THE UNPACKED

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Architecture and Planning Beyond Sustainability MPDSD

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Enhancing Green Space Design Through Participatory Methodology

Master's thesis in Society, Justice, Space
Architecture and Planning Beyond Sustainability
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Abstract

This thesis investigates how participatory design can enhance green space design to create inclusive and sustainable public green spaces in socially and economically challenged areas. While green spaces are often developed through top-down processes, this research examines how co-design with residents can translate lived experience into operational design directions and spatial strategies.

The study is based on a case in Angered , where residents engaged in sensory walks, biodiversity observations, and co-design workshops. Observations revealed gathering around shaded areas, low species diversity, accessibility gaps, and underused lawns. Workshop discussions highlighted desires for cultural representation, opportunities for ecological stewardship, and safer, more inclusive spaces. These insights were synthesised with theoretical foundations - participation, social sustainability, and biophilic design-into six Design Directions: fostering cultural expression, enhancing sensory diversity, strengthening biodiversity and stewardship, enabling flexible gathering, integrating nature as a shared resource, and creating connected micro-spaces.

The design proposal applied these directions through interventions such as modular hexagonal seating, pergolas, a language board, sensory and meditation cells, native planting, and a community garden. The hexagonal modular system became the core spatial strategy, embodying flexibility, inclusivity, and ecological integration.

The findings confirm site-specific conditions - cultural and linguistic diversity, socioeconomic challenges, and low ecological variety - while pointing to broader lessons for participatory design: translating community knowledge into spatial outcomes, reframing biophilia as a social as well as ecological practice, and demonstrating how small interventions can reinforce wider goals of inclusion and resilience. The study concludes that participatory design, when systematically connected to theory and translated into design directions, can generate green spaces that are socially inclusive, ecologically resilient, and adaptable to other urban contexts.

Keywords: *Participatory Design; Public Green Space; Cocial Inclusion; Sustainable Cities; Biophilic Design; Co-Design; Community Engagement.*

Acknowledgements

This thesis is the result of many conversations, shared moments, and thoughtful collaborations, and I am deeply grateful to all those who supported me throughout this journey.

First, I would like to thank teacher Marco Adelfio and my supervisor Bri Gauger and for their invaluable guidance, encouragement and critical insights throughout the research and design process. Your steady support helped shape both the vision and rigor of this work.

To Chalmers—thank you to the university that gave me the chance to fulfill a long-held dream.

I am sincerely thankful to the residents of Angered who participated in the workshops and generously shared their stories, ideas, and hopes. Your voices were not just part of the process, they are the heart of this project. I hope this work reflects your contributions with the care and respect they deserve.

Finally, I am deeply thankful to my world - my family - for their unwavering belief in me. Your patience, love, and encouragement gave me the energy to keep going, especially during the most challenging moments.

Contents

Figure 1: Co-Design Workshop . (Feb, 2025).

1.Introduction

1.1. Background

"Cities have the capability of providing something for everybody, only because and only when, they are created by everybody." — *Jane Jacobs, The Death and Life of Great American Cities p,254.*

Angered, a district in northeastern Gothenburg, is a place of contrasts. On one level, it is a vibrant and ethnically mixed community inhabited by many with immigrant heritage. On the other, it is confronted with significant social and economic challenges including segregation, unemployment and a widespread sense of disconnection with the rest of Gothenburg (Holmberg & Malmberg, 2012).

However, Angered represents worldwide trend in which rapid urbanization and migration often lead to the marginalization of certain groups (Baudrillard, 1994).

Nevertheless, the specific background and history of Angered make it a relevant location in terms of studying how buildings and urban planning can counteract such ills through participatory planning.

The history of Angered is closely intertwined with Sweden's Million Program (Miljonprogrammet), a housing scheme in use during the 1960s and 1970s designed to ease the country's housing shortage. (Hedin et al., 2012).

Research by Hall & Vidén (2005) critically reviews the Million Programme, noting that while it addressed urgent housing shortages, its standardized architecture and poorly activated outdoor environments frequently contributed to long term spatial and social segregation. Similarly, Stenberg (2013, KTH) reflects on how prefabricated concrete systems shaped lived experiences in these areas and how those material legacies call for reparative design strategies.

Over time, such areas became a metaphor for social exclusion with its inhabitants having a challenge in fitting in with the overall urban structure of Gothenburg (Fainstein, 2014). The distance between Angered and the city center combined with the weak social connotations strengthens feelings of detachment among many residents of such areas (Hedin et al., 2012).

In recent years, a growing realization has developed that traditional top-down approaches in urban planning fall short in dealing with complex social concerns.
On the other hand, participatory design- a practice that involves citizen participation in shaping their environment- is a feasible alternative (Arnstein, 1969). It helps to fill the social gaps by offering stakeholders a chance to contribute in decision-making processes about their environment. It promotes a feeling of ownership and creates spaces that genuinely represent the cultural requirements of its inhabitants.

The specific social dynamics in Angered make it an important case study for participatory design. Residents in this district have rich experiences and better understandings for the area's characteristics that can provide more flexible and participatory approaches to design (Sandercock, 2000).
To actualize such a potential, it requires a change in methodologies adopted by architects and urban planners. Instead of following expert-led frameworks, it should also use more participatory approaches with a focus on community voice and empowerment (Anderson, 2012).

The issue in Angered is not simply a matter of social segregation or distance, and the detachment geographically and symbolically from central Gothenburg has created additional barriers to social and economic integration (Hedin et al., 2012).

Participatory design is a tool for overcoming such barriers by creating spaces for dialogue collaboration and co-creation (Arnstein, 1969).
By taking an active role in shaping their neighborhoods inhabitants will most probably develop a deeper feeling of affiliation and belonging with their community.

This approach aligns with current trends toward social sustainability and democratic urbanism. It raises questions about the traditional power structures prevailing in urban planning and architectural practices and promotes a more equitable distribution of decision-making powers (Fainstein, 2014).

In Angered, participatory design can break down deep-rooted barriers that have long kept specific groups out of urban development processes. By including residents in developing public spaces, housing and community infrastructure, architects and urban planners can build environments that work and benefit everyone (Sandercock, 2000).

The potential for participatory design in Angered is supported through the district's long-standing grassroots activism. Community groups have always struggled to make living in Angered better through working on many cases without any backing from city governments (Göteborgs Stad, 2025). These efforts represent the determination and adaptability of Angered's inhabitants providing a strong basis for participatory urban development.

In conclusion, I think Angered is a microcosm that reflects many of the challenges experienced in many urban areas in modern society. The city's background, population and urban planning approaches make it a model case for studying participatory design that can effectively enhance the design of public spaces and promote urban inclusivity. By involving inhabitants as proactive participants in planning and architectural processes. We as architects and urban planners can become key in improving the urban design in similar communities. This thesis highlights the value of participatory design in practice in Angered, with a view towards creating a more sustainable future for its inhabitants and visitors.

1.2. Problem Statement

Public spaces are essential for fostering community interaction, cultural expression and social cohesion. However, many contemporary public spaces suffer from poor design, social isolation and a lack of cultural representation, which undermine their potential to serve diverse communities effectively.

1.2.1. Poor Design of Public Spaces:

Many public spaces fail to meet the functional needs of communities due to inadequate amenities, such as seating, shaded areas and multipurpose zones. This limits their usability and excludes vulnerable groups, including the elderly and individuals with disabilities (Francis et al., 2012). Research by Mehta (2014) highlights that spaces designed with a singular purpose, such as aesthetic appeal, often lack versatility, leading to underutilization. To address this, urban planners must adopt participatory design approaches, engaging communities to create multifunctional and inclusive spaces that reflect their needs (Shamsuddin et al., 2012).

1.2.2. Social Isolation:

The lack of well-designed shared spaces exacerbates social isolation, particularly in densely populated urban areas. Shared spaces, such as green spaces and community centers, are critical for fostering social connections and reducing feelings of loneliness. Studies show that neighborhoods with accessible and well-maintained public spaces report higher levels of social cohesion (Leyden, 2003).

However, poorly lit or inadequately maintained spaces often remain underused, reinforcing social exclusion (Francis et al., 2012). Research by Wood et al. (2017) emphasizes the role of public spaces in promoting social interaction and mental well-being, particularly in urban environments where isolation is prevalent. To combat this, cities must prioritize creating inviting and accessible shared spaces that encourage interaction and community-building.

1.2.3. Cultural Vacuum:

It is rare to notice that public spaces have cultural expression or represent minorities and society's diversity into them. Peters (2010) in a study identifies cultural markers such as public events and artwork in providing a sense of belonging. In a similar study, Neal et al. (2015) found that public spaces in multicultural communities have no cultural markers that celebrate heritage and minorities are excluded from them.

As a result, poor design, social Isolation and limited cultural representation contribute to feelings of disconnection, especially among marginalized groups. However, recent studies show the exposure to nature-rich environments - when designed inclusively - can promote a sense of belonging, decrease stress, and support mental well-being Kellert (2015) and Ristianti et al. (2024). This spots the light on the potential of biophilic design as not just an ecological intervention, but as a social one. When the inhabitants actively contribute to shaping this space through participatory design, integrating biophilic elements like native planting, sensory experiences, and shaded gathering areas, the result can be not only more sustainable green space, but also more welcoming, meaningful, and culturally resonant. This project explores how co-created biophilic spaces can address both environmental and social disconnection, particularly in contexts like Angered.

Figure 2 : Pratbänken (Chat Bench) placed in an open space, positioned facing a natural scenery instead of the space behind it. Despite its purpose of encouraging conversation, its placement overlooks a more inviting view. The row of long, plain benches is uninviting and lacks thoughtful placement, creating a rigid, impersonal seating arrangement that discourages social interaction. Their back-to-back alignment with the Chat Bench further isolates users, missing an opportunity to create a more engaging space.

Figure 3 : The space has a rigid and uninviting layout, with poorly maintained wooden benches that offer little comfort or visual appeal. The seating feels disconnected from the green species , reducing its functionality, while the barren trees and dull surroundings fail to foster a welcoming or engaging environment for interaction.

1.4. Purpose & Aim

The primary objective of this thesis is to enhance green space design in Angered through participatory design. This approach aims to create inclusive, sustainable and accessible green space that reflects the cultural diversity .

1.5. Research Question

How can participatory design enhance green space design to create inclusive and sustainable green space in socially and economically challenged areas?

1.6.Delimitations

This study is delimited to space design in specific socio-economically challenged regions. It highlights the impact of participatory design between designers and residents from these areas.

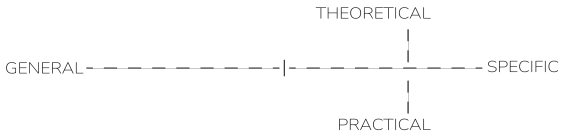
Methodologically, it relies on qualitative workshops, diagnostic mapping collaborative exercises and surveys. However, it avoids statistical analysis and does not evaluate the financial feasibility of proposed designs.

Furthermore, this design is limited to data collected during the project workshop timeframe, without providing any analysis of long-term impacts or changes to the space after implementation.

Finally, the proposal focuses on community input, aesthetics, and environmental benefits, but does not go into the details of construction logistics, financial constraints, or the formal approval and construction phases.

1.7. Methodology

To explore the social, spatial and ecological challenges in Angered, this research uses a mixed approach that combines three connected ways of working with design: Research about Design (RaD), Research through Design (RtD) and Research for Design (RfD).
These are placed on a diagram that helps explain how they relate to each other. By ranging from theoretical to practical and from general to specific.



Research about Design (RaD) is located into the *theoretical–general* part. It forms the foundation of the project by drawing on ideas from existing literature about participatory design, biophilic design and social sustainability.

Research through Design (RtD) is found in the *practical–general* part. It uses design itself as a way to explore and understand through hands-on methods like participatory workshops and collaborative mapping.

Research for Design (RfD) comes in the *practical–specific* corner. It applies what's been learned to shape real design proposals for the green space in Angered and based on local needs, site conditions and community input.

Although theory is often linked with thinking and writing, the practical side of this research is equally methodical. It involves doing, making and testing in a way that is thoughtful and grounded. By highlighting the clear methods used in RtD and RfD, this framework shows that the practical work is not without method, it's a creative,

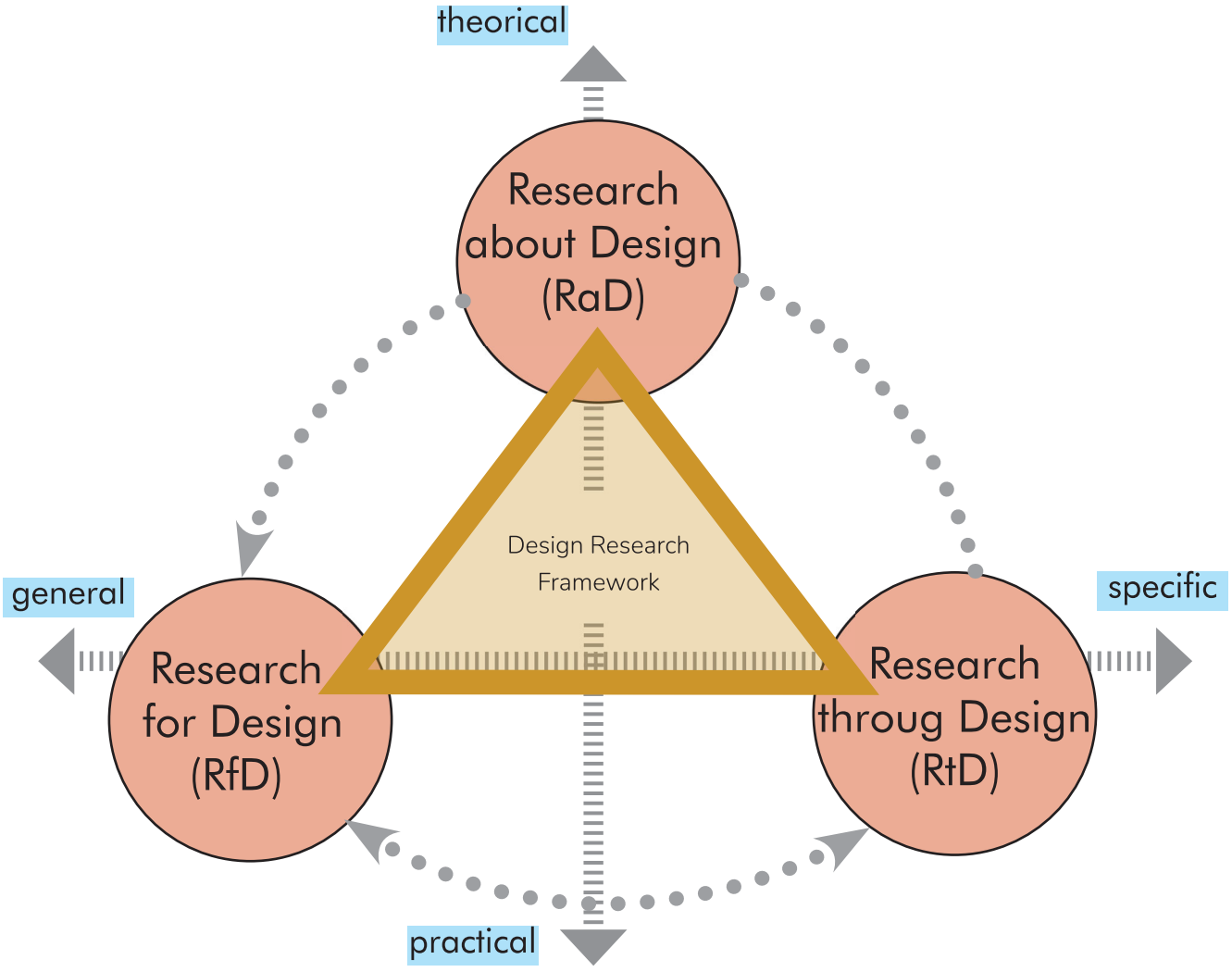


Figure 4 : Research for Design, Research through Design and Research about Design (inspired by / adapted from Frankel and Racine, 2010)

1.7.1 Methodology diagram

This diagram maps the research journey from theoretical grounding to design proposal. Each method contributed to identifying patterns and principles, which were then translated into the Unpacked.

Through active community engagement, the study strives to refine green space design, ensuring it aligns with the varied needs of residents while elevating their overall quality of life.

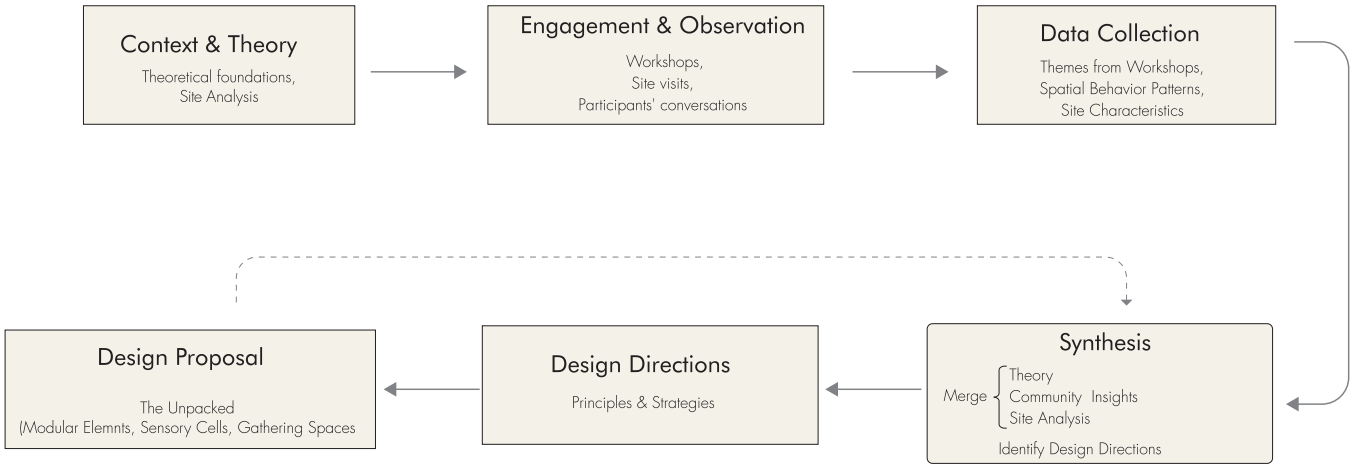


Figure 5 : Methodolgy Diagram

The following mindmap outlines the logical flow of this thesis. It connects the research question with theoretical foundations, methods, experimental work and design outcomes.

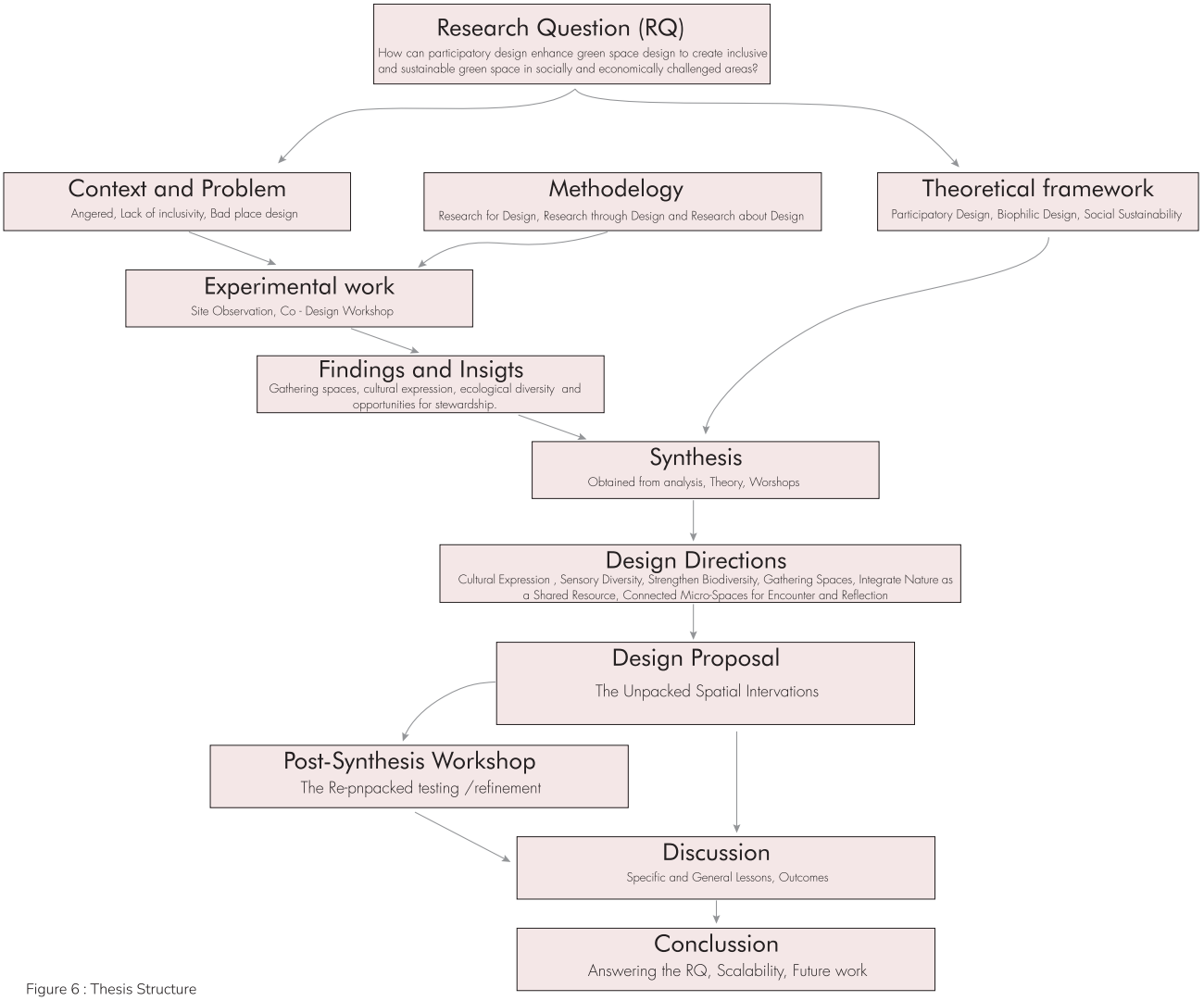


Figure 6 : Thesis Structure

2. Theoretical Framework

2.1. Core Pillars:

The Theoretical framework is built on three interconnected pillars: Participatory Design, Biophilic Design and Social Sustainability. Theses three pillars inform the research and design process, but they do not have the same importance in this thesis.

The central pillar is participatory design because it shapes the methodology and the main goals of the project. While the biophilic design and social sustainability are two complementary lenses which frame the desired impacts of participation in terms of how people engage with space and their sustained sense of community well-being.

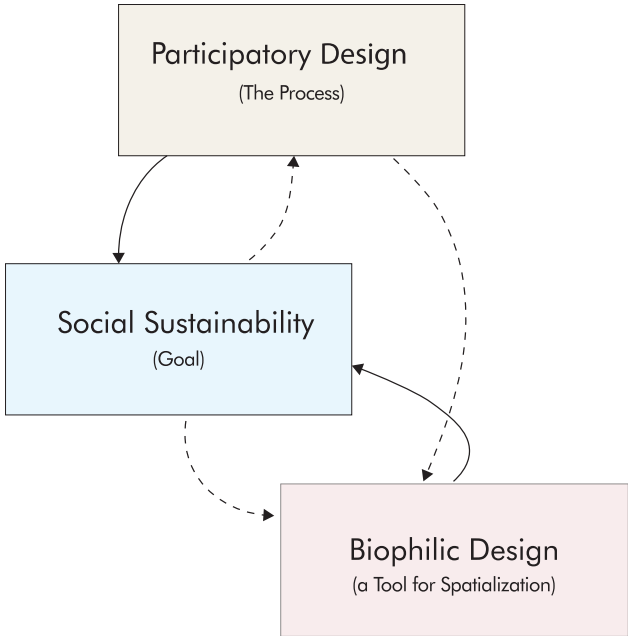


Figure 7 : Theorical Core Pillars

The diagram shows the relations between the three theoretical foundations. Participation serves as the primary process, driving efforts toward social sustainability. In turn, social sustainability goals shape the intent and framing of biophilic design. These three dimensions are interdependent: participatory processes inform what forms of nature matter to communities, while biophilic spaces can reinforce engagement and long-term social resilience. Dashed arrows indicate indirect or reciprocal influences, underscoring how design is shaped not only by process and goals, but also by contextually grounded feedback loops.

2.2 Theoretical Foundations

This research is grounded in three interconnected pillars: Participation, Social Sustainability, and Biophilic Design. These pillars provide a coherent lens linking the social, environmental, and spatial aspects of inclusive this green spaces design in Angered. Together, they guide the research process from community engagement to the spatial translation of design ideas.

1. Participation – The Process

Participation is central to the methodology of this research. Arnstein's (1969) Ladder of Citizen Participation provides a lens for examining the distribution of power in co-design, but its linear model can oversimplify the contested and adaptive nature of participatory work in socially and economically challenged areas such as Angered. Markus Miessen's (2011) critique of consensus-driven participation warns against tokenism and institutional performance, framing participation as a process that must acknowledge and navigate power imbalances.

Miessen's concept of the "uninvited outsider" resonates with my role in this research—as a reflective disruptor moving between community voices and institutional frameworks. This perspective supports a dialogic, flexible approach to co-design that values ongoing negotiation over fixed hierarchies. Here, Participation is not just a method but a guiding pillar, shaping how the project engages residents, interprets insights, and connects these insights to the goals of Social Sustainability and the spatial strategies of Biophilic Design.

2. Social Sustainability – The Goal

Social Sustainability underpins the project's commitment to equity, inclusion, and long-term community resilience. Dempsey et al. (2011) describe it as the capacity of a place to support well-being through social cohesion, safety, and opportunities for participation. Colantonio (2011) further emphasises cultural diversity, democratic governance, and social equity as vital components.

In the context of Angered, Social Sustainability means designing spaces that actively counteract marginalisation, foster belonging, and enable residents to shape their environment over time. It links to Participation by ensuring that co-design processes lead to meaningful, lasting change, and it connects to Biophilic Design by framing nature as a shared resource that supports both ecological health and social connection.

3. Biophilic Design – The Spatial Tool

Biophilic Design offers a spatial framework for translating participatory and social sustainability goals into the physical environment. Kellert's (2015) patterns of biophilic design—such as connection with natural systems, sensory diversity, and integration of natural materials—provide practical guidance for creating restorative, inclusive spaces.

In Angered, Biophilic Design is not only about ecological enhancement but also about cultural resonance and accessibility. It informs design decisions that bring nature into daily urban life, from native planting schemes that reflect local ecology to sensory-rich features that support well-being. By linking ecological resilience to community stewardship, Biophilic Design ensures that environmental benefits are embedded in the social life of the green space.

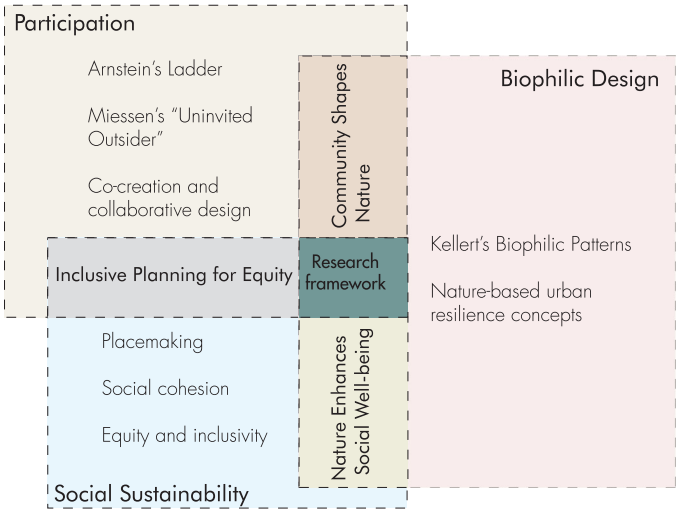


Figure 8 : Research Framework, Core Pillars Intersections

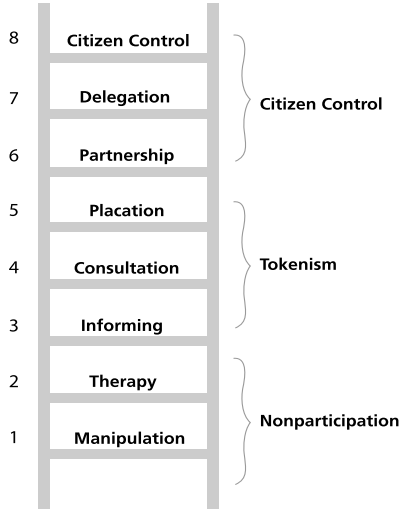


Figure 9 : R. Arnstein's "A Ladder of Citizen Participation, " Journal of the American Planning Association, Vol. 35, No. 4, July1969, pp. 217.

2.3. Literature Overeview

2.3.1 Participatory Design in Architecture and Urban Development

Participatory design integrates end-users and stakeholders into the design process, creating more inclusive and democratic frameworks. Blundell Jones (2012) highlights how this approach ensures built environments reflect community needs and values, challenging top-down planning and promoting co-creation and shared ownership.

Arnstein's (1969) Ladder of Citizen Participation remains a touchstone, though its linear model has been critiqued for oversimplifying contested realities. Miessen (2010) cautions against tokenistic approaches, describing the "nightmare of participation" and positioning the designer as an "uninvited outsider" who must navigate power dynamics critically.

Participation also extends beyond formal processes. Whyte (1980) and Gehl (2011) show that informal encounters in small-scale public settings—enabled by seating, visibility, and flexibility—foster inclusivity and everyday participation. Thus, participatory design functions both as structured engagement and as a framework for enabling daily practices of adaptation and co-use.

2.3.2. Social Sustainability and Its Link to Participatory Design

Social sustainability encompasses inclusivity, equity, resilience, and community well-being. Colantonio (2011) confirms the importance of participatory approaches in urban planning, noting that projects grounded in local involvement gain legitimacy and long-term success.

Research confirms that participatory planning strengthens belonging and responsibility. Shirazi and Keivani (2021), studying compact neighbourhoods, show that resident involvement fosters livability, while Dempsey et al. (2011) define urban social sustainability as the ability of environments to support equity, cohesion, and cultural identity.

Together, these studies demonstrate that participatory design acts as a bridge between the physical environment and social life. By embedding community voices, urban interventions can be both functional and socially resilient, producing places that are adaptive to diverse needs and long-term challenges.

2.3.3. Biophilic Design and Its Contribution to Participatory and Socially Sustainable Spaces

Biophilic design integrates natural systems into the built environment, enhancing well-being and ecological resilience. Kellert (2015) identifies design patterns that foster multisensory engagement and ecological awareness. Recent evidence supports this health perspective: Oosterbroek, de Kraker, Akkermans, Esser, and Martens (2024) show how participatory design of urban green spaces can directly improve residents' health outcomes, linking ecological interventions to social well-being.

Chiesura (2004) expands this view, showing how urban green spaces provide not only ecological benefits but also psychological and social value. Ristianti et al. (2024) further highlight how participatory biophilic design strengthens resilience, as residents who co-create and maintain green spaces develop stronger networks and stewardship practices.

This body of research reframes biophilia as both ecological and social: biodiversity and sensory richness gain meaning when tied to cultural identity, everyday use, and community ownership.

2.3.4. Conclusion

Across these strands, participatory design emerges as central to creating inclusive, adaptive urban environments. Arnstein's (1969) framework and Miessen's (2010) critique highlight the contested nature of participation, while Whyte (1980) and Gehl (2011) show how design at the human scale fosters everyday inclusivity. Research on social sustainability (Colantonio, 2011; Dempsey et al., 2011; Shirazi & Keivani, 2021) demonstrates that community involvement strengthens equity, cohesion, and belonging.

Meanwhile, biophilic design, as theorised by Kellert (2015) and reinforced by Oosterbroek et al. (2024), Chiesura (2004), and Ristianti et al. (2024), demonstrates that integrating natural systems with participatory practices enhances both resilience and health. Taken together, these perspectives highlight the interdependence of participatory, social, and biophilic approaches. When combined, they provide a robust framework for designing green spaces that address social and ecological challenges simultaneously, contributing to more inclusive, resilient, and livable urban communities.

3.
Context & Site

3.1. Urban Context:

Angered Center is one of the most prominent suburban areas in Gothenburg. It is located approximately 15 kilometers northeast of the city center. As one of the largest and most culturally diverse areas in the region. Angered Center is home to a vibrant community of 10,998 residents (Göteborgs Stad, Stadsledningskontoret, 2024), representing a wide range of ethnic backgrounds and cultures. The area is located close to several neighbourhoods such as Hammarkullen, Lövgärdet, Hjällbo, Gårdsten and Rannebergen. Each one has its own unique character and history.

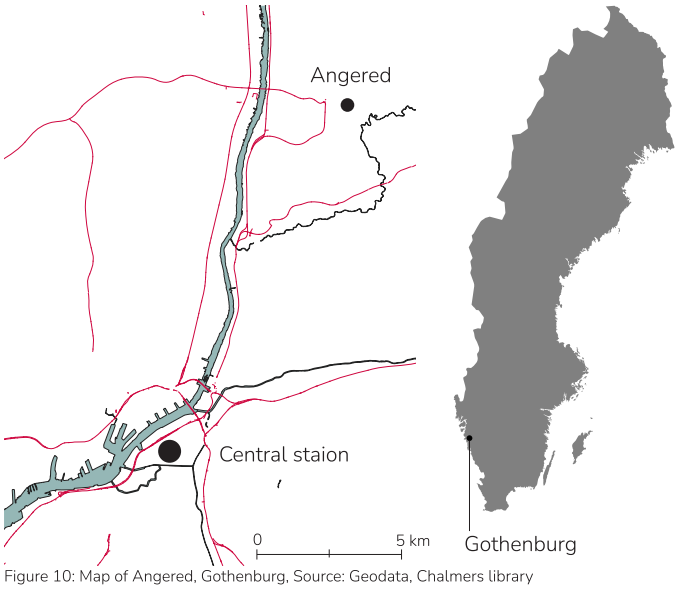


Figure 10: Map of Angered, Gothenburg, Source: Geodata, Chalmers library

The area was designed to provide modern living spaces for a growing population with a focus on jobs and accessibility. However and over time, Angerd has faced challenges related to socio-economic disparities, segregation and stigma. It is often portrayed in the media as an area with higher levels of unemployment and social exclusion than other parts of Gothenburg.

Despite these challenges, Angered is a place of resilience and creativity. It has a rich cultural scene with events such as the annual Hammarkullekarnevalen, one of the largest multicultural festivals in Scandinavia. In addition, Angered is surrounded by many green spaces, including the Vättlefjäll Nature Reserve

It has location and context that reflect the complexities of urban development and the potential for transformation. It is a place where history, culture and society intersect. It could provide a unique perspective on the dynamics of suburban life in one of Sweden's largest cities.

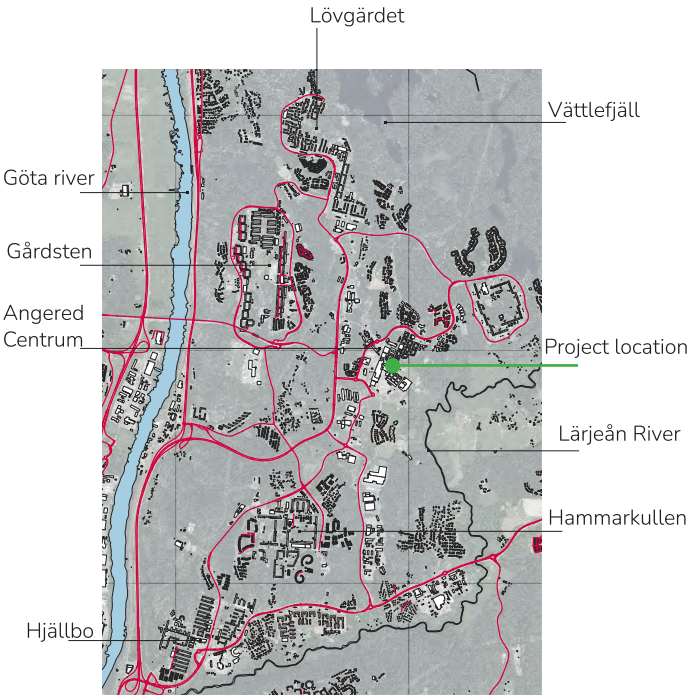
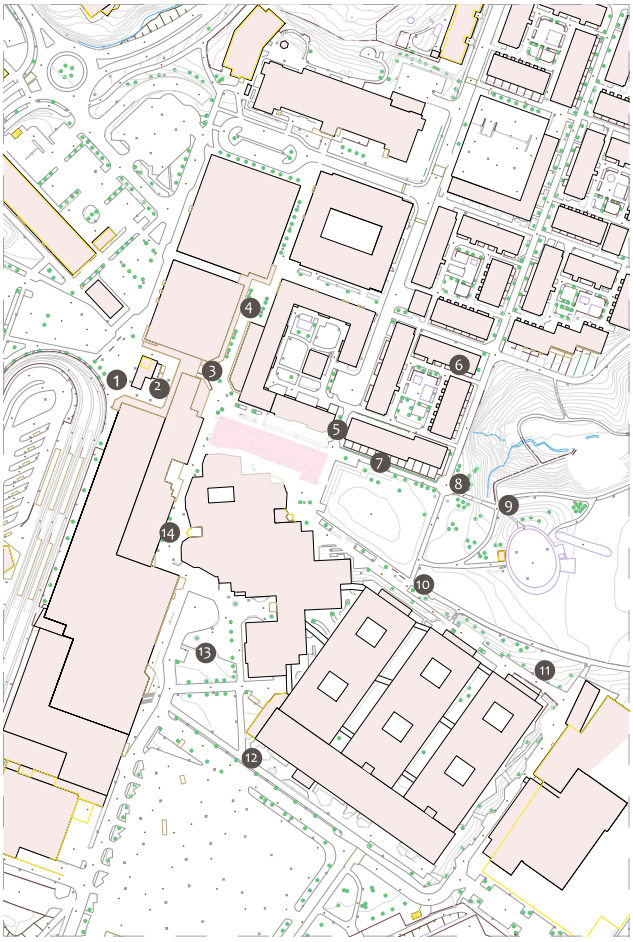


Figure 11: Map of Northeast Gothenburg, Source: Geodata, Chalmers library

Figure 12: Angered Center, Distribution of Population Density, Source: Geodata, Chalmers library

3.2. Site Conditions



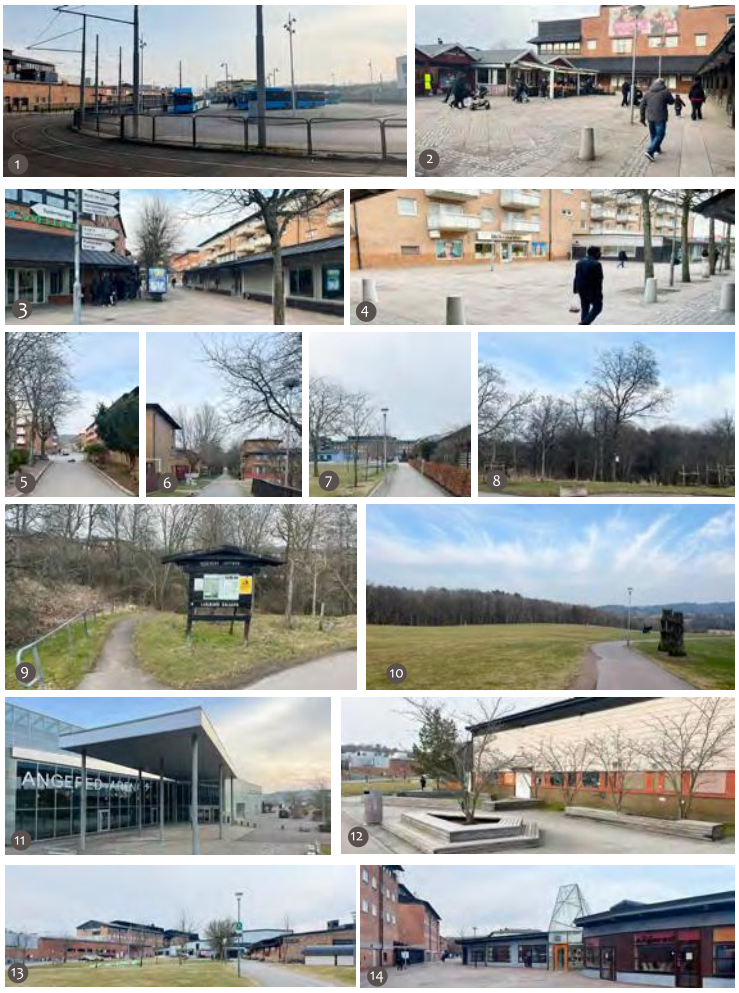


Figure 13: Angered Center. Source: City of Gothenburg, Urban Planning Administration

The site is located in a flat urban area of Angered Centrum, with excellent access to public transportation (Image 1) and close proximity to amenities such as Angereds Arena (Image 11) and the serene river Lärjeån (Image 9). Architecturally, the area reflects a cohesive language of rectangular forms, rooted in the late phase of the Million Programme. As shown in Images 2–14, it occupies a strategic location between Angered Square and the Blå Stället Cultural Center, serving as a transitional node between commerce, community activities and residential life.

This spatial relationship is visible in Images 3–4, where the site borders a blend of retail, office and housing developments, creating a layered urban fabric. The surrounding public services and cultural institutions enrich the area's role as a potential public commons.

Longitudinal section A–A (see following page) reveals how the site functions as a connective corridor, linking Angered Square with adjacent green spaces and residential zones. As depicted in Images 5–7, building heights gradually decrease toward the space, allowing for a transition from dense urban massing to more open, natural landscapes. In contrast, section B–B cuts through Blå Stället, emphasizing its dominant scale and defining presence in the area (Image 14). The site's lower elevation (illustrated in Image 10) creates a subtle terraced condition, which presents both opportunities and challenges for accessibility and landscape integration.

Pedestrian paths and green corridors which are evident in Images 5-7&10. They offer clear links between Angered's park, commercial areas and public transport. These visual connections confirm the site's potential as a **community hub**, where thoughtful interventions can foster social engagement, improve accessibility and reinforce sustainability. Attention to height transitions and material coherence will be key in integrating new design elements with the surrounding park, riverfront and built environment.

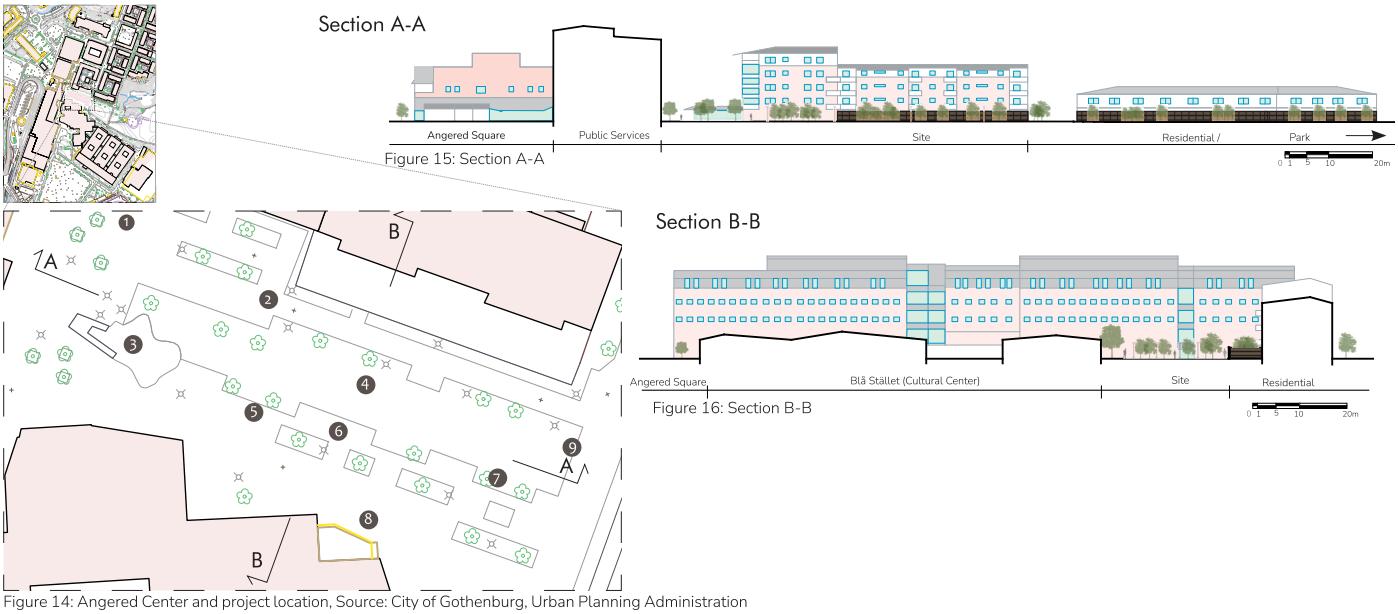


Figure 15: Section A-A

Figure 16: Section B-B

Figure 14: Angered Center and project location, Source: City of Gothenburg, Urban Planning Administration

The photos and site maps reveal several spatial and social challenges within Angered's central public realm:

Image 1. *View after crossing Angered Square* – Despite being a main entry point, the path leads into an undefined and unwelcoming space with little to orient or invite visitors into the space.

Image 2 . *Backside path between the space and residential blocks* - This defined, linear path runs along the edge of the space and is frequently used as a transition route to reach other spaces and activities beyond the space itself. However, its design prioritizes movement over place-*making, offering little reason to linger or engage with the space.*

Image 4. *Benches aligned in a linear row* – Seating is positioned along one edge, facing away from central activity zones and offering little sense of enclosure or social interaction.

Images 5&6. *Randomly placed seating* – Benches and seats appear scattered without spatial logic, shade, or social gathering, reducing comfort and usability.

Image 3. *Play area perceived as 'OK'* – While participants noted this space works relatively well, its isolation from the rest of the space limits interaction and flow of public life.

Images 7&8. *Wooden railings around trees* – These partially enclosed tree bases create visual clutter and break continuity in the space's landscape, offering no added function.

Image 9. *Seating facing away from the space* – A missed opportunity for engagement, this bench is oriented toward a distant nice view instead of connecting with the space's social or core.

3.3. Contextual Analysis

3.3.1. Land Use & Patterns

Angered has a diverse mix of land use patterns that reflect its suburban-urban character. A mix of high and low buildings that are likely to accommodate both residential and commercial purposes. Green spaces of various types contribute to the natural appeal of the area and thus provide recreational opportunities. There is also agricultural land, indicating some level of agricultural or farming activity in the vicinity. Industrial and commercial areas are integrated into the zones trying to support that local economic activities and employment. Overall, there is a balance between built environments and natural spaces highlights Angered Center's efforts to maintain a sustainable urban design.

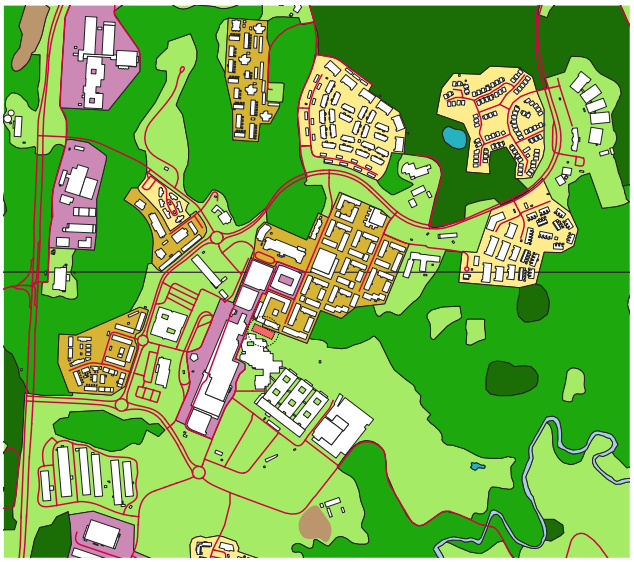
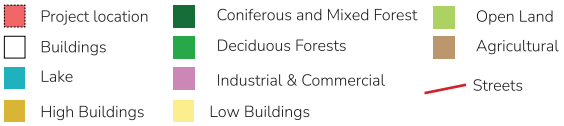


Figure 17: Angered Center, Land Use & Patterns, Source: Geodata, Chalmers library



3.3.2. Species Diversity

The diversity of species in Angered is closely related to the use of its varied land, which creates different habitats and resources for different organisms. Mixed urban areas with both high and low buildings offer convenient locations for adaptable birds like the House Sparrow, while mixed forests and open green spaces provides space for species such as Common Swift and Common Strarling which can live in both natural urban environments.

This mix of built and natural environments forms a mosaic of ecological niches, sustaining diverse bird populations. Yet, over the past 25 years, several species have declined, with shifts in composition largely driven by development and land use changes. This underlines the need for sustainable urban planning to protect biodiversity.

According to collected data in (artfakta.se) there have been about 100 species documented at least five times in the 25 years mentioned, which represent both migratory and resident birds throughout year. Three species were chosen for focus due to their ecological relevance, conservation status, and habitat representation. They reflect different niches, broader urban biodiversity trends, and how populations respond to land-use changes and habitat quality. Both the Swift and Starling are red-listed, while House Sparrow numbers have declined locally and globally (iucnredlist.org).

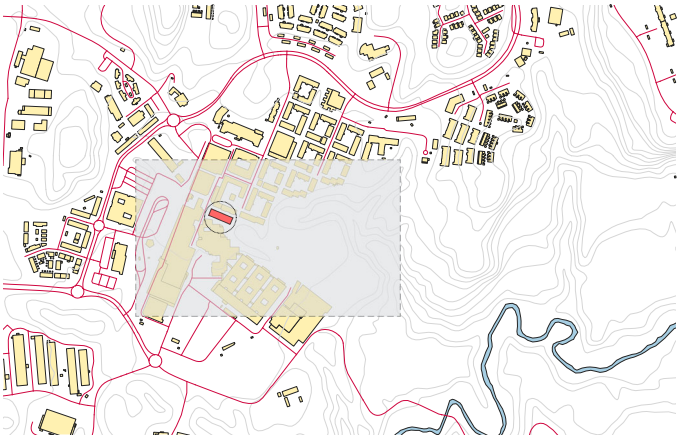


Figure 18: Angered Center, Source: Geodata, Chalmers library Project location

House Sparrow *(Passer domesticus)*
Photo by : Göran Sjöblom
https://artfakta.se/

Common Strarling (*Sturnus vulgaris*)
Photo by : Stig Fredriksson
https://artfakta.se/

Common Swift (*Apus apus*)
Photo by : Lars Petersson
https://artfakta.se/

3.3.3. Urban Structure and Built Environment

Angered is characterised by a mix of modern post-war housing, primarily high-rise apartment blocks and low-density residential areas. The built environment is characterised by functional architecture, green spaces and a focus on communal living. Despite its planned layout, the area faces challenges as a socioeconomic area with limited economic opportunity. Public transport including trams and buses connect Angered to central Gothenburg while local amenities serve the community such as schools, sports facilities and shopping centres.

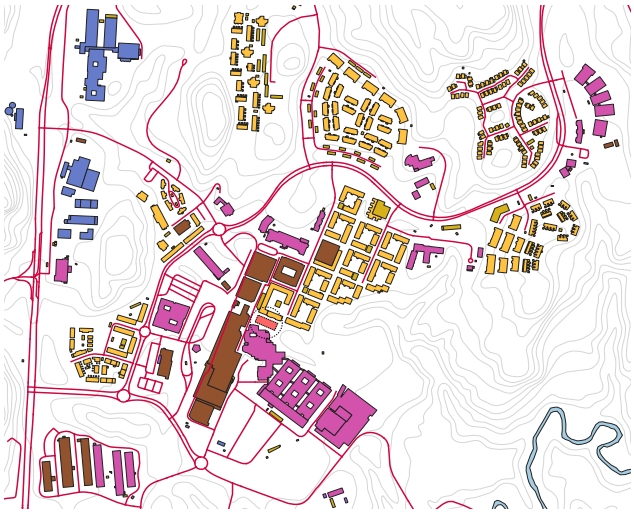


Figure 19: Angered Center, Urban Structure and Building Enviroment, Source: Geodata, Chalmers library

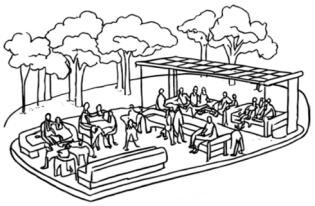
3.4. Contextual Insights

Analysis of the space revealed insights across social, cultural, and ecological dimensions, each evaluated against the project's aim of enhancing green space design through participatory methods. The focus was on generating design-relevant knowledge to guide the co-design process, rather than merely describing the site.

Social Use Patterns

Observations revealed that residents tended to cluster in shaded areas and around existing seating. This pattern confirms the importance of gathering places.

Figure 20: Sketch Social Use Patterns



Cultural Expressions

Angered is characterised by a strong cultural diversity, visible through multilingual signage and community events. These cultural expressions highlight the space's role as a site of identitv negotiation.

Figure 21: Sketch Cultural Expressions

Ecological Conditions

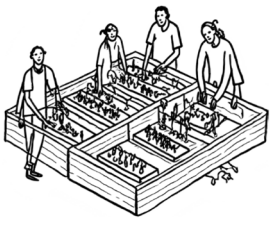
Site analysis revealed low plant diversity, with cherry trees and seasonal planets dominating fenced areas. This limits ecological value, reduces wildlife, and offers little sensory or visual variety for residents

Figure 22: Sketch Ecological Conditions

Residents Input

Workshops revealed residents' interest in gardening and intergenerational interaction, highlighting a desire for spaces that foster stewardship, social connection, and knowledge sharing. In response, a community garden cell was included as a key design element

Figure 23: Sketch Gardening



Summary Box: From Analysis to Design

Land Use & Patterns	..... ►	informed the design of modular seating and pavement patterns
Species Diversity	..... ►	guided the introduction of native species
Urban Structure & Built Environment	..... ►	led to clearer access routes and sensory cells
Contextual Insights	..... ►	resulted in the inclusion of a language board and pergolas

4.
Research & Engagement Process

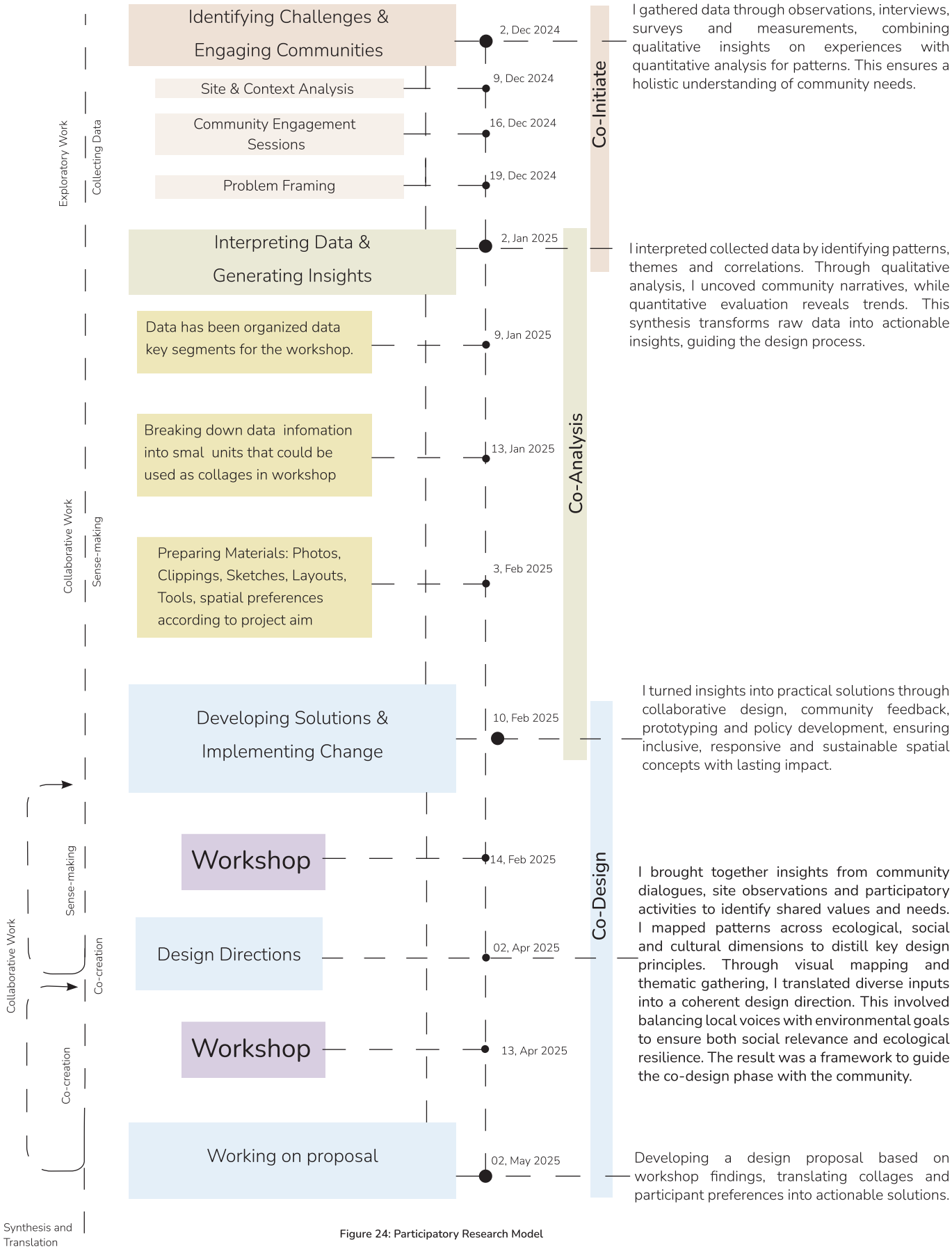


Figure 24: Participatory Research Model

Participatory Research Model

This model is inspired by the co-creation framework developed in the Design and Planning for Social Inclusion course at Chalmers University of Technology (Brandão et al., 2021). Their model outlines a structured participatory path beginning with Co-Initiate - a phase focused on stakeholder mapping, context immersion and trust-building - and progressing to Co-Analyze and Co-Design through collaborative interpretation and synthesis of spatial and social data.

4.1
Co-Design Workshop

4.1.1 Collaboratively Observing and Understanding the Site Session 1 :

Part 1

First, 15 participants were invited to experience the space with fresh eyes through a sensory observation exercise. They were provided with mapping sheets and sticky notes. We walked through the site, pausing to notice what was working well, what felt overlooked and where improvements could be made. Participants carefully observed seating areas, natural elements of trees and planets and accessibility features, identifying both strengths and gaps in the space's design. .

To deepen our understanding, we turned to biodiversity observation, using species identification guide "https://artfakta.se/" and field journals to document the plant and animal life present. This allowed us to see how nature interacts with the urban environment and how we might introduce more ecological elements

Back at the workshop, 3 groups were created. Every group worked on a printed map, sorting findings into three key categories: successful features, existing challenges and areas for improvement. Using color-coded markers, participants highlighted blue for thriving spaces, red for problem areas and green for opportunities to enhance the space.

By the end of this part , we had built a collective understanding of the site, setting the stage for deeper discussions on accessibility, inclusivity and sustainability in the next phases. The process sparked curiosity and a sense of ownership and effectiveness

Part 2

The second part focused on gathering community insights through survey. We worked on answering 10 survey questions about the plark. Appendices provide detailed information and quantitative data about them.

Based on the survey results. Participants provided feedback on key aspects of the space, including its strengths, challenges and potential improvements. The results revealed a strong appreciation for social areas like benches and gathering space (90%), while challenges included lack of biodiversity (28%) and poor maintenance (28%).

To deepen the discussion, the session examined desired activities, with community gardening (75%) and gathering space (90%) ranking highest. Accessibility were also highlighted, with participants emphasizing the need for better pathways, seating and lighting. Using visual charts and group discussions, the workshop translated survey data into actionable themes for future design stages.

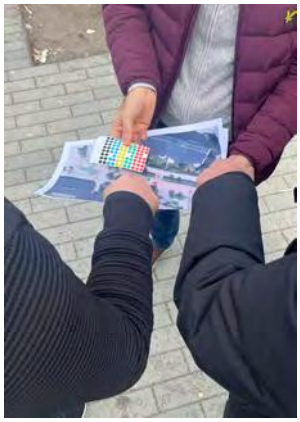


Figure 25: Pictures from Co-Design Workshop

Session 2 : Collage - Making

In this session 9 participants were invited, and we did the same process in session 1. The session aimed to create collages and was structured into three thematic topics. Throughout the session, participants used cut-out images, sketches and mixed media to visualize their ideas. The collages serve as tangible representations of collective visions, informing future design proposals that integrate sustainability in green spaces.

A - The Future of Urban Green Space, a Vision for Biodiversity: Participants imagined an ideal that fosters biodiversity while meeting community needs. They incorporated images of native birds (House Sparrow, Common Strarling, Common Swift), pollinators, water features and sustainable design elements like green roofs and diverse habitats. Discussions revolved around balancing ecological conservation with urban life.

B- Bridging Nature & People, a Biophilic Approach to Urban Design:
This theme explored biophilic design principles to enhance well-being and ecological health. Collages integrated natural materials, sensory elements and wildlife-friendly features such as nesting sites and insect hotels. Participants reflected on how nature-rich spaces could foster a sense of calm, belonging and engagement with the environment.

C- Designing for Inclusion, a space for Everyone:
Accessibility and inclusivity were the focus, ensuring that green spaces serve diverse needs. Participants created designs with wheelchair-accessible paths, sensory gardens, cultural gathering spaces and conservation zones where nature and humans coexist. The discussion centered on how small design interventions could make significant impacts on usability.

Figure 26: Collages, Co-Design Workshop

Figure 27: Pictures from Co-Design Workshop

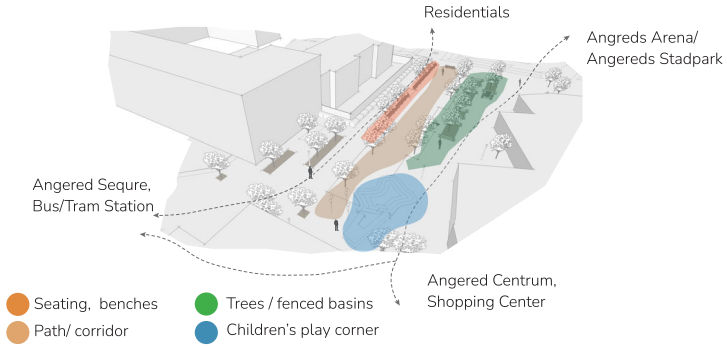


Figure 28: Site and Current Zoning

Figure 29 Heatmap of the site, Source: Geodata, Chalmers library

4.1.2 Co-Design Workshop Outcomes and Reflection

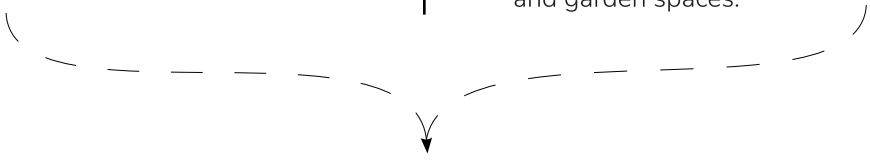
The participatory process generated a set of insights that shaped both the conceptual and spatial development of the space proposal. These outcomes stem from site observations and a co-design workshops where residents reflected on their everyday experiences, aspirations, and challenges in the space.

Observational Insights

- Social Gathering: Residents tended to gather around shaded benches and tree-covered areas, while open area remained underused
- Accessibility Gaps: Certain paths and seating zones were difficult to access or move for people with strollers, mobility aids, or limited physical capacity.
- Ecological Observations: Biodiversity was low, dominated by a handful of hardy grass and shrub specie
- Sensory Qualities: Residents responded strongly to sounds of birdlife and wind through trees which indicates a desire for more sensory richness.

Workshop Insights

- Cultural Expression & Identity: informal performances and shared stories revealed a strong wish to see cultural diversity represented in the green space.
- Gardening & Stewardship: Residents expressed enthusiasm for shared gardening activities as ways to strengthen social ties and build ownership.
- Safety & Belonging: Discussions highlighted a need for spaces that felt welcoming and safe for intergenerational use, particularly for women, children, and elderly residents.
- Design Imagination: Collaborative mapping and co-creation sessions as collage making generated ideas for language board, pergolas, sensory cells, and garden spaces.



Synthesis of Outcomes

Taken together, these insights revealed that residents value shaded gathering spaces, cultural expression, ecological diversity and opportunities for stewardship. They also highlighted gaps in accessibility , pointing to the need for a design that is not only biophilic and sustainable but also culturally resonant and socially just.

Reflection

The outcomes from both observations and workshops underline that residents' everyday experiences are deeply shaped by comfort, cultural identity, and ecological quality. While some insights confirmed expected needs-such as the demand for shaded seating and accessible movement-others revealed less tangible but equally important dimensions, including the symbolic role of cultural expression and the restorative value of sensory diversity.

What stands out is that ecological and social dimensions are not separate concerns: residents imagined biodiversity not as a technical fix, but as something they could engage with . This suggests that the design in this context must weave together the practical, the ecological, and the cultural, positioning the community not only as users of space but as co-creators

4.2
Design Direction

4.2.1.Introduction

This chapter presents the Design Directions that emerged from the synthesis of site observations, co-design workshops, and theoretical foundations. These directions were developed as operational guidelines to bridge the gap between community insights and spatial design decisions. Unlike abstract principles, the directions are deliberately framed as actionable pathways that shaped the final proposal. Each direction is grounded in the lived experiences of residents, informed by the pillars of Participation, Social Sustainability, and Biophilic Design, and translated into specific design elements.

4.2.2. Direction 1: Promoting Cultural Expression and Identity

Rationale

One of the strongest themes from the workshops was the desire to see cultural and linguistic diversity represented in the green space. Residents highlighted the space as cultural and recreational space. They see it where stories, music, and languages could be shared. This aligns with social sustainability theory, which emphasises recognition and inclusion as key to fostering belonging. Dempsey et al. (2011).

Application

This direction informed the inclusion of a language board where multiple languages can be displayed and exchanged, reflecting the plurality of voices in the community. By embedding cultural identity into physical elements, it becomes a space of recognition and pride.

4.2.3. Direction 2: Enhance Sensory Diversity

Rationale

Site observations revealed that residents responded strongly to sensory qualities—such as the sounds of birds and wind, or the texture of natural materials—yet these experiences were underrepresented in the current space. Workshops reinforced the need for environments that engage sight, sound, and touch, supporting well-being through multisensory richness. Biophilic design theory confirms the role of sensory diversity in fostering restorative and engaging spaces. Kellert et al. (2008)

Application

This direction guided the inclusion of wind chimes in meditation cell, and tactile natural materials such as wood and stone. Together, these interventions invite users to experience the space not only visually but through multiple senses and create deeper connections to nature.

4.2.4. Direction 3: Strengthen Biodiversity

Rationale

Ecological observations identified limited species diversity and a dominance of monocultural grass, reducing ecological resilience. Workshops revealed a strong resident interest in gardening and caring for plants, suggesting an opportunity to link biodiversity with community stewardship. Theoretical contributions from biophilia and sustainability highlight the importance of native planting and community involvement in ecological health. Chiesura, A. (2004)

Application

This direction shaped the introduction of native plant species, and habitat-supporting landscapes that encourage biodiversity. It also inspired the community garden cell, designed as a shared space where residents cultivate plants while building ecological awareness and social cohesion. Biodiversity thus becomes a shared responsibility, strengthening both the environment and social ties.

4.2.5. Direction 4: Gathering Spaces

Rationale

Observations showed that residents clustered in shaded areas while large lawns remained underused. Workshops added concerns about safety, inclusivity, and intergenerational use. Theory on participation and social sustainability stresses the importance of creating flexible spaces that can adapt to diverse needs while maintaining accessibility for all. Gehl (2011).

Application

This direction led to the design of hexagonal modular seating integrated with trees, which allows for different group sizes and uses—from solitary rest to collective events. Shaded gathering areas were prioritised, and circulation routes were made more accessible to ensure equitable use. The spaces are designed to support both informal daily encounters and larger organised activities.

4.2.6. Direction 5: Integrate Nature as a Shared Resource

Rationale

Residents associated natural features—such as trees, plants, and flowing water—with feelings of calm and restoration. Biophilic theory confirms nature's role in supporting mental and physical well-being, while social sustainability highlights the importance of equitable access to restorative environments. The space can thus serve as both an ecological system and a shared health resource. Oosterbroek (2024)

Application

This direction inspired the creation of restorative micro-spaces embedded within the green space, including shaded seating areas and sensory/meditation cells that encourage quiet reflection. Natural materials and plantings are positioned to enhance the feeling of immersion in nature, ensuring that well-being is not limited to privileged groups but shared across the community.

4.2.7. Direction 6: Connected Micro-Spaces for Encounter and Reflection

Rationale

While the site allowed for social gathering, observations revealed fragmented patterns of use, and workshops emphasised the need for spaces that balance togetherness with privacy. Participation theory suggests that inclusivity depends not only on large shared spaces but also on smaller, connected environments that support diverse modes of social life. Whyte (1980)

Application

This direction guided the inclusion of distributed micro-spaces, such as sensory and meditation cells, as well as smaller gathering spots that are connected by accessible pathways. These spaces encourage casual encounters, support different forms of use, and offer opportunities for both collective interaction and solitary reflection.

Closing Reflection

The six Design Directions acted as practical tools for translating resident insights into concrete spatial proposals. As illustrated in the diagram, each direction emerged at the intersection of the three theoretical pillars ensuring that the framework was grounded in both community voices and established theory. This integration meant that participation moved beyond symbolism to become formative, while biophilic design extended beyond ecological techniques to embrace social meaning. The directions created a clear line of continuity from research to design and makes the process transparent, replicable, and contextually responsive. Collectively, they shaped a sustainable proposal that rooted in the everyday realities of the community while contributing to broader debates on participatory and ecological urban design.

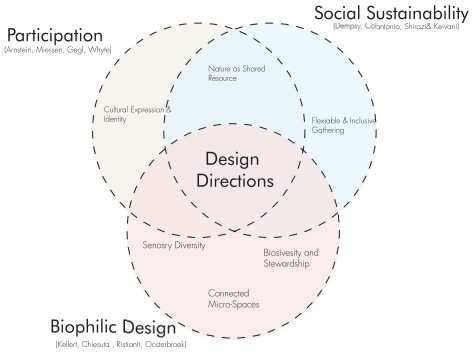


Figure 30: Theorical Pillars and Design Directions

4.2.8. Linking Insights to Spatial Strategies

The design directions were derived from site observations, co-design workshops, and theoretical foundations. To make the translation process transparent, the directions are organised under four thematic categories: Cultural Identity, Sensory & Well-being, Ecology & Stewardship, and Accessibility & Flexibility. Each direction is presented alongside the insights that informed it and the spatial features that give it form in the proposal.

Insight / Observation / Workshop Outcomes	Design Direction	Spatial Feature in Proposal
Residents expressed desire for representation of cultural and linguistic diversity.	Promoting Cultural Expression and Identity	Language board and pergolas
Sensory observation walk revealed appreciation for natural sounds and textures; residents wanted richer sensory experiences.	Enhance Sensory Diversity	Wind chimes tactile natural materials (wood, stone).
Ecological observation showed low species diversity and dominance of grass; residents interested in gardening and food-growing.	Strengthen Biodiversity	Native planting , community garden cell and wooden towers as bird houses
Shaded areas, accessibility gaps noted.	Gathering Spaces	Hexagonal modular benches ,seats integrated with trees and wooden pavment
Participants associated nature with calm, restoration, and health benefits.	Integrate Nature as a Shared Resource	Restorative micro-space and sensory/meditation cells
Fragmented use patterns observed; residents asked for balance between togetherness and privacy.	Connected Micro-Spaces for Encounter and Reflection	Gathering spaces and seating integrated with trees

Table 1: Linking Insights to Spatial Strategies

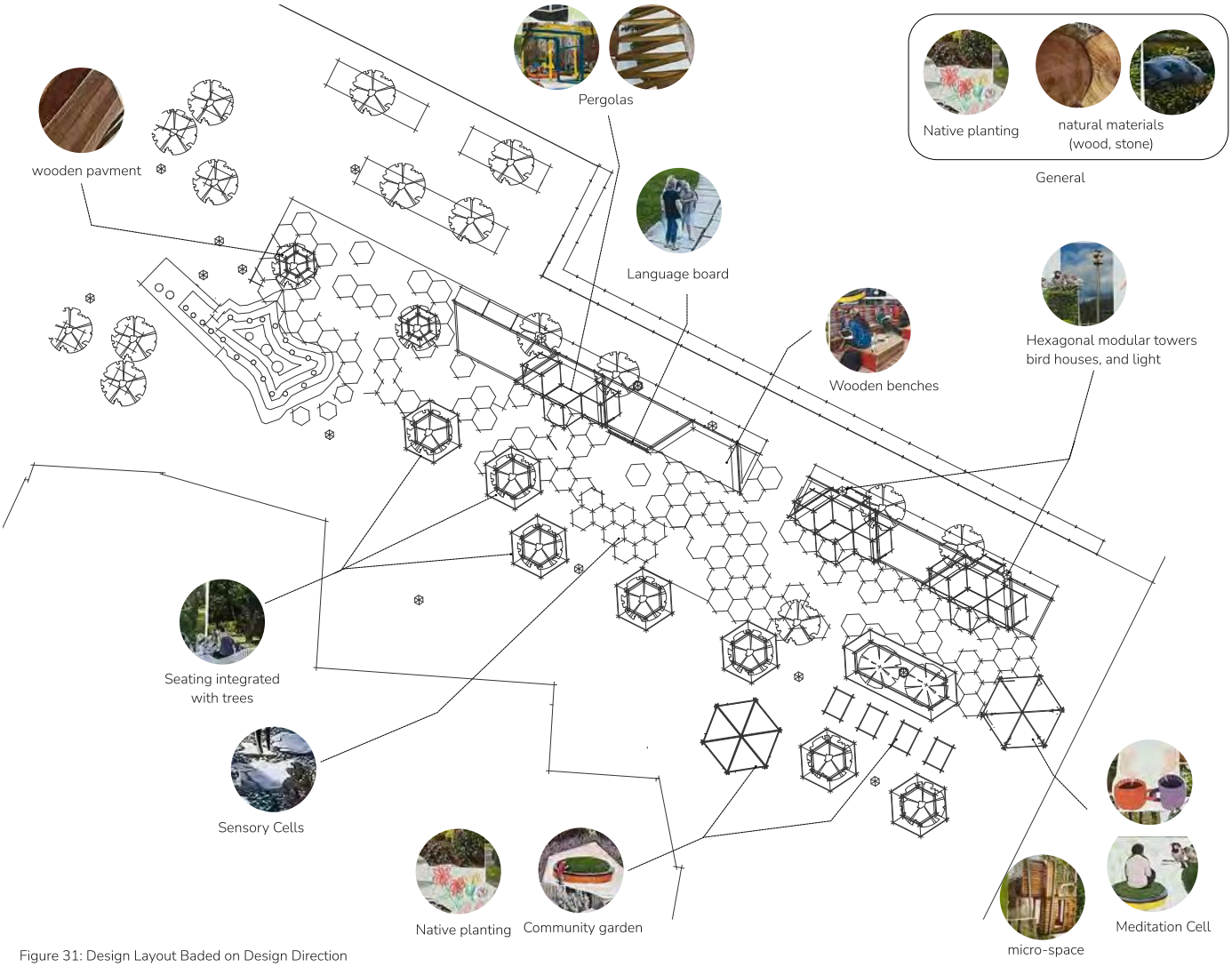


Figure 31: Design Layout Baded on Design Direction

4.3.
Post-Synthesis Workshop
"The Repacked"

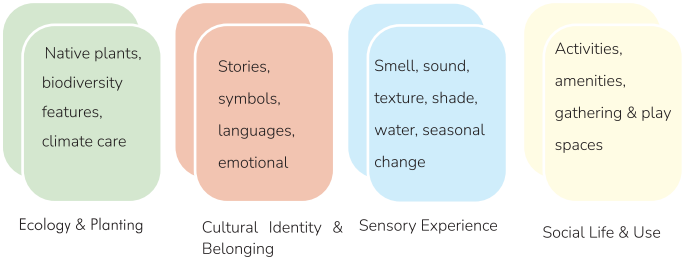
4.3.1. Intro

The synthesis of observations, workshops, and theoretical foundations resulted in six Design Directions, which act as a framework for decision-making. This post-synthesis stage connects the abstract framework to the concrete design proposal. It explains how insights were translated into design elements and how these elements were positioned within the site.

By situating the Design Directions within the specific context of the case study, this stage ensures continuity between the research phases and the design proposal. It also provides a rationale for the choices made—showing how each design element not only responds to community input and theoretical pillars but also prepares the ground for the broader discussion of sustainability in green space design.

4.3.2. Structure and Methods

Participants were divided into three groups of three and rotated through co-design stations. The process used large base maps of the site, color-coded co-design cards, and materials such as markers, stickers, tape, plant samples, textures, and story prompts.



Color System for Co-Design Cards

Each card color represented a design lens:

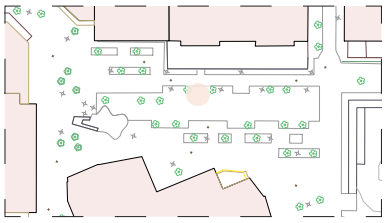
- Green: Ecological resilience
- Yellow: Social uses
- Red: Cultural identity and memory
- Blue: Sensory richness

Three stations were designed to encourage layered forms of engagement:

1. Place Your Plants (Green + Blue)

- Prompt: “What should grow here? How should it feel to be in this space?”

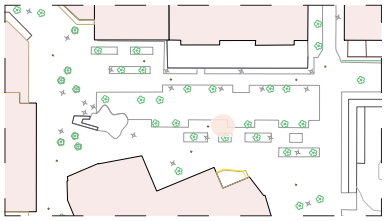
Participants selected Green cards with species (e.g., Backtimjan, Spärroxbär) and paired them with Blue cards describing sensory goals (“fragrant path,” “soft to walk on,” “birds chirping”). These were taped onto maps and expanded with sketches.



2. Moments in the Space (Yellow + Blue)

- Prompt: “Who is here and what are they doing?”

Participants chose Yellow cards with activity types (quiet sitting, picnics, outdoor cooking, play) and paired them with Blue cards for ambiance (“shaded by trees,” “near water sound,” “under open sky”). Sticker icons representing elders, children, and families were used to situate activities across demographics.



3. Mark the Story (Red + Blue)

Prompt: “How can this place tell our story or hold memory?”

Red cards proposed cultural expressions—“a mural in my language,” “poetry from the neighborhood,” “stone path with names”—combined with sensory prompts such as “smells like home cooking” or “sounds from different cultures.”

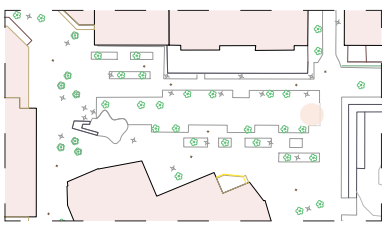


Figure 32: Site co-design stations , Source: Geodata, Chalmers library

This structured process ensured that ecological, social, cultural, and sensory dimensions could be explored in parallel, while also encouraging diverse modes of expression visual, tactile, verbal, and emotional.

Example from Station 1:

Prompt: *"What should grow here? How should it feel to be in this?*

This part should smell fresh and herbal

It should feel alive ,changing with the seasons

There should be shadows from trees and soft sounds from leaves in the wind

Example from Station 2:

Prompt: *"Who is here and what are they doing?"*

Here's a seating space where elders can meet and talk under shade pergola. It should be near the minte path, so it smells nice

I imagine filtered sunlight here, maybe through pergola

This open area could be for community picnics and Eid celebrations

You'd hear kids laughing

It could be a nature play zone logs and rocks for kids to explore, not just use plastic play sets

There should be different textures wood and stone

Example from Station 3:

Prompt: ""*How can this place tell our story or hold memory?*"

Can we create a 'Wall of Words' where everyone can write somthing in their native language?

Near this bench, we should plant mint, rosemary, or sage

There could be a path where each paving stone has a child's 'first word' engraved in different languages

a quiet wind chime with notes inspired by music from different countries

We could invite people to bring something small that reminds them of home

a place to rest and feel seen

4.3.3. Reflections on the Process

The workshop revealed not only what participants designed, but also how their contributions carried personal meaning. A Syrian father proposed a shaded play area near a herb garden, linking his childhood memories to his daughter's future. An Iraqi elder paired a memory bench with bird-attracting plants, describing sound as a connector to place. These stories, gestures, and drawings reflected a shared desire for spaces that feel rooted, familiar, and alive. Not just functional but places that speak, smell, remember, and welcome.

4.3.4. Workshop Outcomes

Tangible Outcomes	Intangible Outcomes
• Annotated design maps layered with input, sketches, and notes to inform zoning and programmatic priorities. • Plant suggestions blending ecological adaptation with cultural resonance: thyme for sensory paths, cotoneaster for seasonal shelter, mint and sage for olfactory anchors. • Spatial concepts such as a Scent Trail, a Storytelling Bench with audio memories, and Story Poles reflecting cultural diversity. • Prototype validation of the card system, showing its effectiveness in translating values into spatial choices. • Photographic and audio documentation contributing to a visual and narrative archive of the process.	• Collective authorship: participants felt like co-creators rather than contributors. • Intergenerational dialogue: youth and elders listened and adjusted to one another. • Trust and confidence: participants expressed feeling respected and heard. • Emotional resonance: many described the process as joyful, grounding, and therapeutic. • Reframing design: experienced as not only technical but also poetic, democratic, and embodied.

Table 2: Post-synthesis workshop outcomes

4.3.4. Transition to Synthesis

The workshop thus bridged empirical research and design synthesis, grounding abstract strategies in lived experience and producing outcomes that directly informed the formulation of Design Directions. This transition ensured that the synthesis phase was rooted in community voices while remaining connected to broader theoretical frameworks of participation, social sustainability, and biophilic design.

5.
Design Proposal

5.1. From Framework to Proposal

The synthesis of site observations, community workshops, and theoretical foundations resulted in six Design Directions that serve as a framework for guiding the design process. These directions are not only capture the priorities of residents but also translate theoretical insights on participation, social sustainability, and biophilic design into operational design tools.

This post-synthesis stage functions as the bridge between analysis and design. It connects the abstract framework of Design Directions with the specific site conditions of the case study, ensuring that spatial interventions do not emerge in isolation but are rooted in evidence and shared priorities. Each direction is systematically linked to design elements such as the hexagonal modular system, pergolas, sensory and meditation cells, and the community garden. In this way, the framework becomes actionable, grounding the proposal in both community input and theoretical precision.

At the same time, the post-synthesis stage prepares the ground for the broader discussions that follow. By clarifying how directions translate into concrete design decisions, it establishes transparency in the process and highlights replicability. This ensures that the design proposal can be understood not only as a local response to specific needs but also as part of a wider conversation on how participatory and biophilic approaches can contribute to inclusive and sustainable green spaces.

Figure 33: Masterplan

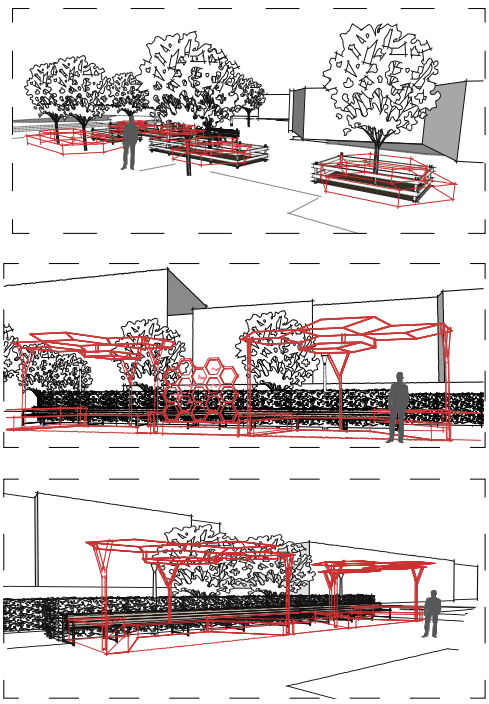


Figure 34: Sktetches of seatings-related interventions

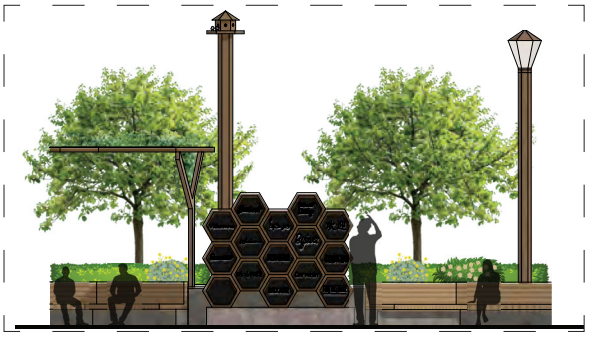


Figure 35: D-02 The Language Board (front view)

The Language Board: A participatory surface for shared expression by capturing voices, thoughts and local identity through writing and drawing

Figure 36: D-03a Covred gathering cell (plan view)

Figure 37: Illustration of The Language Board

Figure 38: D-03b Covred gathering cell (section view)

Biophilic Cells: Shaded seating with native vegetation to invite sensory interaction and reflection.

Figure 39 : Illustration of a Biophilic Cell

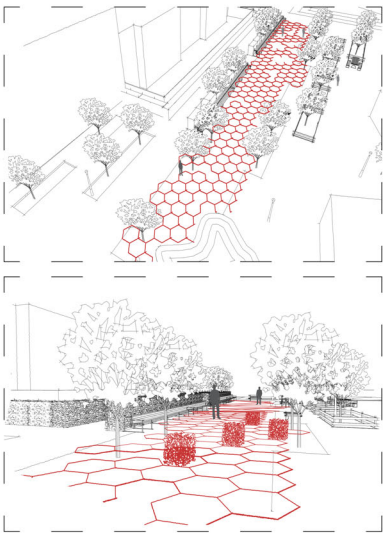


Figure 40: Sktetches of the cenrtal zone interventions

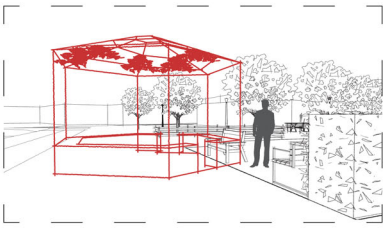


Figure 41: Sktetches of speech and meditaion cell

Figure 43 Illustration view from Angereds Square

Figure 45: Illustration of Speech and Meditation Cell

Figure 42: D-01

Biophilic Core: A dynamic, tactile space designed for play and engagement that invites all ages to connect through movement by interaction and reflection.

Figure 44: D-04a

Figure 46: D-04b

Speech and Meditation Cell: A cocoon-like retreat for quiet reflection, gentle conversation, or solitude. Enhanced by a wind chimes that adds a calming, sensory layer through sound and movement

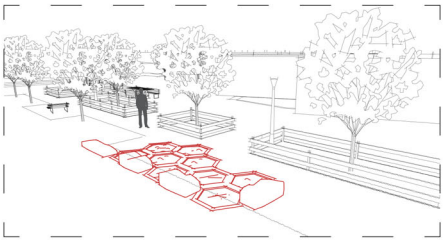


Figure 47: Sktetch of sensory cells intervation

Figure 48: Sktetch of water foutaion intervation

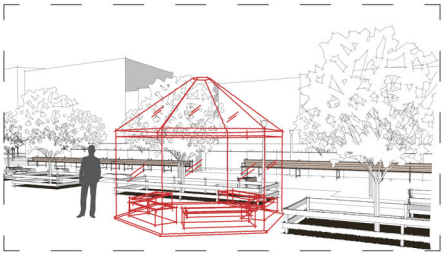


Figure 49: Sktetch of community gardening cell intervation

Figure 53: Illustration of Community Garden Cell

Figure 55: Illustration of Water Fountain

Figure 57: Illustration of Sensory Cells

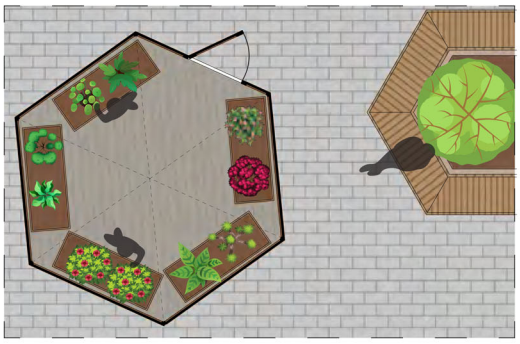


Figure 50: D-06a

Figure 51: D-06b

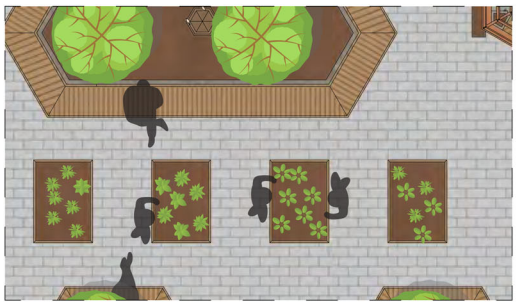


Figure 52: D-05a

Figure 54: D-05b

Community Garden: A shared planting space that invites residents to cultivate herbs, flowers and connection by fostering care, collaboration and environmental awareness.

Figure 56: D-07

Sensory Cells: A tactile space designed for play and sensory engagement that invites all ages to connect through texture and materials.

6. Discussion

This thesis explored how participatory design can enhance green space design to create inclusive and sustainable green spaces in socially and economically challenged areas. The discussion reflects on how the research question was addressed, the value of the participatory process, the translation of findings into design, and the implications for broader debates on urban design and planning.

6.1. Answer to Research Question

This research asks: ***How can participatory design enhance green space design to create inclusive and sustainable green spaces in socially and economically challenged areas?*** The research demonstrates that participatory design enhances green space design by embedding residents' lived experiences into both the conceptual framework and spatial outcomes of the proposal. Rather than treating participation as symbolic, the process translated community knowledge into Design Directions that shaped the space's inclusivity, ecological resilience, and cultural expression. The findings show that participatory design can act as a bridge between theory and practice, ensuring that green spaces respond to the specific needs of communities while contributing to broader goals of social sustainability.

6.2. Outcomes and implications

Observations highlighted key challenges: low biodiversity, gathering in shaded areas, underused lawns, and accessibility gaps. Workshops detected strong desires for cultural expression, ecological stewardship through gardening, and spaces that balance safety with inclusivity. Together, these insights display that social and ecological dimensions of green spaces cannot be separated; residents linked biodiversity with social care, and cultural representation with belonging. This interconnection confirms the need for design frameworks that integrate the ecological, social, and cultural into a single vision.

6.3. From Insights to Design Directions

The six Design Directions came out from the process. (cultural expression, sensory diversity, biodiversity and stewardship, flexible gathering, nature as a shared resource, and connected micro-spaces). They created a framework for guiding spatial interventions. The hexagonal modular system became the main spatial strategy due to its ability to operate multiple directions simultaneously. It allowed flexibility in scale and use, and integrated planting and biodiversity into the social fabric of the green space. By establishing this system within the directions, the design avoided appearing as an arbitrary geometric choice and instead emerged as a translation of participatory and theoretical insights.

These directions structured the design synthesis, guiding the proposal toward inclusive and sustainable outcomes. Each spatial element (modular seating, sensory and meditation cells, pergolas, community gardens, gathering spaces) was rooted in a participatory insight, ensuring that the design was both responsive to local conditions and aligned with broader principles of sustainability.

6.4. Site-Specific and Generalisable Lessons

The findings of this thesis reflect both the particular realities of the study site and lessons that are transferable to wider contexts of participatory design.

Site-Specific Outcomes

a- Cultural and linguistic diversity: Residents emphasised the importance of recognising cultural identity, leading to proposals such as a language board and adaptable pergolas for shaded and storytelling space.

b- b-Socioeconomic challenges: The expressed need for affordable, accessible spaces and enthusiasm for food-growing activities were shaped by the neighbourhood's socioeconomic realities. The proposal for a community garden cell directly addressed these conditions.

c-Ecological constraints: low biodiversity shaped design responses such as introduction of native species adapted to the local climate.

These outcomes highlight the situated nature of participatory design. The design directions and proposals cannot be understood apart from the social and ecological context in which they emerged.

Generalisable Lessons

The research produced insights that extend beyond the case study:

a-Participation as translation: The process demonstrated that resident insights can be systematically transformed into design directions and design outcomes by avoiding tokenistic participation.

b-Biophilia as a social practice: Ecological resilience is strengthened when connected to community stewardship, positioning biodiversity as both an environmental and social asset.

c-Integration across scales: Small interventions, such as sensory features and modular seating, can support broader goals of inclusivity and resilience.

d-Ownership through co-design: When participants see their contributions reflected in design proposals, it generates a sense of belonging and long-term commitment to green space.

6.5. Contribution to Broader Debates

This thesis contributes to ongoing debates in participatory planning, biophilic design, and social sustainability.

a- Participatory Planning and Marginalisation

The case shows how participatory design can act against marginalisation by redistributing agency. Residents were not passive consultees but active co-creators, shaping the proposal through observation walks, mapping, and collaborative synthesis. This constitutes the risk of tokenism in participation and highlights the role of design as a platform for empowerment.

b-Biophilic Design as a Social Tool

Biophilic design is reframed here not solely as an ecological concept, but as a social practice. Biodiversity and ecological interventions have become sites of cultural expression and community stewardship. This expands the discourse on biophilia and positions it as a medium for inclusion, identity, and everyday social interaction.

c- Scalability and Replicability

While the proposal responds to the unique context of the site, the methodological framework is transferable. The sequence (observation and co-mapping, synthesising insights into design directions, embedding them into design proposals). It offers a replicable model for other contexts. What is scalable is not the specific design elements but the process of translating resident knowledge into design directions.

Closing Reflection

The interaction between site-specific and generalisable outcomes highlights the dual value of participatory design research. On one hand, it is rooted in local social and ecological conditions. On the other, it contributes transferable lessons on how participation and biophilic design can be operationalised to foster adaptable and resilient green spaces.

6.6. Limitations and Future Implications

While the case study provided a longitudinal perspective by drawing on several years of site observation and documentation across different timeframes, the concentrated fieldwork was conducted over a shorter period during the winter and early spring. This presents a limitation, as most participants tend to use the space during warmer months. Consequently, the observational data may not fully represent the seasonal variations, patterns of use and the atmosphere experienced throughout the year. A more comprehensive, year-round analysis would be required to capture the full range of environmental and social dynamics that shape the site.

In this context, linguistic and cultural barriers, along with time constraints and lack of trust have emerged as major constraints for some populations, especially those from immigrant backgrounds or the elderly and young people who are not involved in formal community networks. Despite efforts to broaden the participant base through direct and informal means, some voices remained marginal, which is consistent with what Lefebvre (1991) referred to about the “right to the city” as a right that remains elusive for multiple groups.

Methodologically, research’s reliance on workshops and field participation was an effective tool to activate a sense of spatial and foster a sense of ownership, but it omitted groups not necessarily active in the public space, such as digital communities or individuals with social isolation. Recent studies confirm (Manzini, 2015; Botero et al., 2012) that participatory participation should include hybrid and multi-channel platforms, combining field interaction with digital technologies to promote spatial and social inclusion.

Limited time and resources also affected the depth and frequency of community interaction, making the design of interventions based on focused time moments, rather than long-term dynamics. This is in line with what Miessen (2010) warned in his critique of the “sharing nightmare”, where participation can be transformed into a symbolic or formal tool if not supported by institutional continuity and organizational flexibility.

In terms of impact, the results of this research point to the urgent need to integrate participatory creativity processes within sustainable urban frameworks, especially in socially and economically fragile areas. Participatory design should not be reduced to a fleeting planning moment, but should be seen as a long-term path that evolves as local needs and conditions change. In this context, several studies advocate (Sanders & Stappers, 2008; Healey, 1997) to build institutional infrastructures that promote shared governance, support ongoing intergenerational dialogue and integrate environmental data and natural systems as part of the design of public spaces.

Therefore, future work can focus on three interrelated fronts: first, promoting the use of flexible digital tools to reach less representative groups; second, building collaborative governance mechanisms between local residents, civic institutions and municipal entities; and third, integrating the time dimension into urban planning so that spaces are designed for evolution rather than stability.

7. Conclusion

This thesis asked: *How can participatory design enhance green space design to create inclusive and sustainable green spaces in socially and economically challenged areas?* The research shows that when residents are actively engaged in co-observing, co-mapping, and co-designing, their knowledge can be systematically transformed into design directions that shape tangible spatial outcomes. Participation here was not symbolic but generative, turning lived experiences into actionable design logic.

The main outcomes from observations and workshops highlighted four recurring needs: shaded and flexible gathering areas, cultural expression and representation, ecological diversity and stewardship, and safe, inclusive accessibility. These insights were synthesised into six Design Directions, which guided the proposal of modular seating with trees, a language board, pergolas, sensory cells, Community Garden and garden cell. In this way, the proposal directly reflects the voices and priorities of residents while embedding ecological resilience into the everyday life of the space.

The findings confirm what is specific to the study site - cultural and linguistic diversity, socioeconomic challenges, and ecological conditions as low species diversity - while also pointing to broader lessons for participatory design.

These include the value of treating biophilia as a social practice, the importance of translating participation into clear design frameworks, and the scalability of processes that merge theory, community insight, and spatial translation.

By starting broad with theory, narrowing to site-specific participatory practices, and then scaling back out to wider debates, the project explains that participatory design can counteract marginalisation, foster social inclusion, and contribute to more resilient urban environments. While the proposed design is rooted in the unique conditions of its site, the methodological framework—participation as process, social sustainability as goal, and biophilic design as tool—offers a transferable model for inclusive and sustainable green space development in other contexts.

In conclusion, this thesis shows that participatory design, when grounded in theory and ecological thinking, can generate and enhance green spaces that are both socially just and environmentally resilient. It argues for a vision of green spaces not only as green amenities but as co-created landscapes of belonging, stewardship, and renewal.

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9. Appendix

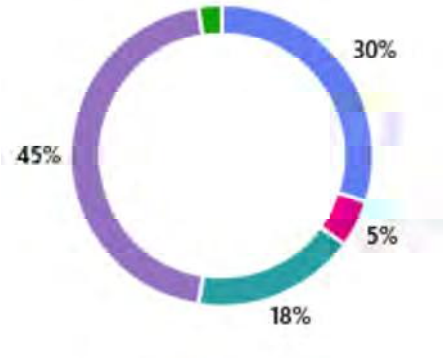
Appendix A : Survey

What does nature mean to you?

47 responses

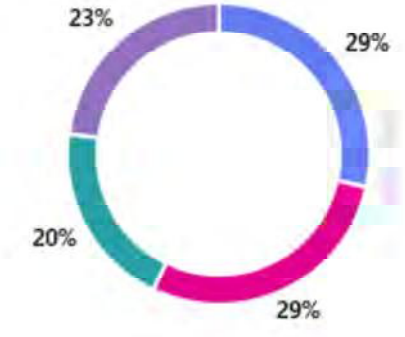
1. What do you like best about this park ?

Nature & greenery	12
Wildlife & biodiversity	2
Walking path & accessibility	7
Social spaces (benches, playgrounds, gathering areas)	18
Other	1



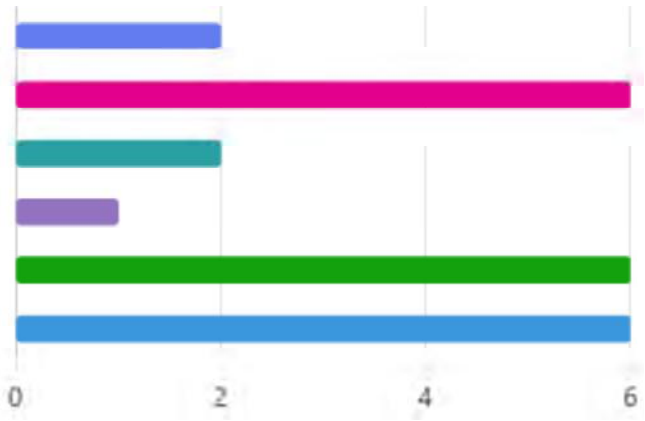
2. What are the biggest challenges or problems in the park today?

Lack of biodiversity (few plants, birds, insects)	10
Poor maintenance (trash, damaged areas)	10
Safety concerns (poor lighting, isolated areas)	7
Lack of inclusive spaces (for different age groups & needs)	8
Other	0



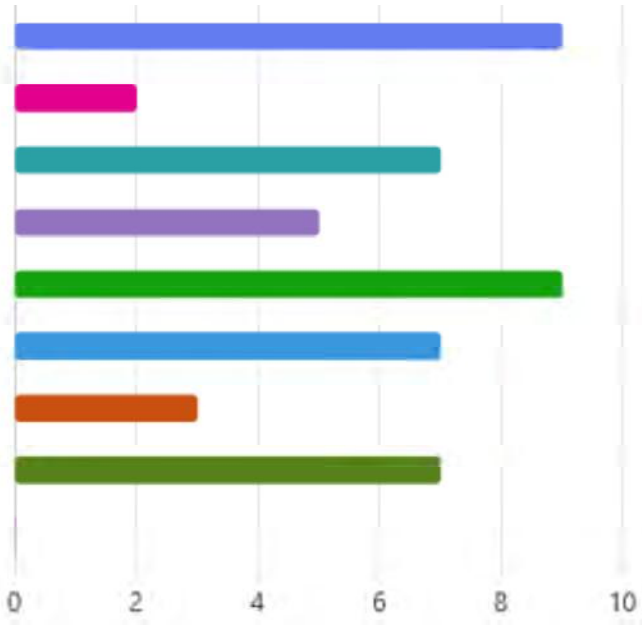
3. How often do you visit this park?

Daily	2
A few times per week	6
A few times per month	2
Seasonal	1
Rarely	6
Never	6



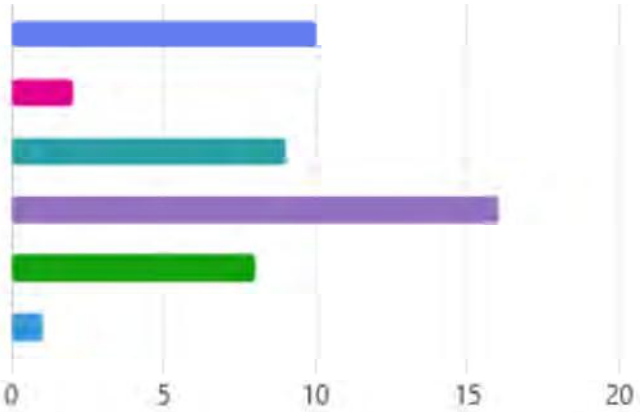
4. What feelings do you associate with being in this park?
(Select 2-3 words that best describe your experience)

Relaxing	9
Inspiring	2
Refreshing	7
Safe	5
Social	9
Boring	7
Unsafe	3
Isolated	7
Other	0



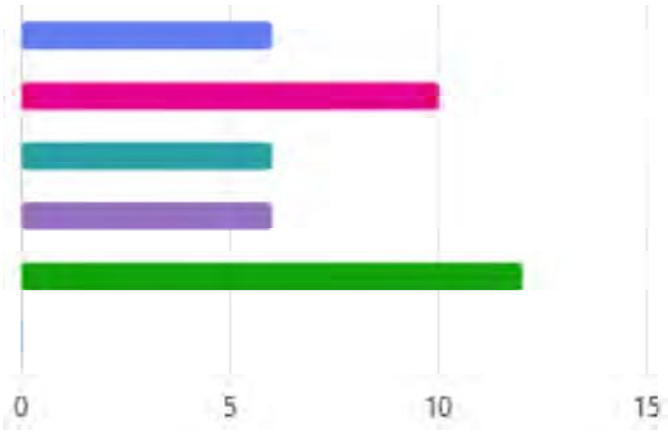
5. Which nature-friendly elements should be prioritized in the park's redesign?

More native plants & trees	10
Wildlife-friendly features (birdhouses, insect hotels)	2
Water elements (pond, rain garden, fountain)	9
Natural materials (wood, stone, soft pathways)	16
Quiet nature areas for relaxation	8
Other	1



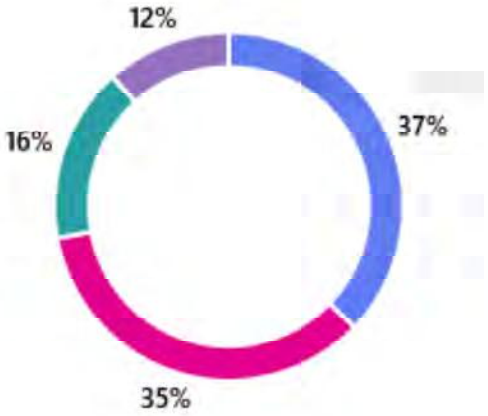
6. What kinds of activities would you like to see integrated into the park?

Outdoor learning spaces	6
Community gardens	10
Walking through nature	6
Meditation & quiet zones	6
Gathering spaces	12
Other	0



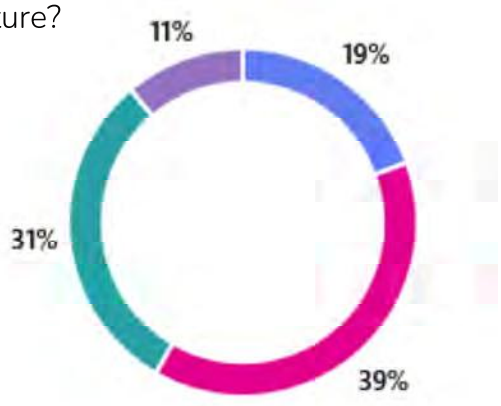
7. What kind of gathering spaces should be included in the park?

Open lawns for picnics & events	16
Seating areas for small group interactions	15
Sheltered spaces	7
Public & Cultural installations	5
Other	0



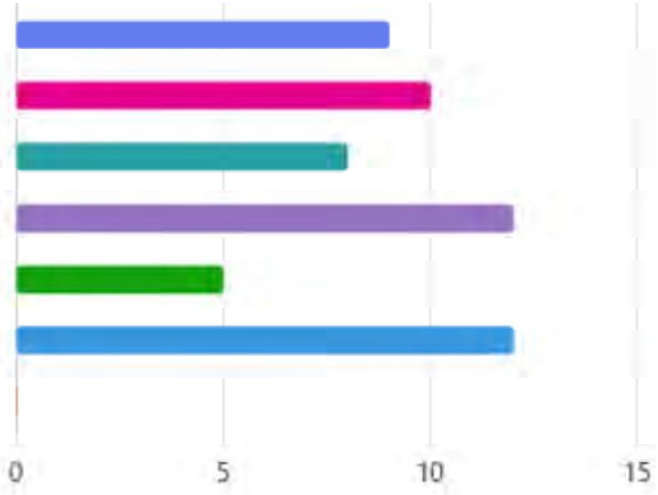
8. How involved would you like to be in shaping the park's future?

Attending workshops & co-design events	7
Contributing ideas through surveys & discussions	14
Helping with planting & small-scale improvements	11
Not interested in being involved	4



9. How can the park be more inclusive and accessible for all users?

- Better pathways & accessibility (smoother, wheelchair-friendly, well-lit) — 9
- More seating areas (comfortable, shaded, and social spaces) — 10
- Cultural or artistic elements (murals, sculptures, storytelling corners) — 8
- Multi-use areas (flexible spaces for events, study, sports, and relaxation) — 12
- Safer design (better lighting, clear sightlines, emergency call points) — 5
- Places for community interaction (student art displays, community noticeboards) — 12
- Other — 0



Appendix B :Species Cards

The End....