology of communal spaces and a summary sheet has been created for each development (see Figure B) . Reviewing these summary sheets, seven developments have been selected to meet the criteria and provide the maximum variety in terms of intentional and unintentional communal spaces. In addition, four developments also have been selected as back up in order to replace with the main selected ones in case any of the main developments was not available for study.

G 09 Byron Street

Age: **completed in 2010**
Density: **> 100 dpha**
Number of Dwellings: **44 units**
Intentional communal space: **Roof Garden Spaces**
Architect: **Collective Architecture**
Developer: **Partick HA**
Whiteinch & Scotstoun HA

Awards:
2011 Scottish Design Awards

Notes:
The development has shared roof gardens as well as private gardens and a communal recreational spaces at the back.

Typology of communal spaces:

- AR
- POS <
- ICS-AR
- I-O-AR
- E < P | C
- I-O-ICS
- V-H-AR

Figure B: A sample summary sheet for Byron Street development

Appendix D: Publications

FARSHIDI, A. and DEVECI, G., 2014. Social Interaction in Urban Residential Developments: Examining the Relations Between the Design of Communal And Service Spaces and Social Interaction Between Residents In Urban Residential Developments In Scotland, *European Network for Housing Research Conference (ENHR2014)*, July 2014, Edinburgh, UK.

FARSHIDI, A., DEVECI, G. and ZAMAN, Q., 2014. Building entrances and access routes as places of contact: Case of an urban residential development in Glasgow, *IDEAS Research Symposium*, May 2014, Aberdeen, UK.

FARSHIDI, A., DEVECI, G. and ZAMAN, Q., 2013. Theoretical Underpinning of Passive Communal Spaces in Urban Residential Developments Case of selected housing typologies in the United Kingdom, *Human And Social Sciences at the Common Conference (HASSACC 2013)*, November 2013, pp. 18-22.