

Transforming Urban Space: The Success of Sustainable Regeneration in Speirs Locks

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ABSTRACT

This paper examines the Speirs Locks area regeneration project in Glasgow, focusing on the implementation of a sustainable and inclusive master plan aimed at revitalising the canal area. The study explores the strategic integration of urban planning principles, stakeholder engagement and environmental sustainability in the redevelopment process. Through qualitative analysis and case study methods, the research highlights the project's successes and challenges, particularly in improving the social, economic, and environmental conditions in the area. The findings show that despite facing physical and infrastructural constraints, the regeneration project has significantly improved the quality of life of the local community and set an example for future urban redevelopment initiatives.

Keywords: Urban Regeneration, Sustainable Development, Master Plan Implementation, Stakeholder Engagement, Canal Redevelopment

1. INTRODUCTION

The development and regeneration of urban areas, particularly those requiring sustainable approaches, face multifaceted challenges that necessitate comprehensive strategies. A holistic perspective is crucial in the sustainable revitalization of historic cities, as it encompasses diverse factors such as history, economy, innovation, environment, and governance. This approach not only enhances the sense of place and social participation but also aligns with global guidelines like those from UNESCO, which emphasize sustainable management principles [1]. In marginal urban areas, the challenges are compounded by inadequate planning and governance, which hinder the achievement of Sustainable Development Goals (SDGs), particularly SDG 11 on sustainable cities. The A'WOT approach, combining SWOT analysis with the Analytic Hierarchy Process, offers a methodological framework to evaluate and prioritize urban regeneration projects, addressing the socio-economic disparities and spatial fragmentation prevalent in these areas [2]. Socially sustainable community regeneration is another critical aspect, focusing on enhancing social cohesion and equity. This involves human-centric approaches that improve community engagement and quality of life, with densification strategies serving as adaptive solutions to current urban challenges [3].

However, the financial viability of urban regeneration projects often poses a significant barrier, as many projects lack sufficient market value and rely heavily on public resources. A multi-objective optimization approach, considering project interdependencies, can guide decision-makers in selecting optimal project portfolios that balance sustainability and resource efficiency [4]. Reconstructing old residential buildings also presents barriers, particularly economic ones, which are the most significant impediments to sustainable urban development. Addressing these barriers through a structured assessment model can help practitioners and investors focus on key areas to enhance sustainability in redevelopment projects [5]. One example of this challenge is the canal regeneration project in Glasgow, Scotland. Glasgow's canals, particularly in the Speirs Locks area,

have been the focus of various development initiatives aimed at revitalising the area and reintegrating it into the wider fabric of the city.

Glasgow's Speirs Locks regeneration project aims to transform the area into a vibrant mixed-use urban environment, capitalising on its proximity to the canal and city centre. The initiative focuses on job creation, housing, and leisure opportunities while emphasising sustainability, community engagement, and regional identity. Urban regeneration projects, such as those in Glasgow, have been shown to have a significant impact on local crime rates. A study by Borbély and Rossi highlighted that areas within 400 metres of Transformational Regeneration Areas (TRAs) in Glasgow experienced a significant reduction in crime, although this effect diminished as distance from TRAs increased [6]. This suggests that the Speirs Locks project can also improve safety and security in the vicinity, contributing to a more attractive and liveable neighbourhood. While the abstract provided does not directly address specific elements of the Speirs Locks masterplan, it offers insights into related urban planning and social inclusion themes. For example, the importance of designing urban spaces that meet the needs of diverse communities, including children, is emphasised in Gadiant's work, which discusses the importance of safe environments that stimulate children's development [7]. This is in line with the Speirs Locks project's focus on creating inclusive spaces that promote community engagement and well-being.

Furthermore, the emphasis on accessibility and inclusion in abstracts related to disability rights and social integration [8]–[10] underlines the importance of ensuring that urban regeneration projects such as Speirs Locks are designed to be accessible to all members of the community, including those with physical disabilities. This is in line with the project's aim to promote local identity and community engagement by ensuring that all individuals can participate in and benefit from the transformation of the area. In summary, the Speirs Locks regeneration project is poised to create a vibrant urban environment that not only improves physical infrastructure but also meets social and community needs.

The canal regeneration project in Glasgow exemplifies a collaborative and sustainable approach to urban planning, addressing both physical and social challenges while preserving historical heritage. This initiative aligns with broader trends in urban regeneration, as seen in various European contexts, where the revitalization of disused waterways is recognized for its socio-economic and environmental benefits. For instance, the recovery of the Battaglia Canal in Italy highlights the importance of blue-green infrastructure in enhancing biodiversity and improving community well-being, which parallels the goals of the Glasgow project to create functional and aesthetically valuable public spaces [11]. The Glasgow Canal Regeneration Partnership's focus on sustainable development is consistent with findings from other urban regeneration projects, such as those in Rimini, Italy, where stakeholder involvement and soft mobility improvements have been crucial. These projects demonstrate how enhancing cycle and pedestrian paths can reduce emissions and improve urban quality, a strategy that Glasgow could emulate to address its infrastructural fragmentation issues [12].

Moreover, the Glasgow project's emphasis on collaboration among local authorities, stakeholders, and communities is supported by research on urban regeneration in the UK, which underscores the effectiveness of integrated and multi-scalar strategies. Such approaches promote sustainable mobility and resilient urban spaces, contributing to health and well-being while adapting to climate change [13]. However, challenges remain, as evidenced by the limited impact of urban

regeneration on crime reduction in Glasgow, which suggests that while local improvements are significant, broader city-wide effects may require additional strategies [6]. The iterative and flexible approach advocated by the Urban Regeneration Wheel could provide a framework for ongoing adaptation and improvement, ensuring that the project remains responsive to changing conditions and community needs [14].

In this context, this study will take an in-depth look at the strategy for the development and regeneration of the canal area in Glasgow, focusing on the implementation of the masterplan, the challenges faced, as well as the expected impact of this project on the neighbourhood and community.

2. LITERATURE REVIEW

2.1 *Urban Regeneration and Canal Area Development*

The regeneration of canal areas, such as the Speirs Locks in Glasgow, exemplifies a strategic approach to urban revitalization that integrates sustainability, stakeholder involvement, and mixed-use development. This approach aligns with broader principles of urban regeneration, which emphasize the importance of sustainable development, community engagement, and the integration of historical and cultural elements. Research highlights the necessity of a holistic perspective in urban regeneration, which considers historical, economic, social, and environmental factors. This comprehensive approach is crucial for the sustainable revitalization of historic areas, as it enhances the sense of place and social participation, thereby fostering a vibrant community environment [1]. The Speirs Locks project, with its focus on mixed-use development, reflects these principles by aiming to create a vibrant environment that supports economic growth through residential, commercial, recreational, and cultural uses. Moreover, the success of urban regeneration projects is often contingent upon the involvement of local stakeholders and the alignment of project designs with community needs.

A collaborative approach can deliver lasting benefits across physical, social, and economic contexts, creating places where people are happy to live and work [14]. This is particularly relevant in the context of Speirs Locks, where stakeholder engagement is key to reintegrating the area into the wider city network. Sustainability is another critical component of successful urban regeneration. Projects that prioritize sustainable development can effectively address urban decay and contribute to building sustainable cities. This involves integrating planning and social subsystems within the regeneration framework to ensure that economic objectives do not overshadow environmental and social sustainability [15]. Finally, urban regeneration projects can drive social and economic renewal by leveraging intellectual capital, which enhances the quality of life and competitiveness of urban communities [16].

2.2 *Masterplan and Sustainability in Urban Planning*

The masterplan for Speirs Locks, emphasizing sustainability across environmental, social, and economic dimensions, aligns with broader urban planning practices that prioritize long-term viability and adaptability. The integration of sustainability principles is crucial for ensuring that urban development not only meets immediate

needs but also remains effective over time. This is supported by research indicating that successful masterplans accommodate change while adhering to an established vision [17]. The Speirs Locks masterplan incorporates environmentally friendly materials and energy-efficient designs, reflecting a commitment to environmental sustainability. This approach is consistent with findings from the Hobsonville Point case study in New Zealand, where design review panels (DRPs) ensure sustainable urban development by integrating climate-related design considerations from the outset [18].

Furthermore, the involvement of local communities in the development process at Speirs Locks mirrors the Service Master Planning approach, which emphasizes stakeholder engagement and co-design to create shared visions and sustainable public spaces [19]. The importance of community involvement and adaptability is also highlighted in the Rio de Janeiro masterplan, which underscores the need for democratic and sustainable governance to improve urban quality of life [20]. This aligns with the Speirs Locks principle of engagement, ensuring that development is responsive to community needs and aspirations. However, challenges remain in translating these principles into concrete actions, as seen in the Latakia masterplan, which struggled with limited efficiency due to a narrow focus on tourism and economic development rather than comprehensive sustainability [17].

2.3 Stakeholder Engagement in the Regeneration Process

The success of regeneration projects, such as the canal regeneration in Glasgow, hinges significantly on effective stakeholder engagement, which includes local communities, government, and the private sector. This engagement is crucial for enhancing project legitimacy and minimizing conflicts, as evidenced by various studies. In the context of Glasgow's canal regeneration, the Glasgow Canal Regeneration Partnership has prioritized transparency and inclusivity, ensuring that local community voices are integral to decision-making processes. This approach aligns with findings from research on stakeholder engagement in energy projects, which emphasize the importance of continuous communication, transparent processes, and active participation to build trust and minimize conflicts [21]. Similarly, urban property development projects benefit from early involvement of local communities, which helps build trust and address concerns effectively [22].

Moreover, stakeholder engagement in regulatory processes highlights the necessity of incorporating feedback from consultations to foster a sense of ownership and trust among stakeholders [23]. This is particularly relevant in urban regeneration, where community-led participation and informal collaboration mechanisms are essential for effective engagement and representation [24]. The notion of "urban experiments" further supports this by providing a creative platform for testing and implementing diverse initiatives, thereby enhancing urban livability and community involvement [24]. Additionally, guidelines for community engagement in green social infrastructure development stress the importance of integrating community perspectives and ensuring their involvement throughout all project phases. This fosters a sense of ownership and aligns project outcomes with community needs, contributing to long-term success [25].

3. METHODS

3.1 Research Design

This research uses a qualitative approach with a case study method to analyse strategies for the development and regeneration of canal areas in Glasgow, specifically in the Speirs Locks area. This approach was chosen because it is suitable for examining complex and multidimensional phenomena, involving various stakeholders, as well as historical, social, and economic factors that influence the regeneration process.

3.2 Data Collection

The data in this study was obtained through an in-depth literature review related to urban regeneration, masterplans, sustainability, and stakeholder engagement, using sources such as scholarly journals, books, government reports, and official documents as a basis for analysis. Documentation methods collected data from the Speirs Locks masterplan, project reports from the Glasgow Canal Regeneration Partnership, and Glasgow city planning documents to provide an overview of the project objectives and implementation. Field observations were also conducted to understand the physical and social conditions in the Speirs Locks area, complementing the documentary data with a richer context for analysis.

3.3 Data Analysis

The collected data was analysed using thematic analysis methods, which allowed the researcher to identify key themes and understand the relationships between them. This process began with initial coding, where data from the literature study, documentation, and observations were coded based on initial themes such as sustainability, stakeholder engagement, and challenges in regeneration.

4. RESULTS AND DISCUSSION

4.1 Overview of Site Character

This report begins by examining the Speirs Locks Strengths and Weaknesses Masterplan, which was developed through various stages of planning practice at the local level. The New York City Government's definition of a Masterplan is 'an evolving, long-term planning document that sets out the framework and key elements of a site reflecting a clear vision created and adopted in an open process' (Government, 2015). Based on this definition, Glasgow Canal Regeneration Partnership collaborates with Glasgow City Council as the Local Authority on projects relating to land use systems or settlements, including adaptation to climate change and place-making. The purpose of this Framework is to provide an overview of the planning process involving the Proposer and the Local Authority, as well as the main structure of this report, which also includes a systematic process diagram to emphasise the uniqueness of the planning process used.

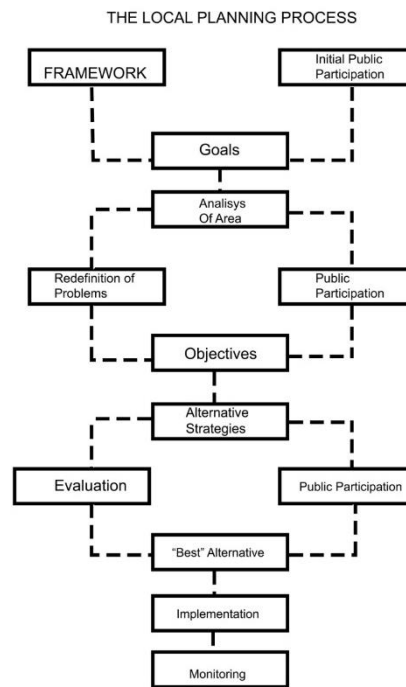


Figure 1. Planning Process Diagram

The area located at Speirs Locks close to the Glasgow Canal that is planned to be prepared should be placed in context. This is an exciting season of change and revitalisation and means good investment opportunities along the canal. New and revitalised communities are placed where investment will make a difference. Commercial development and residential opportunities exist side-by-side as mixed uses flourish (Canal, 2015).

1. Strategic Vision

- a) The vision of the Glasgow Canal Partnership is to plan and transform the regeneration of the Canal corridor including its inland communities to create over time.
- b) A place of quality and vibrant places to live work and visit.
- c) Diverse and sustainable.
- d) Create distinctive and desirable places that make use of the canal and its relationship with the city centre.
Target intentions are:
- e) Make optimal use of key nodal sites.
- f) Incorporate sustainability principles and also reduce carbon emissions.
- g) Integrate urban design and positive place-making with infrastructure improvements.
- h) Embrace community and stakeholder engagement during the design and implementation stages of planning.

2. Future Mission

For the next year 2020, the Glasgow Canal Regeneration Partnership aims to transform the Canal into a fantastic riverside neighbourhood that will bring activity and jobs in Glasgow and facilitate more visitors to come to Glasgow will also be mindful of the sustainability of the project.

There are 4 Projects on the Glasgow Canal with a future mission: Firhill Water-based Community, a new water-based community in the canal basin at Firhill of up to 18 houseboats in a horseshoe arrangement.

Maryhill Locks, A new community neighbourhood with around 800 new homes taking shape at Maryhill Locks, not just new housing developments, but shops, cafes, businesses and community facilities, all part of this side of the canal within Glasgow city. Maryhill TRA, Transformational Regeneration Areas will focus on building affordable homes and creating employment opportunities for local people.

Port Dundas Vision, The site has the potential to create an exciting new urban quarter, attracting people and investment to the area.

The site is located on the outskirts of the city centre with connections to the study area limited and bounded by the M8 Toll Road. Direct access to the site from the city centre is via Garscube Road under the elevated alignment of the motorway. Utilities, The site is a major route for utilities such as gas pipelines, water mains, drainage networks, low voltage and high voltage power cables and also communication lines.

As local heritage, the Canal provides a rich historical heritage and protected ancient monuments.

As open space, the public open space around the masterplan area other than roads is mainly concentrated on the Forth and Clyde Canal and Towpath.

3. Strengths

The Speirs Lock Masterplan site is 14 hectares in size and is located North of Glasgow City Centre close to the Glasgow branch of the Glasgow Canal. A key strength of the site is its proximity to the city centre making it possible to make links between the site and the city centre or events that connect it. George Square the heart of Glasgow is also within 1 mile of the site and it is possible to walk there in about 30 minutes on foot, also under the M8 Motorway which bisects the site from Cowcaddens. The canalside setting is dominated by the refurbished and listed Speirs Wharf warehouse to the east of the site, creating an attractive urban environment. Speirs Wharf sets a local precedent for successful canal-side regeneration.

4. Weaknesses

The Speirs Locks site contains a number of physical constraints as well as weaknesses, for example, Limited access from the site is provided to the canal side from steps and paths. Access is far from ideal. The constraints are: M8 visually disconnects the site from the city, Garscube road A4 Lane distribution road in and out of Glasgow which forms a barrier to neighbouring communities, Major utility lines - pose certain restrictions on development to the south of the site, Scottish opera, Pylons and overhead lines - residential development is currently restricted to 30m on either side, Canal scheduling - development is only permitted behind the schedule retaining wall.

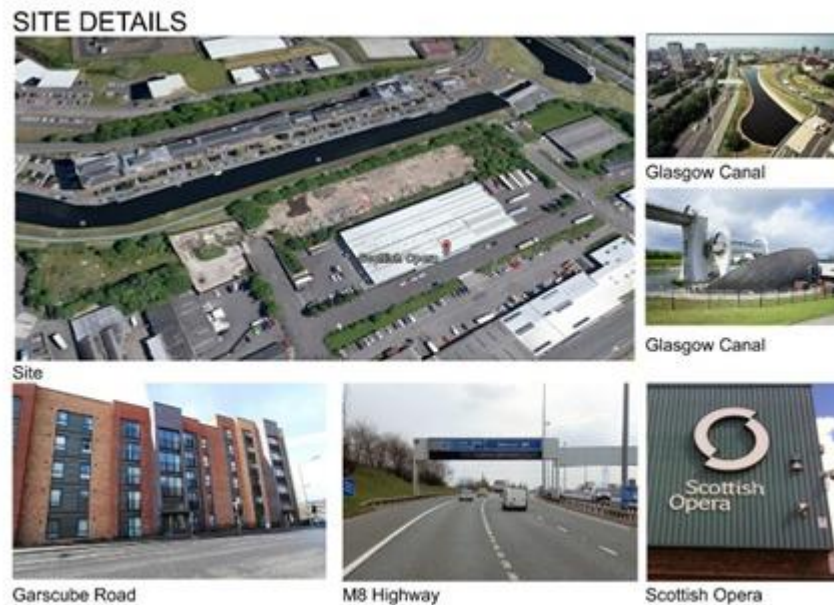


Figure 2. Site Details

For the use of the site, it has proximity to the mixed-use project. The canal provides the potential to accommodate a variety of residential, commercial, recreational, cultural and canal uses where families, businesses, services and communities can thrive, to create a vibrant atmosphere for the mixed use masterplan, several points should be considered by the planner:

5. Building Design

- a) Flexibility
Accommodate possible existing uses. Considering the activities on each floor
- b) Culture
- c) Parking
- d) Open space.

The Speirs Locks masterplan framework will represent a significant amount of work, providing more area for the city than is currently available. The masterplan framework based on a developed vacant site closes the canal to mixed use (Residential and commercial uses) and assists the gradual change from an adjoining low-rise industrial area to a place with more intense and diverse uses including residential and commercial. The Speirs masterplan has a Sustainable mission for the location of the site, such as: proximity to the city centre which means that a range of city centre services and facilities are within walking distance, Proximity to the Forth and Clyde canal which can make the area uniquely attractive as a place for new development and environmental requirements, Close to public transport routers the site is accessible by bus and has a well served bus corridor and is also close to the Glasgow subway.



Figure 3. British Waterway Canal

The regeneration of Speirs Locks in Glasgow has brought about significant changes in the physical and social fabric of the area. The project successfully integrated various elements essential to creating a sustainable urban environment, including the creation of attractive and functional public spaces along the canal. Today, the area is a centre of social and economic activity with cafes, shops, leisure facilities and diverse residential areas.

The success of this regeneration is also evident in the implementation of the Speirs Locks Masterplan, which successfully achieved sustainability targets. The use of eco-friendly materials, energy-efficient building design, and the integration of natural landscapes with urban infrastructure were integral to the development. As a result, Speirs Locks is not only an environmentally friendly but also aesthetically pleasing neighbourhood, making it a successful example of sustainable urban regeneration.

However, the regeneration of Speirs Locks also faced challenges, such as limited access due to legacy infrastructure such as the M8 Toll Road, which created physical barriers between Speirs Locks and Glasgow city centre. Legacy utility infrastructure such as gas pipelines and power lines also posed constraints that required design and planning adjustments. Nonetheless, this regeneration has had a positive impact on social and economic life, increasing social interaction, driving local economic growth, and strengthening community involvement in decision-making processes.

FUTURE MISSION



Figure 4. Future Mission

Discussion

The outcomes of the Speirs Locks regeneration are in line with findings in the literature that emphasise the importance of stakeholder engagement, sustainable design and flexibility in urban planning. The success of this project demonstrates that urban regeneration based on the principles of sustainability and community participation can result in healthier, functional and attractive neighbourhoods.

The study also confirmed that the physical and infrastructural challenges faced in urban regeneration require innovative and adaptive solutions. The design adjustments and strategies applied in the Speirs Locks project demonstrate that regeneration can be successful despite complex constraints.

Furthermore, the positive social and economic impacts of this regeneration support the argument that urban regeneration should not only focus on physical improvements, but also on community empowerment and local economic development.

The theories on urban regeneration that emphasize holistic and inclusive project planning and implementation are well-supported by the research findings from the provided abstracts. A holistic approach in urban regeneration is crucial for sustainable solutions, particularly in historical cities. This approach involves considering various factors such as history, economy, society, innovation, environment, and governance, which are essential for comprehensive urban planning and management [1]. The integration of these diverse elements ensures that urban regeneration projects are not only focused on physical improvements but also enhance social participation and a sense of place among residents. Moreover, the development of a multi-objective optimization approach for urban regeneration projects (URP) highlights the importance of considering project interdependencies and multiple objectives. This approach, as demonstrated in Chongqing, China, allows for a balanced consideration of functional adaptability, resource sustainability, and land utilization efficiency, which are critical for the successful implementation of urban regeneration projects [4]. This comprehensive planning method aligns with the holistic perspective by addressing the economic viability and sustainability of projects. In the context of disaster-prone areas, such as Istanbul, a holistic and inclusive model for disaster priority regeneration areas (DPRA) is essential. This model focuses on improving the quality of building stock and reducing potential disaster damage through spatial analysis and prioritization of regeneration areas [26]. This approach underscores the need for inclusive planning that considers environmental and social factors alongside physical improvements. Finally, the case study of Rotterdam exemplifies the success of urban regeneration through a holistic and interdisciplinary approach. This approach involves not only architectural and infrastructural development but also active involvement of residents and stakeholders, ensuring that regeneration efforts are inclusive and community-focused [27].

CONCLUSION

The Speirs Locks regeneration project in Glasgow is an example of how a sustainable and inclusive urban planning approach can deliver positive physical, social and economic impacts. Through the implementation of a masterplan that promotes sustainability and stakeholder engagement, the area was transformed into a vibrant, mixed-use neighbourhood, appealing to investors while supporting the well-being of the local community. Despite challenges such as limited access and aging infrastructure, the project overcame these through adaptive and innovative design. The resulting positive impacts include increased social interaction, job creation, and improved environmental quality, all of which contribute to local economic development. The outcomes of this project are in line with urban regeneration theories that emphasise the importance of integration between environmental sustainability and community participation, making Speirs Locks a model for the regeneration of other urban areas that seek to achieve a balance between the needs of development, environmental preservation, and social well-being.

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