

Can the life expectancy of the more vulnerable part of Glasgow communities be higher by introducing better design solutions?



Konrad Kolodziej



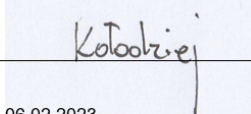
Declaration of Authorship

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BSc Honours Architectural Studies with International Study

Declaration

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Abstract

The built environment has a huge impact on human physical and mental health. People living in urban areas, surrounded by multiple structures, have a much bigger impact on a person than in less dense rural areas. Glasgow, for many years, infamously is achieving average life expectancy lower than the Scottish average or life length of citizens from different cities in the United Kingdom. This phenomenon was even named Glasgow Effect, although this term is not used anymore as it was connected more to political factors, and researchers started calling this difference as excess mortality. The document will explore the relationship using available statistical data and chosen areas of Glasgow, which are: Pollokshields West; Greater Govan; Anniesland, Jordanhill and White inch; and Ruchill and Possilpark. The areas will also be compared to National Design Guide to show whether the current design is adequate and if it should be improved. This dissertation is concerned with the impact of low-quality building design on excess mortality in Glasgow to understand more fully what needs to be done to allow healthy living spaces for citizens. This document employs secondary research to examine the history of less and more vulnerable areas of the city and their differences in health inequalities. Following a literature review exploring the definition and origin of health inequalities, their socio-economic factors and characteristics of the Glasgow Effect, it leads to the conclusion that a series of decisions undertaken resulted in a major loss of workplaces, pushing chosen communities into multiple poverty issues, which affected many people and our city for many years until today.

Chapter 1: Introduction

1.1 Background

Glasgow is the city with the largest population in Scotland and the fifth-most populous city in the United Kingdom. The number of people in the city area is 591.620, but the whole Urban area accommodates 1.685.527 citizens making this place 26th the most populated city in Europe.^[1] It is believed that Glasgow was founded by the Christian missionary Saint Mungo who established a church on the Molendinar Burn – the place where Glasgow Cathedral today stands.^[2] Launching the University of Glasgow in 1451 and elevating the bishopric to become the Archdiocese of Glasgow enhanced its religious and educational status, the same as being involved in early trade with Europe and the Mediterranean. In 1611 Glasgow achieved the rank of Royal Burgh and continued its growth on a stable economy based on international trade, manufacturing and invention.

In the early 18th century, when Daniel Defoe visited and commented on the city in his book *“A Tour Thro’ the Whole Island of Great Britain”* that Glasgow was *“The cleanest and beautifullest, and best built city in Britain, London excepted”*, it still needs to be remembered that the whole population of the city was about 12.000 these days.

In the 19th century, the Clyde River was dredged and deepened, giving the possibility of bringing more bigger vessels to Glasgow instead of Port Glasgow and becoming shipbuilding a significant industry of the city. Considerable demand for workers encouraged more people to come, and Glasgow as a city surpassed Edinburgh’s population as early as 1821.

Despite the City of Glasgow Bank collapse crisis, the city kept growing until it became known as the “Second City of the Empire” and one of the most important shipbuilding centres of the world as it was producing more than half Britain’s tonnage of shipping^[3] and a quarter of all locomotives in the world.^[4] The rapid growth of the city and the availability of new trades and sciences brought more people, making Glasgow one of the first cities in Europe to achieve a population of 1.000.000 citizens.

Glasgow started its economic decline just after the end of World War I suffering the impact of the Post-World War recession. Growth of the industry in Continental Europe and Asia weakened the vital position of many sectors in the city, which caused long-term economic decline and quick de-industrialisation. The need for a reduction in the industrial area affected the whole city leading to high unemployment, urban decay, population decline, welfare dependency and poor health of citizens. The city recovered during World War II and witnessed later growth through the Post-War boom that lasted until the 1950s. Since then, there have been few active attempts to reshape the city. One of them was the Bruce Report which included an almost 30-year-long plan of regeneration and rebuilding and covered a significant part of the city. Following the procedure, the infamous city’s slums were demolished and replaced with tower blocks and larger suburban housing estates.

The rapid erection of high-rise residential buildings affected Glasgow for many years as used solutions and materials were inadequate for the environment. Building quickly lost their value as safe and habitable spaces, and finally, in 2003, it was decided that many high-rise flats needed to be demolished.

The Office for National Statistics for 2016 found that Glasgow retained its position as having the biggest economy in Scotland and the third-highest GDP per capita in the UK.^[5] Today significant differences in life longevity can be observed between particular neighbourhoods of Glasgow, and the

life expectancy of Glasgow citizens is shorter than the life expectancy of citizens from British cities with similar socio-economic factors. The significant disproportion between Glasgow citizens can be shown by the data collected by the Glasgow Indicators Project, while The Scottish Index of Multiple Deprivation prepared for 2020 shows that 44% of Glasgow's residents (281,000) live in the 20% of most deprived areas in Scotland in contrast to a group of 6% of Glasgow's residents that occupy 10% of the least deprived areas in Scotland. [6]

1.2 Aim

To find the connections and possible causes of excess mortality in Glasgow and whether they can be mitigated by better design.

1.3 Hypothesis

Health inequities have been linked to our built environment, so can it be shown that excess mortality can be mitigated by better quality design and therefore provide enhanced levels of health and well-being.

1.4 Scope of Study

It is acknowledged that Glasgow citizens' average life span varies between locations. A significant part of the research is focused on economic factors, seemingly not including the built environment as one of the factors. Due to the lack of a clear connection, this document will investigate the built environment's influence on people's longevity.

1.5 Objectives

- Comparison of 4 different Glasgow areas towards the National Design Guide (NDG), focusing on two sites with the highest life-expectancy average and two with the lowest.
- Finding out if the guidelines from NDG were followed within the researched areas

1.6 Research Questions

The proceeding overview of excess mortality in Glasgow compared to other cities in the United Kingdom led to the construction of the primary research question, asking if the issue can be mitigated by better quality design. As this is a broad topic which requires a great depth of analysis. These are the key questions to form the spine of this document:

- What are the links to our built environment?
- What are Health Inequalities (HI)?
- What is the Glasgow Effect, and where does it exist?
- What is a better design, and how does the current situation fall short?
- Can a link between health inequalities and the built environment be proven?

1.7 Methodology

This dissertation will seek an answer to the previously formulated research question, which concerns the issue of excess mortality in the city of Glasgow, by using available statistical data to define and determine the scale, scope and direction of travel of HI. Research of authoritative sources will be undertaken to determine the social, cultural, economic and environmental causes of HI. Further research will identify and relate critical causes and effects of HI to areas of Glasgow, and evidence based on data collected by the Glasgow Indicator Project will be reviewed. Chosen sample areas will be compared to best practice guidance in National Design Guidance. The research areas were selected within the city area, two with the highest life expectancy (Pollokshields West; Anniesland, Jordanhill and Whiteinch) and two with the lowest life expectancy (Greater Govan; Ruchill and Possilpark). This dissertation will also discuss and draw evidence for conclusions from the above research.

“In the period 2015-19, estimated male life expectancy at birth within Glasgow ranged from 65.4 years in Greater Govan to 83 years in Pollokshields West, a gap of more than 17 years.”

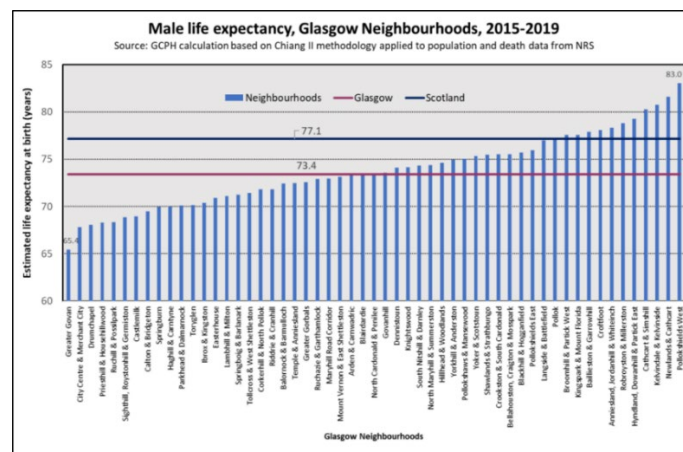


Figure 1 – Male life expectancy, Glasgow Neighbourhoods, 2015-2019

“In the period 2015-19, estimated female life expectancy at birth within Glasgow ranged from 72.7 years in Ruchill and Possilpark to 86.1 years in Anniesland, Jordanhill & Whiteinch, a gap of more than 13 years.”

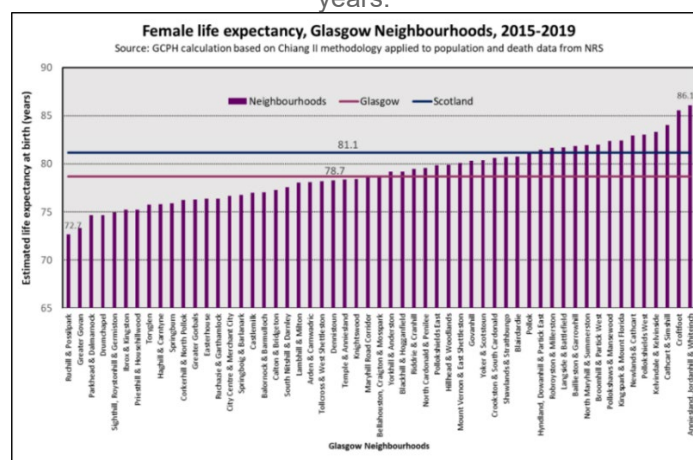


Figure 2 – Female life expectancy, Glasgow Neighbourhoods, 2015-2019

Chapter 2: Literature Review

2.1 Health inequalities

There is strong evidence that all over the world all over countries there is a significant health level disproportion among different social groups. A big influence on how healthy the community is has various social factors like education, employment, income, gender or ethnicity. As a result, we can observe the higher risk of poor health in the groups of lower socio-economic positions. This effect can be observed worldwide with connections to different issues of different social groups. For example, the MBRRACE report from 2021 shows that black women are four times more likely to die in pregnancy and childbirth than white women. However, this document will consider health inequities within the Glasgow area and test if it can link these differences to the building environment. As Dr Andrew Fraser – Senior Adviser to Public Health Scotland, said: *“Health inequities is lost potential. Lost potential for people leading happy, healthy lives. Lost potential for the country and for the communities.”* Comparing life expectancy in the deprived areas of Govan or Bridgeton in Glasgow to life expectancy in Jordanhill, this difference is 14.3 years for males and 11,7 years for females.

Focusing on the specific areas of Glasgow and analysing links to build environment define if the problem can be mitigated by a better design approach to provide enhanced levels of health and wellbeing.

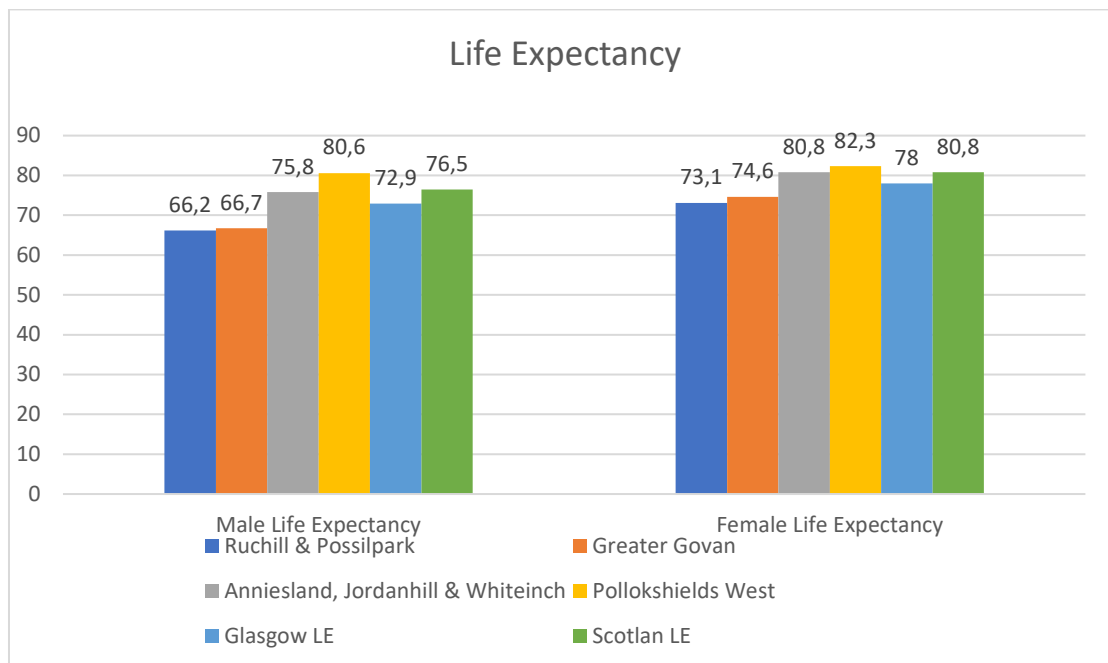


Figure 3 – Comparison of Glasgow Indicators of average life expectancy of chosen Glasgow neighbourhoods, 2015-2019

2.2 Socio-Economic ‘Other’ Factors

2.2.1 Introduction

Glasgow isn’t known only for Glasgow Effect or the big Health Inequities problem; much more significant inequities can be observed. It is known that life expectancy depends on many important

factors, like gender, genetics, access to health care, hygiene, diet and nutrition, exercise, lifestyle, and crime rates. It can be narrowed down to two significant factors – genetics and lifestyle choices. Studies show that approximately 20-30% of an individual’s lifespan is related to genetics; the rest is due to individual behaviours and environmental factors.

2.2.2 Poverty

A comparison of chosen areas shows an enormous disproportion of poverty levels within compared areas of Glasgow. Anniesland, Jordanhill & Whiteinch has second the best result regarding the minor poverty level and 2nd the best life expectancy average. Areas with the highest average life expectancy – Pollokshields West, can also be considered an area with the slightest problem of poverty. Greater Govan and Ruchill & Possilpark areas highly contrast with the previous two areas, with the number of citizens touched by poverty issues being three times bigger. Ruchill & Possilpark has noted the enormous level of people in income deprivation (35%), people of working age in employment deprivation (32,6%), and children living in poverty – below £10,000 annually per household (46,9%) and also the lowest average life expectancy.

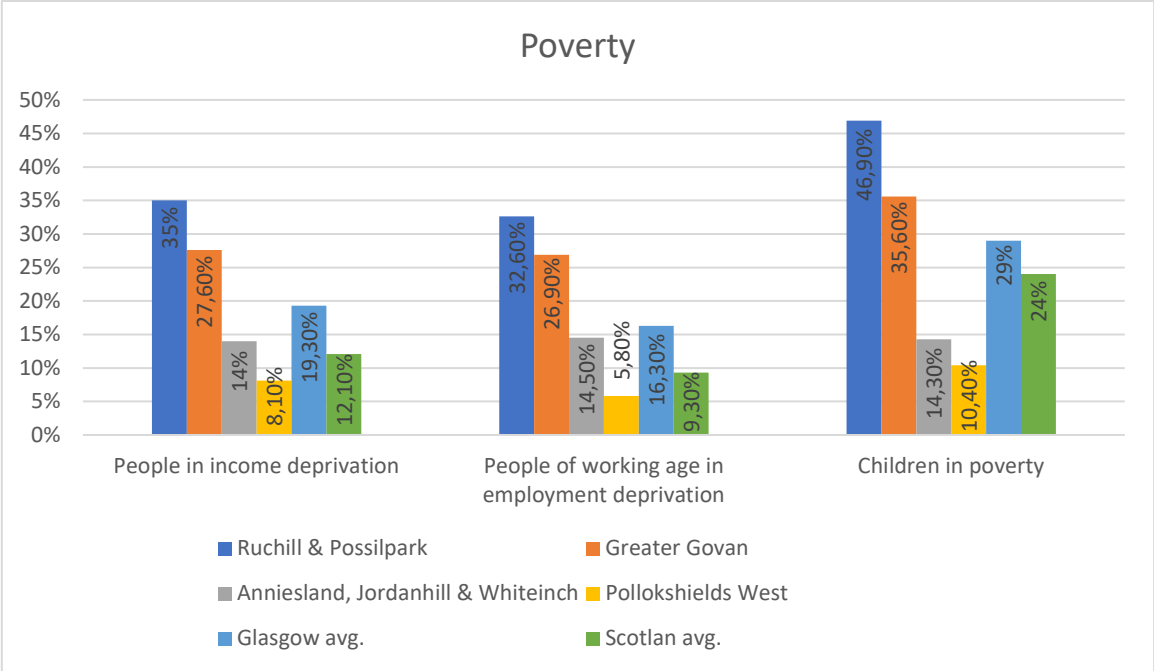


Figure 4 – Comparison of Glasgow Indicators in poverty levels of chosen Glasgow neighbourhoods, 2011-2012

2.2.3 Education

A large disproportion can also be observed along levels of education for considered areas. A comparison of education level statistics with life expectancy lengths for these four chosen neighbourhoods shows that areas with lower education also have the lowest life expectancy.

According to the document prepared by one of the Health Inequalities Research Team members, Sara Meriouma, about the role of education in reducing health inequalities, it is known that there is a direct connection between education and factors such as health and life expectancy length.

“In the UK, there is evidence suggesting people living in the lowest healthy life expectancy (HLE) areas generally have lower educational attainment than people living in the highest HLE areas.”

[https://www.healthactioncampaign.org.uk/tackling-obesity/the-role-of-education/\(secondary\)](https://www.healthactioncampaign.org.uk/tackling-obesity/the-role-of-education/(secondary))

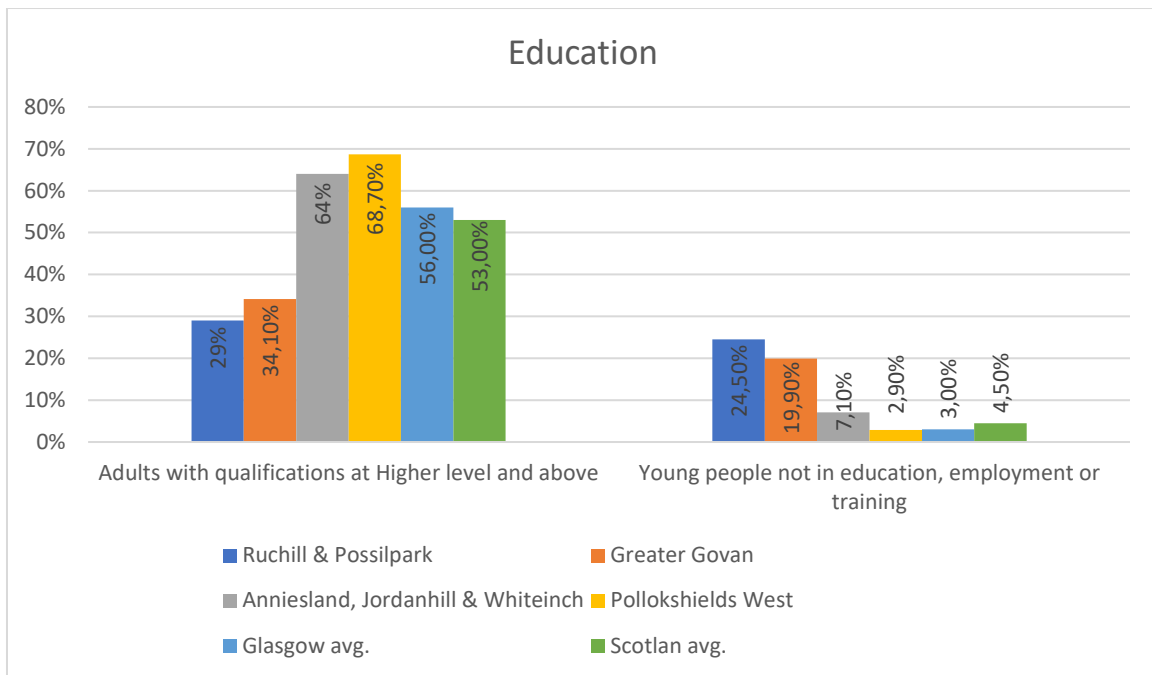
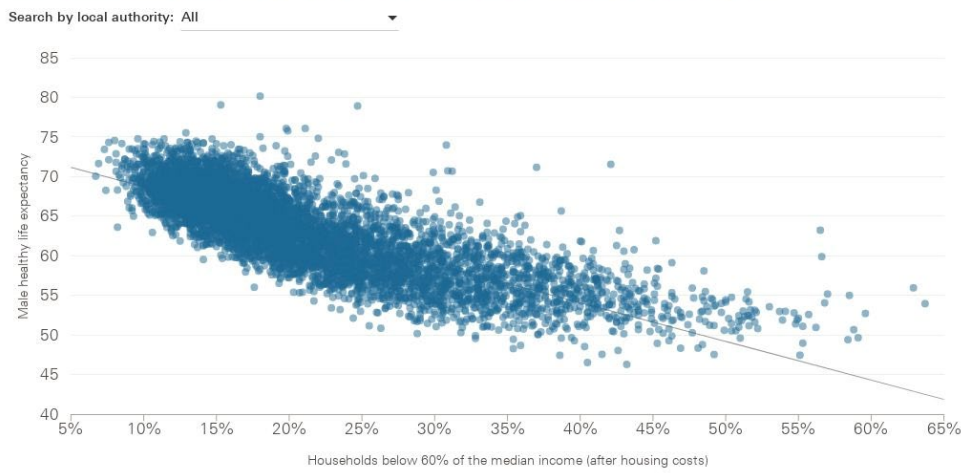


Figure 5 – Comparison of Glasgow Indicators in education levels of chosen Glasgow neighbourhoods, 2011

2.2.3 Summary

The relationship between poverty and healthy life expectancy is clearly shown by a report prepared by The Health Foundation. Considered areas with longer life expectancy have higher statistics in terms of education and a lower percentage of poverty compared to those with lower life expectancy. These factors are known as ones that are having a huge impact on average living longitude.

Male healthy life expectancy at birth, by percentage of households below 60% of the median income (after housing costs) by neighbourhood: England, 2013/14



2.3 Glasgow Effect

The term "Glasgow Effect" was created in 2008 by public health professionals to describe and explain then the unknown reason why Glasgow has such poor outcomes. Comparison between Glasgow, Manchester and Liverpool – three similarly deprived areas of the UK. It is known that the death rate under the age of 65 years was around 30% higher in Glasgow than in Manchester or Liverpool.

Glasgow Effect was the subject of much research; however, new research undertaken by the Glasgow Centre for Population Health alongside NHS Health Scotland, the University of West Scotland and University College London, which was published in May 2016, states that a huge amount of evidence appeared that in case of Glasgow, the population of this city were made more vulnerable to the key factors influencing the health level of the population like poverty, deprivation, deindustrialisation, economic decisions taken by the government, guiding to the poorer health than in places like Liverpool or Manchester which were struggling with similar issues.

Higher vulnerability resulted from many overcrossing factors like historical factors and political decisions. It was decided to scrap the term 'Glasgow Effect' and use excess mortality instead.

2.4 National Design Guide

2.4.1 Introduction

"The statements in this guide provide a series of tests for assessing whether a place is well-designed or not."

"The choices made in the design process contribute towards achieving the ten characteristics and shape the character of place."

National Design Guide is a document issued by the Ministry of Housing, Communities & Local Government to establish framework for creating high quality buildings. National Design Guide together with the National Model Design Code are showing how to achieve well-designed places which can be more beautiful, healthy, greener and able to last longer.



Figure 6 – Ten Characteristics of well-designed places

"The National Design Guide addresses the question of how we recognise well-designed places by outlining and illustrating the Government's priorities for well-designed places in the form of ten characteristics."

2.4.2 Ten Characteristics

Context – enhances the surroundings.

“Context is the location of the development and the attributes of its immediate, local and regional surroundings.”

Understanding historical, contextual, and cultural values is critical to delivering well-integrated responses for contextual needs, which can enhance the positive qualities of the surrounding developments and improve negative ones. During creating a design, people responsible for it should be aware of the contextual meaning of the surrounding area. Misunderstanding meaningful context can result in the building will be less likely acceptable by local communities. Therefore, it cannot be able to achieve planned objectives.

Identity – attractive and distinctive

“The identity or character of a place comes from how buildings, streets and spaces, landscape and infrastructure combine together and how people experience them. It is not just about the buildings or how a place looks, but how it engages with all of the senses.”

According to National Design Guide, well-designed places, buildings and spaces should have a positive and coherent identity that everyone can identify with, including residents and local communities, contributing towards health and well-being, inclusion and cohesion. Secondly, it should have a character that suits the context, its history, how we live today and how we are likely to live in the future. Development should also be visually attractive to delight their occupants and other users.

Built form – a coherent pattern of development

“Built Form is the three-dimensional pattern or arrangement of developments blocks, streets, buildings and open spaces.”

Well-designed places should contribute positively to well-being and placemaking by having compact forms of development that are walkable. Impressive features or grouping buildings should create a sense of place, promoting inclusion and cohesion. They also should have recognisable streets and other areas with well-defined edges, which make the site easier to be found by anyone.

Movement – accessible and easy to move around

“Patterns of movement for people are integral to well-designed places. They include walking and cycling, access to facilities, employment and servicing, parking and the convenience of public transport.”

Following the guidelines of NDG, well-designed spaces should have a maximum choice in how people make their journeys, and all modes of transport should be positively accommodated into the built form. To propose a proper design response, priority should be given to pedestrian and cycle routes creating new connections. Additionally, focusing on pedestrian and cyclist movement corridors means creating paths and trails that are safer, directly connected and convenient for people of all abilities. People should not need to rely on the car for everyday journeys in well-designed places, although well-designed sites should have an eco-friendly infrastructure for electric vehicles.

Nature – enhanced and optimised

“Nature contributes to the quality of a place, and to people’s quality of life, and it is critical component of well-designed places. Natural features are integrated into well-designed development. They include natural and designed landscapes, high quality public open spaces, street trees, and other trees, grass, planting and water.”

Good design responses should prioritise nature and integrate existing and new natural features creating a whole multifunctional network which will be uprisng quality of place, biodiversity and water management, addressing climate change mitigation. Beautiful open spaces, which are easy to access, should provide a place where different enjoyable activities like play, recreation or sport could be performed. Such a place positively influences citizens as they will be encouraged to do physical activities, which can bring further benefits to health, well-being and social inclusion. Additionally, such public open spaces provide opportunities for comfort, relaxation, stimulation and social interaction in a safe environment. Created open spaces should be designed to be high quality and properly managed and maintained for continual use.

Public Spaces – safe, social and inclusive

“The quality of the spaces between buildings is as important as the buildings themselves. Public spaces are streets, squares and other spaces that are open to all. They are the setting for most movement.”

Well-designed public spaces are social spaces which are providing meeting places and opportunities for comfort, relaxation and stimulation. Well-designed public spaces should be sited in well-located accessible locations. They should support various activities and encourage citizens to engage in social interactions promoting health, well-being, and social and civic inclusion. Such public spaces should feel for all user as safe, secure and attractive to use. Very important for such spaces is also landscape architecture. Well-prepared design responses can accommodate proper trees and planting for people to enjoy while also providing shading, better air quality, climate change mitigation and decreased noise pollution.

Uses – mixed and integrated

“Sustainable places include a mix of uses that support everyday activities, including to live, work and play.”

The guide states that well-designed buildings and places should be able to accommodate a variety of uses over time. They should have a mix of uses, including local services and facilities to support daily life and an integrated mix of housing tenures and type to suit people at all stages of life. All the housing buildings and facilities should be designed in such a way that they would be tenure neutral and socially inclusive.

Homes and buildings – functional, healthy and sustainable

“Well-designed homes and buildings are functional, accessible and sustainable. They provide internal environments and associated external spaces that support the health and well-being of their users and all who experience them.”

According to the National Design Guide, well-designed homes and buildings should meet the needs of a diverse range of users, considering factors such as an ageing population and cultural differences. They should be designed in proper sizes, suitable for the purpose and give the possibility of further adaptation to meet changing needs of occupants. To achieve a successful building, it should provide attractive, stimulating and positive places for all in terms of activity, interaction, retreat, or simply passing by. Homes and structures should promote health and well-being by providing a good quality environment (internally and externally); they should relate positively to the private, shared and public spaces, encouraging citizens to engage in social interactions and inclusions. Buildings should be easy to function and provide comfort, safety, security, amenity, privacy, accessibility and adaptability. Homes and facilities should be efficient and cost-effective, reducing contribution to greenhouse gas emissions by incorporating features that encourage sustainable lifestyles. They also should have good ventilation, avoid overheating, minimise noise pollution and have good air quality. Well-designed external spaces of both private and shared use should fit for purpose and incorporate planting wherever possible.

Resources – efficient and resilient

“Well-designed places and buildings conserve natural resources including land, water, energy and materials.”

In relation to the Net Zero Strategy, which sets out policies and proposals for decarbonising all sectors of the UK economy to meet net-zero targets by 2050 (2045 in Scotland), all design responses should be energy efficient and minimise carbon emissions towards reaching net zero targets for given years. Following guidelines provided by NDG, well-designed places should have a layout, form and mix of uses designed to minimise the requirement for resources such as land, energy or water. They also should fit a given purpose and be adaptable over time, to reduce the need for redevelopment and unnecessary waste. They should also be made out of materials and adopt technologies that can minimise their environmental impact. The places should reduce the need for energy through passive measures, including form, orientation and fabric and maximise their contributions to natural resources such as sun, ground, wind and vegetation. Installed energy-efficient mechanical and electrical systems like PV arrays, heat pumps, heat recovery and LED lights. Good designs will minimise the cost of running the building, making it much easier and more affordable for occupants for both use and management. The choice of material should depend on the amount of embodied carbon it contains, trying to reduce this amount to a minimum.

Lifespan – made to last

“Well-designed places sustain their beauty over the long term. They add to the quality of life of their users and as a result, people are more likely to care for them over their lifespan.”

As reported by NDG, well-designed places should be designed and planned for long-term stewardship by landowners, communities and local authorities from the earliest stages. Objects should be robust, easy to use and look after, and enable users to establish a sense of ownership and belonging, ensuring places and buildings age gracefully. Such places, buildings and spaces should be designed fully considering management and maintenance regimes from the early stages of the design process, setting them out in a management plan. To provide options and information for education, health, leisure, social interaction, business and home working, well-designed buildings should be fitted with a high-speed digital connection.

2.5 Sick Building Syndrome

Sick building syndrome is an effect that can observe in a particular building (it can be any building); after a long time of being within the premises of such a building, symptoms can get worse; analogously, they can get better after leaving the building. To possible symptoms, we can include headaches; blocked or runny nose; dry, itchy skin; dry, sore eyes or throat; cough or wheezing; rashes; tiredness and difficulty concentrating. These symptoms are common and can be caused by many different things.

To ease the symptoms, NHS advise: opening the windows to improve ventilation; setting the temperature at about 18C without frequent changes during the day; trying to reduce stress; taking regular screen breaks if you use a computer; going outside for some fresh air during lunchtime and other breaks. In case when citizens think about having sick building syndrome NHS encourage them to speak to their manager or employer if the case has a place at work. If the syndromes appear in different buildings, they should be told to the building manager or owner (e.g. Landlord). People responsible for the facility's state should look into the problem and try to find a solution.

There cannot be pointed to one exact cause of sick building syndrome; however, it is believed that the cause is a combination of different factors, such as poor ventilation or poorly maintained air conditioning systems; dust, smoke, fumes or fabric fibres in the air; bright or flickering lights; the problem with cleaning and layout, such as a crowded desk. NHS also identified the problem as most common for open-plan offices.

Concerns can grow as the difficult housing market situation and high demand for flats give an excuse for many investors and city planners to convert office buildings to dwellings. As we know, the difference between these two types of buildings. Offices are occupied mainly during the day by many workers, while dwellings are mainly occupied during evening/night hours by just a few people. This changes heat losses and gains, giving more work and expenses to achieve a high-quality response. Unfortunately, many investors don't understand how big the difference is, and they are not ready to face the cost associated with this decision. As a result, many low-quality living spaces are being created by scrapping an important function of the building, which is providing workspaces for community members protecting them from eventual poverty, without creating a solution for previously mentioned Sick Building issues.

<https://www.nhs.uk/conditions/sick-building-syndrome/>

Chapter 3: Testing and interpretation

3.1 Comparison of sites through 10 characteristics

3.1.1 Pollokshields West

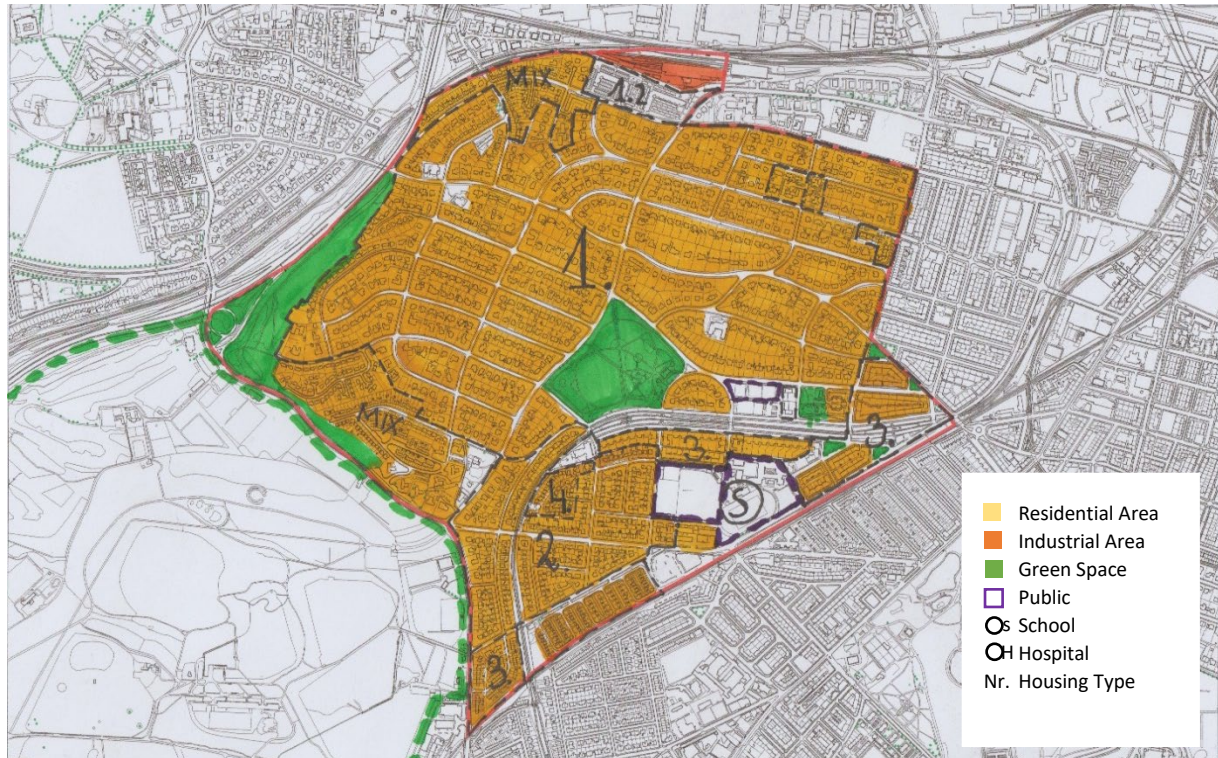


Figure 8 – Pollokshields West Typology

Pollokshields is a conservation area that initially meant to have residential purposes. Mainly developed during Victorian times according to a plan promoted by the original owners – Stirling- Maxwells of Pollok, who was associated with the site back in 1270. The whole neighbourhood was created in two distinct and contrasting styles. The western part consists mainly of large villas with gardens, while the eastern part is formed from typical of many aspects of Glasgow 3-storey sandstone tenements.

Pollokshields West neighbourhood, located in the south of Glasgow, accommodating a population of 7,187 people in 2012^[x] on an area of 2.42km², achieving a population density of 2970 people/km². Life expectancy is the highest in this area compared to other Glasgow neighbourhoods, while poverty statistics are much lower than the Glasgow average.

The site has few public open green spaces, and its neighbouring Pollok Country Park offers an excellent connection to nature and allows citizens to spend their time in a healthy, quality natural environment enhancing their level of well-being and social interactions.

In terms of transport and movement, the area is connected with the rest of the city with subway, trains and busses routes. They create many possibilities for citizens to shorten travel time to, e.g. work as the area is mainly focused on residential purposes.

The above diagram shows how big an area is occupied by residential buildings of one type. Detached and semi-detached houses and large villas are widely distributed around Maxwell Park and seem to be creating the core of this neighbourhood. Further from the centre of the site, we can find residential buildings with more mixed character, from sandstone tenements to more modern housing buildings. The neighbourhood is mainly composed of houses clad with red and blonde sandstone as further from the centre, some brick-clad and light-rendered residential buildings can be seen.

Types of dwellings:



Figure 9 - 1. Large Villas



Figure 10 - 2. Semi-Detached Houses



Figure 11 - 3. Sandstone Tenements



Figure 12 - 4. Modern Brick-Clad Houses

3.1.2 Greater Govan

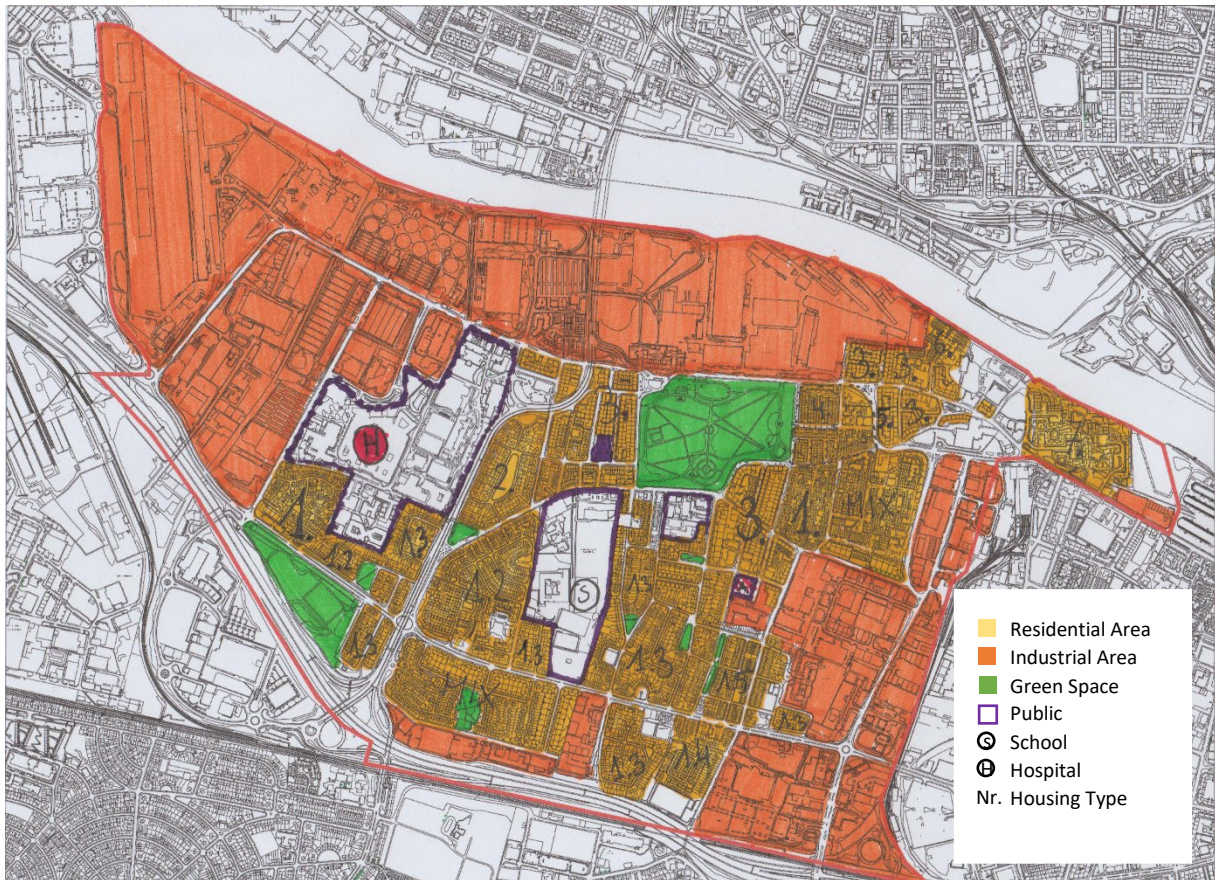


Figure 13 – Greater Govan Typology

Greater Govan is one of the post-industrial neighbourhoods. This area was evolving during its golden ages in the shipbuilding industry when, by the mid-1880's it could accommodate and provide workplaces for 60,000 people. Data shows that in 2012 it housed a population of 13,509^[x] in an area of 4.56 km² achieving a population density of 2963 people/km²^[x]. The industrial zone is still a large part of this neighbourhood, significantly decreasing the effective living area. The area has a characteristic mixture of buildings raised in different styles and times. Alongside classic Victorian buildings, housings from the 1970s and more modern developments can be seen.

In terms of movement and built-form area, Grater Govan feels disconnected from the city, and walking between different locations requires walking through industrial zones. For the whole area, the central green space is Elder Park, located almost in the middle of the studied area.

During the research walk, many young and adult people were observed spending their free time in the abandoned area of Govan Graving Docks, where flourishing flora seems to be overtaking one of the birthplaces of the Scottish shipbuilding industry and place of work for many people to create some wild corner to provide a substitute of calm and a bit more natural place to gasp its visitors.

This diagram was prepared to present more clearly how the Greater Govan's Residential Area is surrounded and "squeezed" by industrial areas and disconnected from the city for pedestrian

movement by boundaries such as the M8 Highway, Railway line and naturally cut off by River Clyde. On the map, there were shown aggregations of different housing types that will later be presented.

In terms of materiality, many buildings have different styles and materials used. In the centre of the site, the most prominent seems to be red and blond sandstone; brick-cladded buildings and light render-coated structures are pretty common.

Types of dwellings:



Figure 14 - 1. Brick-Claddes Housing



Figure 15 - 2. Light-Rendered Housing



Figure 16 - 3. Sandstone Tenaments



Figure 17 - 1.5 Poor Condition Tenaments

3.1.3 Anniesland, Jordanhill and Whiteinch

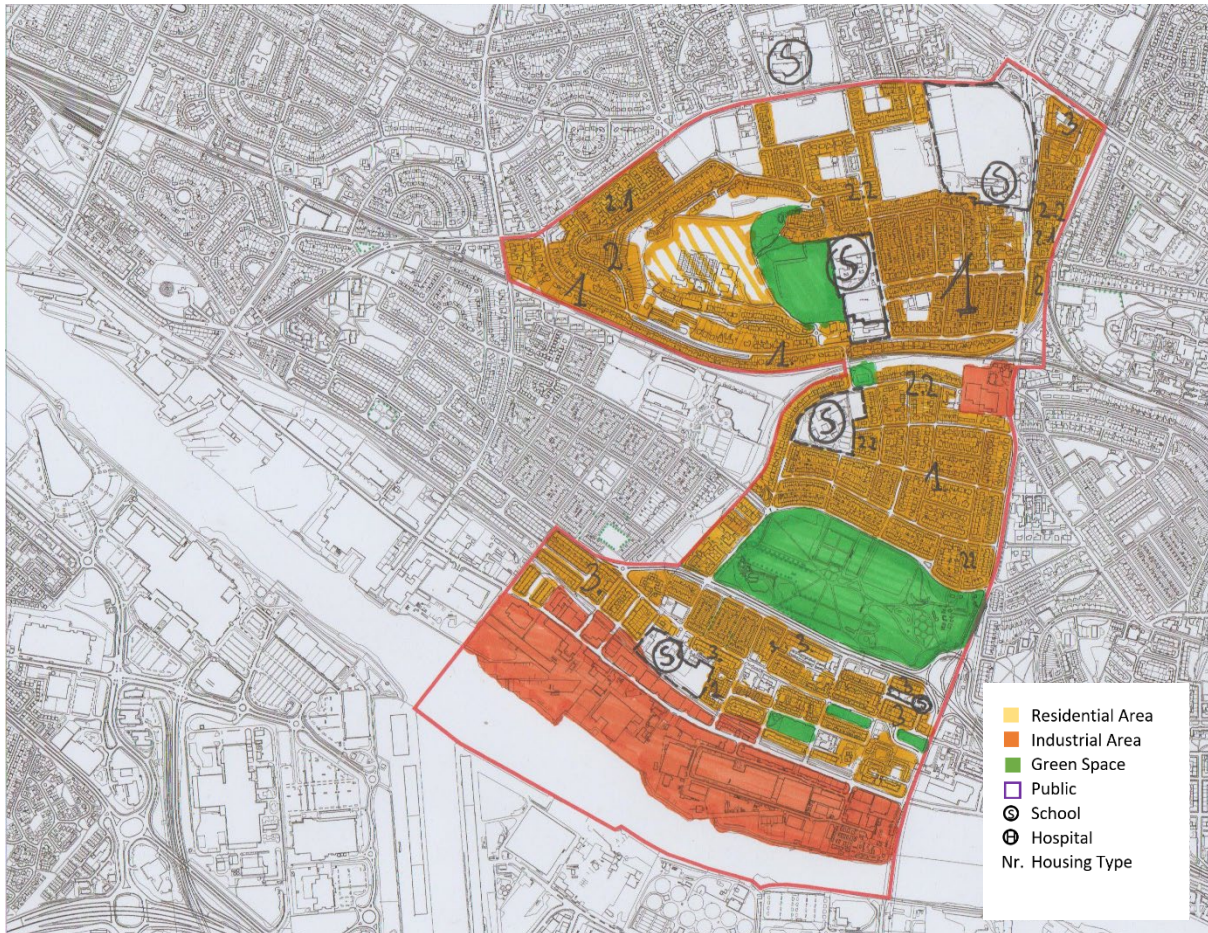


Figure 18 – Anniesland, Jordanhill and Whiteinch Typology

This research area contains three interconnected neighbourhoods located in the West End of the city of Glasgow. The area of Jordanhill in the past was a part of the Jordanhill Estate, which also owned a nearby farm – today's place of Anniesland. Before the 20th century, Jordanhill was considered poor. The site of Jordanhill House – the centre of the parish of Renfrew was bought by Jordanhill Teacher Training College, and later it became home of the Strathclyde Faculty of Education. With the growth of Glasgow and the higher demand for dwellings, the residential area quickly expanded. Whiteinch was previously an island which disappeared after dredging and narrowing works maintained on the river Clyde, and the name was used to describe the north bank of the river. Whiteinch became a home for the shipbuilding industry, increasing the growth of the population.

The size of the considered area is 2.79km², and referring to the Glasgow Indicators Project data, its population was 10,219^[x] in 2012, setting a population density of 3,663 people/km². Life expectancy was higher at 2,9 years compared to Glasgow's average, with a much higher education level than the other neighbourhoods and much lower poverty problems.

The housing area of Jordanhill is composed of terraced housing, some detached and semi-detached houses, and more modern apartments. The neighbourhood is contiguous to one of the largest green

spaces in Glasgow – Victoria Park. The area has a high education level and houses Jordanhill School which is known as the best in Glasgow in terms of academic performance, and multiple other schools that have a direct influence on the education level of citizens, which can be proven by data of Glasgow Indicators Project showing 64% of Adults have Higher qualification and above – it is 32% more than Glasgow average.

Another attractive aspect of the site is transport, the excellent connection provided by regular bus and train services operating Anniesland and Jordanhill train stations. Located nearby, the Clyde tunnel gives road access to the city’s south. The industrial area is mainly focused on the south part of the neighbourhood, and the rest of the site borders it.

Residential buildings consist mainly of terraced housing and more affluent semi-detached and detached houses with good connections to education facilities and green areas.

In terms of materiality, we can see a wide range of materials used, from red and blonde sandstone on Victorian houses to red brick and light render visible on more modern structures.

Types of dwellings:



Figure 19 - 1. Semi-Detached Houses



Figure 20 - 2. Gray-Rendered Houses



Figure 21 - 2.1 Modern Brick-Clad Houses



Figure 22 - 3. Sandstone Tenements

3.1.4 Ruchill and Possilpark

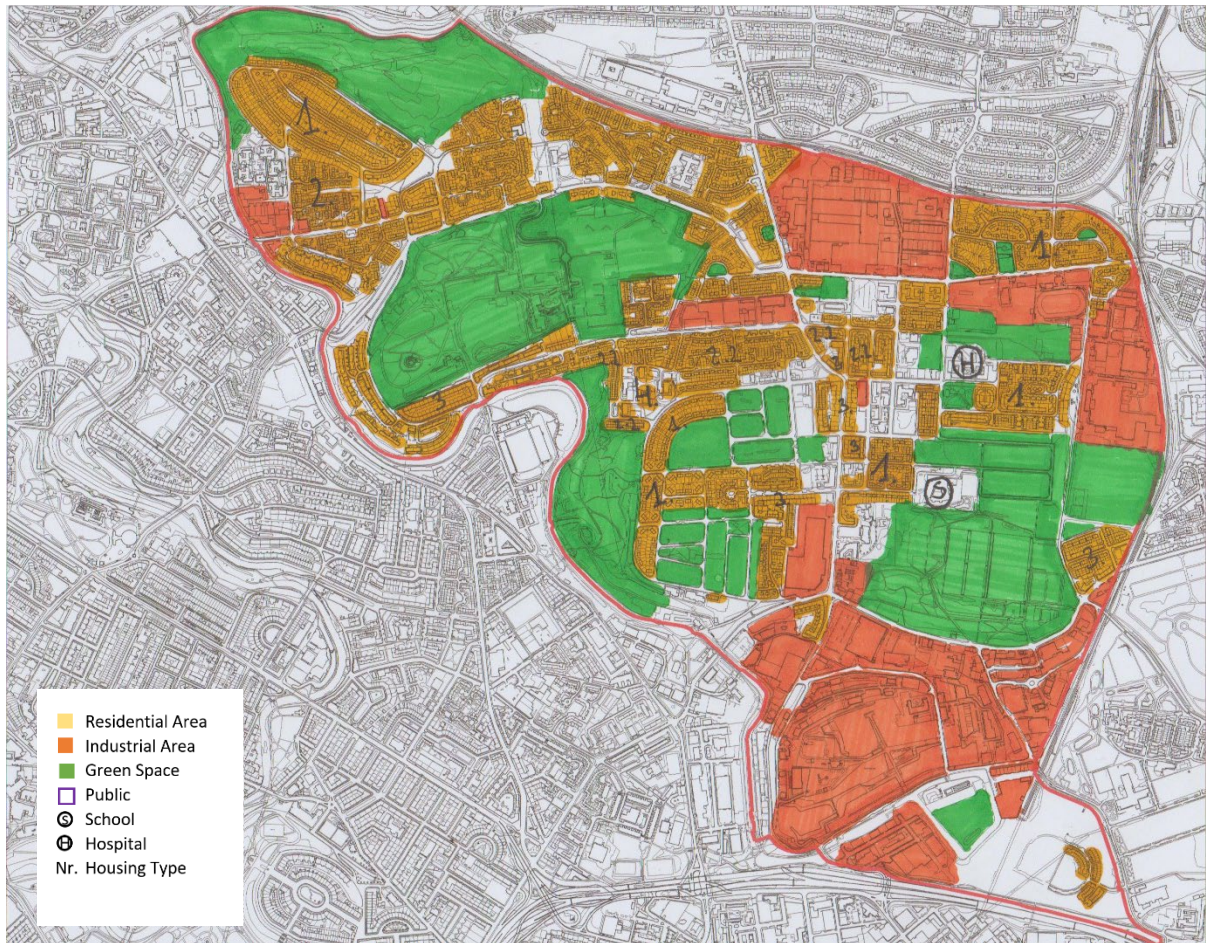


Figure 23 – Ruchill and Possilpark Typology

Ruchill and Possilpark are two neighbouring districts located north of Glasgow city centre.

Possilpark has mainly developed around Saracen Foundry of Walter MacFarlane & Co., founded by MacFarlane and was recognised as the most important manufacturer of ornamental ironworks in Scotland. Extensive iron works brought more people to the area, and the population rocketed from 10 people in 1872 to 10,000 in 1891. Glasgow Town Council described the grid layout for Possilpark as: *“one of the finest and best conducted in Glasgow, and the new suburb of Possil Park, laid out by them with skill and intelligence, is rapidly becoming an important addition to the great city.”* [X] Crisis after World War II, giving up steam power and transforming new designs and materials, which affected the company with a decline of orders. Finally, the company, after being taken over and closed in 1967, the fact touched majorly the surrounding area and living there citizens who lost their jobs, making this neighbourhood of Glasgow one of the poorest in the whole United Kingdom.

Ruchill previously was the site of Ruchill Hospital – an infectious hospital that opened in 1900 and closed in 1998, with its peak time in 1948 when it was accommodating 1,000 beds. The area is also known for the large Ruchill Park, which was opened in 1892. Main works had to be preceded by a significant area transformation as the poor state of the soil needed intervention before becoming a valuable ground for creating a park.

Referring to the Glasgow Indicators Project data population of the area achieved 10,737^[x] in 2012. Compared to the overall size of the considered neighbourhood is 4.17 km² the population density was 2575 people/km².

The whole researched area is covered with multiple patches of green space. Unfortunately , most of them are plain quadrants after demolishing previous structures, without trees or walkways. In the north part of the site, there is an extensive golf course, which remains unused similar to the area of past Ruchill Hospital. The main parks of these neighbourhoods are Ruchill Park, Cowlairs Park, Saracen Park and Keppoch Park.

Ruchill and Possilpark are connected with the city by multiple bus routes and train services operating from Possilpark & Parkhouse station and Ashfield train station. Additionally, the area has good access to the M8 highway.



Figure 24 - 1. Semi-Detached Houses



Figure 25 - 1. Refurbished Semi-Detached Houses



Figure 26 - 2. Semi-Detached Houses



Figure 27 - 3. Multiple-Occupation Dwellings

Chapter 4: Conclusions

As the researched areas are much older than National Design Guide (NDG), it can be seen that they are struggling with creating an ideal response to the guidelines shown in NDG. However, areas with higher life expectancy are not following them perfectly either, but they can make a much healthier environment for their citizens.

The problem of widespread poverty in areas like Greater Govan or Ruchill & Possilpark could have been solved in the past by redirecting its economic growth based on the existing workforce rather than waiting for slow bankruptcy and later collapse of the local area caused by growing unemployment.

Greater Govan was one of the most important birthplaces of the shipbuilding industry, which during its peak time, provided accommodation and workspaces for 60,000 people. Based on the amount of work and number of taxed citizens, we can clearly say that the area should be able to redirect its income sources instead of waiting for the market collapse in the shipbuilding industry. After the collapse, the whole neighbourhood and its citizens were left alone for its later decline – shortly after, the area and people were exploited. Afterwards, the area with people living there were left on their own, spiralling down and being affected by multiple issues for many years until today.

In the manner of analogy, similar history happened to Ruchill and Possilpark area. The neighbourhood has grown mainly around the Saracen Foundry of Walter MacFarlane, which brought many new incomers providing houses and work for many people. It started declining in 1945, just after WWII and work lasted until 1967, when the company's value significantly decreased. Finally, the site was sold, reducing many available jobs in the area. Lack of work for citizens makes this part of Glasgow known as one of the poorest areas in the United Kingdom. After 15 years of Saracen foundry closure, the area became the hub of Glasgow's heroin trade and kept this infamous title until the 1980s. On the other hand, the massive Ruchill Hospital, which could accommodate 1.000 patients and give a job to many citizens, was closed in 1998, again reducing the employment possibilities of the site. Today's area struggles with similar issues to Greater Govan.

Annie'sland, Jordanhill and Whiteinch, before the 20th century, were seen as poor areas. Whiteinch was one of the places that also focused on the shipbuilding industry, which was closed in 1967. Still, thanks to its gentle transition and more negligible dependence of the whole area on this type of industry let, this change happened with much smaller consequences for citizens. Its stable growth and later connections to educational background let develop this neighbourhood from poor to one of the most attractive in Glasgow city.

Pollokshields West, since the beginning, was meant to be a residential area. Its dependency on other regions, which can provide work, was probably one of the main factors in developing good transport connections with other regions.

A city as a place to live should support citizens as living organisms and behave like one.

To be able to define something as a living organism, it needs to have six specific characteristics such as growth, metabolism, reproduction, self-organize, self-replicate, interact and have the ability to sense and react. The growth of the city can be seen as developments within the town. Metabolism can be understood as the need to provide energy, clean water, food, workspaces and adequate sewage system for its citizens – which works as cells of this giant organism. Reproduction is an expansion of the city for wider areas. City council works as a big brain to 'self-organize' locations and

activities in the town while demographic growth shows some kind of self-replication to create later interactions between different cities and exchange needed “cells”. The ability to sense and react can be represented by cause and effect relationships, e.g. Greater Govan, where citizens – “cells” started malfunctioning after losing the main activity, which was crucial to exchange it for essentials.

As the city can be considered a living organism, the enforcement body should not only be focusing on electric energy, clean water and sewage available, but it also should continuously monitor the number of workspaces available today as well as in the future and if needed encourage people to create new ones. Monitoring the market and workplaces can help forecast and plan the city's growth without losing the potential as it happened in Greater Govan or Ruchill and Possilpark.

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