Reconciling Christiania?

A critical view of how Christiania can undergo a viable transformation as new citizens will take up residence due to the upcoming construction of public housing in the Freetown

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Title page

Reconciling Christiania?
The purpose of this thesis is to present a plan for how Christiania can be recociled with the construction of new public housing. This will be attempted accomplished by preparing a number of various strategies relating to the physical and procedural aspect of transformation.

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Abstract

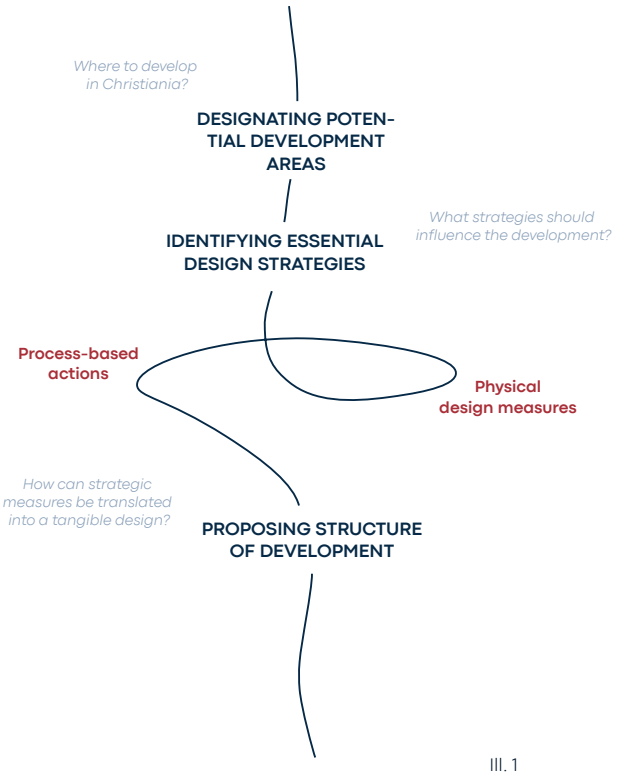
This thesis explores how Christiania, a Freetown in Copenhagen, should develop following an agreement with the Danish state to build 15,000 sq m of public housing. In continuation of this, this report presents a conceptual plan with strategic design measures that aim to guide this development, emphasizing robustness, elasticity, and democracy to accommodate societal and physical changes.

Elasticity is ensured through a phased development plan, allowing adaptation to new knowledge and circumstances as the transformation progresses. A democratic approach fosters inclusiveness and transparency, supporting equality in urban development. The project advocates for informal, bottom-up planning approaches, enhancing community engagement through temporary experiments and social events. Involving citizens from the beginning of the development process and enabling flexible design solutions increases ownership, sense of belonging, and overall satisfaction with the area`s transformation, laying the foundation for a more successful result. By planning for unforeseen changes that inevitably occur in long-term projects, the core vision is more likely to remain resilient, thereby making the plan robust. `Reconciling Christiania` offers a forward-thinking development plan that balances the strong socio-political views present in Christiania with the modern urban need for affordable housing within a densely populated city structure.

Reading guide
To ensure a common basis of how this thesis will be unfolded, an illustration has been made of the physical structure of the report. As the illustration showcases, the report has been divided into the following main phases: *"Where to develop in Christiania", "What strategies should influence the development"* and *"How can strategic measures be translated into a tangible design"*.

The most important key points from each of these phases together form the basis for answering the report`s problem statement.

It is not recommended to skip reading any of these phases as they all play an important part in answering the problem statement.



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Course of process and implemented methods

The integrated design process, developed by Mary-Ann Knudstrup, is a method aimed at creating close cohesion between the various disciplines involved in a design task. This process promotes collaboration and iterative work methods throughout a project's lifecycle, leading to a more holistic design that addresses various themes such as functionality, aesthetics and technical aspects simultaneously. The integrated design process (IDP) is an iterative work method that includes five phases: problem, analysis, sketching, synthesis, and presentation (Knudstrup, M-A., 2004). The iterative element of these phases means that a project continuously revisits these phases throughout the process, as more knowledge is gained, and new problems emerge.

Throughout this report, multiple methods have been used with the aim of gaining knowledge of its main focal point. These methods are all intertwined in the different phases of the IDP and are as follows:

Knowledge gathering through theory, literature, and interviews
These ways of gaining knowledge have, among other things, been used to establish a focal point for defining the problem of this specific thesis. This is done by researching books and videos on Christiania and investigating relevant theories on community-oriented living arrangement, urban barriers, user involvement, approaches of planning etc. This research has been continuously revisited whenever new issues emerged during the different phases, necessitating additional knowledge to address the problem. Furthermore, qualitative, semi-structured interviews have been conducted to get a broader knowledge of the topic, as well as an understanding of the conflicts and interplay between Christiania, the municipality of Copenhagen, and the concept of public housing. These include interviews with Himmerland Boligforening, KAB (Københavns Almen Boligforening), and Mette Prag, urban planner and board member of the Christiania Foundation.

Case studies
In this project, selected case studies have been examined to gain insight into two topics: flexibility in public housing and activating areas near construction sites. These have been used as more concrete and hands-on inspirational sources for solving the defined problems.

Quantitative data collection of the urban environment
Prior to the design phase, analysis has been conducted to investigate the physical and functional conditions internally and externally of the site. This has been done by conducting analyses on infrastructure, microclimate, existing structure, mapping, and access possibilities.

Site visits and field studies
Multiple site visits have been done to gain a broad understanding of the complexities of the area. During these visits, multiple methods have been used to obtain qualitative knowledge. This includes a walk-along with a christianite, as a ethnographic method of gaining knowledge (Walkalongs, n.d.). This provides a deeper understanding of the area, especially from a sociopolitical point of view. However, it can also create a very narrow narrative, which is why it is combined with other methods. Here, qualitative and phenomenological analyses of the atmosphere have been conducted. This is done through observations, walks, qualitative mapping, and sketching on the site, as well as informal talks with locals and visitors.

Sketching and model building
Along with the aforementioned methods, 3D and hand sketching combined with model building in different scales have been used to conduct design ideas and iterations throughout the project, and have act as a base for synthesizing design proposals. Furthermore, various technical calculations has been conducted and acted as a design tool to qualify decisions for design proposals.


Problem
Interviews
Theory
Case studies
Litterature
Analysis
Mapping
Existing structure
Access possibilities
Microclimate
Infrastructure
Sketching
Physical model
Hand sketches
Sketch in Rhino
Synthesis
Site visit with
preliminary design
More concrete
calculations
Hand sketches
Digital model
Presentation
Illustrations
Vizualisations
Physical model
Drawings

Ill. 2

Introduction

Many Danish cities face the complex challenge of developing or transforming urban areas so that they support an attractive and vibrant setting for a good and safe everyday life for the city's local residents. Whether such transformation is taking place in an open, uncrowded rural area or a large dense city structure, it is important to consider the core purpose of the transformation. Is it due to an increasing housing shortage? Is it due to climate challenges? Perhaps it is due to political agendas? What and how the urban development should take place depends on the specific site that needs to be transformed, but common to all urban developments is that they should aim to be carried out in a democratic way with a sustainable approach in mind; both environmentally, socially and economically.

This project will examine and comment on how the current area of Christiania, Copenhagen, can and should develop moving forward, as the Danish state and Christiania have jointly entered into an agreement to build public housing in the Freetown. This project will present a conceptual plan for what the development of the area should work towards, as well as introduce a number of strategic design measures that should be integrated in order to support the direction of the overall development. Therefore, this report intends to formulate and determine the main structure for how the future Christiania should develop - both in the form of a conceptual plan for the physical environment, a phased plan for the overall urban development of the area as well as a series of strategies aiming to support the direction of the development – all without determining an accurate and specific design proposal for the whole area in detail.

To clarify, this report will not introduce a detailed master plan of what the final housing construction must look like when completed as this project seeks to support a transformation which can develop and be modified over time.

The content of the report is defined and delimited in recognition that this project will not be able to predict what the future will look like in ten, 15 and 20 years, and therefore, the content of this report aim to support robustness, elasticity and democracy in design in order to accommodate any future changes of society, thereby, being inclusive for newly emerged needs or societal trends. Also, the purpose of allowing the development plan to be adaptable to new inputs along the way further allows for gathering and implementing useful experiences throughout the process from temporary interventions and experiments which cannot be achieved through classic analyses, theoretical reflections or similar desktop research.

"When developing cities we often tend to focus on the end product – the architectural or materialized plan. [...] [Therefore] master planning is in many ways counter-productive, since is does not take into account changing needs, the transformation of the site, and the change processes taking place during development"

(Samson, 2010)

What is a development plan and what does it intent to do?

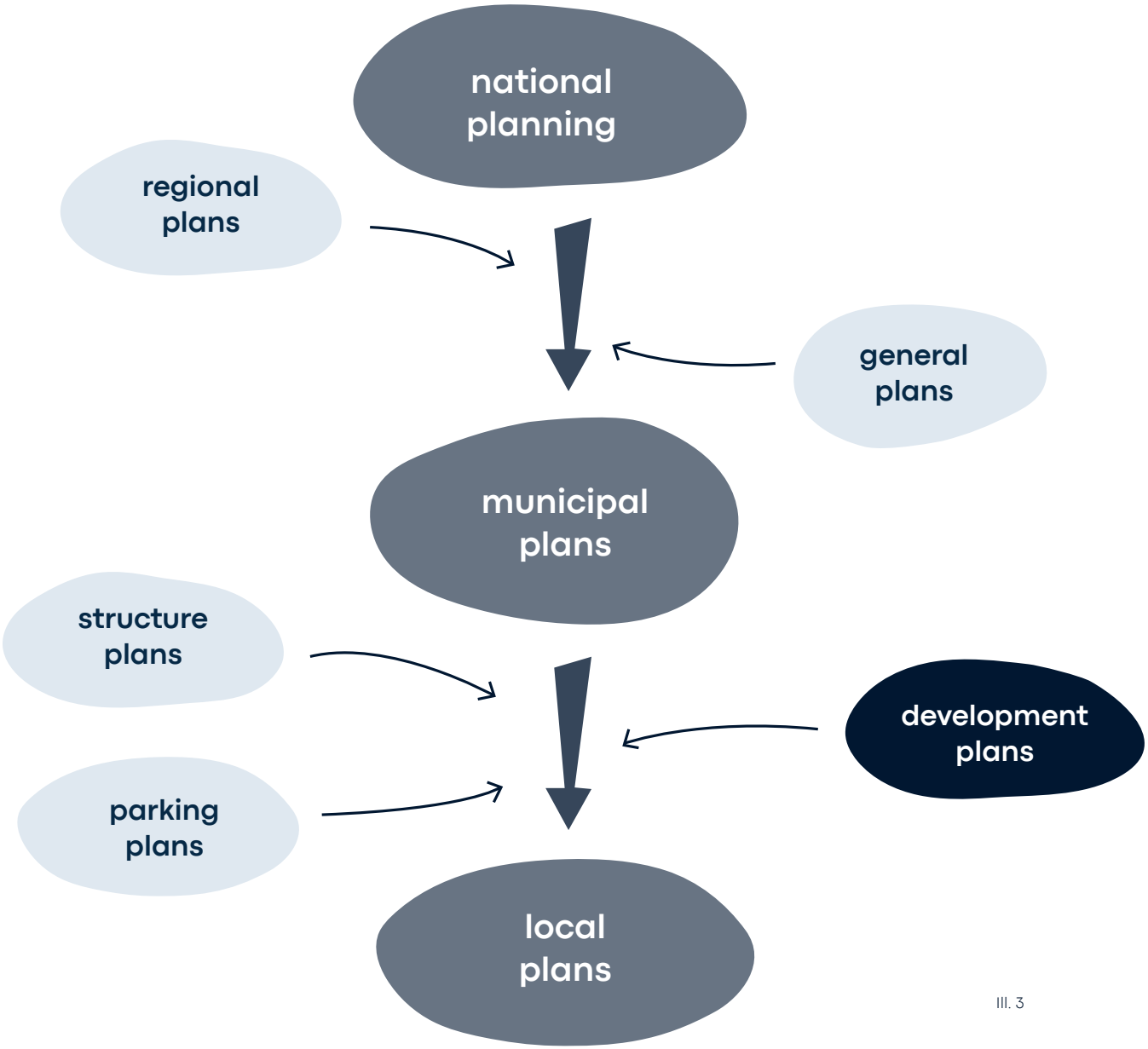
This report intent to follow the premise of a development plan. In order to ensure a common basis of understanding why the report has been structured as it has, a brief introduction will be given to the Danish planning system. Moreover, the general purposes of development plans will be clarified with the aim of presenting what a "traditional" development plan usually contains.

The Danish Planning System (Plansystemet) is based on the Planning Act, which is a legal set of rules of how to carry out the physical planning of land in Denmark. Furthermore, Plansystemet refers to the organizational structure and the procedures that regulate the preparation, adoption and implementation of plans that describe how cities, and the surrounding land should develop moving forward. This may for example include plans for urban development, environmental protection, transport, economy and other relevant themes. As seen on illustration 3, Plansystemet is divided into the following formal types of plans: national planning, municipal plans and local plans. Thus, it should be pointed out that often these formal plans are supported by the preparation of informal plans which intend to link formal planning at different levels. Examples of such plans are regional plans, development plans, structural plans, comprehensive plans and perspective plans (Post, 2018 a).

In traditional sense, the term "development plan" refers to a planning tool used in urban development which is utilized to describe a physical, a strategic and an economic vision for how a given area should be developed. In addition to this, a development plan usually also presents a phase plan for how these visions are to be realized (Realdania By & Byg, 2018). In continuation of this, it must be pointed out that the premise for development plans is not stated or described in the planning act which is the official Danish promulgation of the Act on planning (By-, Land- og Kirkeministeriet, 2020 a). This means that there are no official guidelines or requirements for what a development plan must contain, how it must be structured and at what stage in a planning process it must be composed. Therefore, development plans can to some extent be shaped to fit different planning tasks (Post, 2018 b). Because of this, development plans should be perceived as an additional tool used to link planning across different levels in Plansystemet e.g. linking national planning with municipal planning or linking municipal planning with the preparation of local plans.

It must be made clear that this report intends to act as an intermediary between further local plans and the formal, legislative agreements which has been made between the Danish State and the residents of Christiania about constructing public housing[1].

[1] ***Note***. *The conditions for this agreement are described in more depth on page 22.*


national planning
regional plans
general plans
municipal plans
structure plans
development plans
parking plans
local plans

Ill. 3

Towards a more democratic planning system:

Rethinking Citizen Involvement in Urban Development

When cities and rural areas in Denmark are developed, this is not only influenced by the plans adopted by public authorities, but also by the distribution of ownership, possibility of financing, relevant legislation and, not least, by political decisions. All this makes urban planning complex as it is sometimes challenging to reconcile all aspects while still ensuring well-thought through designs that centres around the right focus - more specifically the citizens, as these are the ones who will inevitably experience, interact and coexist within the design.

Based on the above, it is therefore relevant to be conscious of how one approaches urban development when planning and designing future cities, rural areas, and everything in between. This is explained by the fact that the way in which planning is approached significantly influences which interests will naturally be prioritised in a project, ultimately shaping who the project will favour in the end. In other words, whether a project will tend to favour the interests of authorities, politicians, or citizens - or a combination of these. Generally, the process of planning urban developments can proceed according to either a top-down approach, where decisions and initiatives are issued from the government or relevant authorities, or through a bottom-up approach, where the process of development arises organically through the engagement and input from a given local community.

Often, top-down urban planning is therefore associated with individuals of high influence or governing bodies who possess the authority to dictate the future development of a city or subarea. Here, power and overall authorization are centralized and distributed among a few actors, which can be advantageous if efficiency, modernization, and coherence is prioritised in the transformation of urban environments. On the contrary, a top-down approach often risks overlooking significant local qualities or crucial characteristics of an area, as this approach may lack the capacity to understand or accommodate site-specific nuances. Likewise, top-down management sometimes tend to favour political discourses or large-scale strategic objectives, making the local citizens less influential of the development. (Gattupalli, 2023).

This differs significantly from a bottom-up approach, which is predominantly driven by local residents, community empowerment, and grassroots initiatives. Here, one of the most prominent strengths of this approach is the ability to tailor urban development to specific needs of a given area or the interests of the local citizens. This often results in an increased sense of ownership, belonging, and respect among locals for the urban environment, as the decision-making process occurs at a decentralized level where everyone has the opportunity to be heard and thus influence the given direction of the development. However, this approach carries a significant risk of lacking an overarching perspective, where larger strategic goals and visions may not be adequately integrated into the local development of an area. Additionally, bottom-up approaches also tend to be more time-consuming to implement than top-down management, as it necessitates a high level of consensus among all people involved. Likewise, this approach equally requires a high degree of participation from all involved parties, which can be difficult to sustain over time. (Gattupalli, 2023).

Taking a look at how urban planning usually proceeds in Denmark, it often follows a top-down approach, where decisions are made at the authority level—either by the relevant ministry or by local municipalities, depending on the scope and scale of the given development project. This is explained by the fact that a top-down process is often the most efficient to implement, both in terms of use of resources and time optimization. Additionally, the Danish Planning System legally requires that many decision-making processes regarding urban development take place at an authority level therefore making it challenging to solely follow a local-community-driven approach. However, one might question whether this governance-tradition is in fact the most ideal to follow in order to ensure good conditions for cities to foster enjoyable neighbourhoods with vibrant

Ill. 4. Bellahøj is a public housing project that were constructed in 1953 and is located in Copenhagen (Photo: KAB).

urban life which provide a high quality of life and sense of representation for the individual citizen. To delve deeper into this question, it is essential to examine actual housing projects that have already been realized and have had the opportunity to establish themselves. More specifically, it is obvious to study Bellahøj and Christiania, both located in Copenhagen, Denmark, and comparable in size. These two residential areas are both distinct examples of how top-down and bottom-up urban development can manifest and take physical form. Whereas Bellahøj is a clear example of a housing area characterized by extensive state intervention and top-down planning, the design of Christiania is characterized by citizen initiatives and locally controlled, decentralized decision-making processes (DAC, 2023). This distinction is particularly evident in the architectural design of both areas, their characteristic identity and atmosphere, their ability to adapt and meet societal needs, and the degree of citizen involvement.

As illustrated by figure 4, Bellahøj consists of a number of standardized high-rise buildings constructed in a modernist style surrounded by carefully planned green areas. These high-rise buildings are a result of the increasing demand for housing in the capital area in the post-war period, hence functionality, structure, and uniformity have influenced the design of this residential area. As a result of this, only a minimal degree of citizen involvement has influenced the development of the area, which arguably has led to a reduced sense of ownership and engagement among the local population. On the contrary, as seen in illustration 5, the area of Christiania is composed of a mixture of self-built houses and modified old military constructions, which today are nestled among tall trees and untamed nature. Although the former military buildings follow a series of consistent and distinctive axes, it is clear how the area has since been shaped by informal urban development as all newer construction have been organically integrated into the landscape without conforming to a larger urban structure of the surroundings. This is explained by the fact that Christiania to a great extent has evolved based on the personal preferences and needs of its inhabitants, resulting in a highly unique and characterful urban environment. However, this way of developing has entailed that the Freetown has not engaged with or taken into account the nearby city structure, resulting in the area being detached from the surroundings as it has solely evolved independently.

To sum up, whether a top-down or bottom-up approach limits or fosters the ability to create good urban areas might be challenging to unambiguously give an answer to this as both Bellahøj and Christiania possess their own individual challenges to this day. At the very least, both areas have in common that the intentions behind them have been good.

This naturally leads to a pondering about whether one should strive to combine the two approaches to urban planning in the quest to ensure greater resilience against the possible challenges that urban development might face. This very theme is addressed by Teddy Cruz and Fonna Forman in their book "Socializing Architecture: Top Down Bottom Up." from 2022. More specifically, this book investigates how different planning approaches affect local communities and social life in urban environments. In continuation of this investigation, the book argues, among other things, that effective urban development requires both direction and input from an authority (top-down) and from a community (bottom-up) in order to support sustainable and inclusive urban environments. (Cruz & Forman, 2022).

"We believe that hybridizing top-down public resources with bottom up, community-based social management and governance is the key to civicizing public space, producing sustainable, accessible, civically oriented public spaces in our cities today" (Cruz & Forman, 2022)

Without explicitly using the term, the book thus argues for a synergetic approach to urban devel-

Ill. 5. Christiania was occupied in 1971 and has since developed independently from the surrounding society.

opment, where collaboration between top-down agencies and bottom-up initiatives jointly foster democratic and resilient plans for city development. (Cruz & Forman, 2022).

This is very interesting and naturally leads to wondering how these approaches should be hybridized. Even though a clear answer to this remains somewhat unanswered, it is highly relevant to reflect upon, especially when focusing on the specific site that this report will center around - more specifically, Christiania. Additionally, one might further raise the question of how a bottom-up community (like Christiania) can be reconciled with top-down planning. In continuation of this, it can be argued that that part of the solution to this might involve prioritising citizen-involving initiatives highly as a governance-based development plan necessarily will be drafted. Luckily, integrating citizen involvement can be achieved in various ways. For example, a degree of citizen involvement will naturally occur through mandatory hearings when local plans for the transformation of an area are to be adopted. However, this initiative is a formal measure, and it can be questioned whether it is adequate enough when aiming to support a sense of influence and representation in a development.

Alternatively, citizen involvement can occur through the use of other measures such as DGNB as it specifies a number of criteria[2] as to how citizen involvement can be sufficiently implemented into a project. However, it should be pointed out that the integration of this measure in a planning process is purely voluntary which means that there is currently no guarantee that criteria like the mentioned will influence the development of a given urban area. Therefore, this project would like to raise a question as to whether the current structure of the Danish Planning System needs to be challenged in terms of ensuring that democratic, citizen-oriented initiatives are prioritised to a higher degree in the formal field of urban planning.

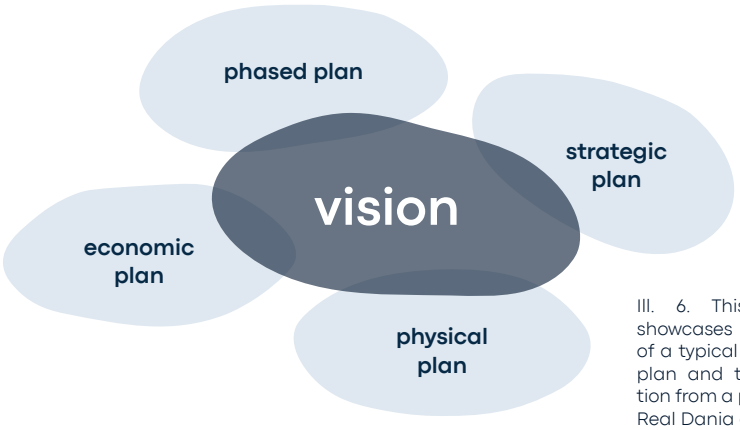
[2] ***Note.*** *Reference is made to the following criteria: PRO1.7 (Participation) and PRO1.9 (Governance) (Global Benchmark for Sustainability, 2020).*

Rethinking development plans

Therefore, although official legislation relating to the process of planning currently establishes the framework for coherent planning across country and city, unites societal interests in land use, protects nature and environmental conditions as well as supports growth and progress throughout the country, it can be questioned whether the legal system actually manages to a sufficient extent to involve citizens in the processes of urban development. It is often seen that citizen involvement takes place exclusively through formal and legislatively determined initiatives, for example through local planning hearings. This report is critical of whether the degree of citizen involvement in various planning processes is sufficient, as it is today, as planning is only relevant by virtue of the presence of citizens which is why they should be included in the process. Therefore, this report intents to challenge how urban development and planning can take place in an (even more) democratic way by rethinking the content of development plans. More specifically, this project will present a number of procedural strategies ***in addition to*** the otherwise expected strategies relating to the physical transformation of an area. In case of this report, the area in question will be Christiania. Moreover, these procedural strategies will seek to promote a democratic, inclusive and experimental development of Christiania, and will not necessarily be rooted in physical designs.

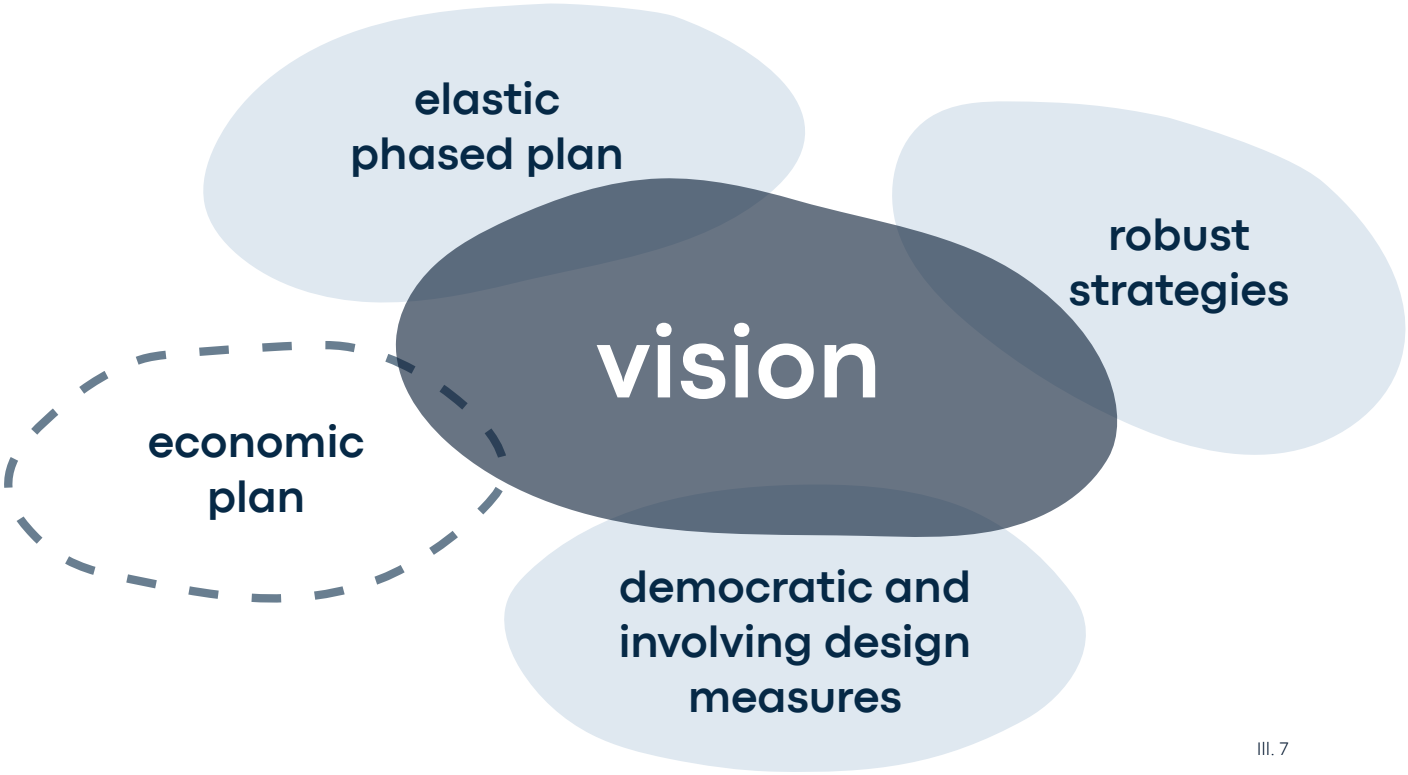
Finally, it must be pointed out that this development plan will not present any strategies for the economic conditions that relate to the future development of Christiania, despite the fact that traditional development plans often include an economic plan.

Traditional development plan



Ill. 6. This illustration showcases the structure of a typical development plan and takes inspiration from a publication of Real Dania called "Development plans as a tool in urban development[3].

Modified development plan



Ill. 7

[3] ***Note:*** *Translated from the Danish title: "Udviklingsplaner som værktøj i byudvikling".*

Prefase

In this section, the main points will be outlined regarding what this thesis will focus on as well as why this focus is relevant

Densification of Copenhagen

Copenhagen has increased dramatically in size over the past recent century due to a large population growth as well as an ever-increasing urbanization making the city constantly more and more dense (Det Tværgående Analyse kontor og Klimaenheden, 2024). This societal development has led to a new need to rethink how we design and plan our cities, as well as a need to question how the future forms of living should be structured.

Although Christiania has remained somewhat unaffected by this development, the Freetown is no longer exempt from being part of the solution to the continuously increasing demand for affordable housing in the capital area. In 2022, the Danish state and Fonden Fristaden Christiania reached an agreement to construct public housing within the Freetown. This agreement will be elaborated on in the following pages.


Nordhavn
As early as the late 19th century, space in Copenhagen has been limited, prompting the expansion of the area now known as Nordhavn. As of 2024, Nordhavn remains under development, exemplifying a long-term mega trend in which people continue to favour urban living, leading to a constant densification and growth of already large cities. (Nordhavn, n.d.)
Lynetteholmen
Lynetteholmen is yet another example of the continuously increasing housing shortage in Copenhagen. By 2070, it is expected that the artificial peninsula will be able to accommodate at least 35,000 residents. (Lynetteholm, n.d.).
Ørestad Syd
In 2005, the largest local plan in Danish history was adopted by the City Council in Copenhagen, allowing for the transformation of the area now known as Ørestad South. Today, the area is fully developed and is home to over 13,000 residents.(Ørestad syd byrum, n.d.).
Christiania
1:50.000
III. 8

Agreement between the Danish state and Christiania

Since the establishment of Christiania in 1971, the dynamic between the Danish state and the Freetown has proven to be complicated marked by a series of legal disagreements and disputes. Additionally, an ongoing dialogue and negotiation about the future of Christiania have unfolded between christianites and the shifting Danish governments.

On several occasions the Freetown has been attempted to either be closed down or adapted to the norms and rules of the surrounding society - but predominantly in vain each time. However, in 2011 and 2012, an agreement was reached between the Danish state and Christiania that formalized a number of legal and administrative matters regarding the structure of the Freetown. The agreement recognized a degree of independence for Christiania while also stating that all responsibility for maintaining the preservable buildings was transferred from the state to the residents of Christiania. Ultimately, this led to the creation of Fonden Fristaden Christiania which is the official organisation that administrates the Freetown. Fast forward to 2022, these agreements underwent thorough review and renegotiation with the primary objective to assess the ongoing relevance of the existing agreement and determine if adjustments were necessary for its continued applicability (Bolig- og planstyrelsen et al., 2022). The outcome of this renegotiation is the starting point for this report.

Agreement: *Tillægsaftale mellem Fonden Fristaden Christiania og staten*
In 2022, a supplementary agreement was prepared to the existing accords established in 2011 and 2012. This additional agreement addressed the following four crucial focal points:

1. New housing for all
2. A safe recreational area in the city
3. Better housing and urban renewal
4. Fonden Fristaden Christiania can become the owner of the entire area of the Freetown

Although all these four points will influence how Christiania should develop moving forward, this thesis will mainly centre around the theme "1. New housing for all" as this involves that 15,000 sq m of public housing will be constructed in the area of Christiania in the nearby future. More specifically, the agreement stats that 6,500 sq m of housing must be built before the end of 2027, after which 3,500 sq m must be built by 2029 at the latest. Lastly in 2031, the remaining 4000 sq m of housing is planned to be completed. (Thomsen, 2022). Furthermore, it is expected that all of this will generate up towards of 300 new residents in Christiania making the agreement part of a larger political agenda of alleviating the current housing shortage in the capital (Bolig- og planstyrelsen et al., 2022).

Ill. 9.
(Photo: Christiania)

Historically, Christiania has repeatedly shown resistance to state interference, as the Freetown aims to function as an independent state with its own set of rules, legal provisions and social norms. For this reason, it is relevant to investigate how such a society can be reconciled with a top-down prepared plan, such as the "*Tillægsaftale mellem Fonden Fristaden Christiania og staten*", which is described on the left-hand side.

Ill. 10

On the basis of the agreement between the Danish state and Christiania, as well as the historical disagreements between these parties, it is natural to question how to ensure the best circumstances for realizing the mentioned housing project in a way that is beneficial for all involved. This will be the primary focal point of this thesis and can be manifested in the following problem statement

How does a project ensure local engagement?

How are new driving force attracted to existing communities?

How to implement top-down planning in a bottom-up society?

How can a development plan form the framework for reconciling Christiania with the implementation of 15.000 sq m public housing in a robust, elastic and democratic way?

How can a timetable allow room for change and adaptation to changing needs

Should the future public housing connect Christiania with the surrounding city?

How can conflicting views and beliefs be brought together in a unified vision?

As this problem statement touches on many complex aspects, a number of additional questions will inevitably arise, which this project will not necessarily be able to answer. However, these questions will influence the project along the way, since they will be repeatedly considered, discussed and reflected upon as the project unfolds.

How can the regulations for public housing be adapted so that they accommodate the mindset and character of Christiania?

How can the characteristics of Christiania be represented in new constructions?

Should Christiania's spirit be continued?

Is Christiania ready for change?

How can new housing promote the integration of newcomers into existing communities?

How does change and transformation mature?

Why emphasize a focus on robustness, elasticity and democracy?

A development plan that is robust, elastic, and democratic is better equipped to create sustainable, liveable, and equitable urban environments. Robustness ensures that the core vision of a project is resistant and effective against unforeseen challenges; elasticity allows for new knowledge to influence the process making the project able to adapt to future needs; and a democratic approach ensures inclusiveness and transparency which will arguably support equality in deciding how our cities should develop and progress moving forward. By actively allowing for three themes to influence urban planning, this will help ensure good prerequisites for creating cities that provide high quality of life for all residents.

Vision for development plan

This project seeks to present a reinterpreted version of a traditional development plan[4] that aims to reconcile Christiania with the construction of 15.000 sq. m public housing in a robust, elastic and democratic way. In order to do so, this report envisions the following aspects to be implemented when transforming Christiania.

Creating a welcoming atmosphere
When developing Christiania, it should be prioritized to strengthen the area's external edge zones that currently isolate the community from the rest of Copenhagen. This will allow for a more welcoming impression of the Freetown. Because of this, it should be carefully considered how new buildings in these edge zones interact with their surroundings. Such design choices not only support city life but also help connect the Freetown with the rest of the city, ultimately bridging the physical urban environment and erasing the existing physical and psychological division. Subsequently, the street layout near the border of Christiania should invite short-term stays and informal interactions among the people of the city.

Allowing for flexibility in public housing
When constructing 15,000 sq m of new public housing in Christiania, the dwellings should support community-oriented architecture as this will ease a seamless integration of newcomers into the area. Furthermore, this will ensure a sense of cohesion in the area as this type of living arrangement taps into what the current accommodations in Christiania centres around. Likewise, in new constructions it should be priotised to integrate a degree of flexibility as this will help cater to the needs and lifestyles of various individuals and thereby support for a strong sense of ownership. Moreover, allowing for flexible living arrangement will ensure that the built environment can evolve over time, reflecting changing individual preferences and societal trends while maintaining Christiania's dynamic atmosphere.

Fostering a sense of ownership in urban spaces
In the transformation of new urban spaces, a principle of shared ownership should be encouraged as this will strengthen equality and democracy in of public spaces. This should be achieved by minimizing predetermined programming, allowing for flexible use of spaces. Ideally, the new urban spaces should invite creativity and collaboration, allowing residents to shape their surroundings in ways that reflect their collective identity and values.

Democratic participation initiatives
In case of the future development of Christiania, it should be prioritised to ensure a democratic process of transformation. Therefore, citizen involvement should be allowed to highly influence how the developement should take place and progress. This will help foster a sense of representation and belonging as locals are invited to actively influence the shaping of their surroundings. By integrating citizen-involving initiatives, both locals and newcomers are likely to feel represented as they have the ability to effect decision-making processes. It is presumed this a high degree of local involvement will reduce a general resistance against the transformation of the area which is benificial to minimize.

Environmentally sustainable design solutions
Finally, in the construction of both architectural and urban spaces environmental sustainability should function as an integrated part of defining how the physical designs should take form. Therefore, it should be prioritised to lower the possible CO_2-emission of new constructions as well as to reduse the risk of flooding in urban environments.

All of this aims to create the framework for new, inclusive, and vibrant neighborhoods that bring people together. Thus, it should be pointed out that the urban development of Christiania should be carried out in respect for the existing environment, local social structures, and the characteristic spirit of Freetown.

[4] ***Note.*** *This phrase refers to the points stated in "What is a development plan and what does this rapport intent to do?"*

Ill. 11

Where to develop in Christiania?

On the following pages, the complexity of Christiania will be presented along with the socio-physical potentials and challenges that the area possesses. This will set the framework for identifying potential development areas within the Freetown

Introducing Christiania

This report centres around the area of Christiania which is located on the edge of the Christianshavn district in Copenhagen, Denmark. Christiania is not simple to define and is often described as a complex and experimental constellation due to the composition of quirky personalities with diverse beliefs, creative and alternative values, quiet recreational environments contrasted with somewhat illegal businesses. Because of this, the following sections will try to shed light on the diversity and multiplicity of the area in various ways in order to present a nuanced picture of the Freetown. Here, a number of key questions will be attempted to be uncovered such as *Why did Christiania arose? What characteristics defines Christiania? And which elements of Christiania are crucial to cherish moving forward as 15.000 sq m of public housing is planned to be constructed?*

In addition to this, important observations about the physical structures of the area will be showcased as well.

Lastly, all key points of these investigations will then form the basis for pointing out potential development plots in Christiania of which it is beneficial to construct the future 15,000 sq m of public housing.

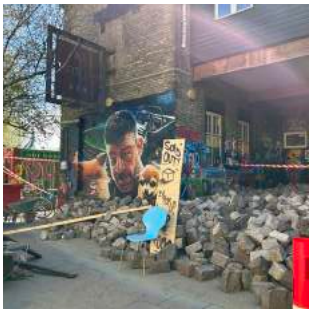
Christiania occupies approx. 34 ha, and is surrounded by urban neighbourhoods and water.

1:10.000
Ill. 12
33

Loppeområdet

Sydområdet

Psyak



Tinghuset

Mælkevejen

Fredens Ark

Fabriksområdet

Løvehuset

Mælkebøtten

Nordområdet

Blå Karamel

Bjørnekloen

Syddyssen

Midtdyssen

Norddyssen

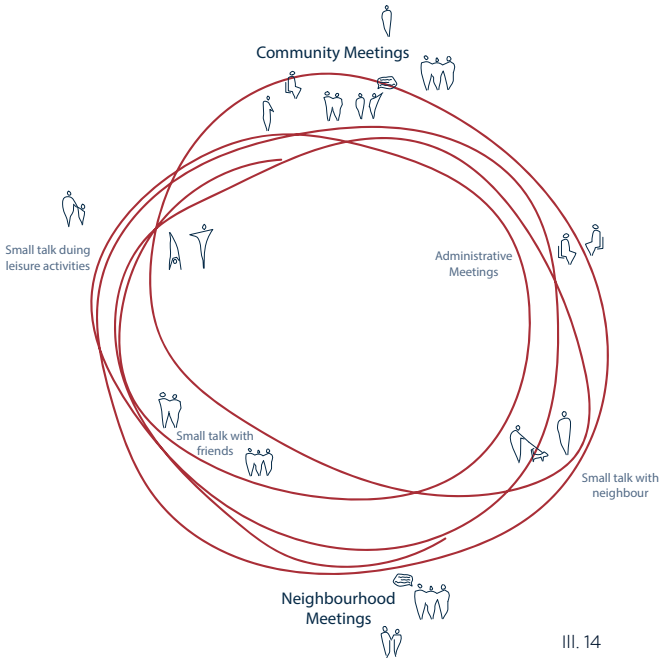
Ill. 13

What is Christiania?
Christiania emerged in the beginning of the 1970s as a group of activists jointly decided to occupy the former and abandoned military grounds in Bådmandsstræde, seeking an alternative lifestyle that deviated from the traditional norms in Denmark. Additionally, the occupation of the area unfolded on the basis of a housing crisis in Copenhagen and Christiania, therefore, became a symbolic and psychical attempt to address challenges at the time regarding housing shortage and high rents for people living in the capital. Christiania has not only arisen on the basis of a desired change, but also as a demonstration aiming to challenge common people`s ability to live in cities. (Christensen, 2022 a).

Throughout the years Christiania has been challenged by crime and illegal drug trade, which has put the local cohesion in Christiania under pressure while also fostered constant conflicts between Christiania and the Copenhagen Police. Nevertheless, these challenges have arguably strengthened the political opposition against the Freetown, and, among other things, contributed to the political need for repeatedly discussing and negotiating the future of Christiania. Despite this, Christiania has developed into a unique and self-governing enclave known for its artistic and cultural diversity which is reflected in its characteristic street art, self-built architecture with additional extensions and wild vegetation. All of which forms the framework for an alternative lifestyle which thrives in the Freetown. (Christensen, 2022 a).

Organisational structure of the Free Town
Taking a closer look at how Christiania is structured internally, the community follows a participation-based decision-making process principle. This approach is intended to allow all residents to participate and influence all decision-makings regarding Christiania. Consequently, the structure is highly characterized by the absence of formal hierarchies. Going into more detail, the organizational structure consists of regular Community Meetings and Neighbourhood Meetings between the 15 sub areas of the Freetown. Both of which allows for discussions, evaluations and joint decision-making of relevant topics related to both social and psychical aspects of Christiania. Whereas Community Meetings involves all christianites, Neighbourhood Meetings are only intended for the given local residents that live in a specific sub-area (Christensen, 2022 b). Further, these sub-areas are illustrated on the following pages.

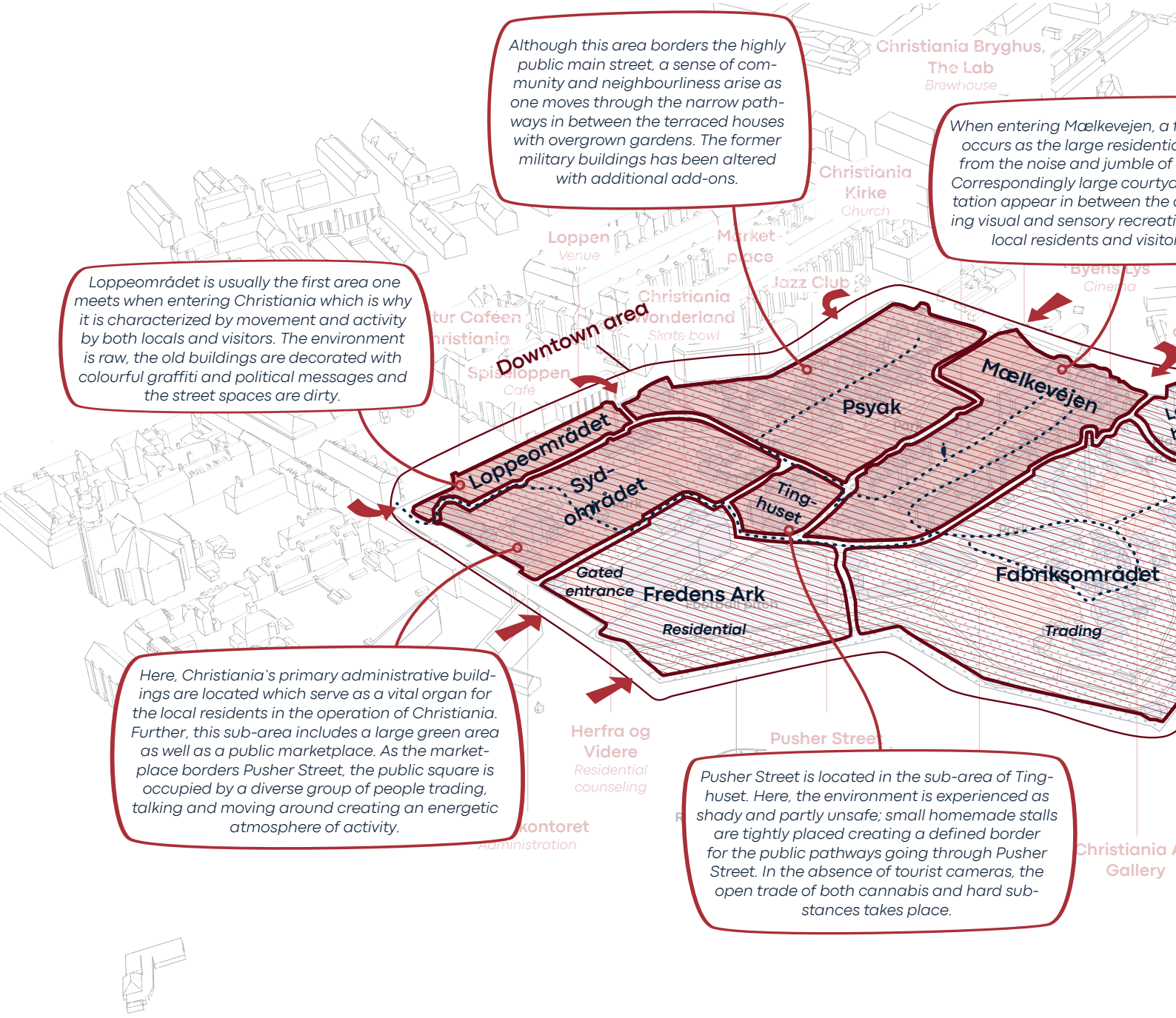
Both types of meetings play a crucial role in the self-governing structure of Christiania by ensuring that decision-makings are democratic, inclusive and based on the wishes and values of the local residents. Further, this aspect underlines the community`s commitment to engage in local matters. Likewise, this also showcases the christianites desire to influence how Christiania should be develop moving forward. This aspect is crucial to emphasize for the reader, as this report will later identify which strategic principles should be prioritised in the process of shaping and constructing the future 15.000 sq m of public housing.

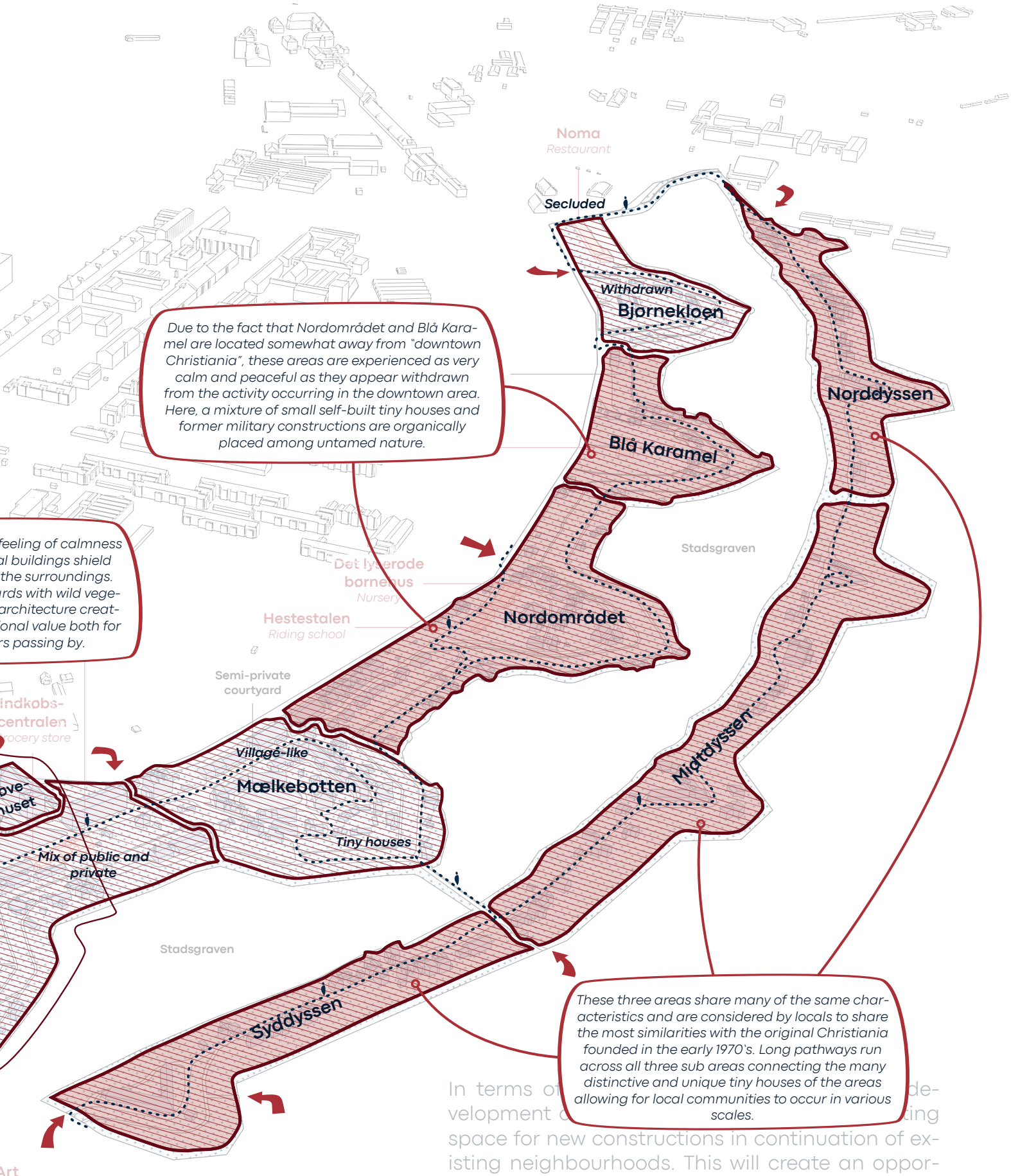


Ill. 14

A walk through the area of Christiania

Christiania covers an area of approx. 34 ha, and here, a broad variety of functions are represented within the site. This is due to the fact that the Freetown has a history of viewing itself as a state making it an aim to self-provide. Additional to this, Christiania is internally divided into 15 smaller sub-areas as mentioned in the previous text cf. p. 35. Not only do these sub-areas vary in size, programming and number of residents; they also vary in atmosphere. In this illustration, each sub-area has been marked out and, in few words, the atmosphere of the subareas has been described. Thus, it should be pointed out that some areas appear more similar than others which is why they have been described collectively.





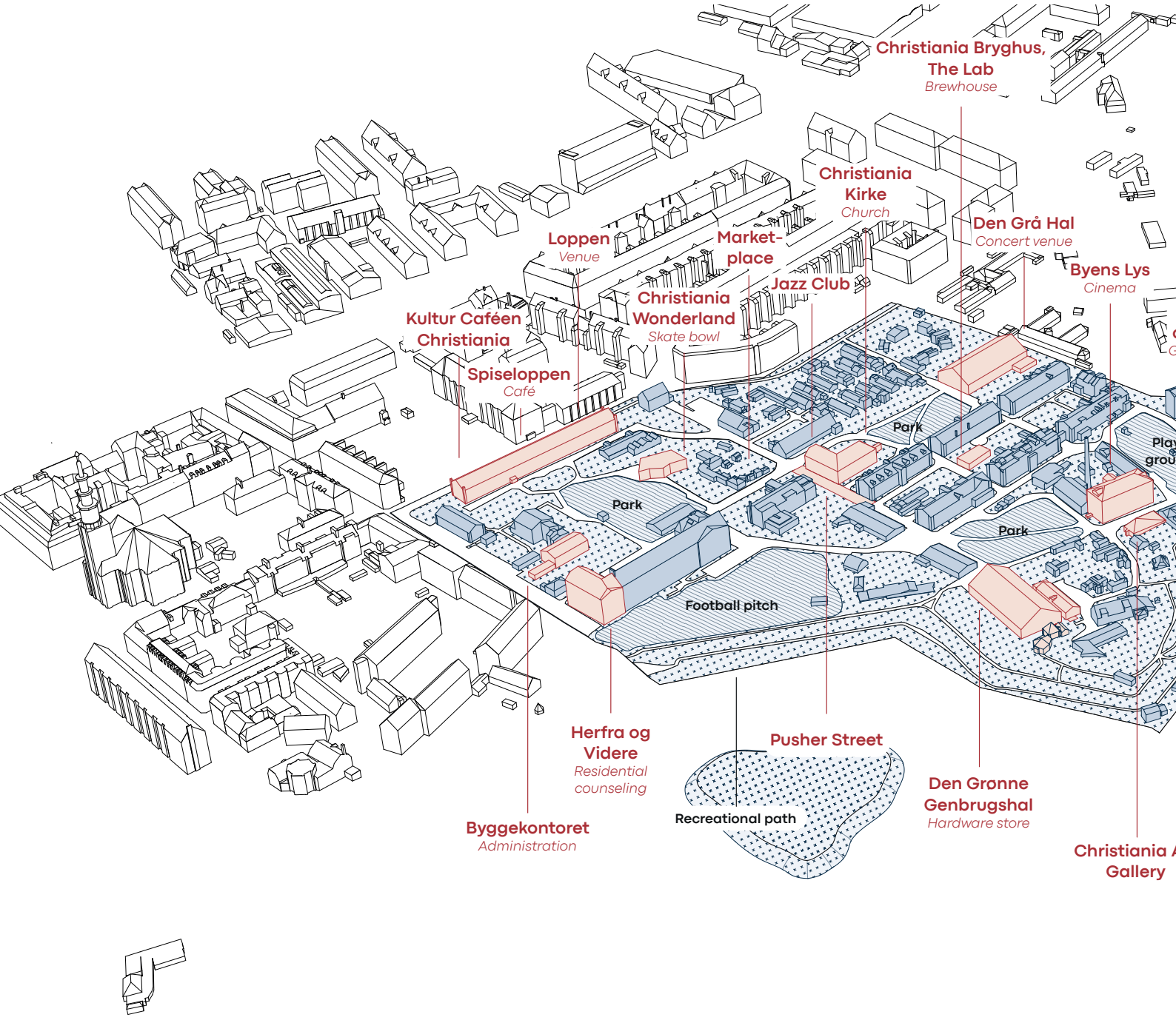
In terms of de-
velopment ting
space for new constructions in continuation of existing neighbourhoods. This will create an opportunity to carry on and expanding already existing communities in new residential areas, whereby easing the integration of new residents in the area.

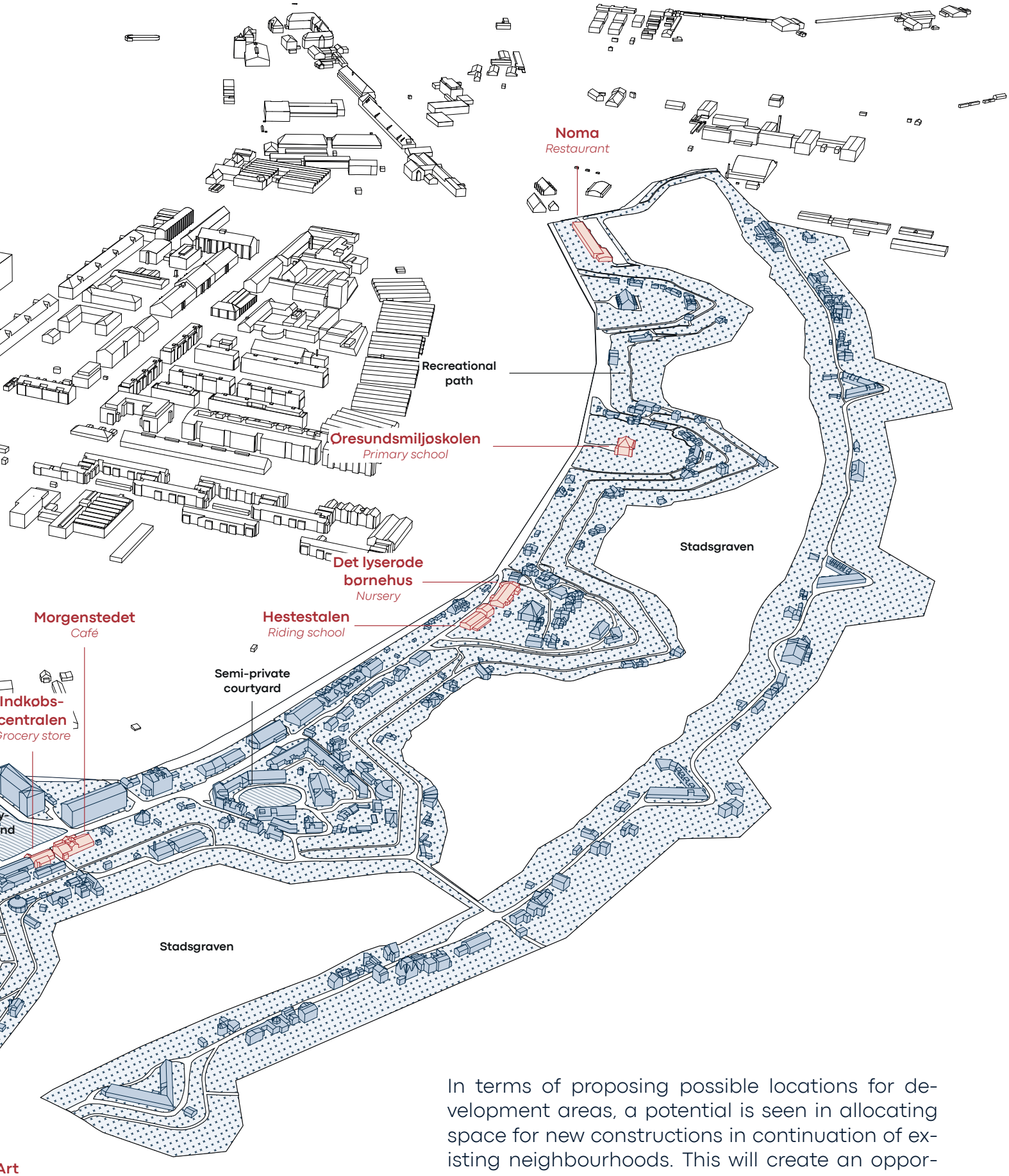
Course of our first walk when visiting Christiania

Entrance

A walk through the area of Christiania

Christiania covers an area of approx. 34 ha, and here, a broad variety of functions are represented within the site. This is due to the fact that the Freetown has a history of viewing itself as a state making it an aim to self-provide. Additional to this, Christiania is internally divided into 15 smaller sub-areas as mentioned in the previous text cf. p. 35. Not only do these sub-areas vary in size, programming and number of residents; they also vary in atmosphere. In this illustration, each sub-area has been marked out and, in few words, the atmosphere of the subareas has been described. Thus, it should be pointed out that some areas appear more similar than others which is why they have been described collectively.





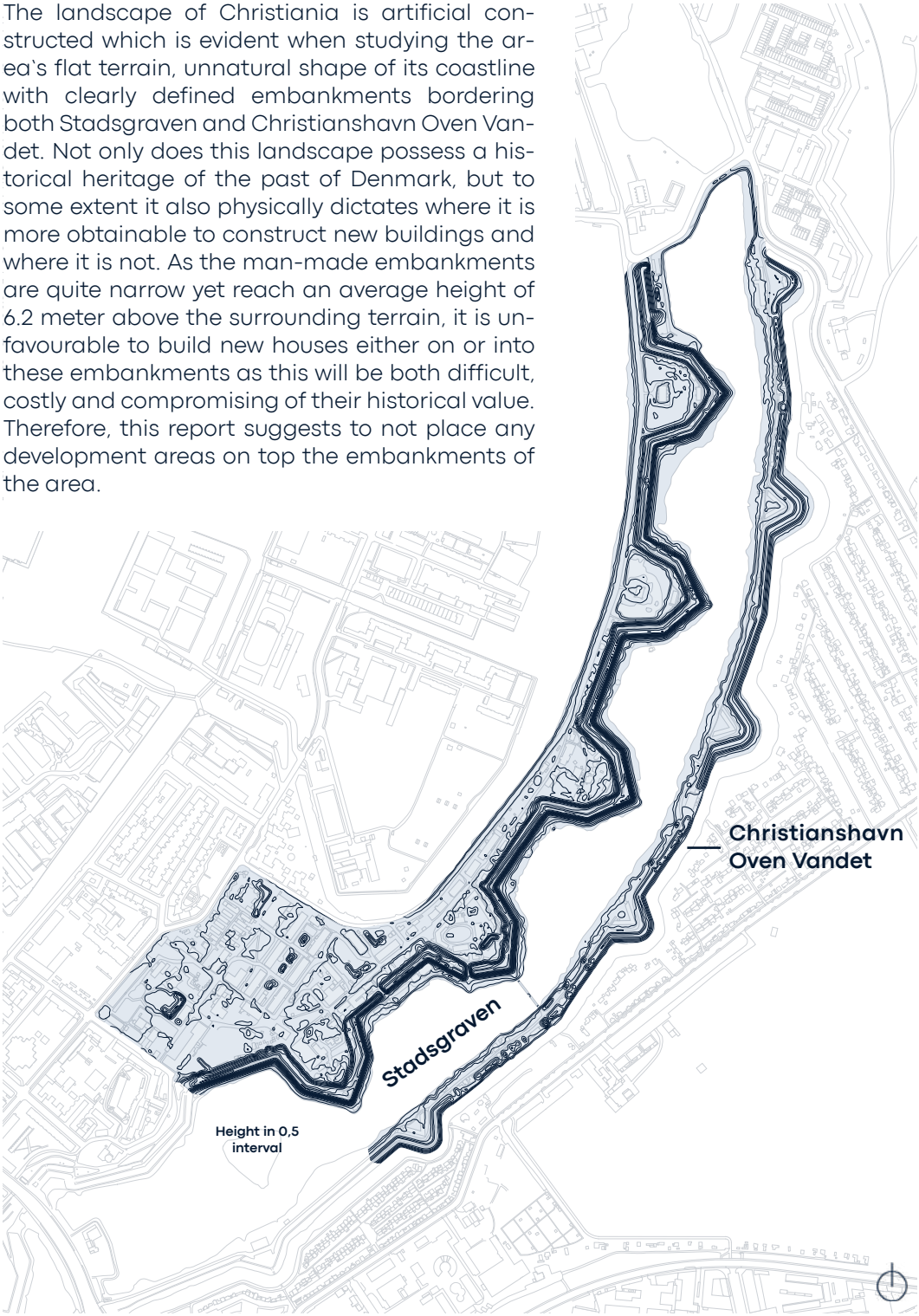
In terms of proposing possible locations for development areas, a potential is seen in allocating space for new constructions in continuation of existing neighbourhoods. This will create an opportunity to carry on and expanding already existing communities in new residential areas, whereby easing the integration of new residents in the area.

Understanding the structures of Christiania

On the following pages, selected observations about Christiania's infrastructure, microclimatic conditions, green structures and degree of preservation will be presented. These observations aim to provide the reader with insights regarding the area's structural conditions.

Topography

The landscape of Christiania is artificial constructed which is evident when studying the area's flat terrain, unnatural shape of its coastline with clearly defined embankments bordering both Stadsgraven and Christianshavn Oven Vandet. Not only does this landscape possess a historical heritage of the past of Denmark, but to some extent it also physically dictates where it is more obtainable to construct new buildings and where it is not. As the man-made embankments are quite narrow yet reach an average height of 6.2 meter above the surrounding terrain, it is unfavourable to build new houses either on or into these embankments as this will be both difficult, costly and compromising of their historical value. Therefore, this report suggests to not place any development areas on top the embankments of the area.



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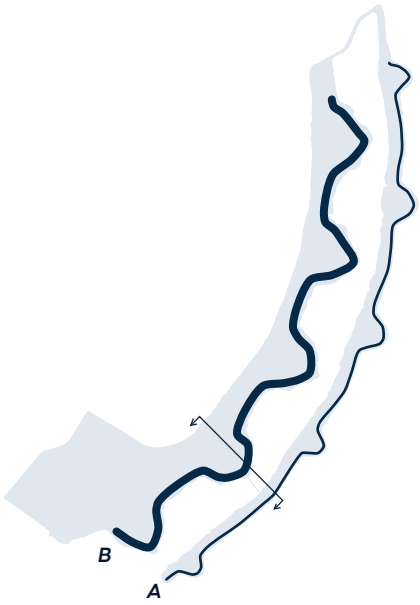
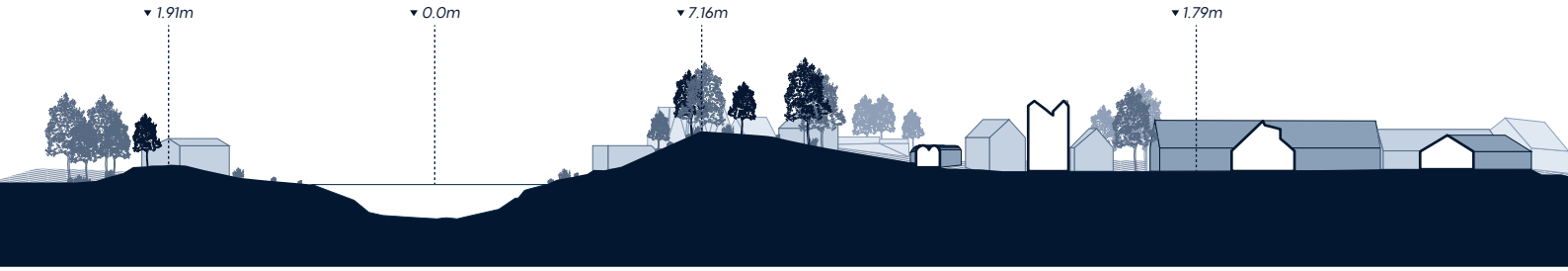
Ill. 16





Embankment A[5]

Stadsgraven

Embankment B

Residential area

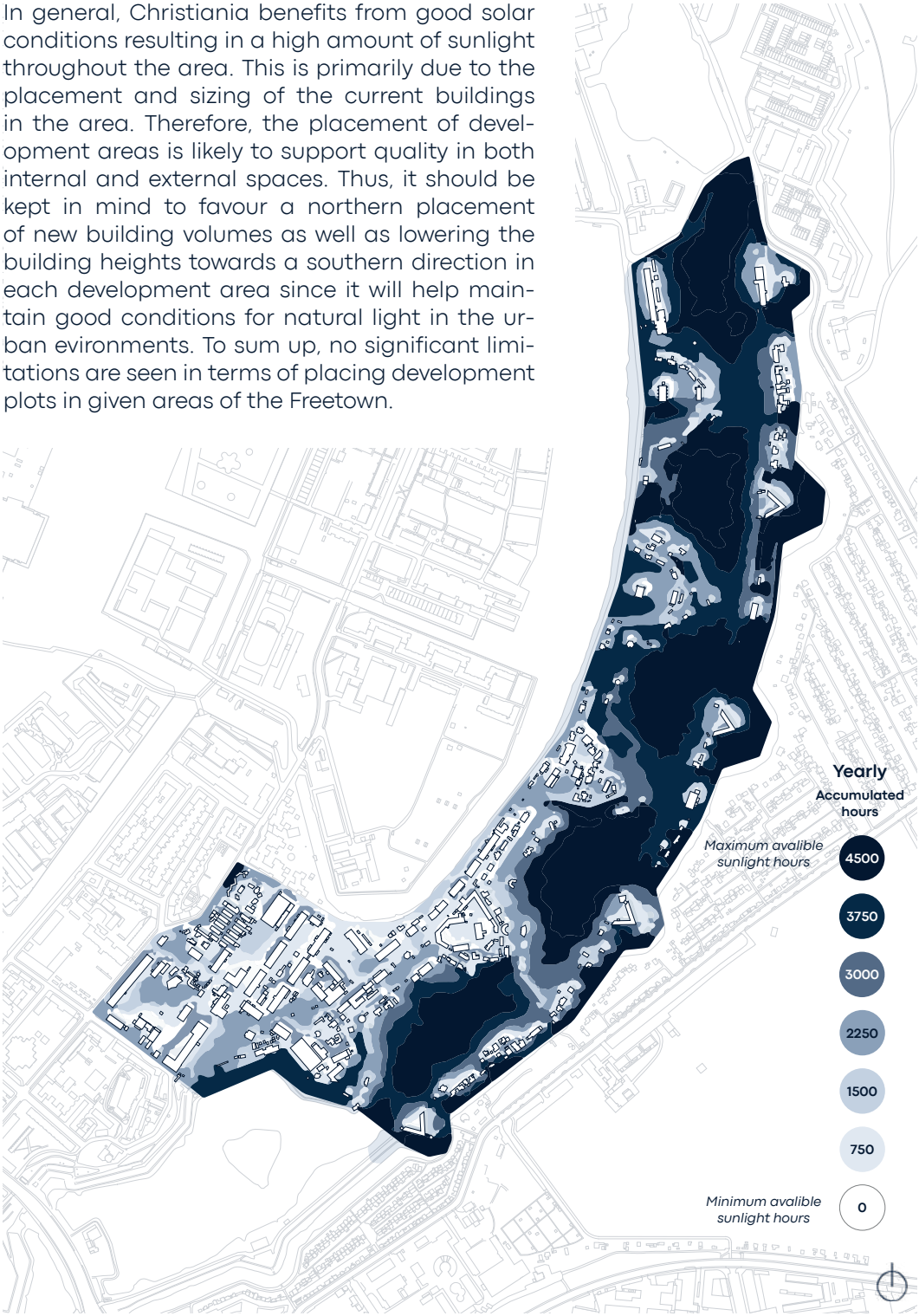
Residential area

1:1.000
III. 17

[5] ***Note.*** *Embankmant A varies much in height and has a maximum height of 2.49m above the water table.*

Solar conditions

In general, Christiania benefits from good solar conditions resulting in a high amount of sunlight throughout the area. This is primarily due to the placement and sizing of the current buildings in the area. Therefore, the placement of development areas is likely to support quality in both internal and external spaces. Thus, it should be kept in mind to favour a northern placement of new building volumes as well as lowering the building heights towards a southern direction in each development area since it will help maintain good conditions for natural light in the urban evironments. To sum up, no significant limitations are seen in terms of placing development plots in given areas of the Freetown.



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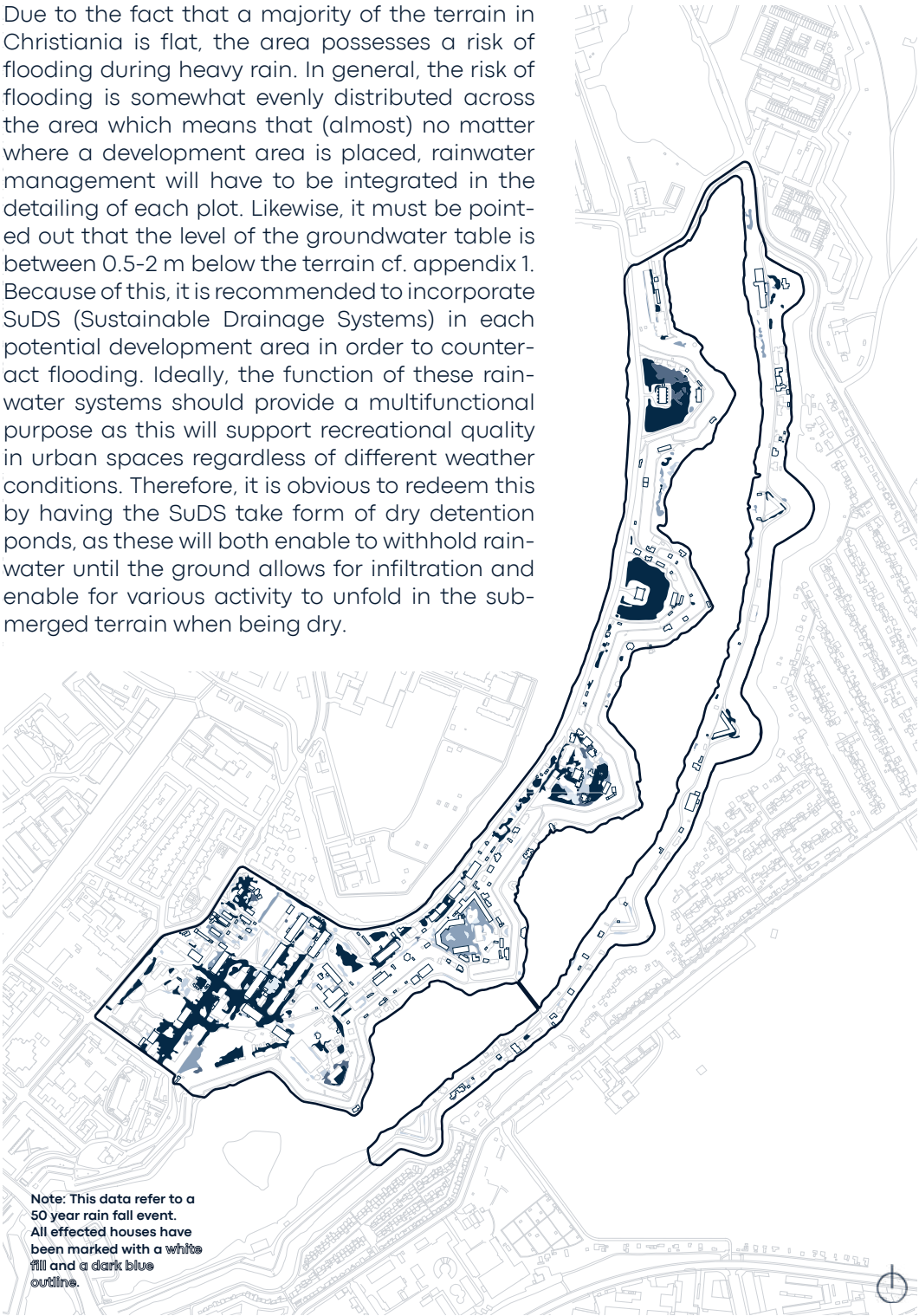
Ill. 18

Blue spot

Due to the fact that a majority of the terrain in Christiania is flat, the area possesses a risk of flooding during heavy rain. In general, the risk of flooding is somewhat evenly distributed across the area which means that (almost) no matter where a development area is placed, rainwater management will have to be integrated in the detailing of each plot. Likewise, it must be pointed out that the level of the groundwater table is between 0.5-2 m below the terrain cf. appendix 1. Because of this, it is recommended to incorporate SuDS (Sustainable Drainage Systems) in each potential development area in order to counteract flooding. Ideally, the function of these rainwater systems should provide a multifunctional purpose as this will support recreational quality in urban spaces regardless of different weather conditions. Therefore, it is obvious to redeem this by having the SuDS take form of dry detention ponds, as these will both enable to withhold rainwater until the ground allows for infiltration and enable for various activity to unfold in the submerged terrain when being dry.



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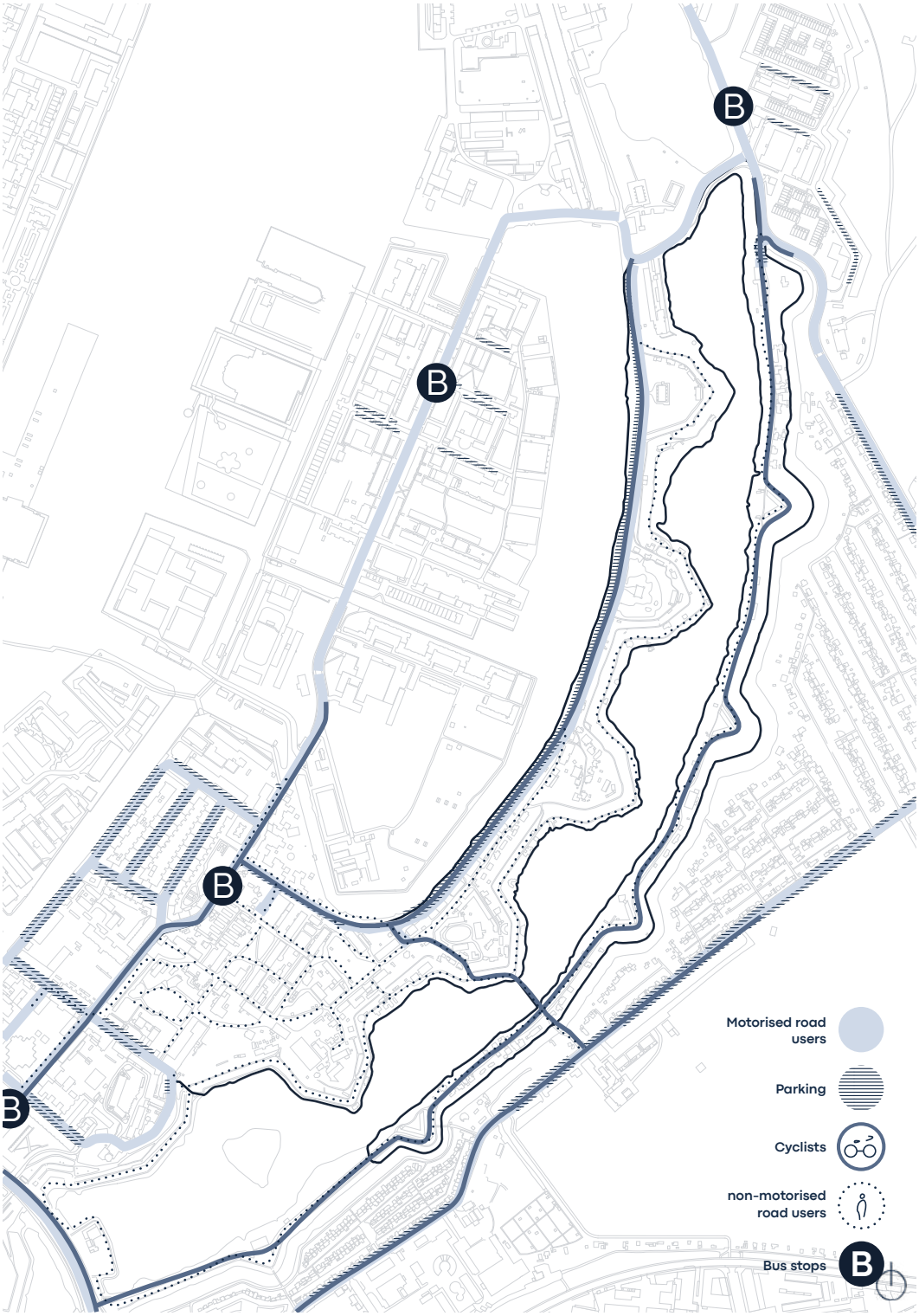
Ill. 19

Generally, the infrastructure of Christiania is characterized by a big emphasis on soft road users and is well-known for its car-free environment.

The area highly prioritises pedestrians and cyclists by providing a variety of path systems for walking and biking. This creates a relatively low degree of noise pollution in the area cf. appendix 2, while also promoting a sense of safety for non-motorised road users as a majority of the users move in an approximately similar speed. For those arriving to the Freetown by car, parking areas are available on the outskirts of Christiania. Although new residents will move into Christiania and the need for parking is expected to increase, this report wishes to challenge the general parking norms by continuing to not propose new parking at Christiania. This is explained by the fact that Christiania has a central location in Copenhagen, which is why a high use of public transport is to be expected to dominate the mobility in the area. Therefore, when placing development areas, it should be prioritised to ensure easy access by human-powered mobility as this is the dominant form of mobility in Christiania. Likewise, when further detailing each development plot, it is obvious to carry on the existing car-free initiative and solely dimension pathways according to the human scale.

Ill. 20. The mobility at Christiania is highly dominated by human-powered mobility such as people walking are biking.

Infrastructural connections



1:10.000
Ill. 21

Preservable buildings

1:10.000
III. 22

One of the predominant characteristics of Christiania is the patchwork of varying architectural expressions which form an essential part of the character and identity of the area.

In relation to this, the municipality of Copenhagen have carried out a SAVE-analysis (Survey of Architectural Values in the Environment) in which they have pointed out specific buildings at Christiania that are important to preserve due to historical heritage cf. Ill. 22. However, all of the structures marked on the illustration as "worth of preservation" originate from before Christiania was occupied in 1971 and, therefore, only constitute of the original military barracks. More specifically, this means that the newer, self-built structures are categorised as not worth of preservation even though these structures are identity-defining for the architectural landscape of Christiania. Examples of identity-defining buildings can be seen in illustration 23. Consequently, this report suggests that all existing structures will be preserved (to the extent that is realistic) when building 15.000 sq m public housing in Christiania as this will help maintaining the current vibrant and dynamic atmosphere of the area. Therefore, it would be unfavourable if the location of development plots would result in demolition of existing buildings. Moreover, from a strategic point of view, a possible demolition of existing housing will risk generating local resistance among christianites against the forthcoming housing project as a whole. Furthermore, this could potentially cause a threat to the belief of reconciling Christiania with the government agreement.

SAVE-building

SAVE-building

SAVE-building

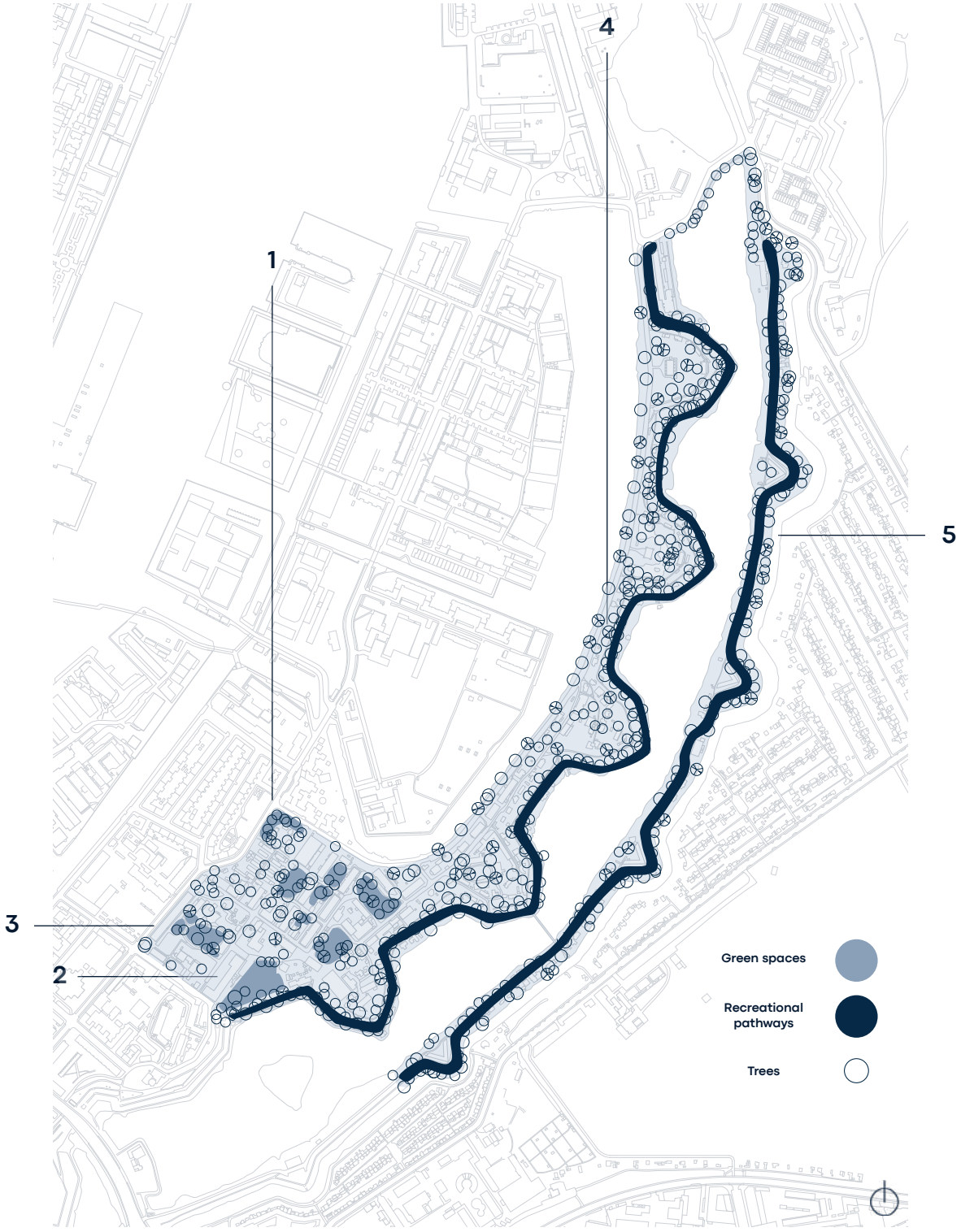
Identity-defining

Identity-defining

Identity-defining

Ill. 23

Green structures



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Ill. 24

Unlike the surrounding city structure of Christiania, the Freetown is largely dominated by green spaces, dense vegetation and recreational paths.

Because of this, the area is often used for recreational purposes such as walks, exercise and short-term stays by both locals and visitors. Therefore, the green structures of Christiania both contribute great value for the local people living in the area as well as for the whole city of Copenhagen as it becomes a place of destination. Thus, it should be pointed out that not all green areas in Christiania possesses a significant recreational value. Whereas the pathways along the embankments afford the opportunity for exercising and enjoying nature, the green open spaces in the downtown area appear abandoned or use as urban storage. Therefore, it is obvious to preserve the green paths in the area while consider the green open spaces as potential areas of transformation.

Lastly, it should be pointed out that since Christiania to a great extent is dominated by nature, a majority of the area is permeable. This distribution between permeable and impermeable surfaces is beneficial to uphold, as the area is generally at risk of flooding and a permeable terrain will increase seepage of water into the ground. Therefore, if development areas are placed in the existing green structures, the spaces in between the expected buildings volumes should prioritise to be maintained permeable.

Green space

Green space

Green space

Ill. 25

Recreational path

Recreational path

Potential development areas

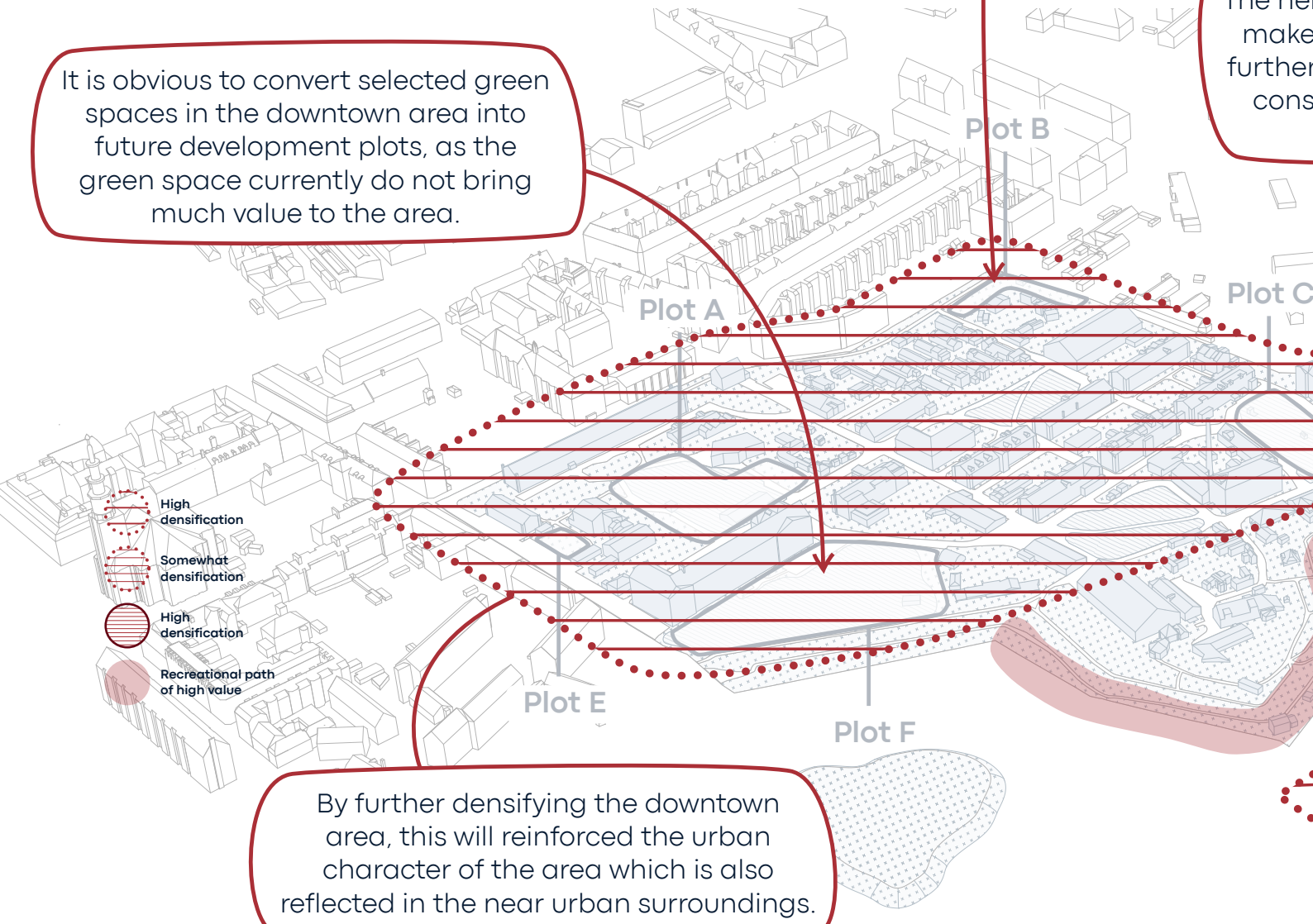
By allowing the area to remain car-free, more space will be grated for urban life as the development areas can prioritize more room for urban spaces.

historical heritage, characteristic atmosphere
nmarized, the following placement of potential
lll. 26. As it appears in the illustration, the devel-
n both
wishing to support a successful integration of
spread out among already existing communitie
to be part of and to contribute to the already we
Furthermore, development areas have both been placed in the edge of the Freetown and internally among existing neighbourhoods as this allows for new constructions to adapt to different architectural contexts, scales and degrees of communities.

It is obvious place development areas in the edge of Christiania, as this will create an oppotunity to fragment current barriers surrounding the Free Town.

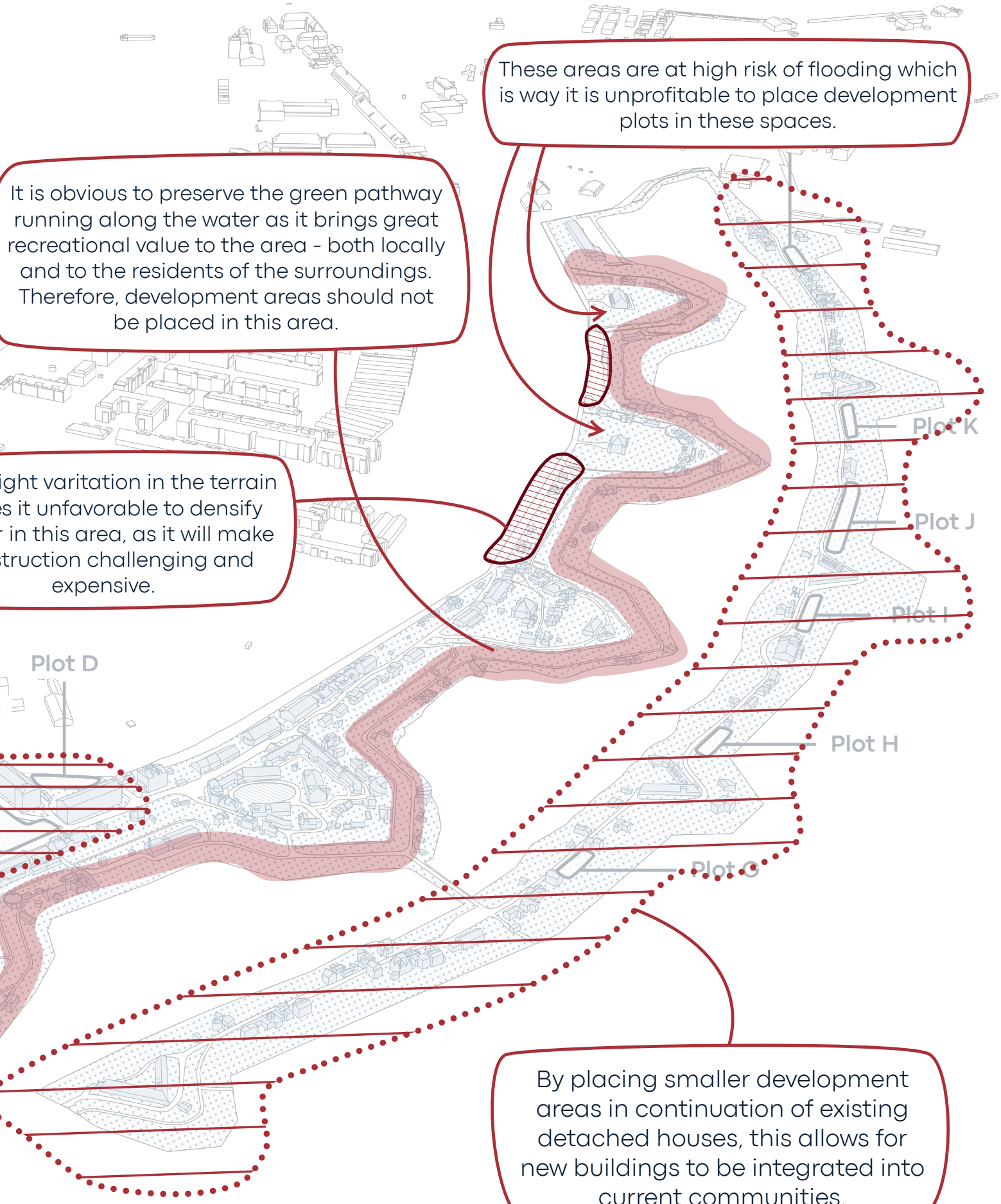
The hei
make
further
cons

It is obvious to convert selected green spaces in the downtown area into future development plots, as the green space currently do not bring much value to the area.



By further densifying the downtown area, this will reinforced the urban character of the area which is also reflected in the near urban surroundings.

DEVELOPMENT AREA	PLOT A	PLOT B	PLOT C	PLOT D	PLOT E	PLOT F
AREA SIZE	*4250 sq m*	*1250 sq m*	*2600 sq m*	*700 sq m*	*250 sq m*	*4850 sq m*

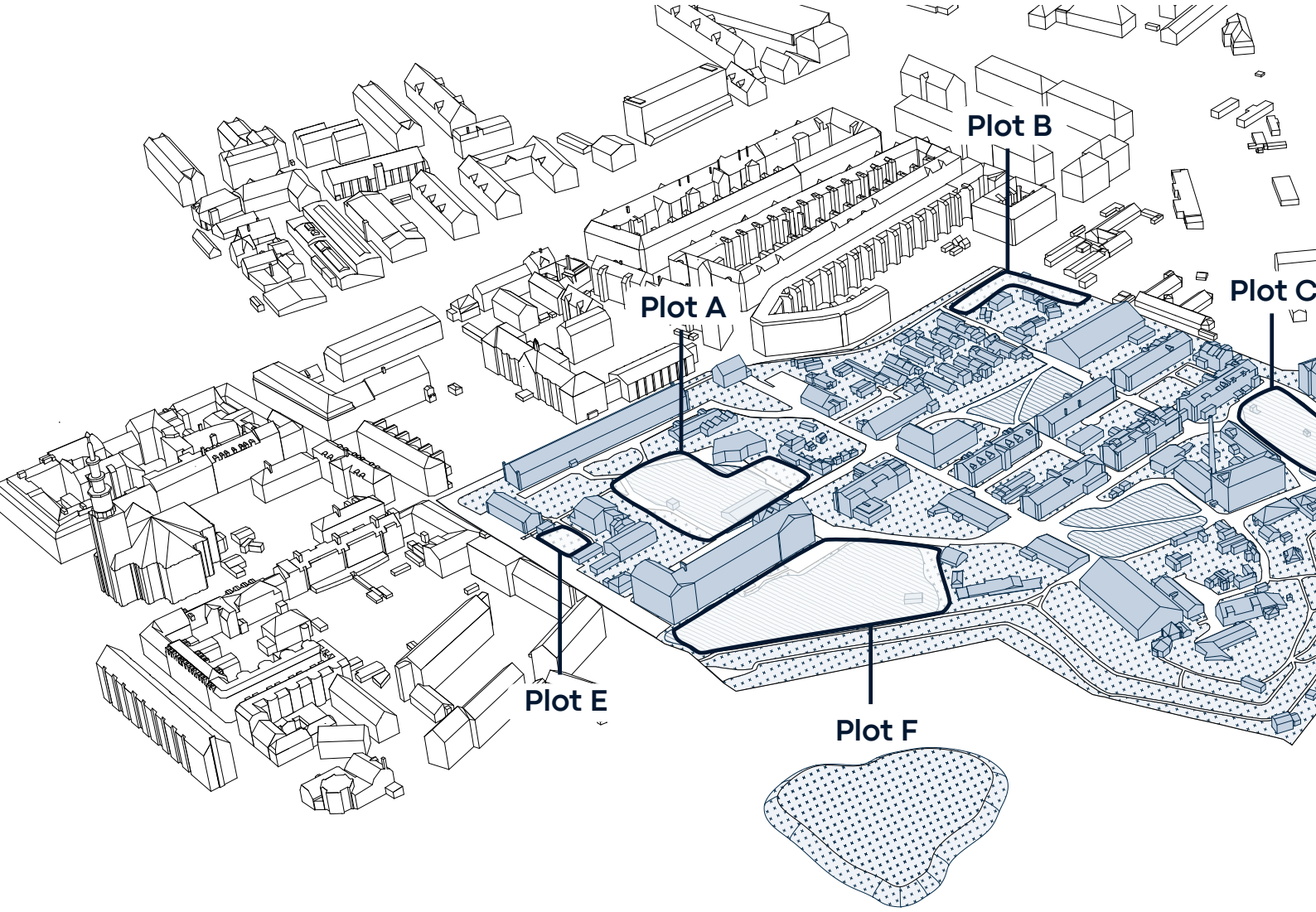


DEVELOPMENT AREA AREA SIZE	PLOT G *375 sq m*	PLOT H *525 sq m*	PLOT I *725 sq m*	PLOT J *1450 sq m*	PLOT K *1000 sq m*	PLOT L *650 sq m*

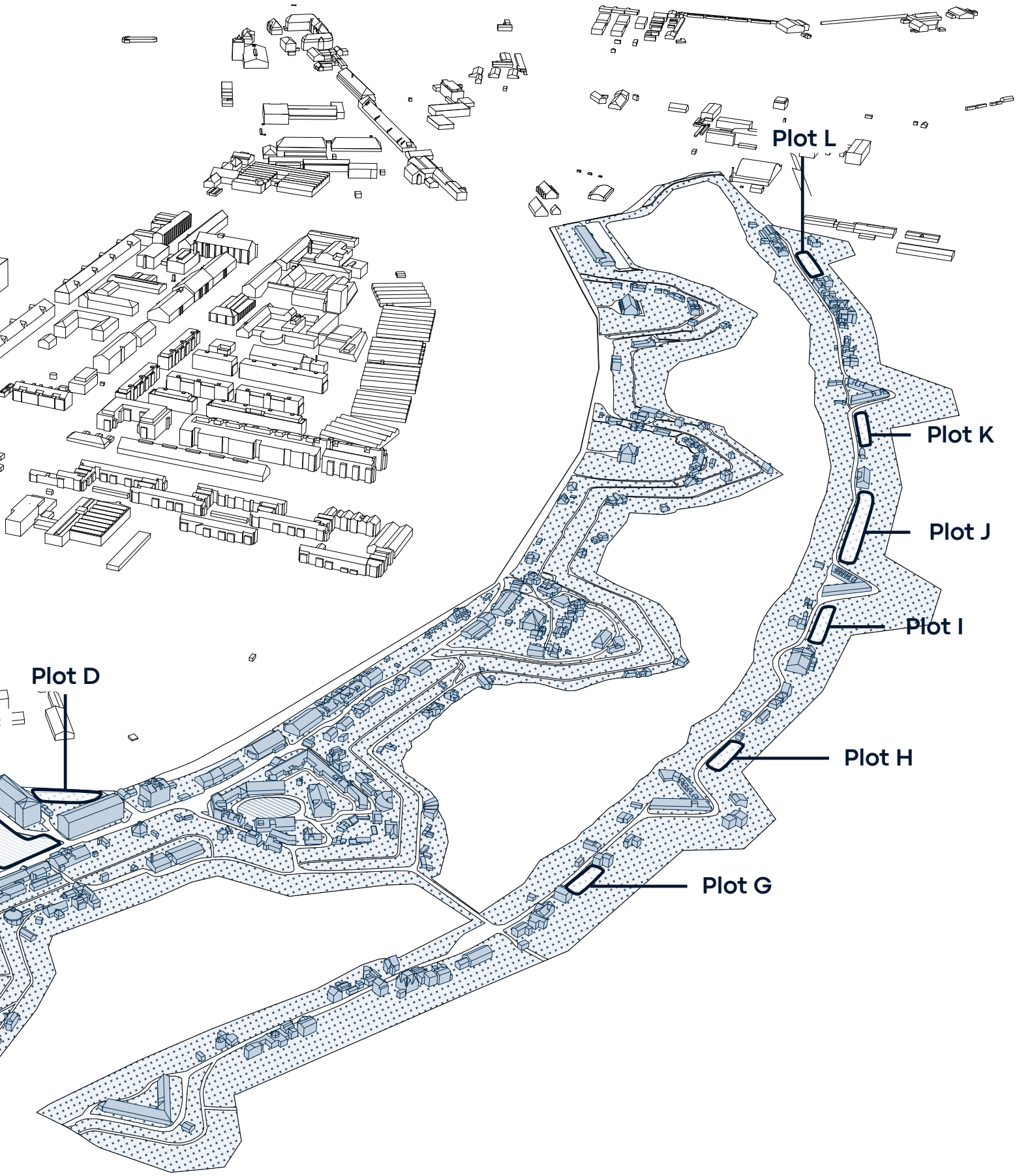
Ill. 26

Potential development areas

If the various insights about Christiania's historical heritage, characteristic atmosphere and physical structures are collectively summarized, the following placement of potential development areas can be designated cf. Ill. 26. As it appears in the illustration, the development plots have been carefully placed in both lager and smaller fragments throughout the area. This is a strategic choice which originates from a democratic point of view of wishing to support a successful integration of newcomers to the area. If newcomers are spread out among already existing communities, it is expected that they are more likely to be part of and to contribute to the already well-established society within Christiania. Furthermore, development areas have both been placed in the edge of the Freetown and internally among existing neighbourhoods as this allows for new constructions to adapt to different architectural contexts, scales and degrees of communities.



DEVELOPMENT AREA	PLOT A	PLOT B	PLOT C	PLOT D	PLOT E	PLOT F
AREA SIZE	*4250 sq m*	*1250 sq m*	*2600 sq m*	*700 sq m*	*250 sq m*	*4850 sq m*



DEVELOPMENT AREA AREA SIZE	PLOT G *375 sq m*	PLOT H *525 sq m*	PLOT I *725 sq m*	PLOT J *1450 sq m*	PLOT K *1000 sq m*	PLOT L *650 sq m*

Ill. 26

What strategies should influence the development?

In the following section, a series of analyses, studies and theoretical investigation will form the basis for the design of strategies which aim to support the framework for a future development of Christiania

Physical development

In this section, various strategic will be presented with the intention of framing the physical transformation for the designated development areas

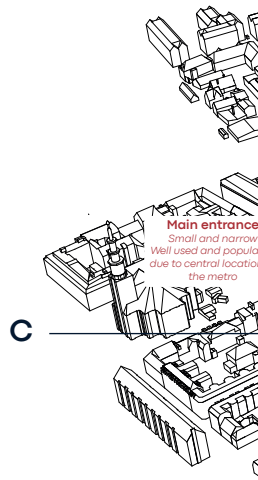
Uninviting external edge zones

Each day in the labyrinth of urban landscapes, individuals are guided through the invisible network of boundaries that unknowingly nudge peoples movements. Whether or not one is aware of this complex network of obstacles, these will inevitable shape one's perception of the urban environments and the city as a whole. Therefore, when transforming existing urban areas, the aspect of barriers within the city should be carefully considered due to its extensive impact on divisions and connections in the city web as well as the general urban experience.

Before going into more detail with the edges surrounding Christiania, a brief study will be conducted of the book `Urban Walls` by Andrea Mubi Brighenti and Mattias Kärrholm in order to establish a basis for examining hindrances such as walls and fences.

Nuancing the perception of urban obsticals

Urban Walls examines how physical structures influence our perception of urban spaces, city life, movement patterns, and social interactions and are based upon emerged worries about the proliferation of walls. Considering these concerns, Brighenti and Kärrholm uses the book to analyse how structures not only define space, but also reflect and influence social relations, power relations and identity. In addition to this, the book argues that the perception of walls will constitue of a matter of perspective and that the function they carry are selective to a certain degree. For instance, physical obstacles can be interpreted as protective for some, while exclusive for others depending on one's position in relation to the wall thereby mixing positive and negative associations. To further elaborate, the book delves on the fact that when people are placed on different sides of a wall, the degree of diversity increases due to the recognition of differences that divides individuals into boxes of belonging and social cohesion. Additionally, it is found that people who are found on the same side of a wall acknowledge common features which make them more likely to experience a sense of community. Because of this, it is important to be aware of the fact that walls are not only physical elements, but also symbolic and social structures of which the perception of them depends on the individual who observes them and the context in which they are placed. (Brighenti & Kärrholm, 2019). Therefore, when examining the edges surrounding Christiania it is important to keep this in mind as it may nuance the understanding of the walls of the Freetown.



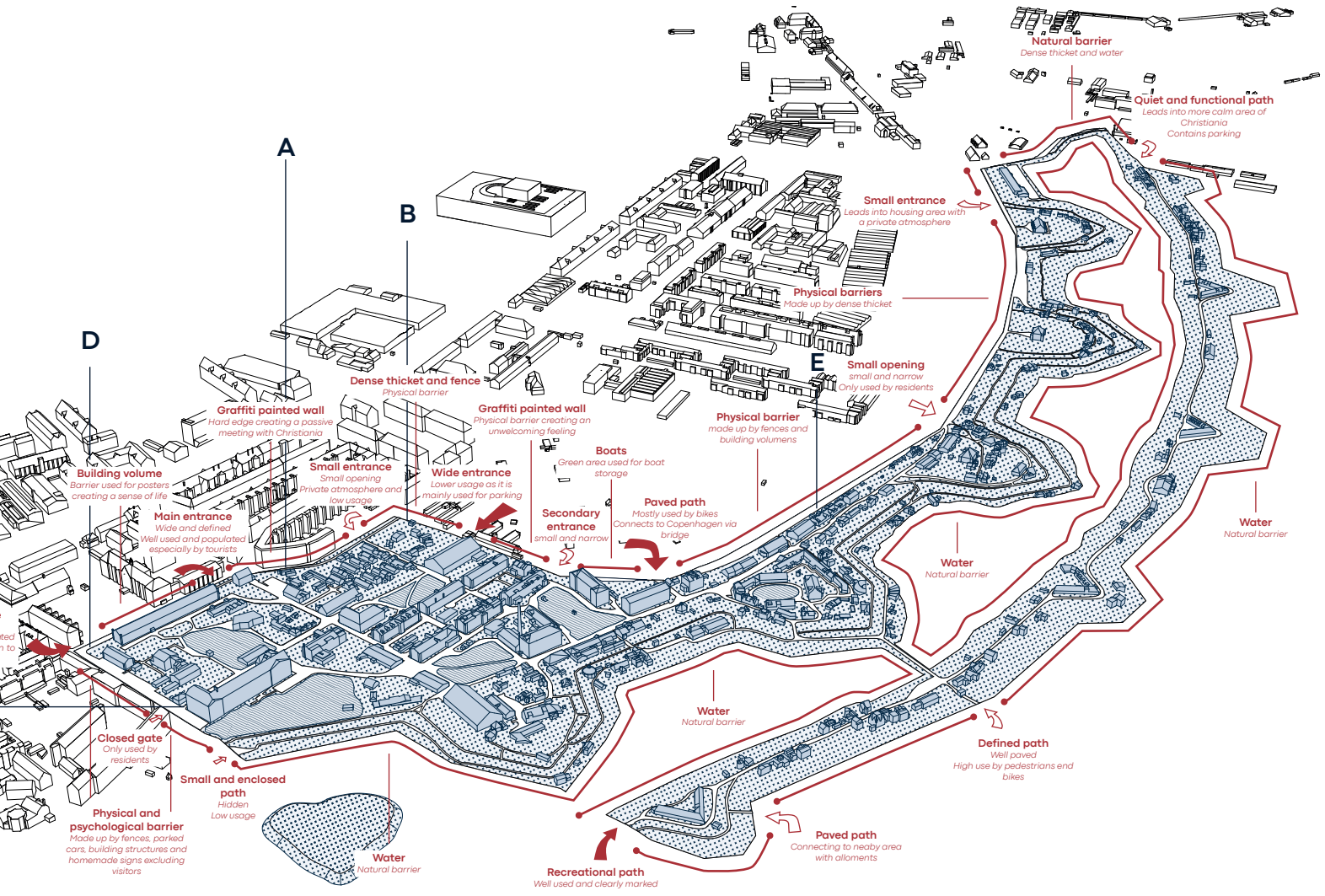
Barriers

Larger access points

Smaller access points


A
B
C
D
E

III. 27


A
B
D
E
Natural barrier
Dense thicket and water
Quiet and functional path
Leads into more calm area of Christiania
Contains parking
Small entrance
Leads into housing area with a private atmosphere
Physical barriers
Made up by dense thicket
Small opening
small and narrow
Only used by residents
Dense thicket and fence
Physical barrier
Graffiti painted wall
Hard edge creating a passive meeting with Christiania
Graffiti painted wall
Physical barrier creating an unwelcoming feeling
Physical barrier
made up by fences and building volumens
Boats
Green area used for boat storage
Building volume
Barrier used for posters creating a sense of life
Small entrance
Small opening
Private atmosphere and low usage
Wide entrance
Lower usage as it is mainly used for parking
Main entrance
Wide and defined
Well used and populated especially by tourists
Secondary entrance
small and narrow
Paved path
Mostly used by bikes
Connects to Copenhagen via bridge
Water
Natural barrier
Water
Natural barrier
Water
Natural barrier
Closed gate
Only used by residents
Small and enclosed path
Hidden
Low usage
Physical and psychological barrier
Made up by fences, parked cars, building structures and homemade signs excluding visitors
Water
Natural barrier
Defined path
Well paved
High use by pedestrians end bikes
Paved path
Connecting to neaby area with allotments
Recreational path
Well used and clearly marked

III. 28

As Christiania can expect many newcomers in the coming years, it is obvious to examine how outsiders encounter the Freetown and engage with the borders of the area. This is explained by the fact that one's initial impression of an area often has the potential to shape the overall perception of the given environment.

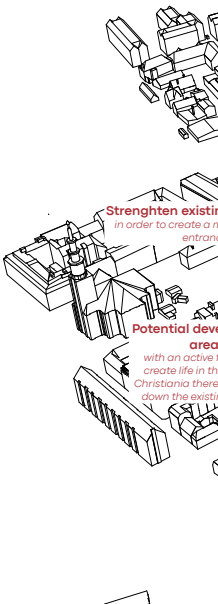
In general, the edges of Christiania consist of various physical barriers such as fences, walls, building volumes and dense thicket which, as stated in the previous section cf. "Urban Walls", increases a feeling of rejection when encountering the area as a visitor (Brighenti & Kärrholm, 2019). This is explained by the fact that these obstacles generate a territorial barrier that divides the residents at Christiania from the citizens of Copenhagen making the area seems enclosed and separated from the nearby surrounding city. Some of these barriers originate from when the area was used by the military whereas other barriers have been established by the christianites themselves. Additionally, some of these obstacles are marked by homemade signs stating that specific areas are unwelcomed for non-residents which adds a psychological layer of in-hospitability to the barriers. This further enhances the uninviting and unapproachable impression of the area for external users. Thus, it should be pointed out that even though the barriers might be perceived negatively by outsiders, each fence, wall or other form of enclosure also serve the purpose of protecting the community on the inside of the boundaries. As an example, barriers might contribute to obtaining a sense of privacy or feeling of safety for the individuals which are protected by the given urban wall. Again, as Brighenti and Kärrholm states in the book `Urban walls`, it becomes obvious that the interpretation of walls is always a matter of perspective depending on one`s location in relation to the barriers (Brighenti & Kärrholm, 2019). Therefore, walls tend to become a topic of mixed opinions by implying oppositional pairs such as `constraining and enabling` movements and `protecting and segregating` different groups of people.

In case of Christiania, the surrounding boundaries not only limit the physical accessibility for people passing by, but also guide the individuals away from unintended places of interference. This makes the purpose of the obstacles in the edges ambiguous. Despite this, the physical and psychological barriers of Christiania still foster an image of the area being unwelcoming towards external citizens. Arguably, this can complicate the future process of inviting new people to take up residence in the area as their first impression of the Freetown is negatively influenced. This also argues for rethinking how the meeting with Christiania should be structured moving forward. By transformning parts of the current border of the Freetown into public functions or residential buildings, this will activate the edges and accommodate for a more positive impression when encountering the area.

Ensuring inviting encounters with Christiania

Based on these observations, this project suggests creating active facades to enhance the degree of interaction between the user, the building and its surroundings. This will arguably promote a more positive impression of an area. If a building is distant or reserved, the gap around its plinth will appear as an inactive boundary, making the area unappealing. Integrating active ground-floor functions into the building volumes can help soften the building`s edges and support for people to engage with the space.

Apart from activating the ground floor area in buildings, retracting the physical volume of a construction will likewise soften the perception of a border, as it allow for smaller urban spaces to occur. These spaces will arguably break up the strict layout that a border affords and enable people to withdraw into the urban havens. These recessed spaces will encourage brief stays and informal meetings which are likely to foster a more welcoming space in the interplay between an area and the urban context.

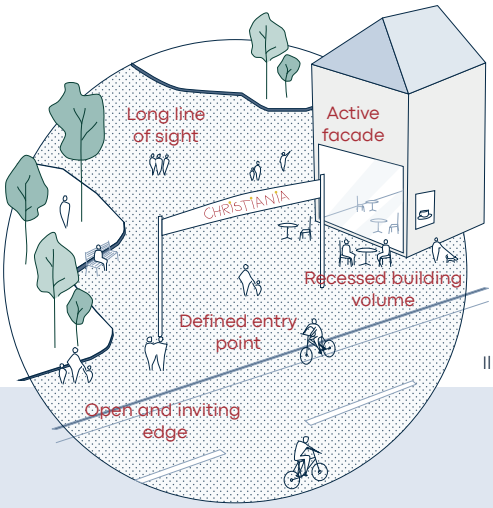


Should be changed

- Barriers
- Larger access points
- Smaller access points

Should be preserved

- Barriers
- Larger access points
- Smaller access points

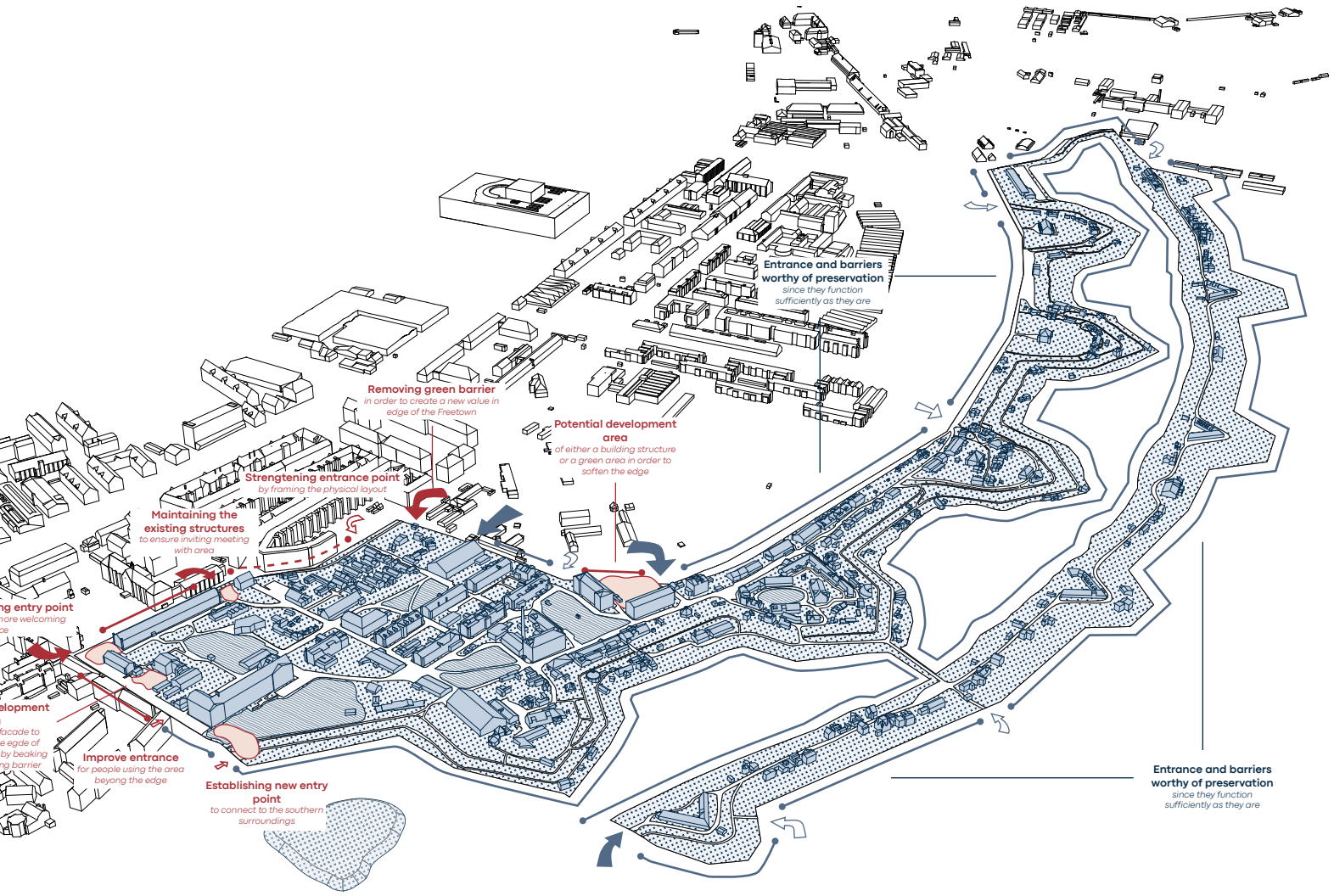


III. 30

Strategy: Softening the border of Christiania

Design measure

Since the current edge of Christiania consists of various obstacles separating the area from its surroundings, this creates a reserved and unwelcoming firsthand impression of the Freetown. In order to change how Christiania is perceived when encountering the area, the adjacent edges should be modified to support a more open and inviting meeting. Further, this should be accommodated by implementing various functions in the ground floor space of buildings that face towards the context, by allowing for urban life to occur in the gap between buildings and public streets and lastly by enhancing the entry points leading into the area as this will promote navigation and further exploration of Christiania.



III. 29

Embrace informal meetings

In the planning of urban environments, a dilemma often arises according to the degree of predetermination of functionality in a given urban space. Although clear programming of urban spaces can guide and nudge users towards specific use and activity, the absence of predefined functionality can allow free interpretation of the utilization of space. In continuation of this, it is not uncommon to experience how the programming of urban environments is used for other purposes than the purpose that were intended as people tend to occupy space on their own terms in order to accommodate their individual needs and interests. Nevertheless, the shaping and layout of public spaces still play a significant role in how an area is experienced, utilized and engaged with.

In the case of Christiania, it is interesting to study the programming of urban environments as they appear to seamlessly link highly public spaces with otherwise private areas. Many dwellings do not possess private front yards as their facades border public pathways. Conversely, a majority of the urban spaces in Christania tend to be occupied with different interior which are traditionally found in private outdoor settings, such as garden furniture, drying racks, outdoor children`s toys, potted plants etc. Therefore, the purpose of the following section will centre around examining how current environment support for different spheres meet and link together.

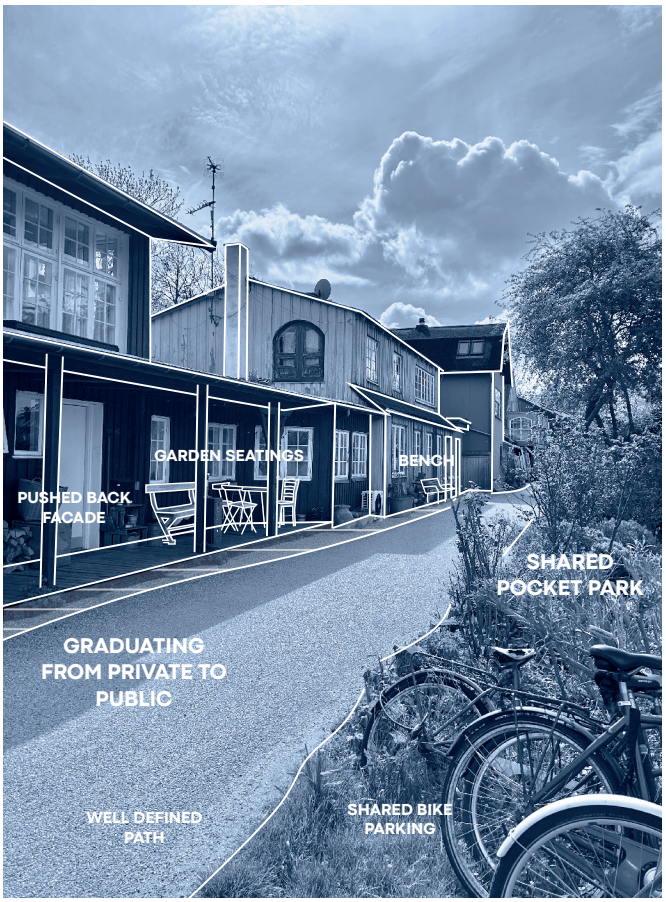
Informal interactions and sense of shared responsibility

When moving around Christiania, it is apparent how the edges surrounding a majority of the private residences functions as an outdoor extension of the individual homes which makes it difficult to point out when the public space ends and a private area begins. In relation to this, it should be kept in mind that the Freetown, among other things, follows a non-ownership-principle where all land is owned by the association Fonden Fristaden Christiania - and thus not owned by the individual residents (Christensen, J., 2022 a). Because of this, no one has the right to privatize the urban area surrounding the plinths of each building. As seen on illustration 31 and 32, the urban spaces along the public pathways systems of the area are characterized by different interiors and functions that arguably invite informal interactions between people. As an example, garden seating, potted plants, trust stands, home-made stalls, workbenches, etc. are placed along the street paths, which naturally draw residents out into the public space while inviting non-locals somewhat into the private sphere of the dwellings. As a result, this promotes for short-term interactions. Overall, this seems to strengthen the social cohesion in the area as well as strengthen the interaction with people passing by.

In general, the interplay between public and private spheres contributes to an internal cohesion of the communities within Christiania as the blurred zoning of public and private fosters a sense of shared ownership and collective responsibility among the residents of the area.

Programming of new urban spaces


SOMEWHAT OPEN FACADES
HOME-MADE STALL
WIDE EDGE ZONE
SHARED SEATING OPTIONS
CLEAR LINES OF SIGHT
WELL DEFINED PATH
GARDEN SEATINGS
HUMAN-SCALED


GARDEN SEATINGS
BENCH
PUSHED BACK FACADE
SHARED POCKET PARK
GRADUATING FROM PRIVATE TO PUBLIC
WELL DEFINED PATH
SHARED BIKE PARKING


LIMITED LINE OF SIGHT
UNAPPROACHABLE
PRIVATE GARDEN
PHYSICAL BARRIER FENCE
UNCLEAR DEFINITION OF PATH
PATH SURROUNDED BY PRIVATIZED FUNCTIONS

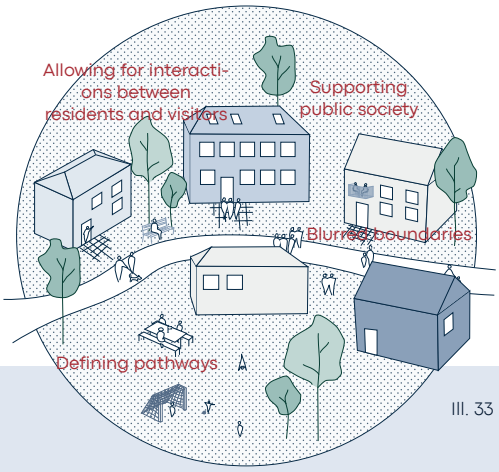
Ill. 31


SHARED PRIVATE GARDEN
PRIVATE PORCH
PRIVATE PORCH
Narrow path
PHYSICAL OBSTACLES
PATH SURROUNDED BY PRIVATE FUNCTIONS
PSYCHOLOGICAL BARRIER

Ill. 32

The alternative and unconventional layout of the urban environments in Christiania is surprisingly well-functioning despite the lack of clear programming. This is supported by the fact that the urban spaces in general foster sense of safety to move around exploring different sub areas and accommodates for informal interactions to occur between various individuals. By allowing for free interpretation of how to occupy and use spaces, this supports for a degree of equality, as everyone`s needs to some extent are represented and can be met in the urban environments. Additionally, the use of these urban spaces is subject to constant negotiation among its potential users, as everyone can occupy the spaces on equal terms. These factors are crucial to the character of Christiania and should therefore be considered carefully in the transformation of new urban spaces in the Freetown. Likewise, a majority of the well-functioning urban environments are structured around pathways systems which allow for people to be to temporarily invited into private communities while still being allowed to move further on into other areas thereby not feeling a sense of intrusion. This specific structure of the urban spaces allows for informal meetings and interactions to occur organically which supports for fluid communities to take place and enables for a sense of greater connection in the area.

Based on these aspects, this report proposes to avoid over-programming the functionality of new urban environments and instead only dictate the overall physical structure of the spaces. More specifically, new urban spaces should ideally cater to all citizen within the city, whether they are locals or visitors, ensuring that everyone feels comfortable in taking ownership. To be precise, it is obvious to take inspiration in how the current urban environments are structured according to movement as this supports for people to seamlessly move through different spaces of local communities without feeling a sense of intrusion. Further, by allowing the use of urban spaces to be up to individual interpretation, this will ultimately increase the chances of obtaining activity at different times spread throughout the year. The urban environments will thus develop dynamically and organically over time.



Ill. 33

Strategy: Room for fluid communities

Design measure

In order to strengthen the possibilities for communities to arise organically between new arrivals and local residents, all future developments should prioritise blurring the boundaries between public and private. This can be realized by implementing a principle with plinth cadastre, where all area outside the residences belong to everyone and to the public. By gathering the building volumes around pathways instead of having them defining a private courtyard area, this will likely support for informal encounters and fluid communities to occur as people will feel a sense of safety when entering different urban settings. Moreover, by having the building volumes border the paths systems, this will also help define a course of movement which will arguably support for people to explore Christiania while not feeling trapped in a private space.

Public housing

Due to the fact that the supplementary agreement from 2022 between the Danish State and Christiania dictates that 15.000 sq m of public housing must be built in the area by the end of 2031, it is crucial to examine what the concept of public housing entails as well as to investigate the potential for implementing public housing in a unique and unconventional community like Christiania. Therefore, in the following text, the overall practice, legislations and variations of public housing will be addressed.

The concept of public housing
Every 6th person in Denmark lives in public housing which makes it an important part of the Danish housing market. Not only does public housing ensure equal conditions for all applicants, but it also maintains affordable rents in an exponentially more costly housing market. One of the crucial differences between public housing and other forms of housing is that tenants only pay for expenses related to rent. Further, this is determined by law as the rent may only cover the expenses of the housing department and thus may not generate any further profit. The reason for this is that public housing is partially financed by the public sector – either the state, the regions or the municipalities, which should not speculate on rents (Hvad er en almen bolig?, n.d.).

A distinctive feature of public housing is the strong focus on tenant democracy. Tenants have significant influence on decision-making where they can participate in department meetings and be elected to the department board. It is likely that a department in a housing community will not have more than 30 members, with a typical size ranging between 15 and 40 individuals per community cf. appendix 3.

Types of public housing
In general, public housing can be divided into three different categories: family housing, youth housing, and senior housing. And as the names suggest, family housing is open to all whereas youth housing is aimed towards students and senior housing is designated for elderly or disabled individuals referred by the municipality. Despite the fact that these categories of housing cater to different target groups determined by age and employment, public housing also varies in terms of adaptability and degrees of togetherness with one's neighbours.

Often traditional public housing is defined by being maintenance-free for the tenants. For some this is an advantage as one only has to tender to their own everyday life. For others, it might be perceived a disadvantage given that the dwelling cannot be customized to one's own wants and needs. Furthermore, only few internal areas are shared among the neighbours in this constellation minimizing the opportunities for informal meetings between residents. However, public housing also appears in more unconventional forms accommodating a higher degree of adaptability and community. An example of this is the concept of "AlmenBolig+" where the tenants are expected to contribute to both the maintenance of the dwelling and the surrounding indoor- and outdoor environment. Therefore, in these housing units, the residents have expanded control of the ability to customize (AlmenBolig+, n.d.). Another form of unconventional public housing is "public co-housing". This can both be understood as collective living communities where each tenant has their own room while sharing housing-functions such as the kitchen area. It can also address a typology focusing more on shared facilities where people have their individual dwellings but share various common areas. To a greater extent, this creates a foundation for a more connected community among neighbours and sometimes also entails a cheaper rent cf. appendix 3.

Integrating public housing in Christiania
When building public housing, especially in a place like Christiania, it is obvious to consider how to do so and which type of housing structure to implement as each form of living entails both advantages and disadvantages. Listed below are some of the most significant.

Advantages
There is a general shortage of housing in Copenhagen followed by high levels of rent. Therefore, by implementing public housing in a central area such as Christiania, many people would benefit from this as it allows for more individuals to obtain affordable housing in the capital. Additionally, by increasing the supply of public housing, this will contribute to more social equality. Furthermore, the principle of public housing largely aligns with some of the values predominant in Christiania such as a non-profit-driven approach to the operation of housing. Lastly, by accommodating that newcomers can relocate to Christiania, this might help alleviate the current challenges occurring in Christiania, such as the high degree of criminal activity in pusher street.

Disadvantages
Arguably, it might be challenging to reconcile a highly regulated constellation such as public housing with an area that has a history of defying the Danish building regulations. Likewise, a majority of the residents in Christiania has expressed opposing views towards constructing new housing in the Freetown. Furthermore, Christiania have expressed a wish to possess the autonomy to decide which residents are suited to relocate to the area cf. appendix 10 and 11. All, of this have a risk of generating friction in the process following from now.

As a respond to these critical views on the project, a cooperation agreement has been constituted between Christiania and KAB (Copenhagen Social Housing Association). Therefore, moving forward, KAB will act as a consultant for Christiania's new public housing association assisting and guiding the future process of construction (Jacobsen, 2023).

Ill. 34. Example of an AlmenBolig+ housing project.

To sum up, balancing these aspects are likely to pose difficulties which is why a development plan for the future process could prove to be a helpful tool for all associated.

Community-oriented forms of living

As cities evolve and societal norms shift, the demand for housing which cater diverse living arrangements is increasing, in particular the wish for shared housing. This demand is driven by multiple factors in society such as housing shortage, changing family structures, augmented costs of living and increasing awareness of sustainability (Cutieru, 2024).

Therefore, considering this ongoing development in society, it is obvious to investigate how dwellings can accommodate various living arrangements and family constellations. Additionally, with Christiania's tradition of questioning conventional lifestyles, the Freetown possess the potential to experiment with how shared forms of living can be accommodated and rethought when constructing new architecture in the area. Furthermore, when walking around the Freetown and talking to locals, it is apparent how the area already prioritises a community-minded lifestyle. Not only does the organisational structure of the Freetown support for regular interaction between the locals as both meeting and various events are arranged frequently, but the general outlook on life among christianites is also dominated by a wish for sharing and upholding a sense of togetherness. The latter is explained by the fact that many locals seek to live in close relation with one another - either in the sense that they live in actual collectives or in the sense that they share spaces or functions among their neighbours. Therefore, it is obvious to examine which different types of community centred dwelling that exist as well as their degree of sharing and internal togetherness.

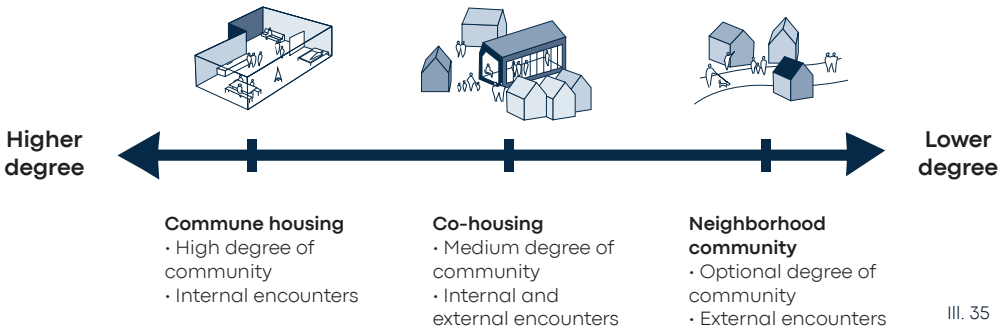
Degree of community
In general, the degree of community in housing varies depending on the form of dwelling that a residence is structured according to. The Danish Social- og Boligstyrelsen has identified three key parameters which greatly influence if a dwelling supports togetherness among individuals or not (Fællesskabsorienterede Boformer, 2024).
These aspects are as follows:

Placement of building volumes
The physical distance between building and the layout of the associated surroundings are of great importance for how the community between residents can develop as it influences the possibility of informal social interaction.

Internal layout
The domestic structure of the dwellings affects the residents' internal communities. More specifically, the implementation and linking between interior spaces such as rooms, common spaces and shared facilities can help strengthen the opportunities for engagement.

Organizational aspects
Lastly, organizing social events such as resident meetings, summer parties, annual gardening, communal meals, etc. affect whether residents have strong relations or not. Since this factor is not physically anchored, it instead depends solely on local drivers and initiatives of the individuals involved.

In relation to this, it is obvious to point out that different types of living arrangements cater to different needs and settings. And since this thesis aim to propose a plan for how new public housing can be integrated into the existing environment of Christiana, only community-oriented forms of livings are relevant to study. Therefore, in the following section, the premise of commune housing, co-housing and neighbourhood community will be examined.



Ill. 35

Commune housing

Commune housing is centred around a group of people who live together in the same singular dwelling sharing both resources and responsibilities all from doing practical house tasks to ensuring a strong social cohesion within the dwelling. Often this type housing is based on either a common ideology or a shared set of values relating to e.g. sustainability, self-sufficiency, alternative lifestyles or social justice. Furthermore, a key aspect of commune housing is that it accommodates a strong sense of togetherness since it supports inclusive, shared environments where the residents collaborate on communal tasks, finances, decision-making processes etc. All of this creates the opportunity for individuals to thrive both personally and socially. In terms of the physical framework, the strong sense of togetherness is promoted by the fact that residents typically share all common areas such as kitchen, dining area, bathroom and living space. Therefore, most of the housing activity in this type of dwelling is carried out in collaboration among residents strengthening an internal community. (Andersen, 2021). An example of commune housing can be found at Christiania where currently four different collectives exist cf. ill. 38.

Co-housing communities

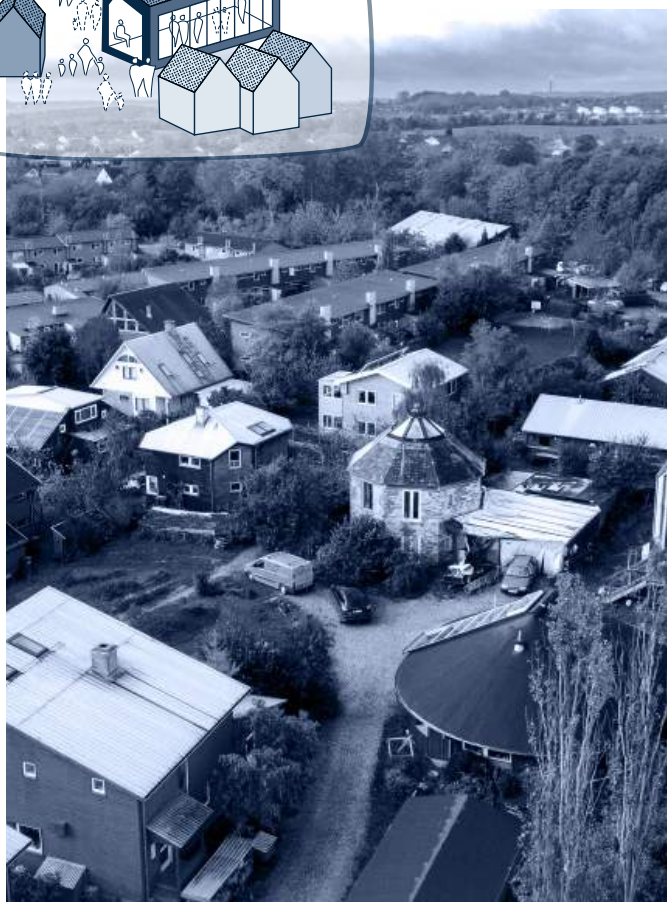
Often co-housing refers to a wide range of different housing constellations which in one way or another centres around the premise of a community. In case of this report, the term will relate to only the following definition. Co-housing communities is a form of living arrangement where individual, full functional dwellings share various facilities and spaces such as common rooms, garden areas, laundry and guest rooms. As this form of housing promote all residents to take part in the community, residents often meet up and engage in social activities occurring internally among the dwellings. Furthermore, the composition of residents varies much in terms of age, occupation, social class, interests etc. However, it is often seen that co-housing communities have restrictions as to who are allowed to move in. In addition to this, the most widespread types of housing constellations are senior co-housing communities, communities for socially disadvantaged, eco-communities and intergenerational co-housing communities.

Architecturally, co-housing communities are characterized by its physical layout which often constitute of individual homes equipped with own kitchen and bathroom. Further, these houses are often centred around shared facilities which enable social interactions and collaboration between residents. Therefore, this type of housing offers a compromise between privacy and community as it allows for residents to either retreat or to take part in social activity. (Bolig - Regulering og Tilsyn, 2024). An example of a co-housing community is Andelssamfundet i Hjortshøj (AIH), Aarhus, 1992, designed by Vandkunsten cf. ill. 37.

Neighbourhood communities

Neighbourhood communities represent small societies within a specific area, where residents live independently yet in close proximity to one another. Within such community, social interactions occur in the surroundings of each dwelling rather than internally in buildings. Therefore, the constructing of new residences necessitates an extension and further enhancement of existing social networks in order to enable for informal and casual get-togethers between neighbours. Likewise, in neighbourhood communities one of the defining parameters is the shared external spaces that residents utilize and enjoy together. These spaces may include pocket parks, playgrounds, community centres as well as shared streets and squares. These shared areas serve as gathering places offering an opportunity for recreation, relaxation, and social interaction which can foster a sense of community among neighbours. In terms of the physical layout, neighbourhood communities often occur in detached house structures placed in close proximity. An example of this is Byhusene in Copenhagen, 2016, designed by Vandkunsten cf. ill. 36.

Ill. 36. Byhusene is a housing project located in Copenhagen which is inspired by the project, Kartoffelrækkerne.



Ill. 37. Andelssamfundet, Aarhus.

Ill. 38. Example of commune housing in Christiania. (Photo: Jesper Ray)

Embracing community living in new housing
Focusing on the future establishment of 15,000 sq m housing in Christiania, it is advantageous to continue the tradition of rethinking conventional living arrangements and, thereby, implementing only community-oriented forms of living in the area. Not only does this accommodate the existing mindset of the Freetown, but it also taps into the current societal trends regarding a need to live closer together in order to comply with environmentally sustainble ways of living. Moreover, it is obvious to continue how the different variations of communities are currently distributed in Christiania since they are implemented according to the ability to let social activity occur internally or externally. Therefore, it is beneficial to implement a combination of commune housing and co-housing communities in the dense downtown area as the urban spaces are often occupied by the public which complicates private encounters between residents in urban settings. On the contrary, neighbourhood communities should ideally be integrated in the eastern area of Christiania as this part is less frequented by visitors which allow for the residents to carry out social activities and local encounters in the public sphere without feeling interrupted.

Ill. 39

Strategy: Promoting various community-oriented forms of living

Design measure
In order to promote community-oriented forms of living and thereby facilitate the integration of new residents into the local social life, the future architecture should be designed and dimensioned to accommodate the following three forms of living: commune housing, co-housing and neighbourhood communities. In addition to this, it is obvious to allow for sharing functions, facilities and spaces among residents. More specifically, neighbourhood communities can be supported by creating smaller, fully functional individual dwellings that share common outdoor areas across residences in the same sub area. Moreover, co-housing communities can be supported through housing that is physically gathered and placed around shared functions and facilities to support formal and informal encounters among residents. Finally, commune housing can be supported through housing with shared internal functions, which is large enough to accommodate more than four adults.

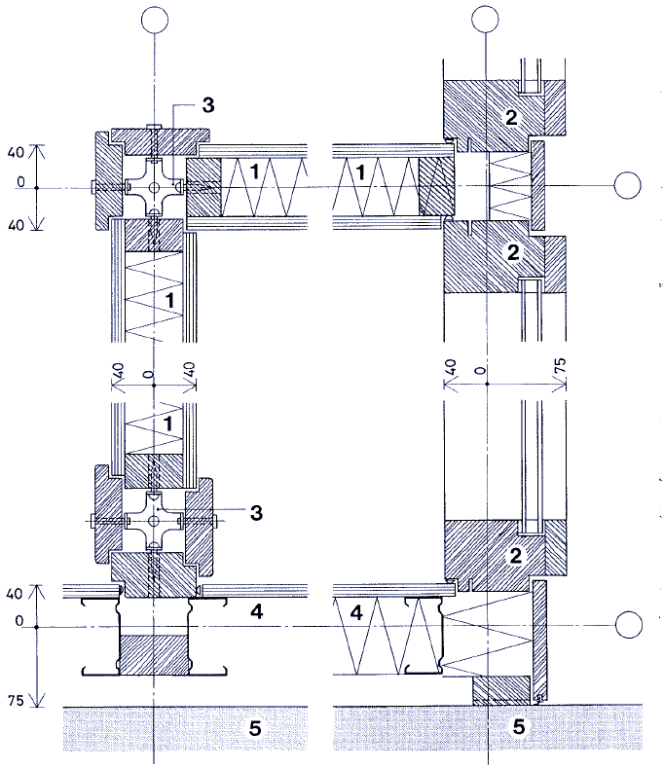
Customisation of dwellings

Often individuals engage and care more about their surroundings if they have an attachment and respect for the environment in which they live. According to psychologist, Ingrid Gehl, by enabling people to influence, customise or adjust the nearby physical environment, this enhances a sense of belonging to the place since the individual need to a higher degree are met in the design (Gehl, 1971). However, this is often difficult to fulfil in rental spaces since tenants typically have limited powers to change or customise the accommodation. Further, this is explained by the fact that rented housing is often subject to a number of restrictions determined by the landlord. Therefore, the following text has the purpose of investigating how public housing can become more flexible in order to facilitate varying needs and ensure a sense of representation and attachment in the future accommodation for newcomers. In order to do so, the public housing project called "Flexibo" will be utilized as a case for examining how customisation and flexibility can be integrated into new housing.

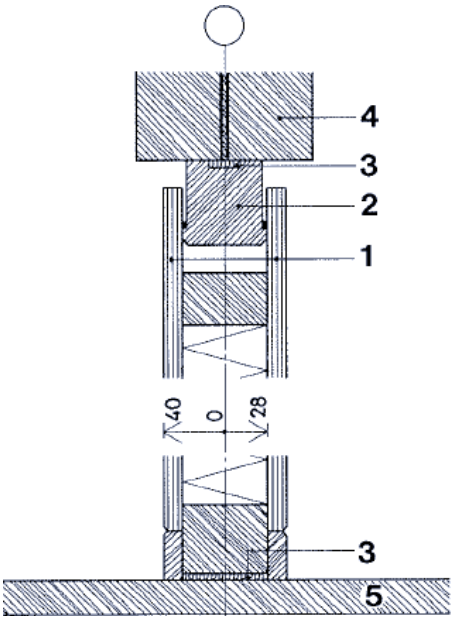
What is Flexibo?
Flexibo is a gathering of 68 public housing units located in Copenhagen S designed by Fællestegnestuen and owned by SAB, which today establishes the framework for a number of unique family homes - all with their own individual, internal layouts. Since the construction of the dwellings in 1976, the units have acted as a symbol of an architectural innovation for their time, as they both explore and experiment with how regular homes can be made internally flexible. Not only do these houses reflect an era of evolving needs in the 1970's but they also represent a magnified focus on integrating community-oriented beliefs into architecture at the time (Holmberg, 1979 a). Further, this trend still influences how various housing projects are composed today making Flexibo a relevant architectural project.

Going into more specific details about how Flexibo aims to offer customisable living arrangements, this is carried out through a grid system of movable walls, enabling residents to reconfigure spaces to suit individual preferences and lifestyles. By following this system, each dwelling can adapt to the individual needs of the specific resident living in a given residence cf. ill. 40. Thus, it should be pointed out that all housing units have been provided with a number of fixed core elements such as kitchens, bathrooms, and entrances which cannot be change as plumbing, installations and electricity are permanently rooted in each house (Hansen, 1978 a). In addition

Ill. 40. Flexibo. (Photo: KAB-Arkiv)



Ill. 41.
Vertical section
1. Partition wall elements. 2. Facade elements. 3. Four connectors with screwed cover strips. 4. Cladding wall. 5. Concrete weight elements.



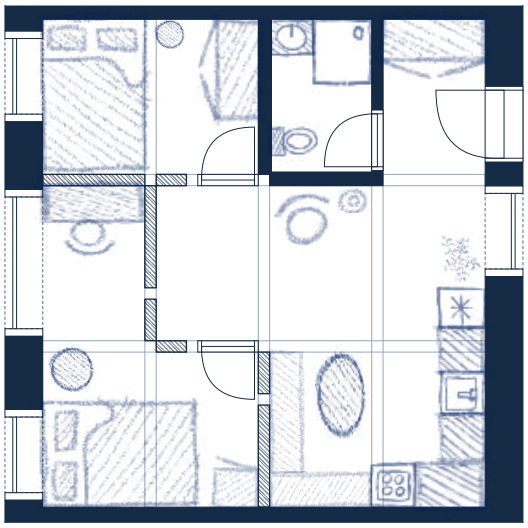
Ill. 42.
Vertical section
1. 12 mm chipboard. 2. Guide rail. 3. Felt
4. Double laminated timber beam. 5. Floor

to this, one might argue that this system solely supports controlled flexibility as the grand framework of the buildings will be predetermined. Further, this system offers the advantage of making the structural limits and system more comprehensible by creating a visible grid structure that is easy to understand. However, if a desire arises by the residents on making the dwellings even more flexible, an additional iteration has been made showing another flexible system based on the same grid size cf. appendix. 4.

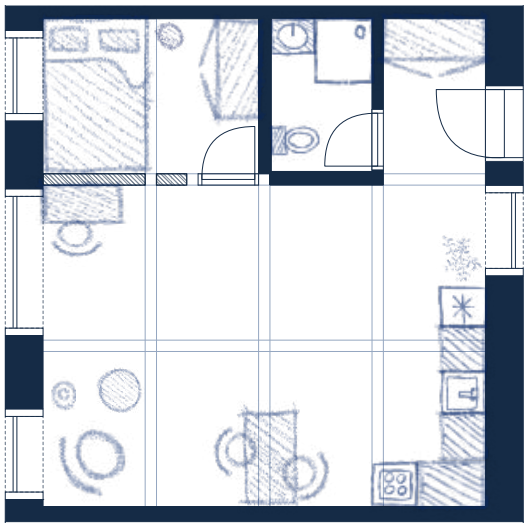
Technical principle of construction

If taking a closer look on the technical aspects of this flexible wall-grid-system, each wall element is assembled with brackets and attached to a continuous grid of beams integrated into the ceilings of the dwellings. Furthermore, brackets are also used to anchor the wall elements onto the floor, featuring small anchoring points in which the brackets can be attached to cf. ill. 41 (Hansen, 1978 a). Even though this facilitates easy construction of rooms, this technical assembly also allows for sound to travel easily between each room even though the flexible walls are insulated. This creates internal noise disturbance which challenges the auditory experience of the dwellings (Holmberg, 1979 b). Therefore, this aspect is a point of attention for future iteration of this flexible wall-grid system.

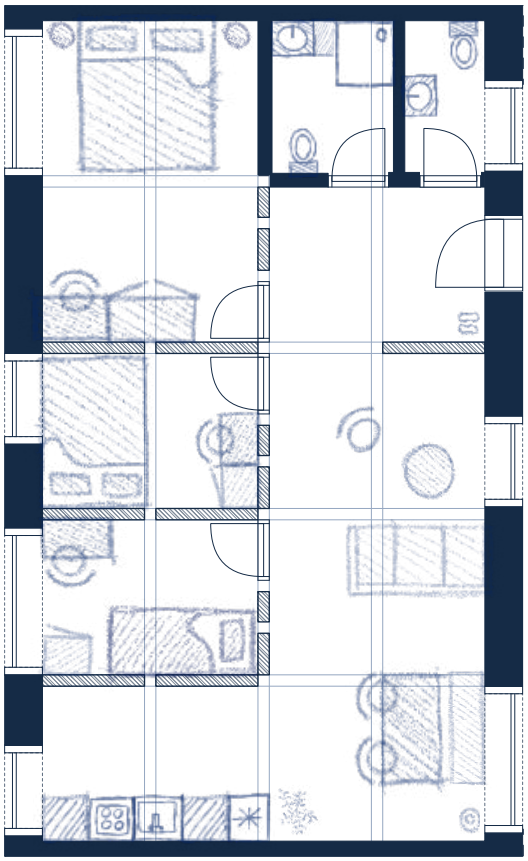
To assist residents, several comprehensive instructions have been prepared for dismantling and installing the partition wall elements (Hansen, 1978 b). This is obvious to repeat if a similar grid system is to be installed in the future housing constructions in Christiania.



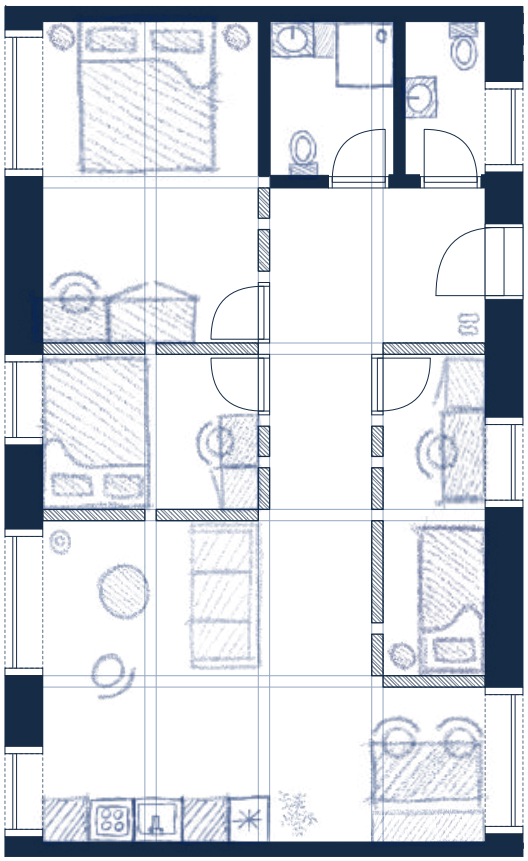
1.a



1.b



2.a



2.b

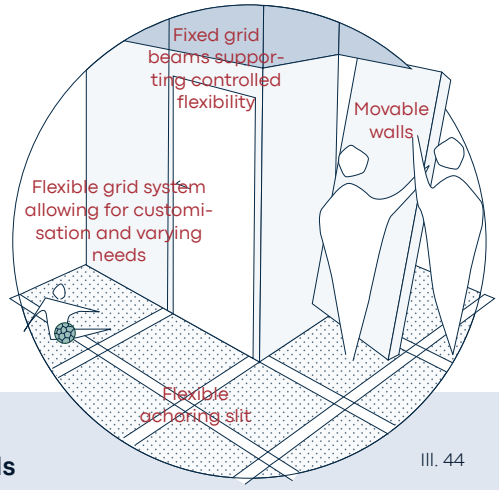
1:100
III. 43

How can this principle be integrated into a large-scale public housing project in Christiania?
This concept of a flexible wall-grid-system possesses a grand potential to benefit the future housing in Christiania. This is explained by the fact that the flexible wall-grid systems afford the accommodation to adapt to the needs of each resident thereby creating the framework for ensuring a sense of representation and attachment for all individuals. Even though the concept of flexible wall elements is currently well-functioning in the case of Flexibo, the concept must be adjusted in order to fit the context of Christiania as it is expected that large-scale housing structures will be built.

First of all, if the grid system is to be implemented into a multiple-floor building, then the grid and core functions must be repeated throughout all floors to ensure stability and follow the same sizing as this will allow for all residences to share the same wall elements. Subsequently, by doing so it will minimize the economic costs of the constructions since a repetition of elements will afford simplified construction technics.

Secondly, the actual sizing of the grid is obvious to modify and make smaller than the case of Flexibo, as this will accommodate a layout of smaller rooms which will challenge people to live more condensed reducing the total resource consumption per resident. This is important in order to support the current trend of implementing climate awareness into how we shape our buildings and cities (Kej, 2023).

Thirdly, due to the fact that internal noise can travel from room to room in the current grid system of Flexibo, a slit must be implemented in the floor mirroring the ceiling grid. This will allow for the wall elements to be rooted onto the floor which will help break the traveling of sound along the floor.



Ill. 44

Strategy: Flexibility in dwellings to adapt to changing needs

Design measure
In order to facilitate a sense of representation and attachment in new dwellings, this project suggests the integration of the structural concept of a grid-system which allows for flexibility and customisation in the internal layout of the residences. More specifically, this report suggests having new constructions follow a 2.2 m x 1.5 m grid size with the wall elements being attached to both the ceiling and floor. On page 72, a number of various layouts of a singular dwelling has been illustrated in order to showcase how the grid system can support various living constellations. Furthermore, this concept of allowing for flexibility in accommodation both complies with the general guidelines for public housing while still tapping into the current building approach found at Christiania. Therefore, this design measure can arguably be perceived as a way of reconciling the agreement of constructing 15.000 sq m of public housing with Christiania.

CO_2-reduced constructions

In general, Christiania has a history of experimenting with recycled materials and thereby challenging the traditional way of building. This has both created the basis for a distinctive architectural aesthetic, enabled economically affordable buildings and reduced the possible CO_2-footprint of the constructions. These are all advantageous qualities, which are ideal to combine with the premise of public housing, as it enables new constructions to be built more sustainable at a lower cost.

When discussing materials and built environments, the emphasis on environmental sustainability has become a rapidly evolving trend and an integral aspect of future constructions. Accordingly, when constructing 15.000 sq m of new housing in Christiania, it is crucial to conduct an investigation of how specific materials influence the climate. The following sections will thus examine a variety of materials and their environmental impact as well as the aesthetics that is inherent when building sustainable.

Before investigating specific materials, it is important to define how this report intends to work with environmental sustainability. Specifically, this examination aims to focus on the CO_2-emission from materials as the building industry is a major source in the current climate change. This is explained by the fact that the industry is currently contributing with 33% of the total CO_2-emission worldwide (Reduction Roadmap, 2022 a). Arguably, the most beneficial solution solving this challenge would be to drastically reduce the quantity of new constructions. However, due to an increasing population and addtional need for accommodations, other measures must be introduced in order to facilitate the requirement for a lower CO_2-emission. Consequently, this report suggests the use of recycled materials from demolished buildings within Christiania and from nearby locations. In relation to this, the European Commission has conducted a study in which they state that the use of recycled material will not be able comply with the general need (Directorate-General for Environment, 2022). This is explained through the rapid expansion of housing constructions. Therefore, an additional solution must be implemented supporting the wish for environmentally friendly materials. According to SBi (Statens Byggeforskningsinstitut), by using biogenic materials, the amount of CO_2-emission can be reduced both in terms of production and storing of CO_2 in the building mass (Rasmussen et al., 2022).

Challenging the official regulations of CO_2-emissons

In order to specify and compare specific materials, a Life Cycle Assessment (LCA) has been conducted in which a buildings Global Warming Potential (GWP) is determined. However, it should be pointed out that in the calculations, transport of materials has not been taken into account given that the required data is currently not available. Still, transportation is a big contributor in the CO_2-emission (Nielsen et al., 2022 b) which is why it will be prioritised to investigate materials that can be acquired within nothern Europe. Due to the fact that the current Danish regulation of allowed CO_2-emisson is quite unambisious, this project will be aiming to fulfil the limit of CO_2-emission defined by Reduction Roadmap. This limit allow for a maxium emission of 0,4 kg CO_2-eq/m_2/year (Reduction Roadmap, 2022 b) whereas the Danish regulation is set to as high as 12 kg CO_2e/m_2/year (Nielsen et al., 2022 a). Since the median housing footprint in Denmark is 9,6 kg CO_2e/m_2/year (Reduction Roadmap, 2022 c), the official restrictions are easily complied with.

By abiding to the limits set by Reduction Roadmap, it is more likely to accommodate the target of limiting the global warming to a maximum of 1.5 °C within the timespan of 7-14 years as stated in the Paris Agreement (Reduction Roadmap, 2022 b).

Ill. 45

Reusing construction materials in new buildings
When determining which specific materials the future building in Christiania should consist of, it would be beneficial to use recycled material given that it offers significant environmental advantages by reducing waste and conserving natural resources. Additionally, reused materials can contribute to cost savings due to their typically lower price compared to new materials. Not only does this makes construction more cost-friendly but it also supports sustainable building practices. Additionally, implementing reused materials in constructions can provide unique aesthetic qualities, giving buildings a distinctive character and historical charm that new materials often lack. In continuation of this, this will arguably also help carrying on the existing atmosphere and identity found in the current environment of Christiania cf. ill. 45. However, it is not always possible to find the same materials in large quantities, unenviably making the aesthetic much less stringent and coherent. In order to give an example, a study has been conducted of a current building in Christiania that is set to be demolished. The study presents an estimate of how much cladding the demolished building would generate. In this specific case, the studied building would provide 228 sq m of reuseable material cf. appendix 5. Based on this study, different design iterations have been prepared showcasing possible aesthetics and structures when having multiple materials collected in a building facade cf. ill. 46.

Selecting specific materials
Since it is unlikely that all new construction in Christiania can consist of solely reused materials, an additional study has been conducted in order to specify what an actual wall element can consist of and how much CO_2 it emits. The study consists of two parts. In the first part of the study, different wall materials are investigated separately in the magnitude of one sq m in order to determine which materials possess the lowest CO_2-emission for each component in the wall cf. appendix 6. In the second part of the study, specific materials are selected and combined to construct a full external wall with the lowest GWP. All these calculation can be found in appendix 7.

Based on this, four different combinations of materials have been selected as the most favourable wall compositions when constructing 15.000 sq m of public housing in Christiania cf. ill. 47.

Vertical | Mono-material building facade

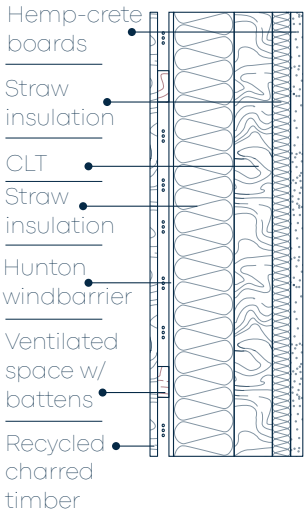
Vertical | Multiple-material building facade

Vertical | Two-material building facade

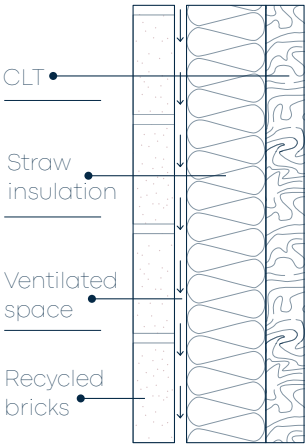
Biaxial | Multiple-material building facade

Ill. 46

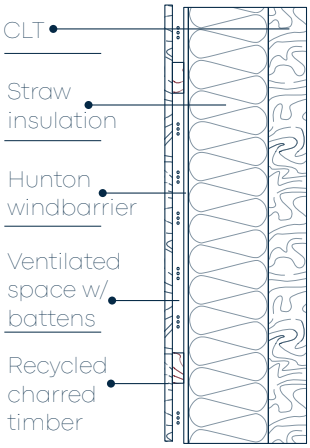
Section of wall constructions



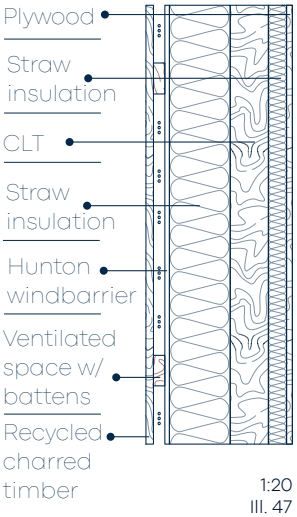
TOTAL GWP
0.233 kg CO_2e/ m_2/year



TOTAL GWP
0.264 kg CO_2e/ m_2/year

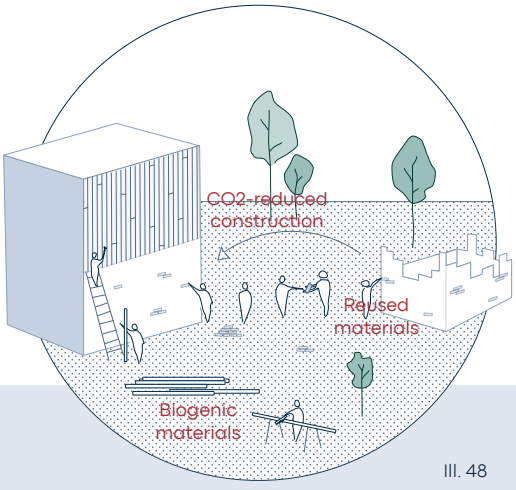


TOTAL GWP
0.226 kg CO_2e/ m_2/year



1:20
Ill. 47

TOTAL GWP
0.271 kg CO_2e/ m_2/year



Ill. 48

Strategy: Environmentally sustainable constructions

Design measure

When constructing 15,000 sq m of public housing, the buildings must only be constructed with the use of biogenic and/or recycled materials as it will follow the current building style and approach at Christiania. Additionally, all decisions regarding the new construction should be climate conscious due to constantly reducing resource access. This approach accommodates integrating environmental sustainability into new construtions and aligns with the community's ethos of environmental responsibility. By prioritising biogenic and recycled materials, it will minimize the environmental impact, reduce waste, and support a circular economy.

Procedural measures

In this section, selected strategic will be presented with the intention of framing the non-physical transformation for the designated development areas

What is user involvement and how is it traditionally implemented?

As previously pointed out in the critical reflection of this report, it can be questioned whether the Danish planning system sufficiently involves citizens in the shaping of urban planning. More specifically, it is often seen that user involvement formally only occurs through a variety of official initiatives such as public hearings. As an example, this is carried out through the adoption of local plans, the preparation of environmental impact assessments (EIA[6]), and the development of strategic environmental assessments (SEA[7]). However, authorities also have the opportunity to voluntarily implement informal initiatives in order to enhance the degree of democracy in urban development processes. Despite this, this project remains critical of whether these informal initiatives are given an adequately priority to substantial impact the process of urban planning in Denmark. Therefore, this report aims to inspire how bottom-up approaches can be incorporated into, specifically, development plans and thereby influence how the interest of various actors are favoured. This is justified by the fact that bottom-up initiatives greatly support an increased sense of ownership, belonging, and respect among locals, which ultimately fosters a high quality of life for the city's residents. Additionally, a great focus on community engagement is highly relevant in planning since, in the end, it is the citizens who inevitably will experience, interact with, and coexist within the urban development thereby making their point of view significant. In the following section, this report will clarify what should be understood by the term "citizen involvement" as well as present a range of strategies for how citizen-involving initiatives can be integrated into the future transformation of Christiania.

Different degrees of involvement

As previously mentioned, user involvement can occur both through formal initiatives that are dictated by the Planning Act (By-, Land- og Kirkeministeriet, 2020 b), and through informal efforts, which are not legally mandated but can be implemented voluntarily by municipalities and other planning authorities to ensure a more inclusive and participatory planning process. Even though, it can be questioned as to whether the informal measures are given enough priority, a growing number of organizations are emerging which centres around aiming to increase community engagement in urban planning. In relation to this, it is obvious to highlight the industry association, Værdibyg (Value-Creating Construction Process). More specifically, Værdibyg was established in 2008 in response to a desire from the construction industry for better dialogue across different professions, stakeholders, and involved actors in the field of planning and construction. To be exact, Værdibyg was established by the following associations: BAT-Kartellet, Bygherreforeningen, DI Byggeri, Danske Arkitektvirksomheder, Foreningen af Rådgivende Ingeniører, Konstruktørforeningen, and TEKNIQ Arbejdsgiverne. (Holst-Olesen, 2024).

[6] ***Note:*** *in danish "miljøvurderinger (VVM)"*
[7] ***Note:*** *in danish "strategiske miljøvurderinger (SMV)"*

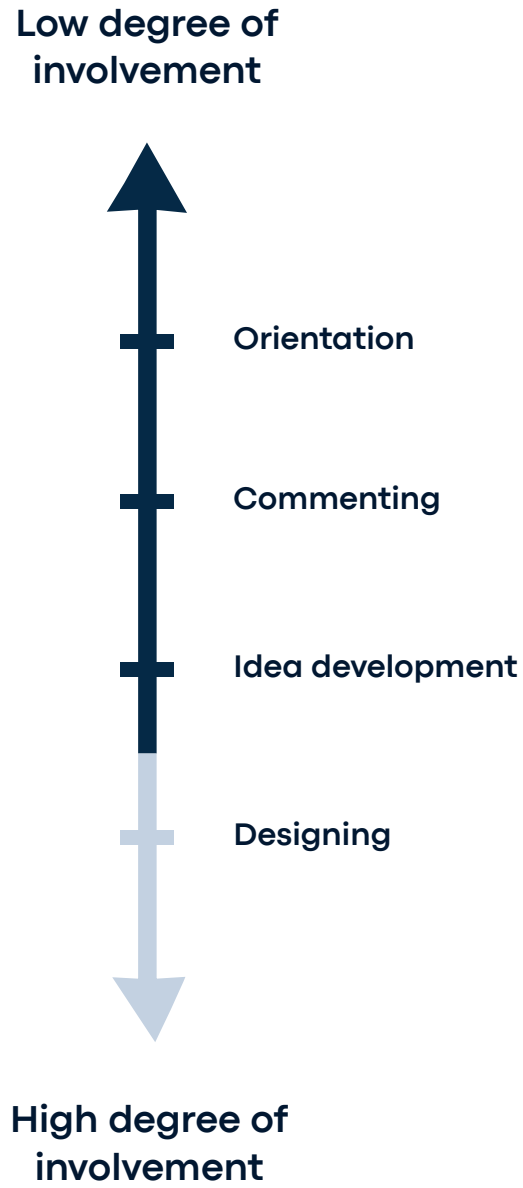
To meet the desire for deeper dialogue across field of planning and construction, Værdibyg has, among other things, published a guide that describes how citizens can be integrated in the development of urban areas in different degrees of involvement. In the guide called `Brugerinvolvering`, the following three levels of interaction between developers and users are identified:

Orientation: *The users are being informed about the project's development as well as the choices and decisions made in the project.*

Commenting: *The users are invited to comment on selected solutions or design ideas.*

Idea development: *The users are directly and actively included in the development of ideas.*
(Thyssen, 2012)

Additional level of citizen-involvement
Though these levels of citizen involvement to a great extent support bottom-up perspectives to influence a project, one might argue that an additional level is missing in this categorisation which would allow for users to be an active actor in the actual designing of an area that is undergoing transformation. By doing so, this would arguably strengthen the dialog between professionals and citizens which would allow for more in-depth gatherings of insights and feedback from potential users. Likewise, this additional level of involvement would potentially also promote an even greater sense of ownership and empowerment among citizens as they are given the possibility to affect the actual shaping of how an area should develop. Therefore, this report sees potential in exploring and concretizing how users can be involved in the actual design process.



Ill. 49

Temporary experiments and social happenings

In the context of urban development, engaging with local communities and potential residents is crucial for fostering a sense of ownership and ensuring that new projects meet the needs and preferences of their users. This report explores two key initiatives: temporary experiments and social happenings, which aim to integrate community feedback and social interaction into the planning and construction processes of the future housing development in Christiania. By implementing these initiatives, a more democratic and inclusive process is likely to be obtained which will inevitably ease the integration of newcomers, enhance a general sense of respect of ownership of new neighbourhoods and support for communities to be strengthened across the Freetown. Therefore, the following sections will delve into the specifics of how these initiatives can be effectively utilized in the development of Christiania.

Ill. 50. Occasionally, Christiania arranges public events. Here, a market takes place in the downtown area.

Temporary experiments

Temporary experiments are an initiative that can be used to ensure continuous learning and adaptation of design solutions throughout a development process, and it allows for experimentations of design and use of spaces (Socialstyrelsen, 2023). By conducting trial actions, construction companies can identify potential challenges and errors, allowing them to make adjustments and improvements before moving on to full-scale production or implementation. The purpose of these actions is thus to gather experience about the physical development of e.g. facade expression, programming of edge zones, floor plans of the dwellings, etc. Furthermore, initiatives like these will strengthen a sense of influence for local and future users. More specifically, this could for instance be done by:

- *Building a full-scale mock-up of a planned dwelling or construction element and invite citizens and future users to inspect them so they can provide feedback on the layout, materials, spaciousness of the residences etc.*

- *Testing different recreational functions in the space between buildings and public areas with a view to investigating the residents' sense of ownership of edge zones and the visitors' perception of privacy. This can be done through the implementation of urban gardening, seating areas, art installations, smaller playground areas etc.*

- *Linking a current Christianite with newcomers and newly established societies in order to introduce new residents to local norms and promote an exchange of knowledge and experiences*

It is important to point out that trial actions largely require support from relevant authorities in order to be tested, approved and realised as this collaboration ensures that these actions align with regulatory standards, safety protocols, and community guidelines.

Social happenings
Social happenings involve planning a variety of events that can support social establishment in an area under development as architecture on its own cannot force people to connect or interact especially when undergoing transformation. In such cases social happenings can be used to gather people based on shared interests thereby encouraging a sense of community between new and current residents. Furthermore, by arranging a series of social events it is possible for potential future residents to gain an understanding of what it means to live at Christiania. Additionally, this initiative aims to strengthen a sense of belonging and ownership among newcomers. Examples of social happenings are as follows:

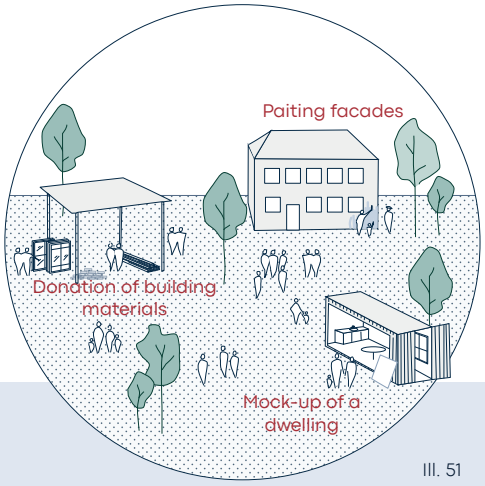
• A photo event where citizens submit photos of places in Christiania that they like, feels safe in, finds interesting etc. (gets people involved in the area and gives the planner an insight into any challenges and potentials).

• A station for the donation of building materials that can be used for facade cladding. However, these materials must be critically assessed by professionals in relation to the degree of use. (Strengthening the sense of ownership + creating character/identity in new buildings)

• Communal dining at Christiania, where interested potential residents can meet local Christianites (Promote interaction between future migrants and Christians).

• Inviting new residents to decorate the service core of each dwelling (possibly in collaboration with an artist) (creates a meeting/interaction between residents + creates character/identity for newly built areas + strengthens the resident's sense of ownership of the local area)

• An open house events where citizens are invited to visit the construction site, meet the project team and ask questions about the design process (can create a sense of community and ownership among the potential users)



III. 51

Strategy: Decision-making in collaboration with citizens

Design measure
In the design process of transforming Christiania, it is crucial to integrate social happenings and temporary experiments in order to ensure an inclusive and efficient development. More specifically, this means that no buildings should be constructed without citizen involvement or trial actions as this allows for different design solutions and concepts to be tested and evaluated in collaboration with the actors involved as well as other interested citizens. Furthermore, in order to support the growth of the local community and strengthen the connection between newcomers and current residents it is significant to arrange social happenings that can create spaces for social engagement.

Activating areas during transformation

The essence of soul, atmosphere, and urban life does not materialize on its own, thus they risk of disappearing as areas undergo change. When existing urban areas are to be transformed or modified, as seen in the case of Christiania, ongoing construction sites become a necessity, inevitably impacting the surrounding vicinity and city life. These construction sites require physical segregation from the public for safety reasons, often achieved through the installation of tall, passive metal fences. In addition to this, the focus of activity on construction sites is often only directed inward toward the construction work itself, as crew accommodations and offices are typically situated away from public view. This dynamic raises the risk of disconnecting construction sites from their surrounding context as the urban edges bordering the construction site often generate inactive, lifeless areas during the construction process. Because of this, the quality and vitality of the area will come under pressure.

At present time, Christiania possesses a vibrant and locally embedded life among both residents and visitors. However, this vitality is at risk of diminishing in areas designated for new housing construction, as these areas will inevitably serve as active construction sites at some point in time. Consequently, selected subareas of Christiania may experience a decline in activity and urban life as in the time span towards 2031. To minimize the risk that future construction sites in Christiania generate inactive, dead zones around their perimeters, the forthcoming case study will examine how Institute for (X) actively seeks to cultivate urban life within a transforming area.

What is Institut for (X)?
Institut for (X) is an independent, non-profit cultural association that has emerged from citizen initiatives. The association was established in 2009 and is currently located in Aarhus C, Denmark. Since its beginning, Institut for (X) has been dedicated to fostering a dynamic laboratory for urban experiments, allowing citizen initiatives to be tested and organically developed when developing cities. The primary purpose of the association is to create a vibrant and recreational district in Aarhus city centre, inspiring experimentation and collaboration across citizen-driven initiatives, culture and creativity, business, public debate, and education (Aarhus Kommune, 2023).

Since Institut for (X) operates on a bottom-up principle, the association is continuously redefined and shaped by its users. Currently, the organization comprises:

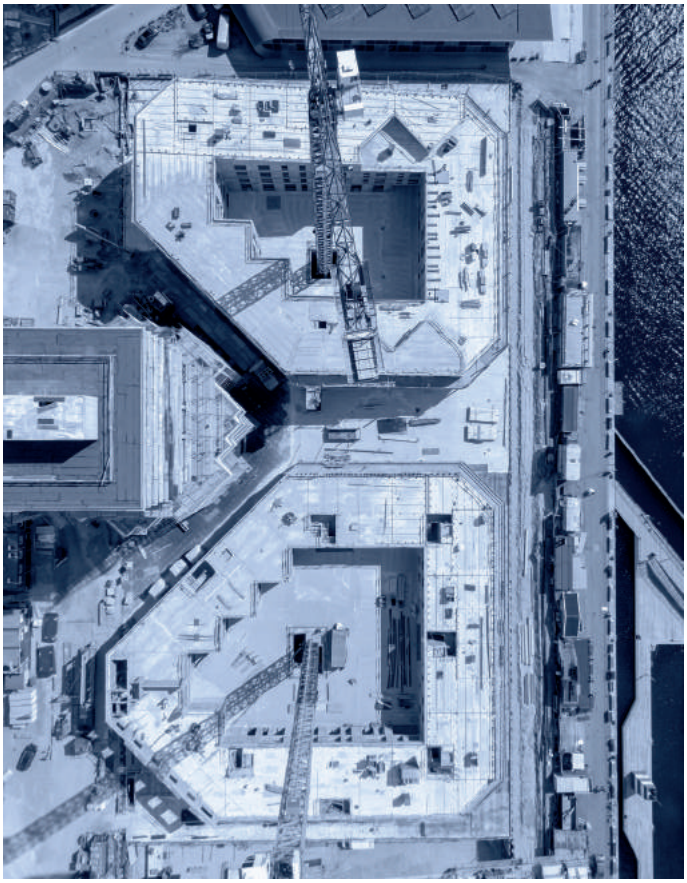
- 600+ active members
- 90 studios and workshops
- 43 companies
- 15 smaller associations
- 5 networks

(Institut for (X), 2023)

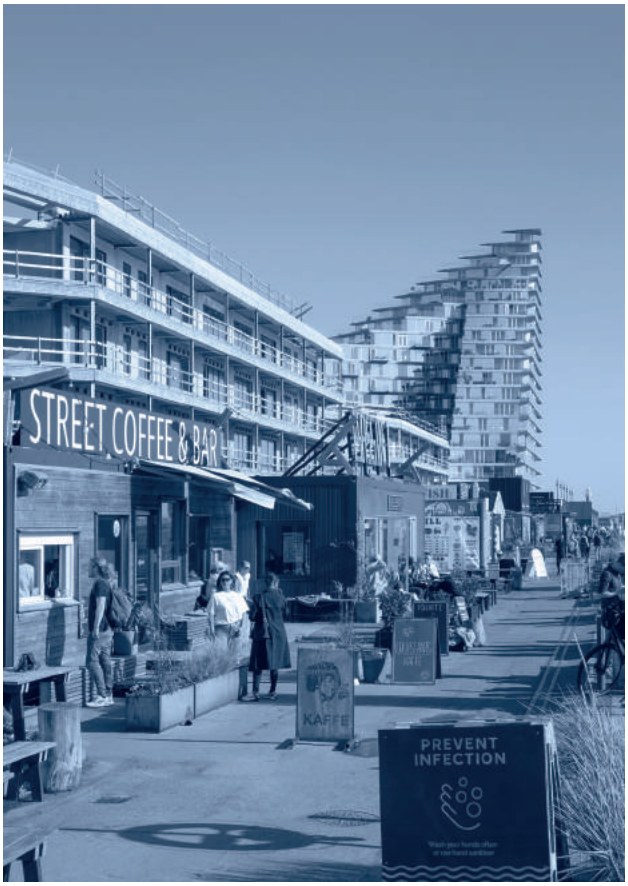
Rethinking the use of urban spaces
Institut for (X) has been actively involved in exploring and developing various concepts for activating underutilized urban spaces during construction processes with the aim to generate value for citizens. This includes initiatives ranging from revitalizing wastelands to organizing social events for current and future users as well as activating urban edges around construction sites.

Specifically, Institut for (X) has developed a concept called "Levende Byggepladshegn" which involves incorporating temporary functions into the fences shielding construction sites. By replace inactive grid or panel fences with various functions and activities oriented towards the public, this concept aims to activate areas which would otherwise be abandoned or uninteresting to engage with. Often the programming of the fences seeks to mimic the future use of the immediate context

Ill. 52. Aarhus Havn.



Ill. 53. Construction site near harbour front.



Ill. 54. Aarhus Havn has undergone a long-term transformation, which is why temporary functions have been implemented in the area to activate it throughout the process.

surrounding the construction site. This causes the activated fences to vary in terms of functions but generally they include a mixture of the following activities: workshop facilities, coworking spaces, exhibition studios, cafes, and small businesses (Wendell & Laursen, 2018).

An example of how the concept of dynamic construction site fencing has been realised, can be seen if taking a closer look at Aarhus Ø, specifically at Basin 7. Here, in the time span from 2019 to present time, a number of containers with temporary functions were set up along the waterfront north of Basin 7. The specific functions of each container were carefully chosen based on the area's maritime character and the future planned functions of the construction site that the activated fence enclosed. These functions included micro-shops, food stalls, and harbour-related activities such as storage for surfboards etc. By implementing these activities into the edge of the construction area, this initiative helped activate an otherwise uninteresting and inactive urban space during a transformation. Likewise, it also contributed to defining and developing what waterfront at Basin 7 looks like today as many of the most successful temporary functions have become rooted in the area and are now permanent features in the area (Nielsen, 2019).

Furthermore, this is a great example of how the concept of dynamic construction site fencing has been utilized as a strategic tool to rethink and redefine the use of urban spaces - whether the spaces are temporary or not. Not only has the concept helped to strengthen the identity of Aarhus Ø by allowing the citizens to engage with an area during a time of transformation, but it has also allowed for a bottom-up, citizen-influenced development of the area as the temporary functions have been changeable if needed.

How can this translate into a process-based design measure that benefits the transformation of Christiania?

This process-oriented design concept outlined above holds significant potential to be integrated into the future development of Christiania, especially as 15,000 sq m of public housing are planned for construction by 2031. This is explained by the fact that the implementation of dynamic construction site fencing in Christiania possesses several potentials which likely will benefit the procedural development of the Freetown. More specifically, potentials consist of the following:

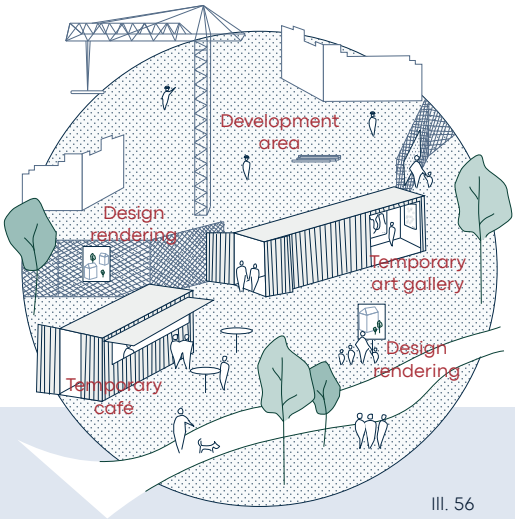
- *Dynamic construction site fencing increases the likelihood of retaining urban life in the near surrounding of construction area by attracting people through various functions and activities. Further, this increased human presence near the area of transformation are expected to support a seamless integration of newcomers into the new neighbourhoods as they may already be familiar with the space from the very first day the construction site fencing is removed.*

- *Dynamic construction site fencing allows for testing and experimenting with how a given area should take shape, as the temporary functions in the fencing can easily be changed or maintained depending on need and desire. This also means that the opinions and inputs from citizens can be relatively easily accommodated, as dynamic construction site fencing allows for ongoing, experience-based adjustments.*

- *Dynamic construction site fencing is based on a bottom-up approach to urban development, which is already a well-known principle in Christiania as their organizational structure is very much influenced by it. This provides a basis for assuming that the concept can be relatively easily integrated into the free town, as community empowerment and local initiatives already are practiced phenomena among local residents in Christiania.*

However, it should be pointed out that this concept requires a good and close dialogue between local stakeholders, developers, and public authorities. If it is not possible to establish and maintain a mutual dialogue between these actors, a concept aligned with dynamic construction site fencing risks failure.

Ill. 55. Today, Aarhus Havn affords a vibrant city life along the harbour front.



Ill. 56

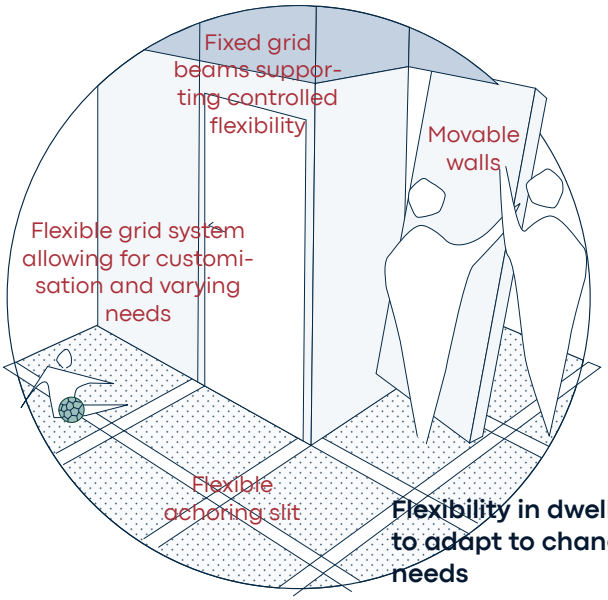
Strategy: Sustain local urban life during transformation

Design measure

To counter the risk of dead spaces occurring near construction sites, the adjacent urban edges should be activated during the time span of transformation. This can be achieved by creating temporary connections, functions, and activities that can occur concurrently with the transformation of a construction area. By implementing temporary functions in the edges of the construction site, activity can be generated in the vicinity of the construction site. This approach enables the preservation, continuation, and ongoing development of the area's soul, atmosphere, and local life even during the transformation process.

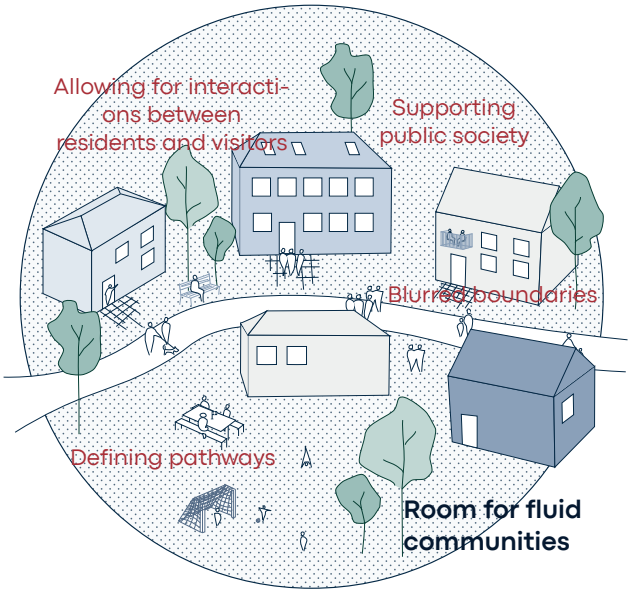
Summary of presented strategies

Here, all mentioned strategies have been summarized in a simplified overview. These strategies are a summary of what this report proposes should influence the transformation Christiania as 15.000 sq m will be constructed in the area. These strategies seek to support a robust transformation which both upholds a respect for the existing environment and societal characteristics of Christiania while also challenging the traditional concept of public housing by allowing for more flexibility and higher degree of sharing in new residentials. Moreover, the strategies also aim to support a democratic process when implementing new housing into Christiania as local citizens are given the opportunity to actively participate in the shaping of the Freetown moving forward.

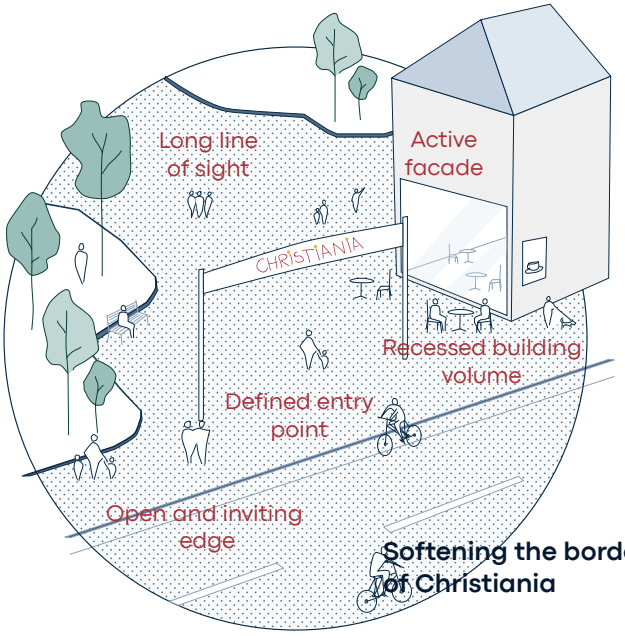


Flexibility in dwellings to adapt to changing needs

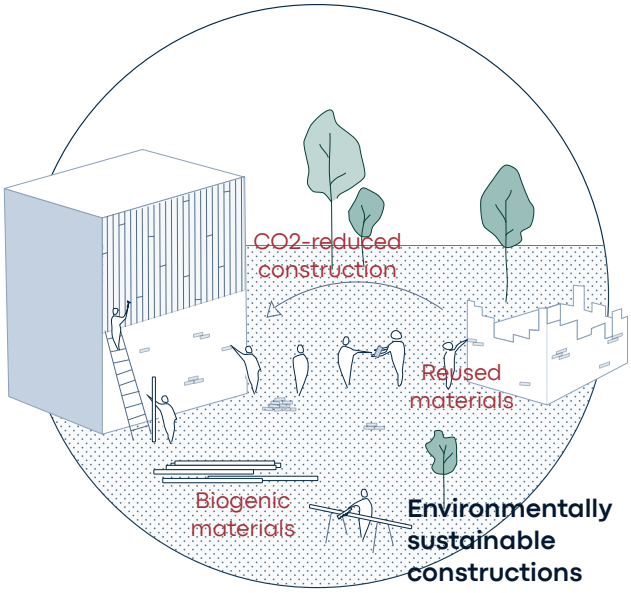
Promoting various community-oriented forms of living



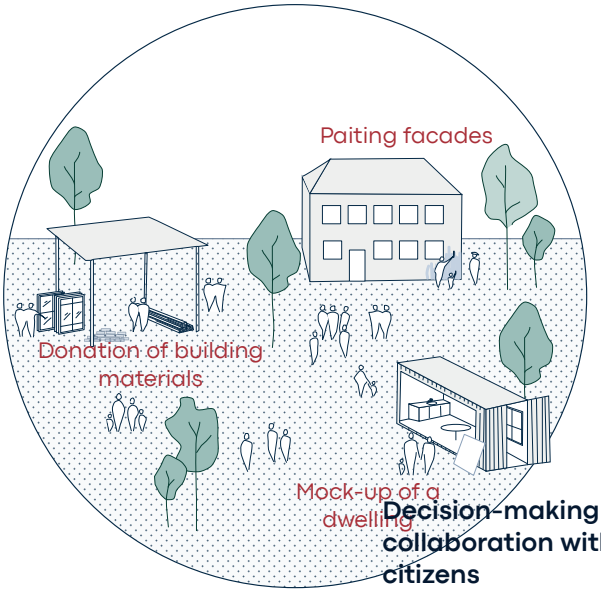
Room for fluid communities



Softening the border of Christiania

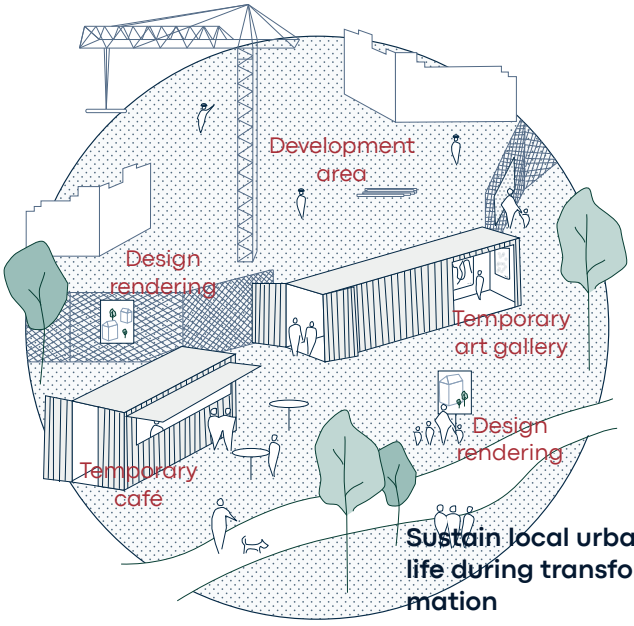


Environmentally sustainable constructions



Decision-making in collaboration with citizens

Ill. 57



Sustain local urban life during transfor-mation

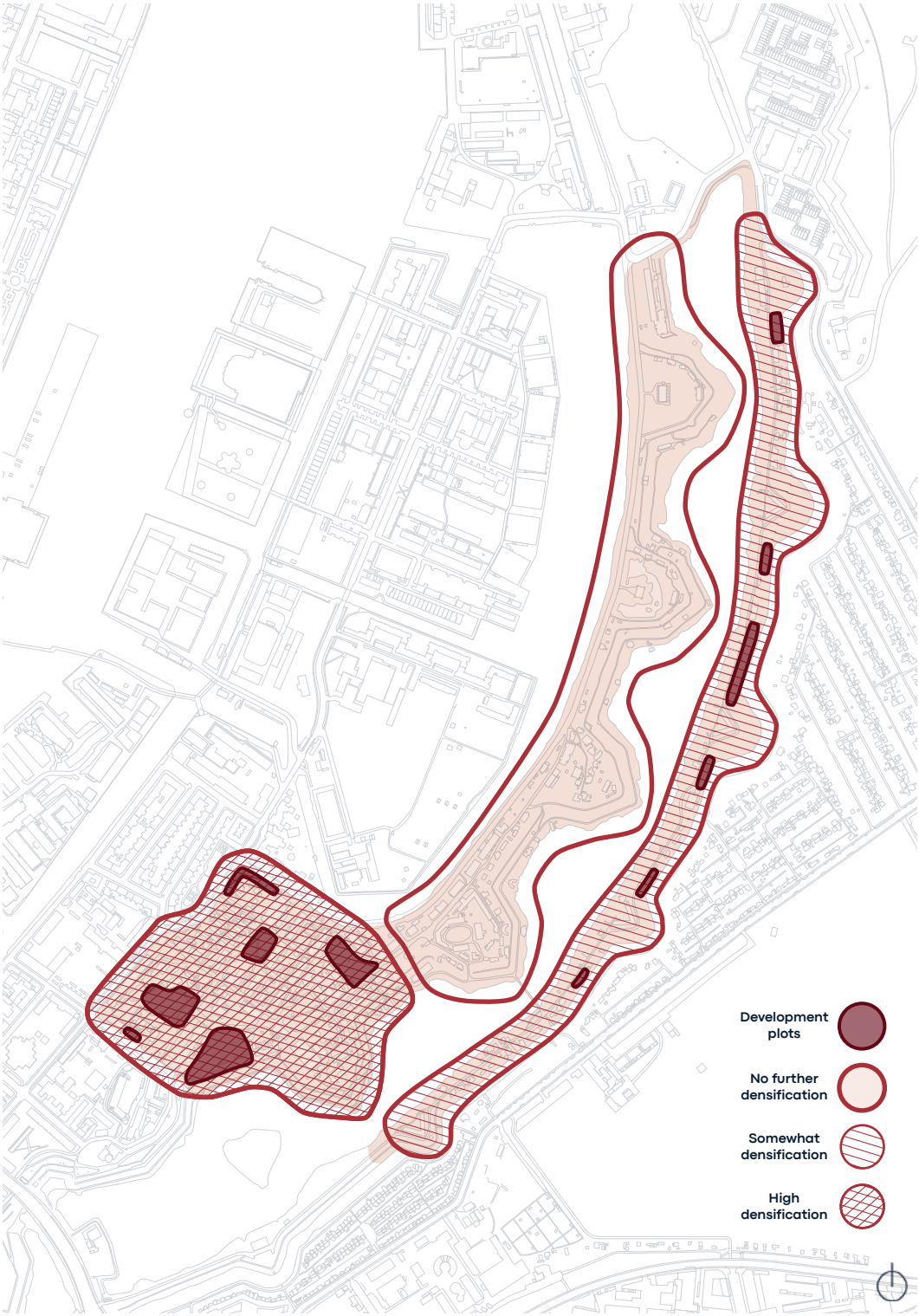
How can strategic measures be translated into a tangible design?

In this section, the previously presented physical and procedural strategies will be manifested into a transformation of Christiania aiming to reconcile the Freetown with the construction of public housing

Physical concept of densification

Based on the conducted analyses, studies and theoretical investigations, it has been determined to divide Christiania into three different categories that reflect the concept of a trade-offer. To elaborate, as there is justified risk that resistance will arise from the residents of Christiania, when developing 15,000 sq m housing, it can be beneficial to make a trade in which some parts of the Freetown are kept untouched whereas others are densified. In such case, the downtown area has been selected as an area potential of densification due to its urban character and architectural structures. Thus is should be pointed out that the green urban space alongside Stadsgaven will be exempted from his densification as a result of its green, recreational value. Lastly, the eastern part of Christiania has been selected to undergo a low densification and development areas have been placed in between of existing neighbourhoods.

Identified development plots
In relation of the strategic concept densification, a variety of development areas have been identified. These are illustrated on ill. 58 where it appears how the construction plots have been somewhat evenly distributed across Christiana in order to support and ease the future integration of newcomers into the existing neighbourhoods and local communities. This strategic allocation still allows for the preservation of green, recreational spaces that possess high value while promoting urban growth throughout the area.



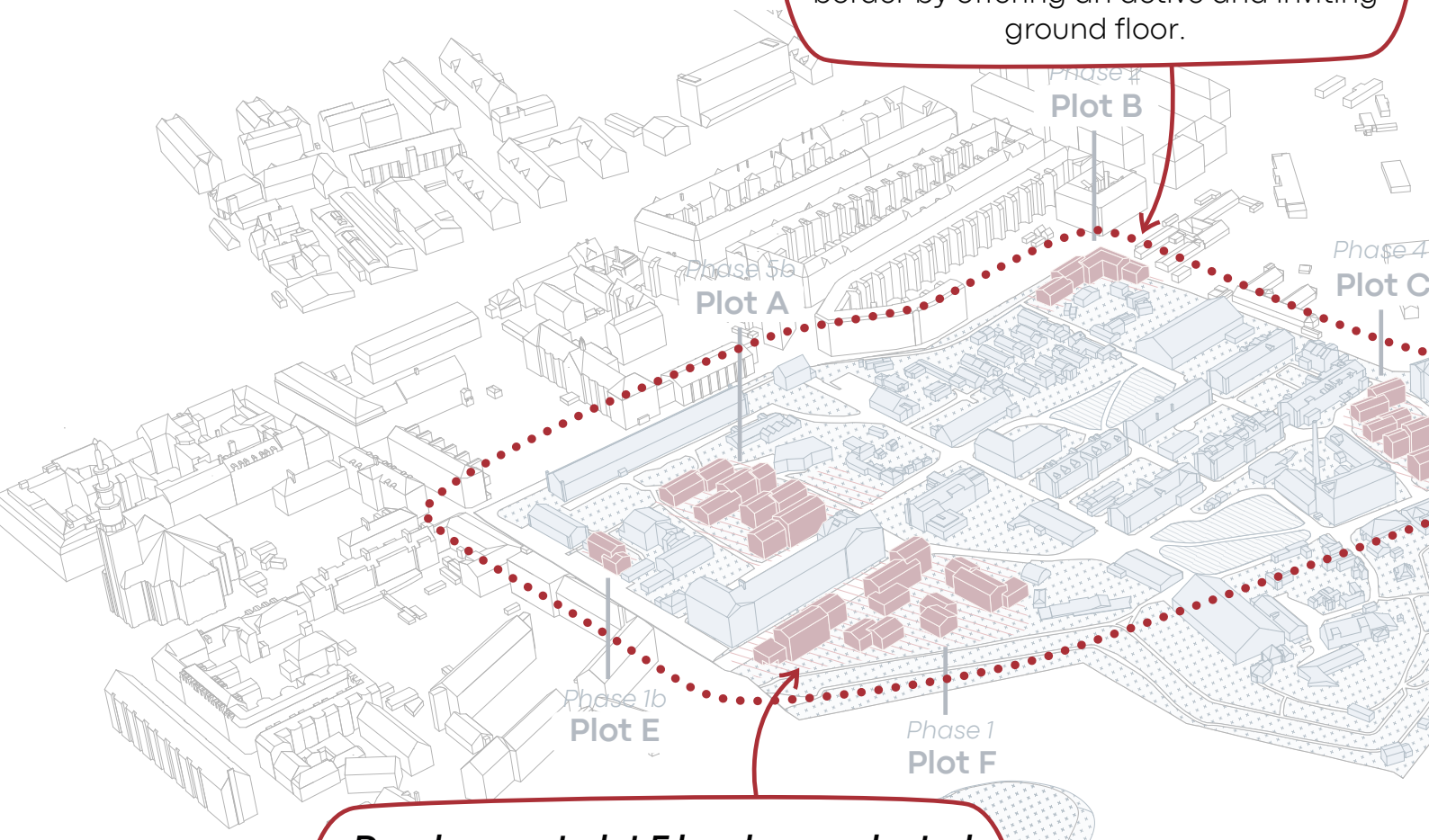
1:10.000
Ill. 58. Concept of densification and selected development areas.

Proposed master plan for Christiania

This development plan and design proposal 'Reconciling Christiania' is a suggestion on how to bring together the unique cultural heritage of Christiania and the agreement of Freetown. This proposal aims to harmonize ment by integrating sustainable building respecting the distinctive social structure and inclusivity, the plan seeks to create odate the current residents but also wel- include community-oriented architecture esig needs of the population. Through these efforts, 'R a resilient, dynamic, and cohesive urban landsc town while addressing contemporary urban chall

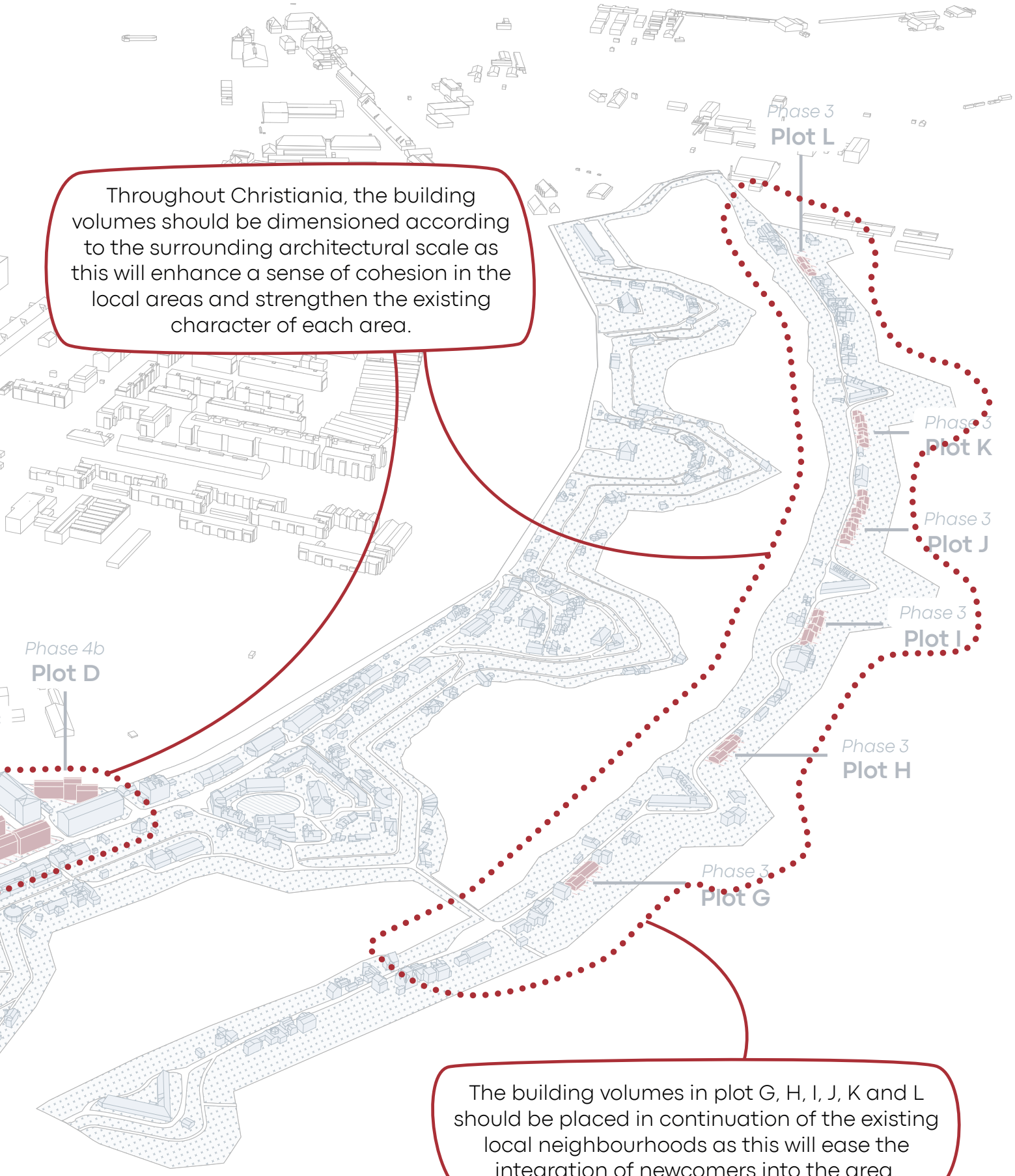
All building volumes should aim to frame courses of movement in between the buildings as this will allow visitors and locals to explore the micro neighbourhoods which will both generate activity and fortify the oppotinity for people to interact.

In development plot B, D and E, the new building volumes should seek to soften the reserved character of Christianias border by offering an active and inviting ground floor.



Development plot F has been selected to be further detailed as an example of how the mentioned strategic measures can be translated into a specific design

DEVELOPMENT AREA EXPECTED FLOOR AREA	PLOT A *3625 sq m*	PLOT B *1585 sq m*	PLOT C *2965 sq m*	PLOT D *1035 sq m*	PLOT E *435 sq m*	PLOT F *4640 sq m*

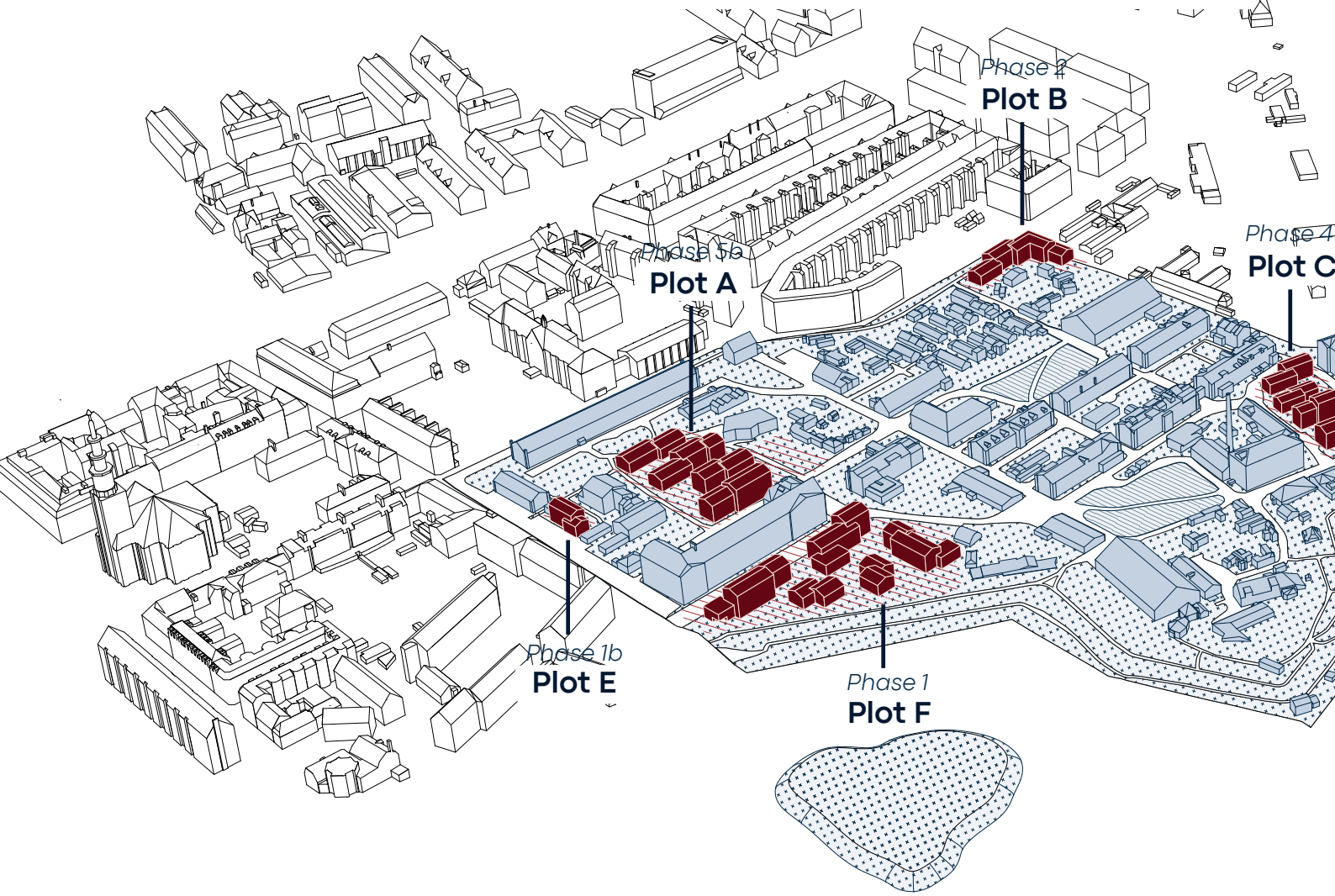


Ill. 59

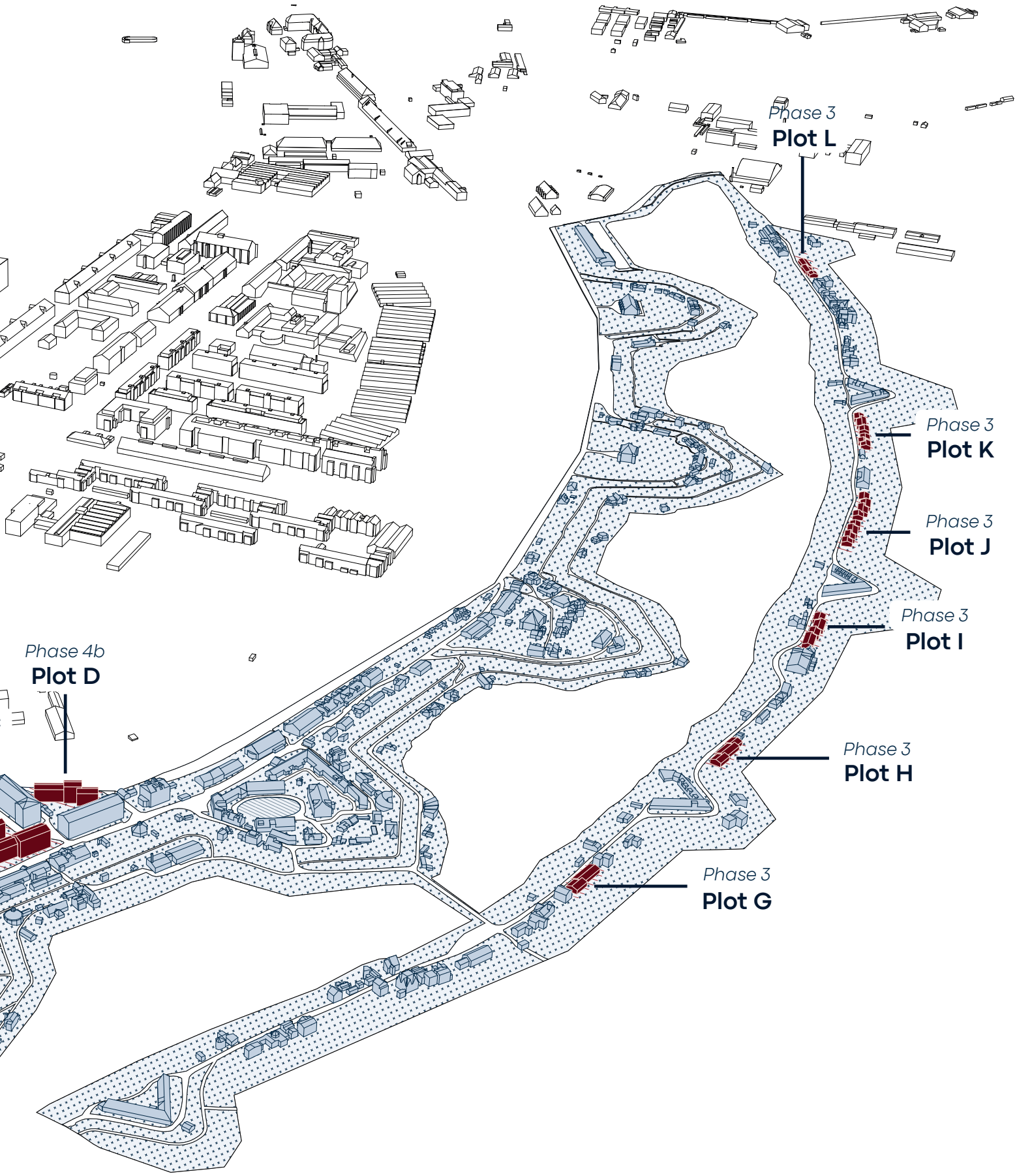
DEVELOPMENT AREA EXPECTED FLOOR AREA	PLOT G *225 sq m*	PLOT H *250 sq m*	PLOT I *375 sq m*	PLOT J *635 sq m*	PLOT K *435 sq m*	PLOT L *300 sq m*

Proposed master plan for Christiania

This development plan and design proposal `Reconciling Christiania` is a suggestion on how to bring together the unique cultural heritage of Christiania and the agreement of constructing 15.000 sq m public housing in the Freetown. This proposal aims to harmonize the existing environment with modern development by integrating sustainable building practices, enhancing community spaces, and respecting the distinctive social structure of the area. By fostering a sense of belonging and inclusivity, the plan seeks to create vibrant neighbourhoods that not only accommodate the current residents but also welcome newcomers. Key elements of the proposal include community-oriented architecture that promotes shared spaces, and flexible design solutions that adapt to the evolving needs of the population. Through these efforts, `Reconciling Christiania` aspires to create a resilient, dynamic, and cohesive urban landscape that honours the spirit of the Freetown while addressing contemporary urban challenges.



DEVELOPMENT AREA	PLOT A	PLOT B	PLOT C	PLOT D	PLOT E	PLOT F
EXPECTED FLOOR AREA	*3625 sq m*	*1585 sq m*	*2965 sq m*	*1035 sq m*	*435 sq m*	*4640 sq m*



Ill. 59

DEVELOPMENT AREA EXPECTED FLOOR AREA	PLOT G *225 sq m*	PLOT H *250 sq m*	PLOT I *375 sq m*	PLOT J *635 sq m*	PLOT K *435 sq m*	PLOT L *300 sq m*

Phased plan accommodating elastic development

This development plan is divided into five phases and is structures according to an expanded time frame of 10 years. This extension of the phase plan positively benefits the reconciling of 15,000 sq m public housing and Christiania as this will gradually incorporate newcomers as well as make the transformation less invasive by making time for a slow fusion. Additionally, by allowing for a longer time perspective it supports an elastic development plan with the possibility of flexibility during the development period by allowing the construction to adapt to future changes as the city might develop throughout the transformation period. In continuation of this, it also enables an option to be influenced by experience, ideas and initiatives that arise among developers, residents and other interested citizens. However, it is important to point out that the extended time frame can also result in challenges since the construction process at Christiania is prolonged, which can lead to a negative perception of Christiania as a construction site under constant development. To accommodate this challenge, this phase plan has been structured in accordance with essential time perspectives, that allow for most development plot to be developed, established and completed before the start-up of new construction areas.

The phases
The overall construction of all selected development area have been parted into five different phases which vary in size and floor square meters. The order in which the constructions will take place have been carefully selected according to ensure that social life can thrive within the Christiania concurrent to the ongoing developments.

Likewise, many considerations have been put into designating which development plot would serve as the catalyst for the overall development, as this area of transformation are expected to carry significant symbolic value for the remaining project. Therefore, in the future process of implementing 15.000 sq m of public housing in Christiania, phase 1 has been selected to include the construction of the largest development area as this will allow for testing a majority of the determined strategies in the early stages of the transformation.

Phase 0
Prior to the building process, phase 0 has been set to initiate communication and dialogue between relevant authorities and all citizens interested in the participating in the future transformation of the Freetown. This initiative derives from a desire to actively promote equality and democracy throughout the entire project making under involvement and repeated gathering of experience a crucial factors to prioritise. By doing so, this will promote a collaborative environment of sharing ideas and knowledge, adressing potential concerns early on, and collecting feedback and experiences from various trial actions and experiments. By fostering open communication at the start of the transformation, this it can ensure alignment between the wishes and expectations from locals citizens and potential users, which can ultimately lead to a more successful and inclusive development process. Therefore, this phase will involve the implementations of experiments and planning of social happenings. To give an example, it would be beneficial to arrange a variety of event that revolves around the language of architecture and urban planning. More specifically, this could help interested citizens to enhance their way of speaking about process of design making them more able to express and provide specific feedback of design iterations.

Phase 1 + 1b
The first phase of the construction is set to involve two areas– plot E and F. More specifically, plot F covers an area of 4850 sq m and includes the construction of approximately 4640 sq m of floor area which is suggested to both include residential purposes, private common spaces and public functions. Moreover, plot E covers an

area of 250 sq m with approximately 435 sq m of floor area. These areas have been selected to be constructed concurrently to each other in order to reduce the total length of the transformation of Christiania thereby instead allowing room for time buffers for each construction phases.

Since phase 1 is set to encompass the largest development area in this development plan (F), the construction is expected to happen over a longer period of time. Therefore, by introducing plot E concurrently in phase 1b, this will serve two purposes: Firstly, symbolically illustrate that not all development areas will undergo extensive construction and secondly, allow for early influx of newcomers to the area. To further elaborate, plot F of phase 1 has been chosen as the first development area since this site enables to test a majority of the identified strategies already in the initial phases of the transformation. This strategic choice ensures that potential critical aspects of the project are addressed early on, setting a strong foundation for the establishment of subsequent phases.

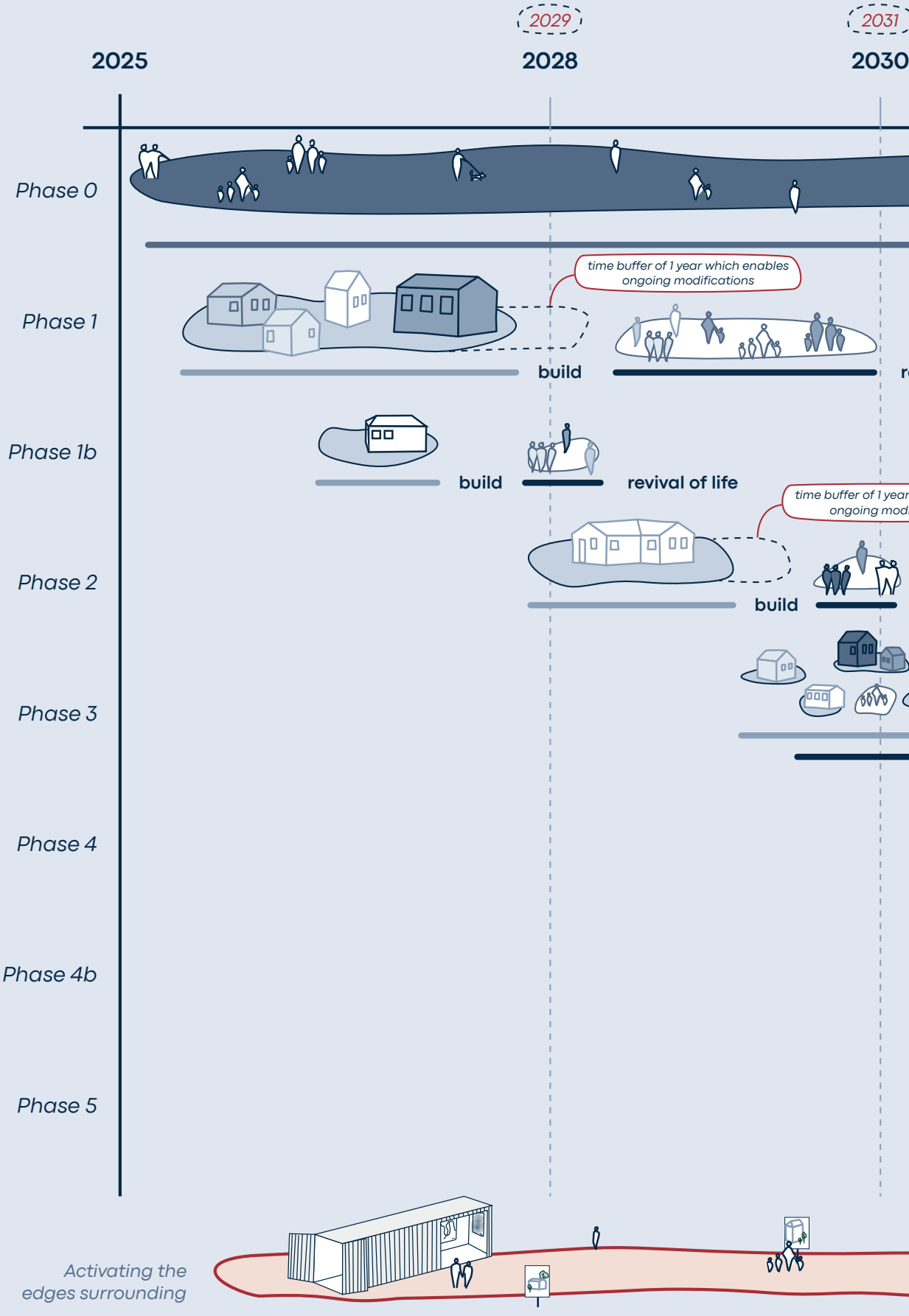
Phase 2
The second phase consists of plot B which is located in the external edge zone of Christiania and covers an area of 1250 sq m with approx. 1585 sq m of floor area both providing housing and public functions. The development plot has been chosen as serve as the second phase of construction due to its high potential to generate new urban value locally if transformed. Additionally, when transforming Christiania, it is crucial to support for an inviting and vibrant edge around the area as this will promote connectivity to the surrounding urban city. By enhancing the edge zone, the area aims to change the perception of Christiania being unwelcoming.

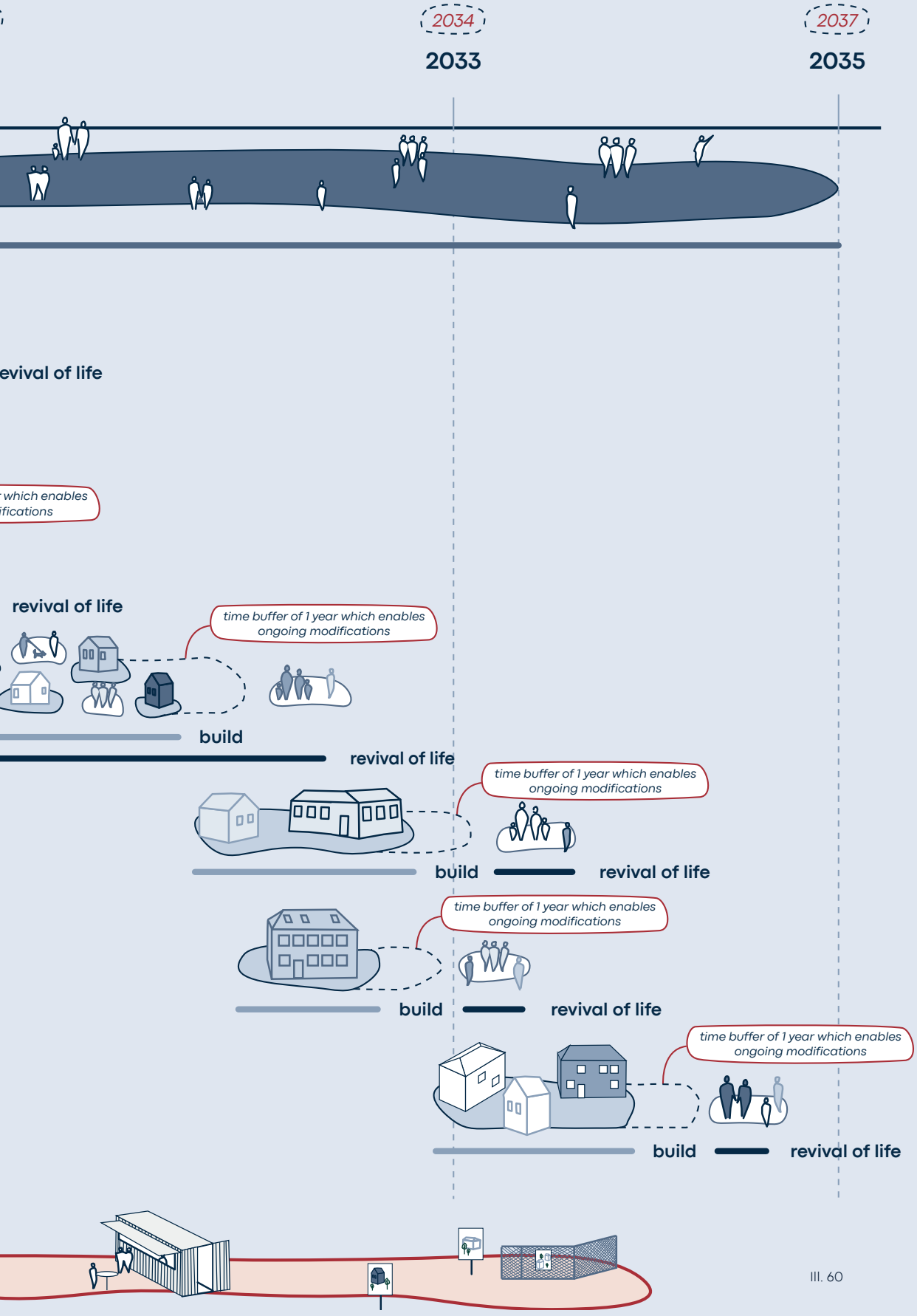
Phase 3
Phase three of the development plan is divided into smaller, individual phases that aims to gradually integrate new neighbouring communities into the existing social structures of Christiania. More specifically, this involves plot G, H, I, J and K. By allowing for each of these plots to finish construction before a new plot is commenced construction, this will help facilitate that each development area is seamlessly integrated into the social and cultural dynamics of the area without disrupting the urban life of the whole sub area. Furthermore, these areas have been chosen in order to provide room for the downtown area to establish itself in the newly developed sites without being constantly influenced by construction. This will arguably assist life to flourish in the already developed areas after serving as construction sites for an extended period of time.

Phase 4 + 4b
The fourth phase of this development plan has been selected to consist of development plot C and D which are located in close physically close connection to each other – one in the external edge zone of Christiania (plot D) and one inside the Freetown (plot C). Currently, these areas are planned for simultaneous development to expedite the construction period in Christiania. However, through the building process it should be assess whether there are sufficient resources, labour, and funds to develop both areas concurrently. By allowing for an ongoing evaluation of this, it will arguably ensure that the total transformation will remain both time efficient and sustainable, carefully prioritising the allocation of resources to meet the evolving needs of the community.

Phase 5
The last phase of this development plan is set to invovle the construction of plot A. This development area comprises of 4250 sq m and are expected to provide approx. 3625 sq m of floor area. This location of this plot has been selected as the last phase of development since it is located in the nearby surroundings of phase 1 and phase 1b thereby allowing for urban life to establish in these areas before continuing with new development.

Time table for development process




2034
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time buffer of 1 year which enables ongoing modifications
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time buffer of 1 year which enables ongoing modifications
build
revival of life

III. 60

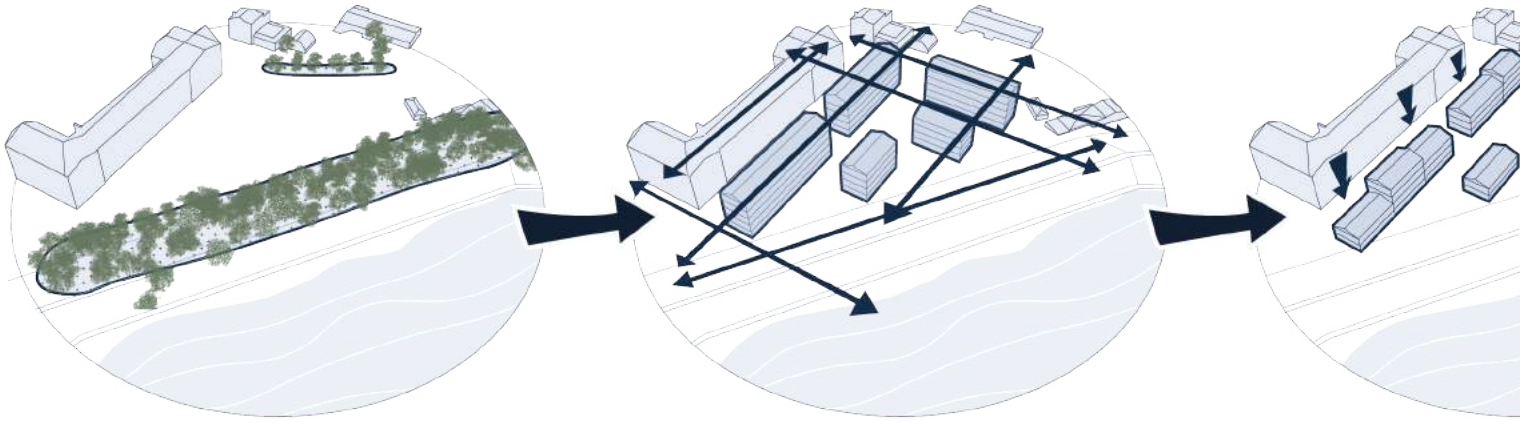
It is important to state that this project views urban development as a comprehensive, long-term process, which means that the development of Christiania does not terminate when the construction of public housing is fully established. While the formal development from a governmental perspective ends, the community-driven transformation continues to unfold. As such, the completion of this development plan does not mark an endpoint, but rather a milestone in the ongoing journey of Christiania`s evolution and growth.

Detailing of a specific development area

On the following pages, a design proposal of a selected development area will be introduced and the shaping of this area will follow the premise of the presented strategies of this report. Although all these strategies apply to all the designated development areas, some strategies may be given more importance than others depending on the specific location of the development plot and its immediate surroundings. In order to simplify the various considerations and reflections that have formed the basis of the presented design proposal, the following pages will highlight the most significant steps of having the selected develoment area take physical form. More specifically, these steps have been divided into the following themes: building volume, external spaces and internal spaces. Lastly, it is important to state that this design proposal must be perceived conceptually due to the fact that the selected area is an example of what a final design ***could*** look like - not what it ***must*** look like.

1:10.000
Ill. 61

Building volume

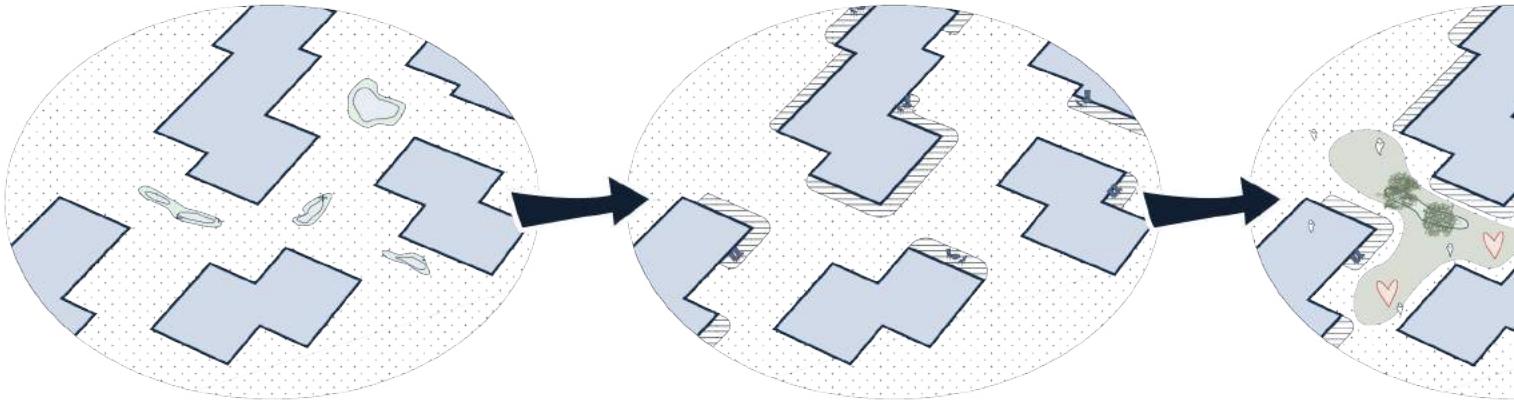


Preservation of trees
In the transformation of this area, a majority of the green structures are preserved to support maintaining recreational quality.

Placement of buildings
When placing building volumes, it is beneficial to continue dominating lines from the architectural context in order to structural coherence. See appendix 8.

Sunl
The height of the bu
justed to ensure a hig
sunlight in the

External spaces



Bluespot
To counteract the risk of flooding, dry detention ponds are incorporated into the urban landscape delaying infiltration.

Edge zones
The edges of each building volume are designed to support informal encounters between both residents and visitors thereby fostering a vibrant urban environment.

Vibrant
Affording interpret
spaces are to be us
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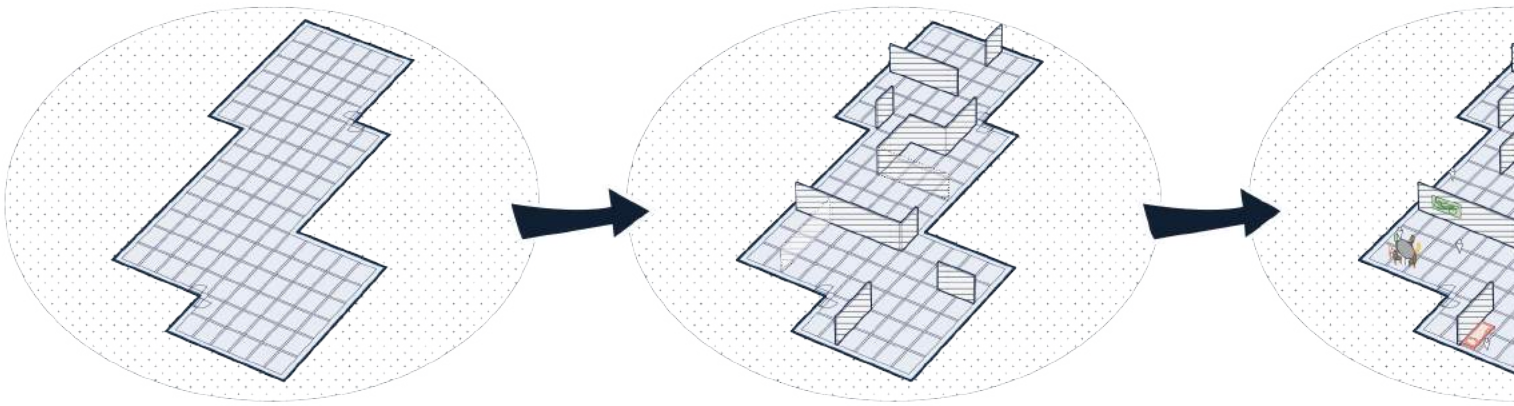
spaces for citizens
commu

Internal spaces



Internal grid
Implementing an internal grid-system in the buildings allows for residents to take up ownership of each dwelling. See appendix 4.

Customisation of dwellings
The flexible grid-system affords all dwellings to be modified based on individual needs of the tenant as well as to adapt to future trends in the society.

Vibrant re
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internal spaces of ea
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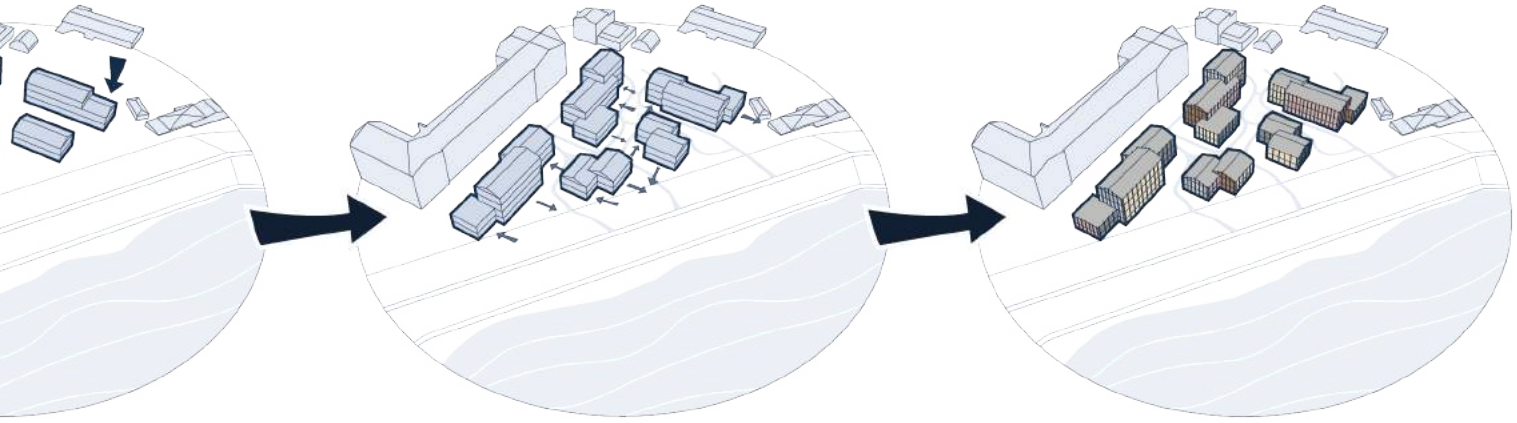
Christ



ight
ilding volumes is ad-
gh amount of natural
urban spaces.

Flow
Building volumes are recessed to create micro urban spaces which are located around paths of flow, as this promotes informal encounters.

Facade
A patchwork of various reused materials are integrated into the buildings facades which help continue the iconic architectual atmosphere of the area. See ill. 46.

spaces
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sed ensures a sense
nd creates inclusive
to strengthen local
unities.

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ch building, a dynam-
eated which support
ent that exists within
tiania.

Ill. 62

Design proposal

When combining all of these design steps into a cohesive design, enjoyable neighbourhoods with vibrant urban life and sense of representation are provided.

Presentation of selected development plot

In this section, development plot F will be presented through a series of varying visual materials such as plans, sections, renderings, diagrams and calculations.

Rendering of urban space

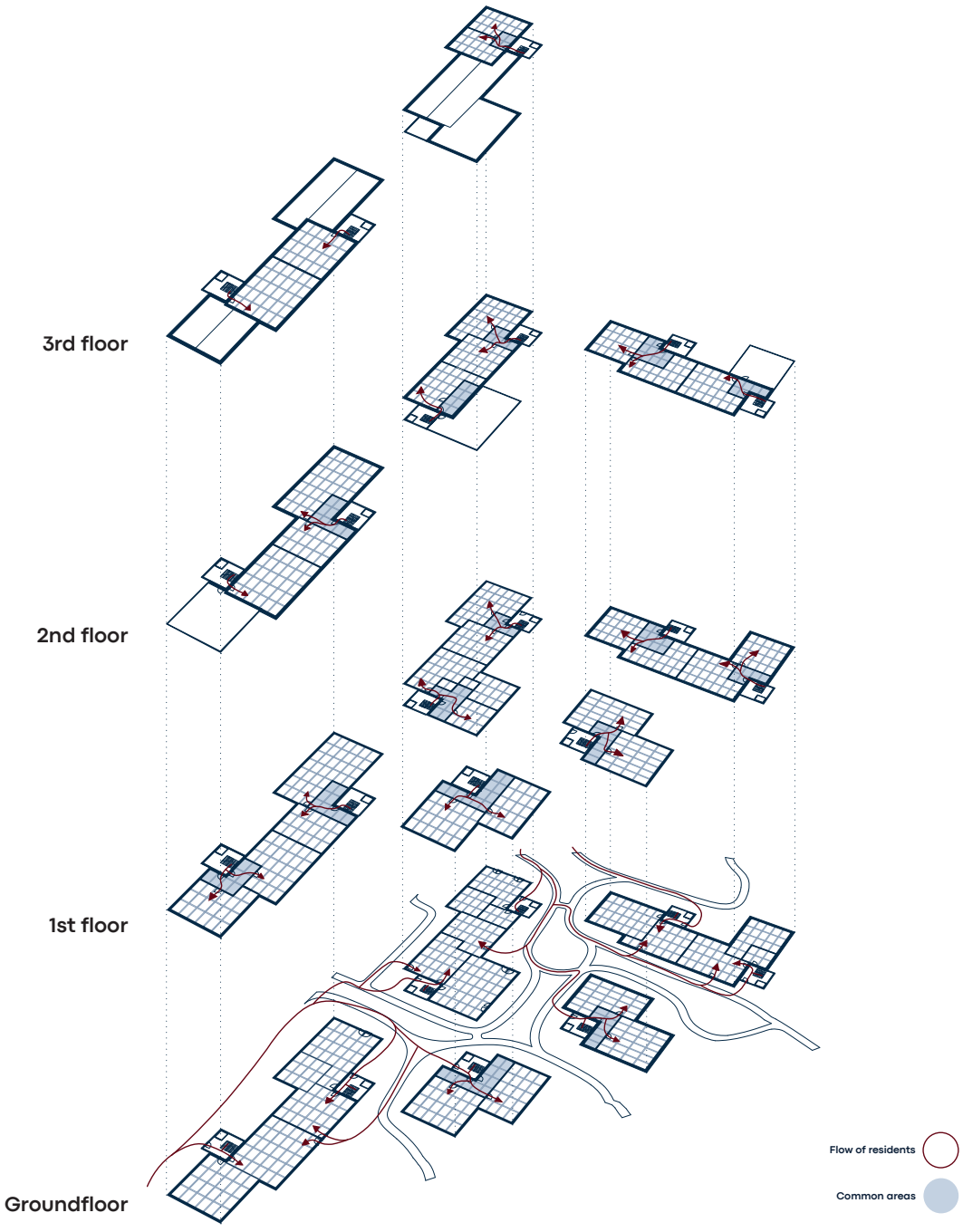
Room for diverse activity and informal encounters

Ill. 63

1:500
Ill. 64

Moving through private and public spheres

To demonstrate the accessibility of the building for its residents, an overview of the overall flow has been provided. Specifically, these movements have been organized based on the primary users of the building structure. This illustration allows for a clear understanding of how different dwelling within the building is accessed through common rooms thereby fostering informal meetings between neighbours as well as strengthening a sense of community among residents living in the same building volume.



Ill. 65

Floor plans of building volumes

Dwelling

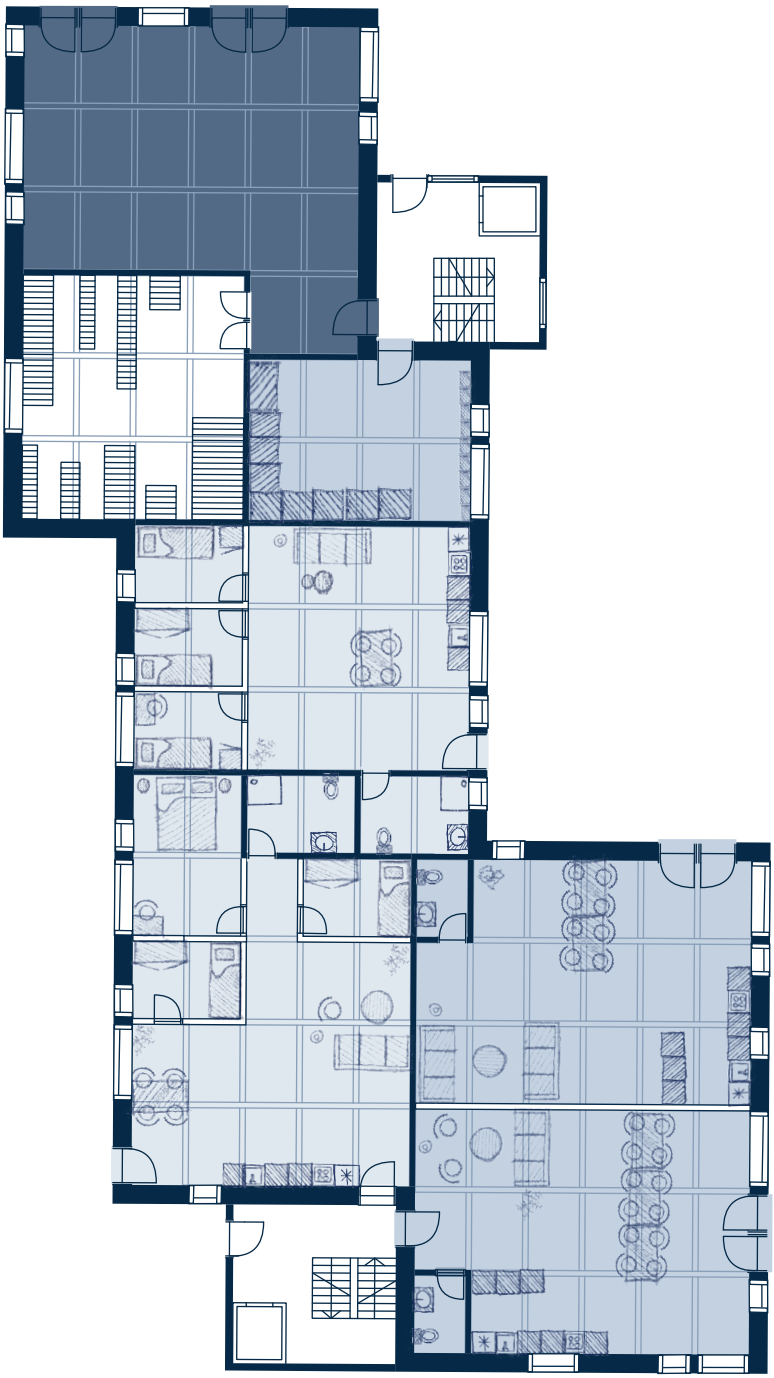
Common spaces

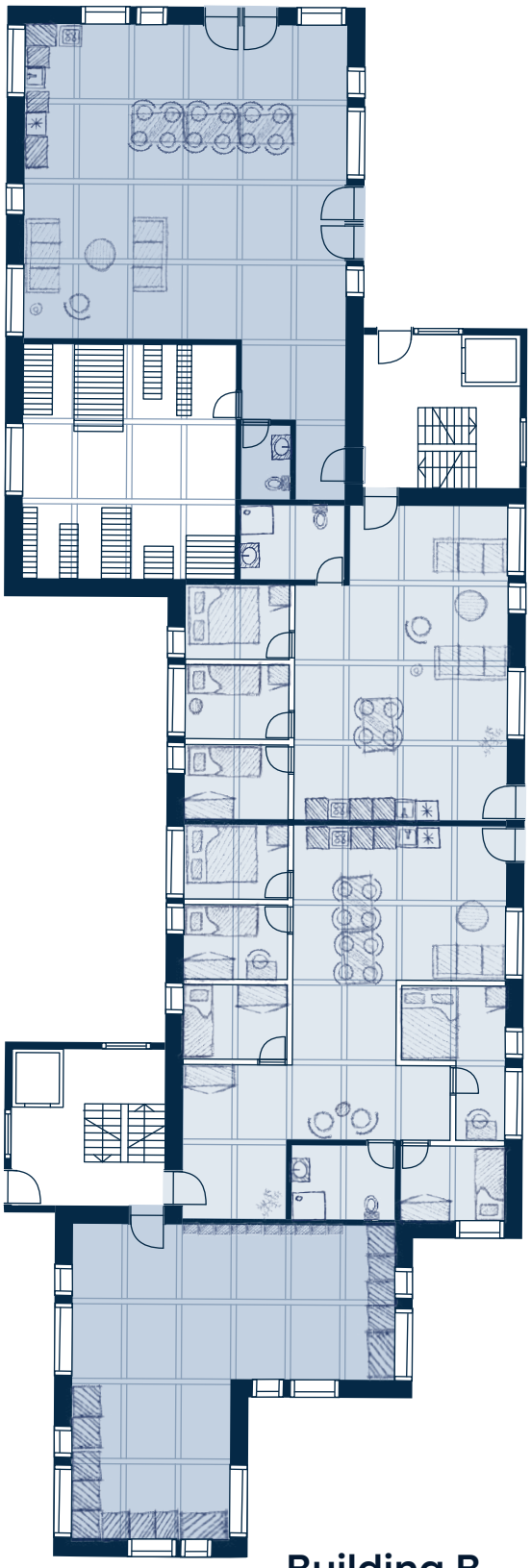
Business / workshops

Building A

Ground floor level

Size of floor area 443 sq m

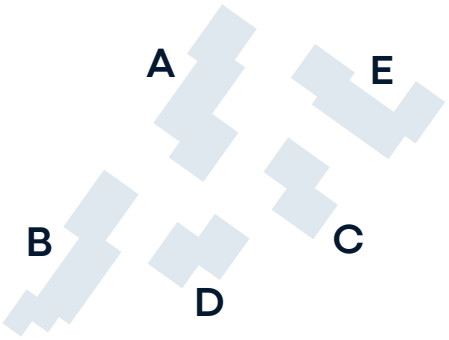


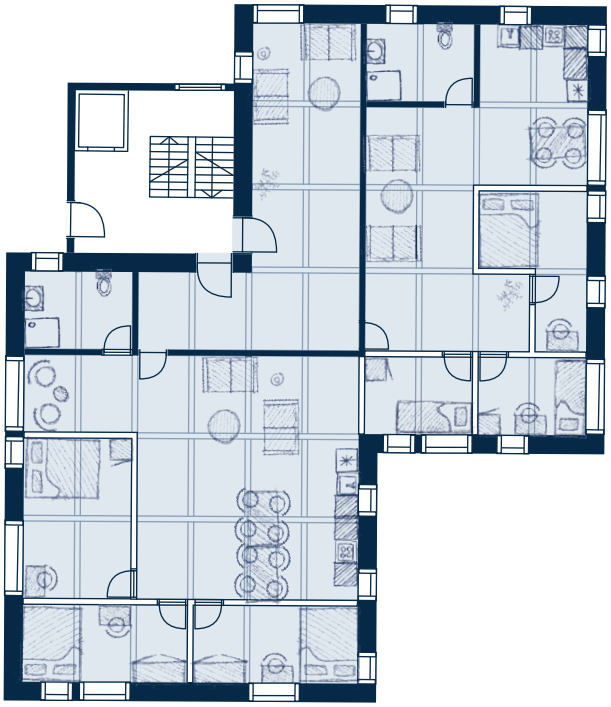


Building B

Ground floor level

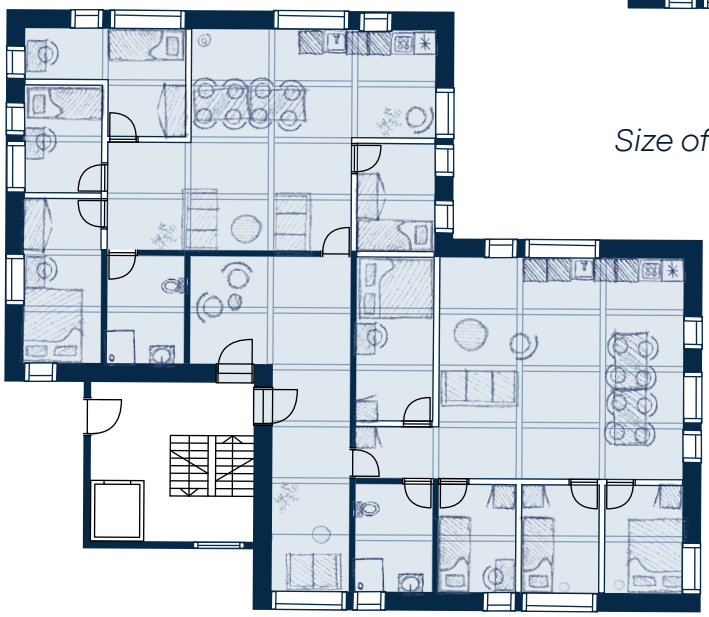
Size of floor area 417 sq m





Building C

Ground floor level
Size of floor area 213 sq m



Building C

Ground floor level
Size of floor area 213 sq m

Building E

Ground floor level
Size of floor area 374 sq m

1:200
Ill. 66

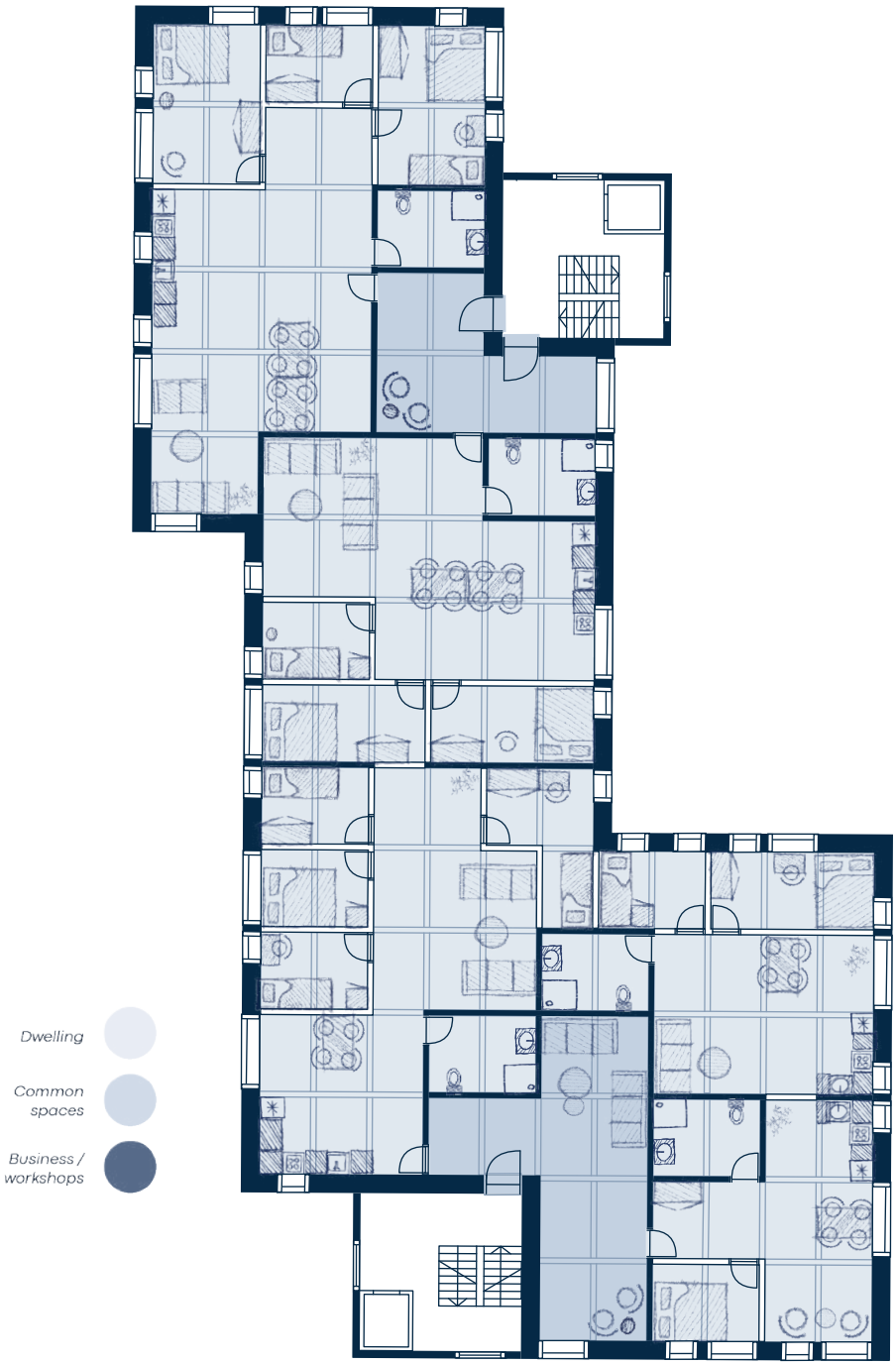
First, second and third floor level

Floor plans of building A

Building A

1st floor level

Size of floor area 443 sq m

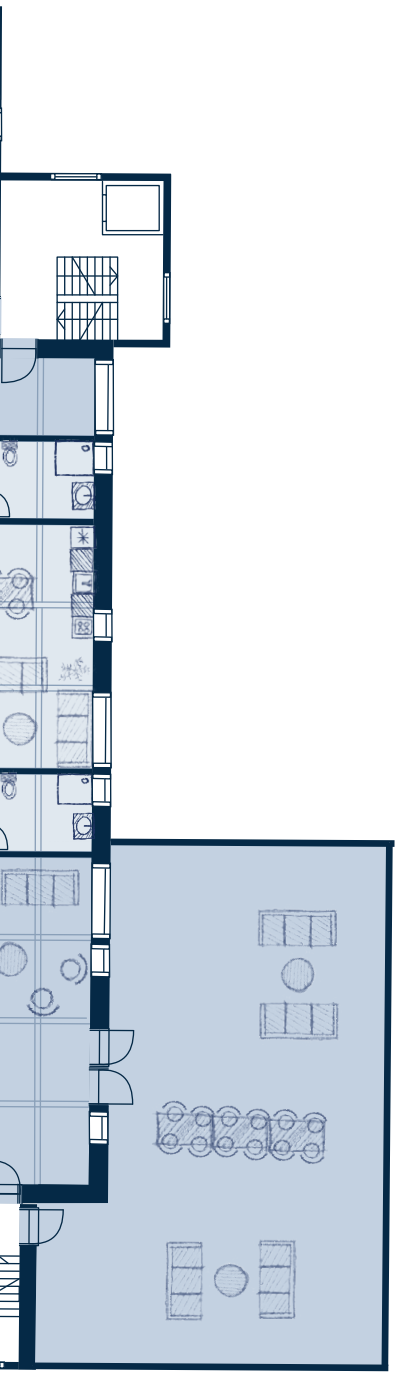


Building A

2nd floor level

Size of floor area 328 sq m

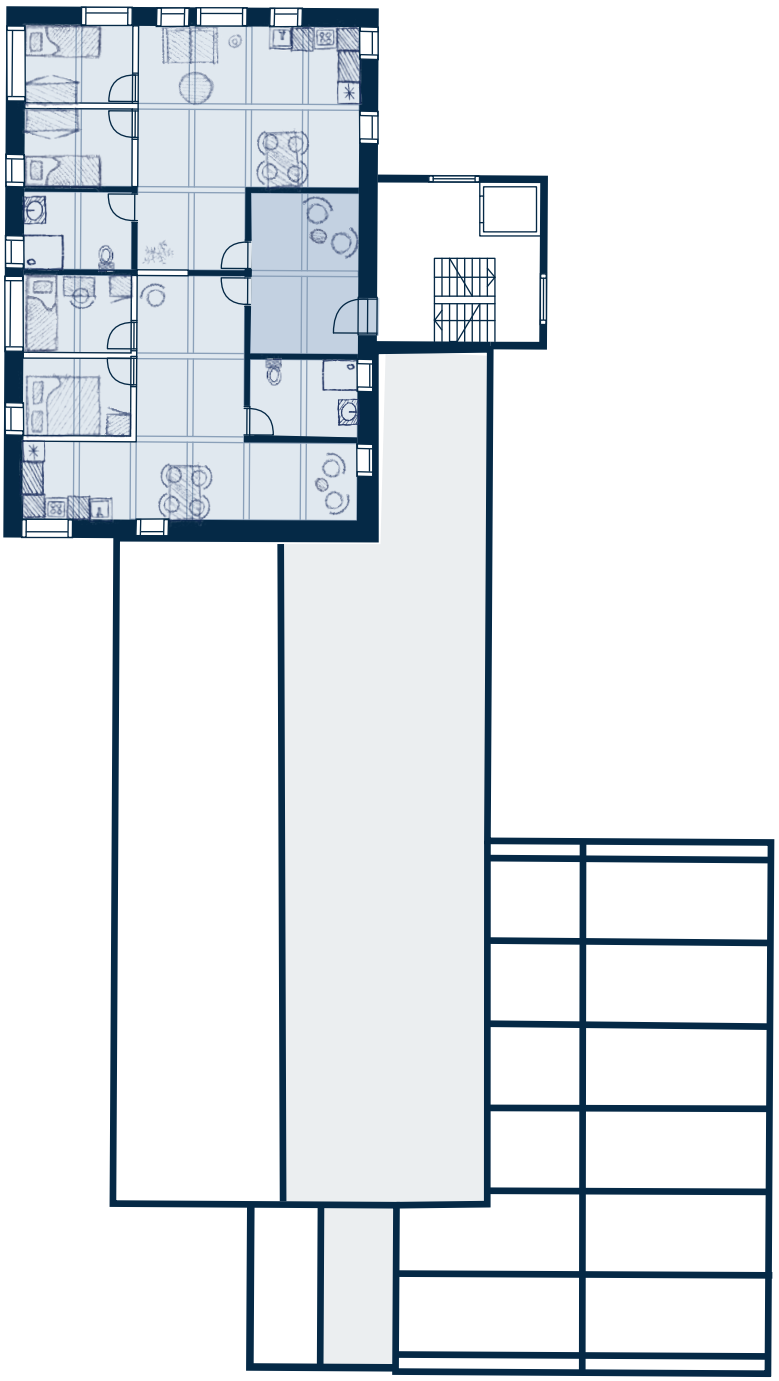
m



Building A

3rd floor level

Size of floor area 138 sq m



1:200
III. 67

Elevation of building facade

1:100
Ill. 68

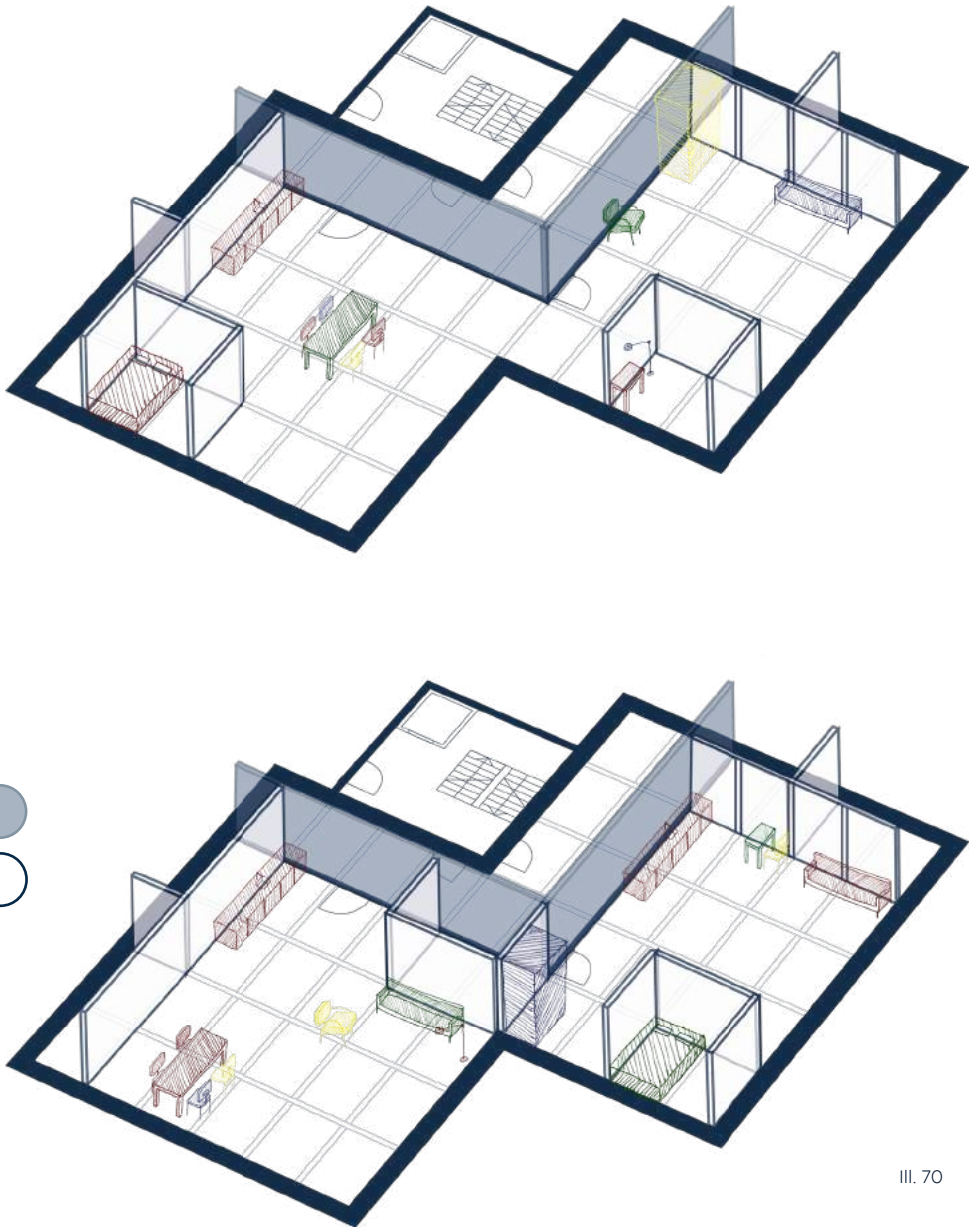
Rendering of internal space

Adaptable spaces of living

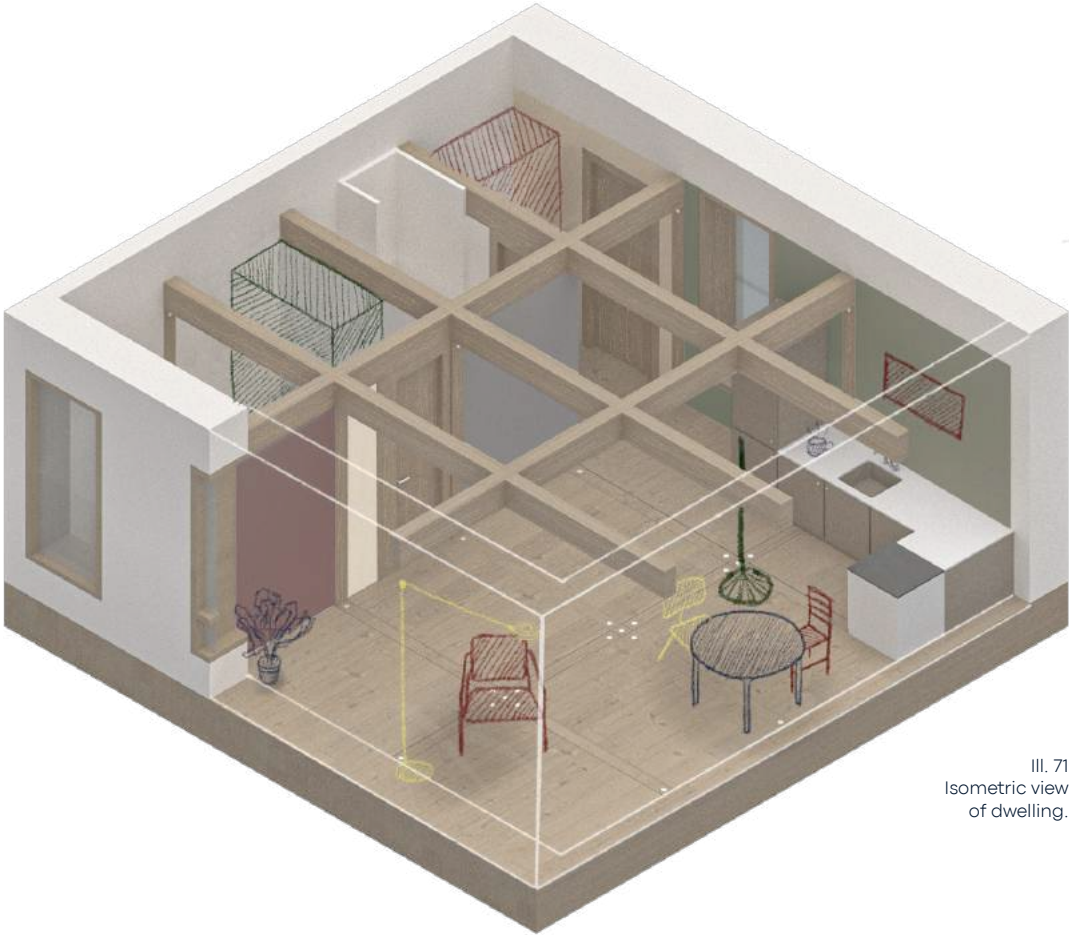
Ill. 69

Sharing space among neighbours

This illustration aims to demonstrate how the size of the dwelling can vary according to the requirements and needs of individual residents. As depicted, the individual floors are interconnected, providing the flexibility to either close off or open the passage between the two separate dwellings using the designed grid system. This flexibility allows residents to adapt the layout to their specific needs, whether they prefer separate living spaces or a more interconnected environment.



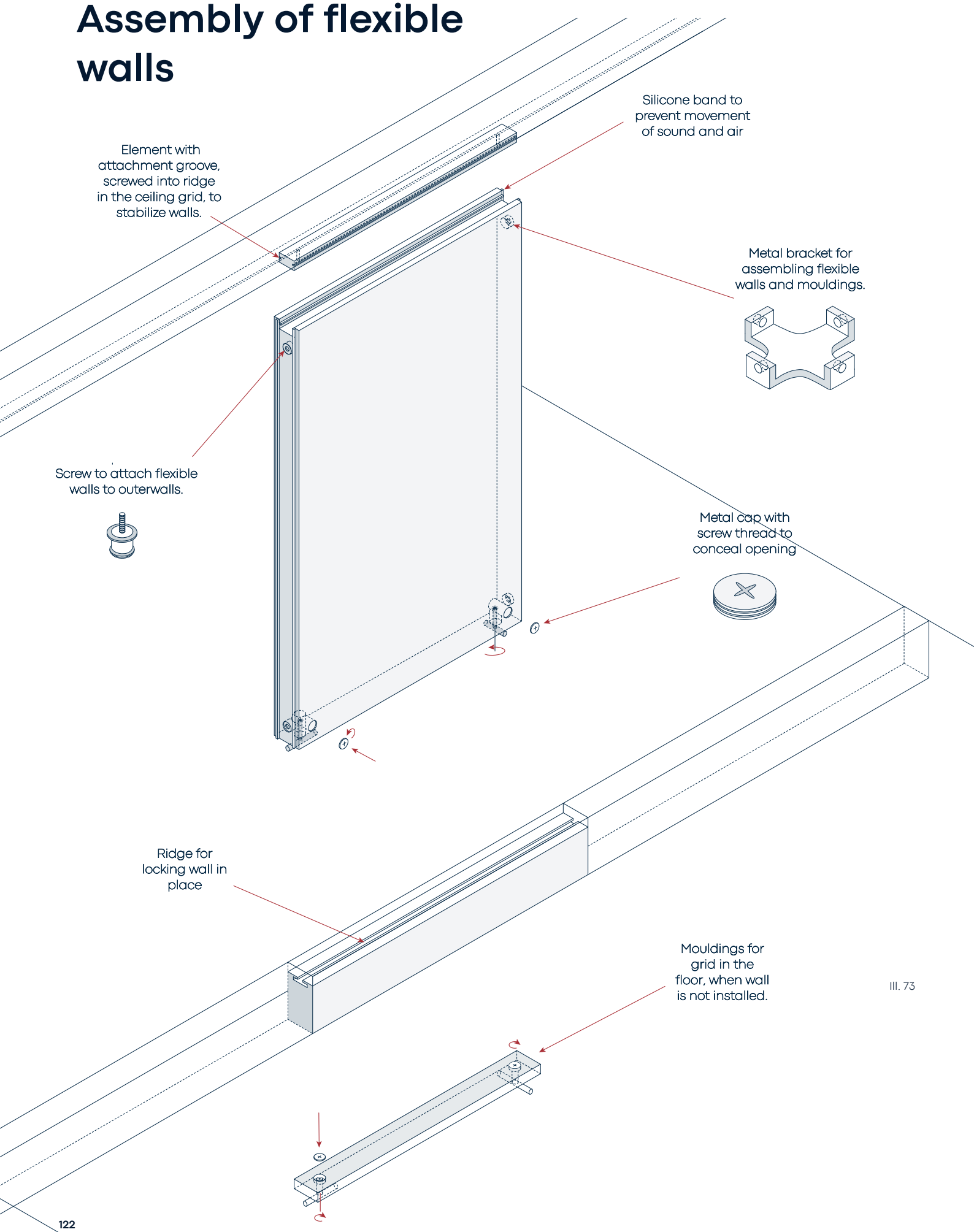
Ill. 70



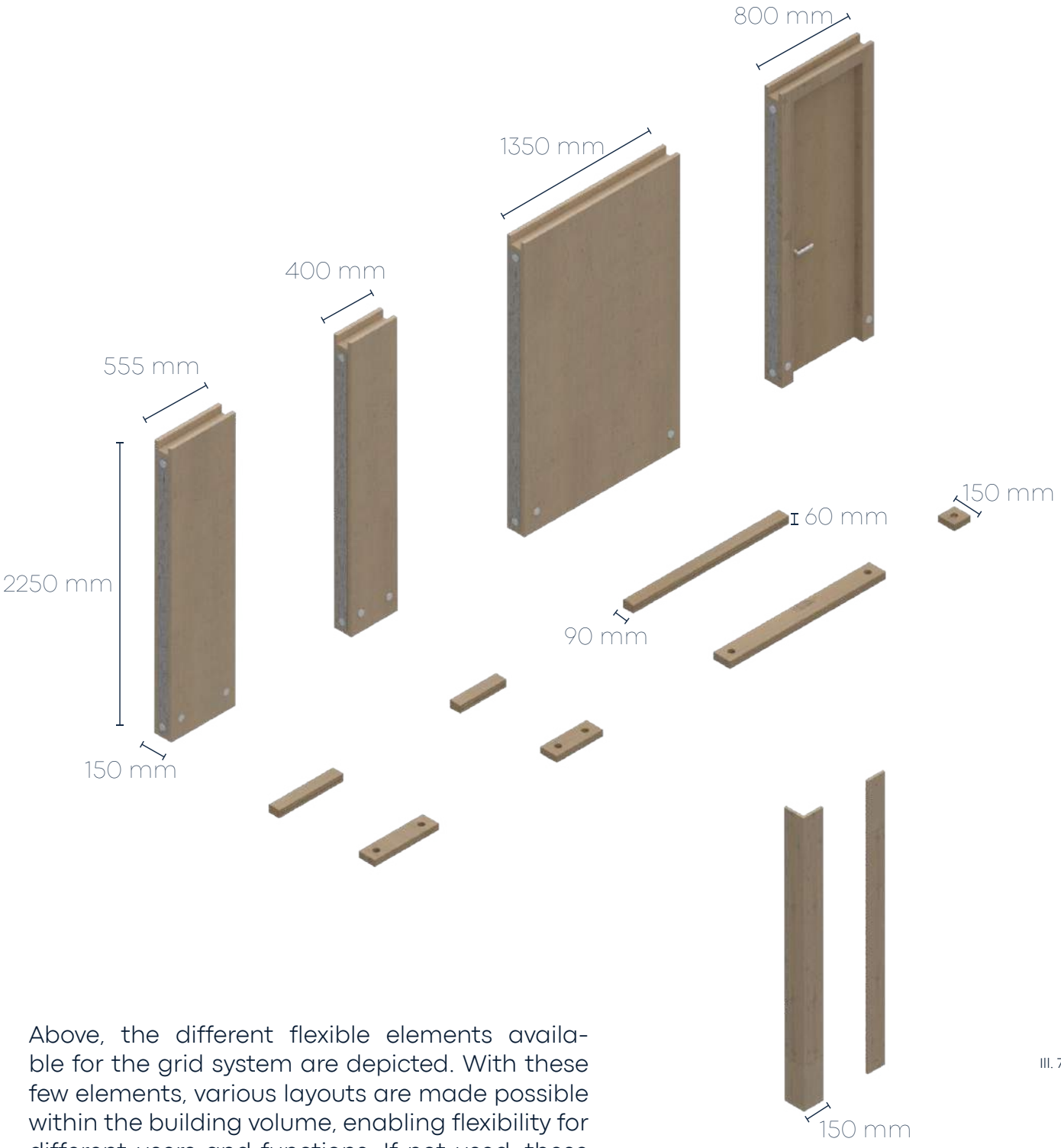
Ill. 71
Isometric view
of dwelling.

Ill. 72. Section of dwelling.

Assembly of flexible walls



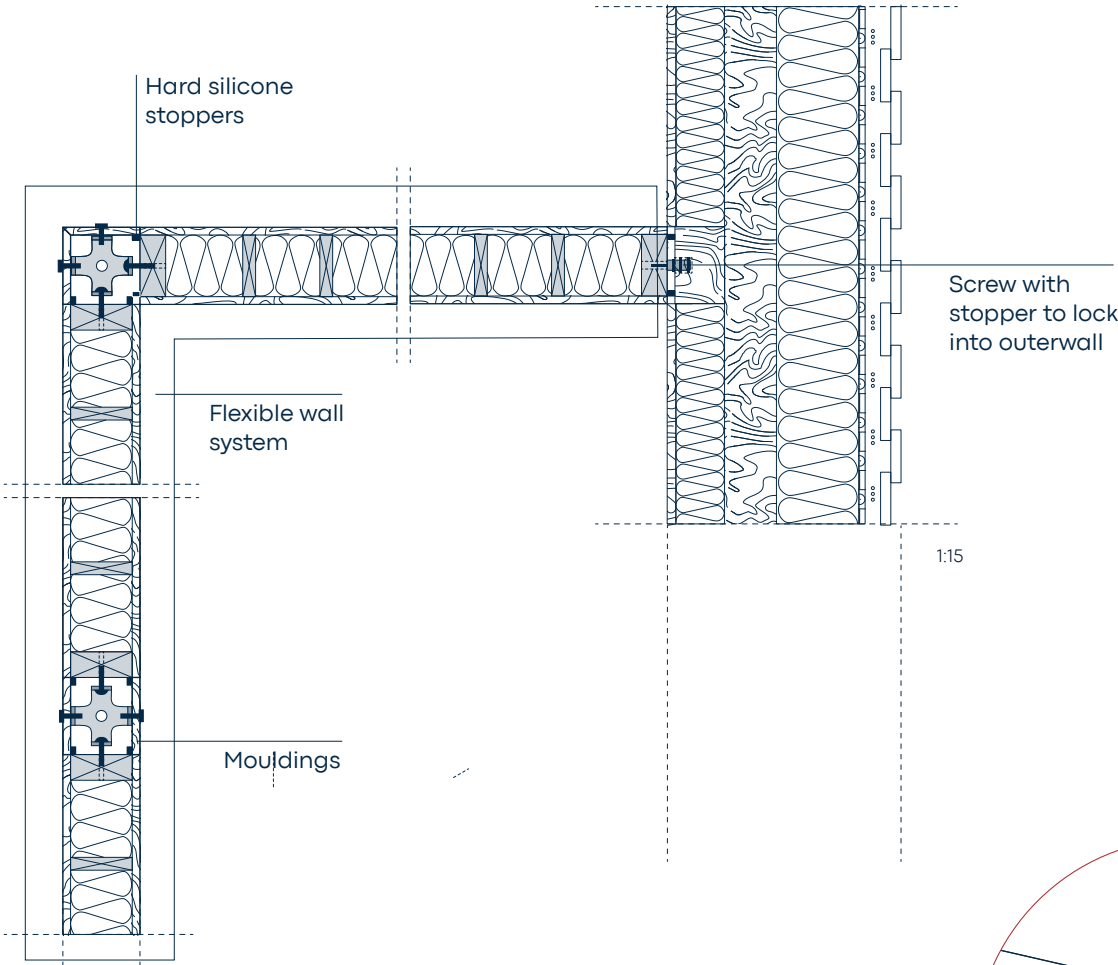
Ill. 73



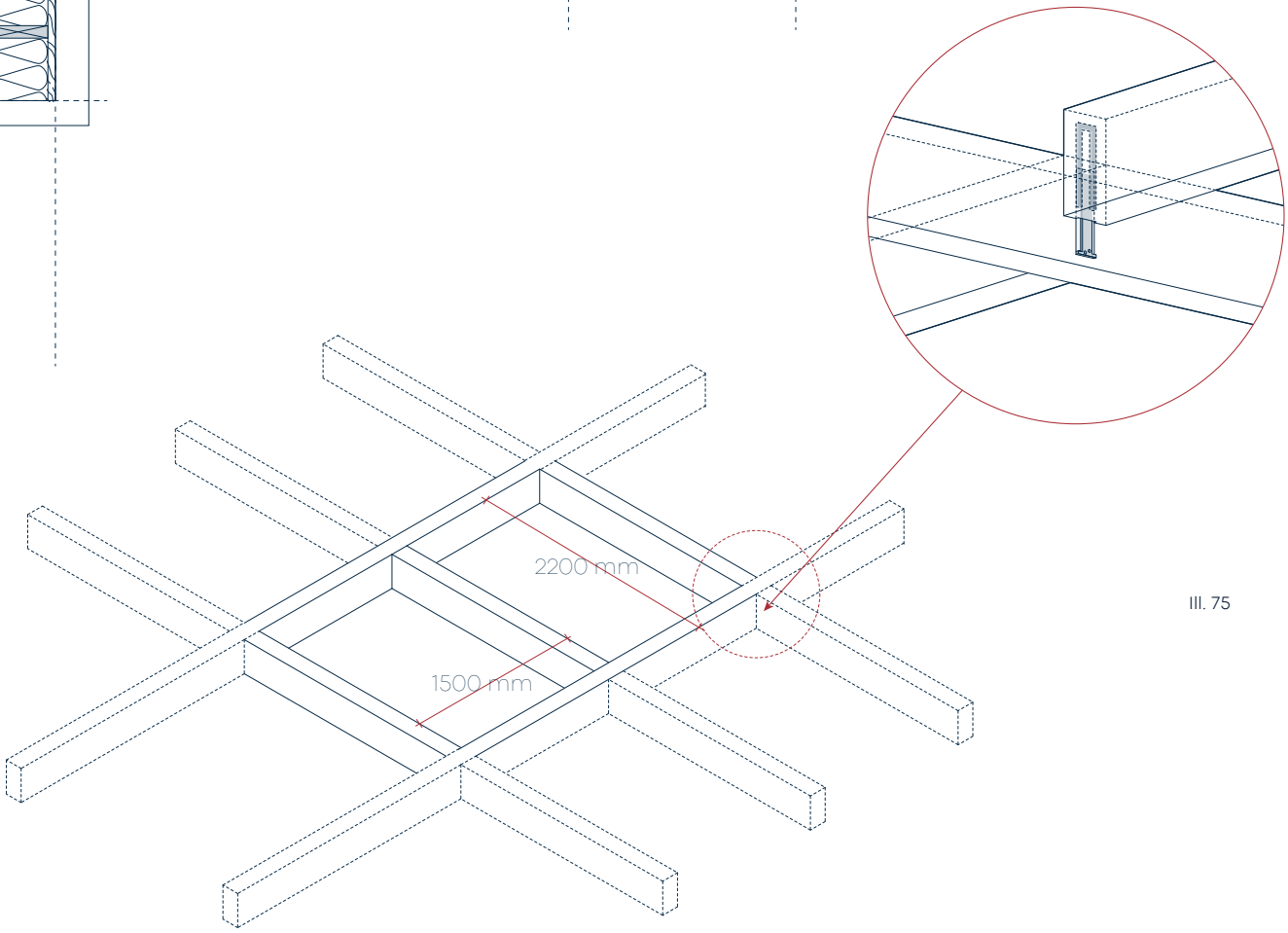
Above, the different flexible elements available for the grid system are depicted. With these few elements, various layouts are made possible within the building volume, enabling flexibility for different users and functions. If not used, these elements are stored adjacent to the shared spaces on the ground floor.

Ill. 74

Assembly detail of grid system

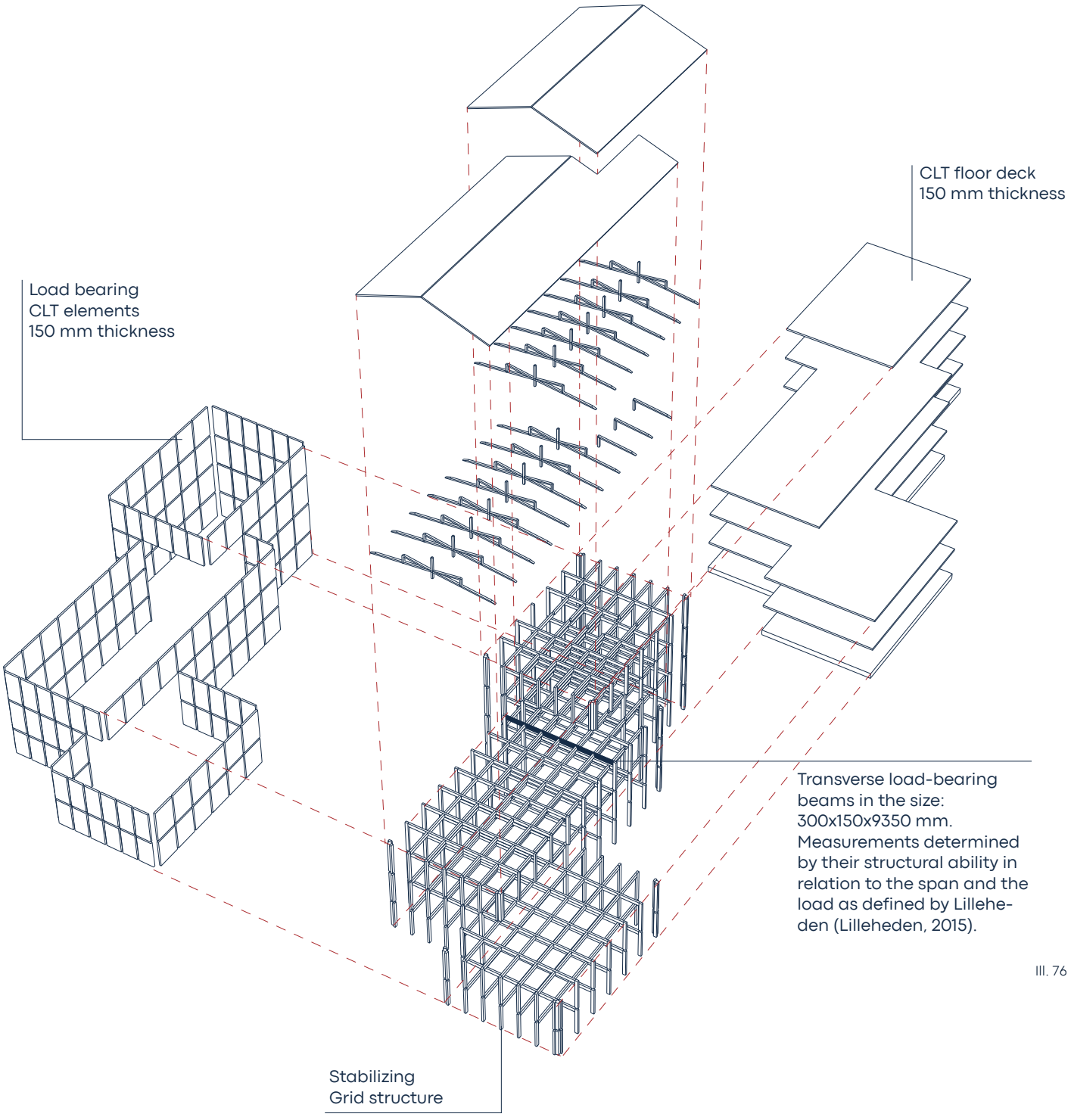


1:15



III. 75

Principle of load-bearing construction



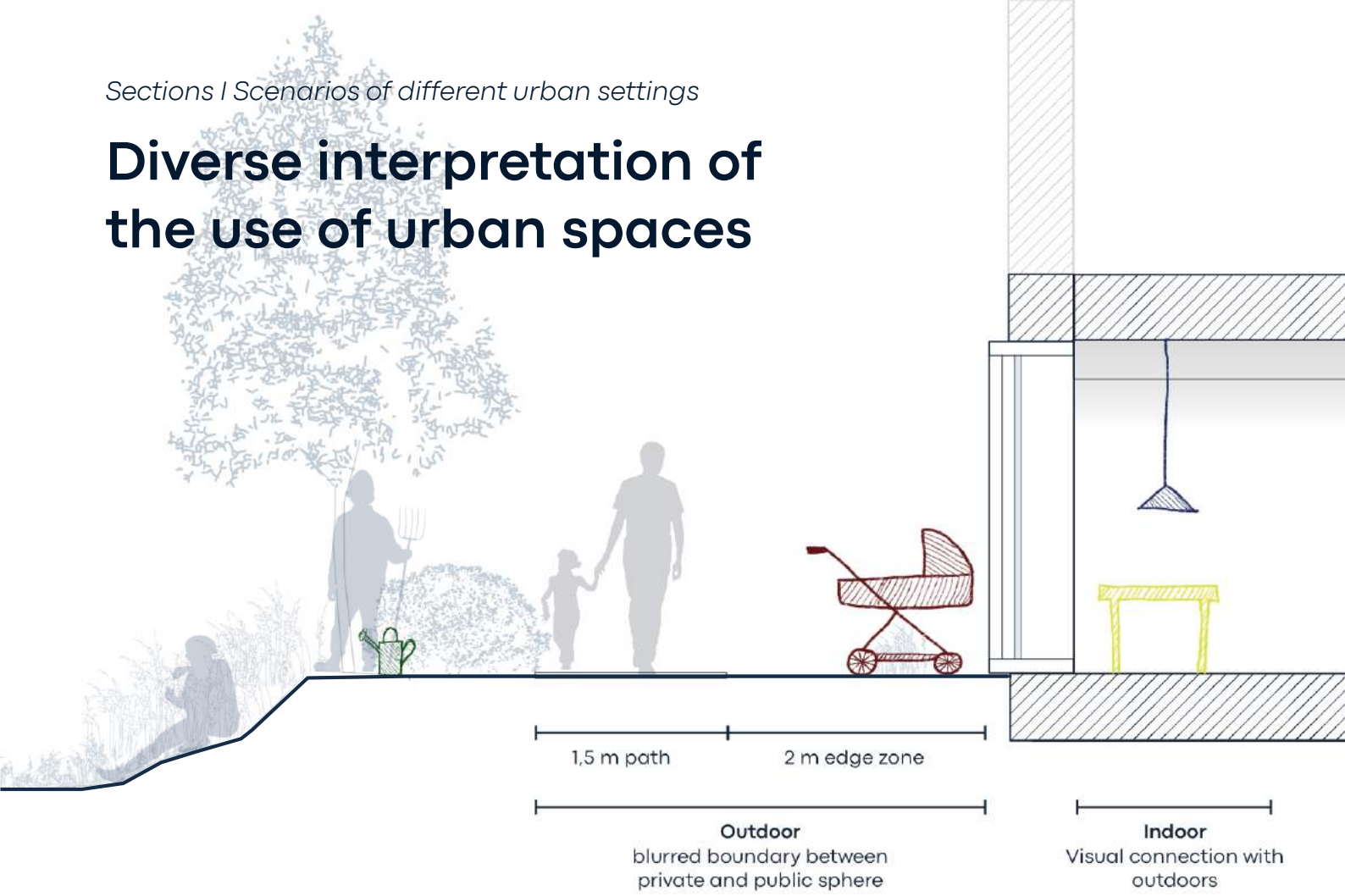
Ill. 76

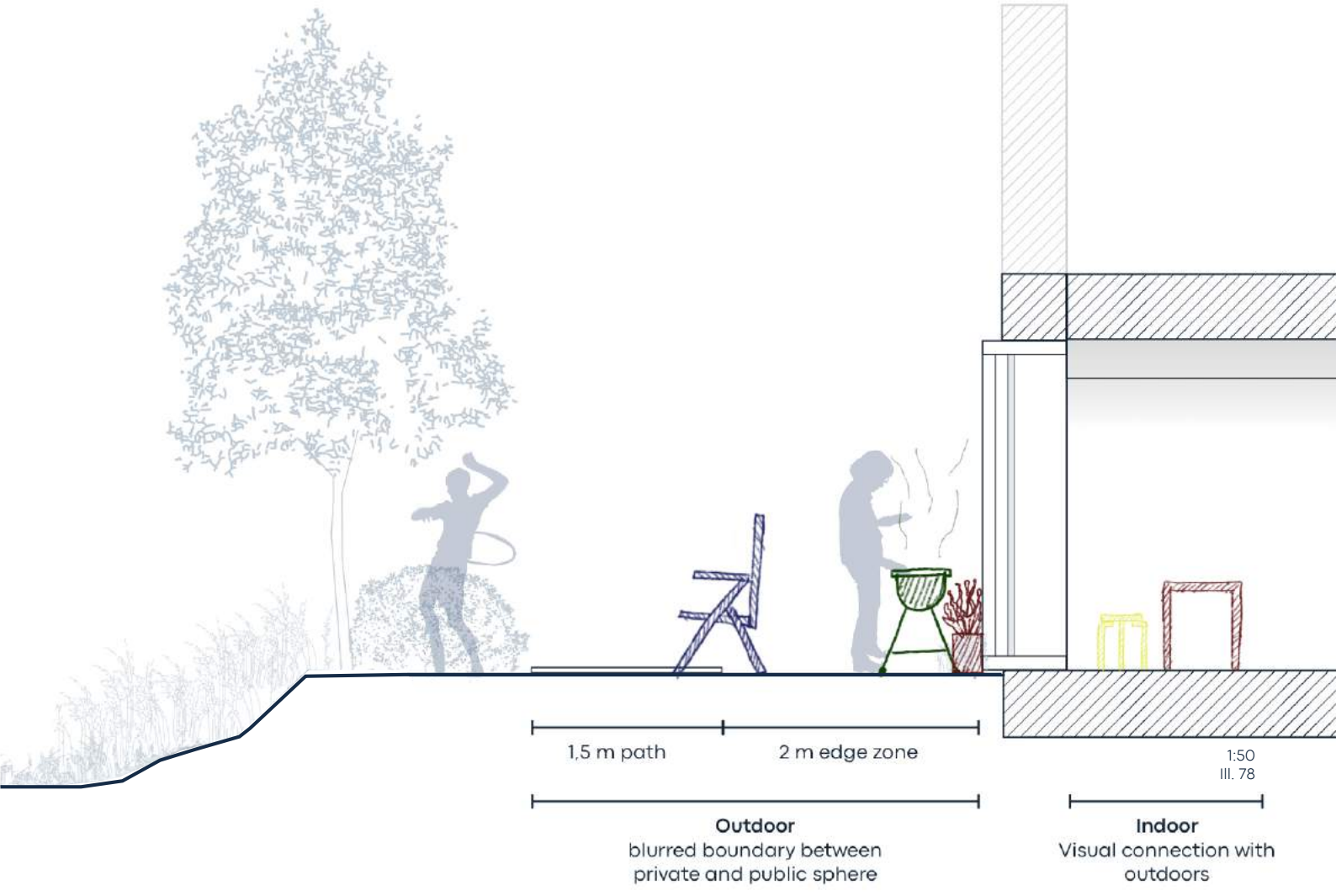
Rendering of urban space

Inclusive and vibrant urban environments

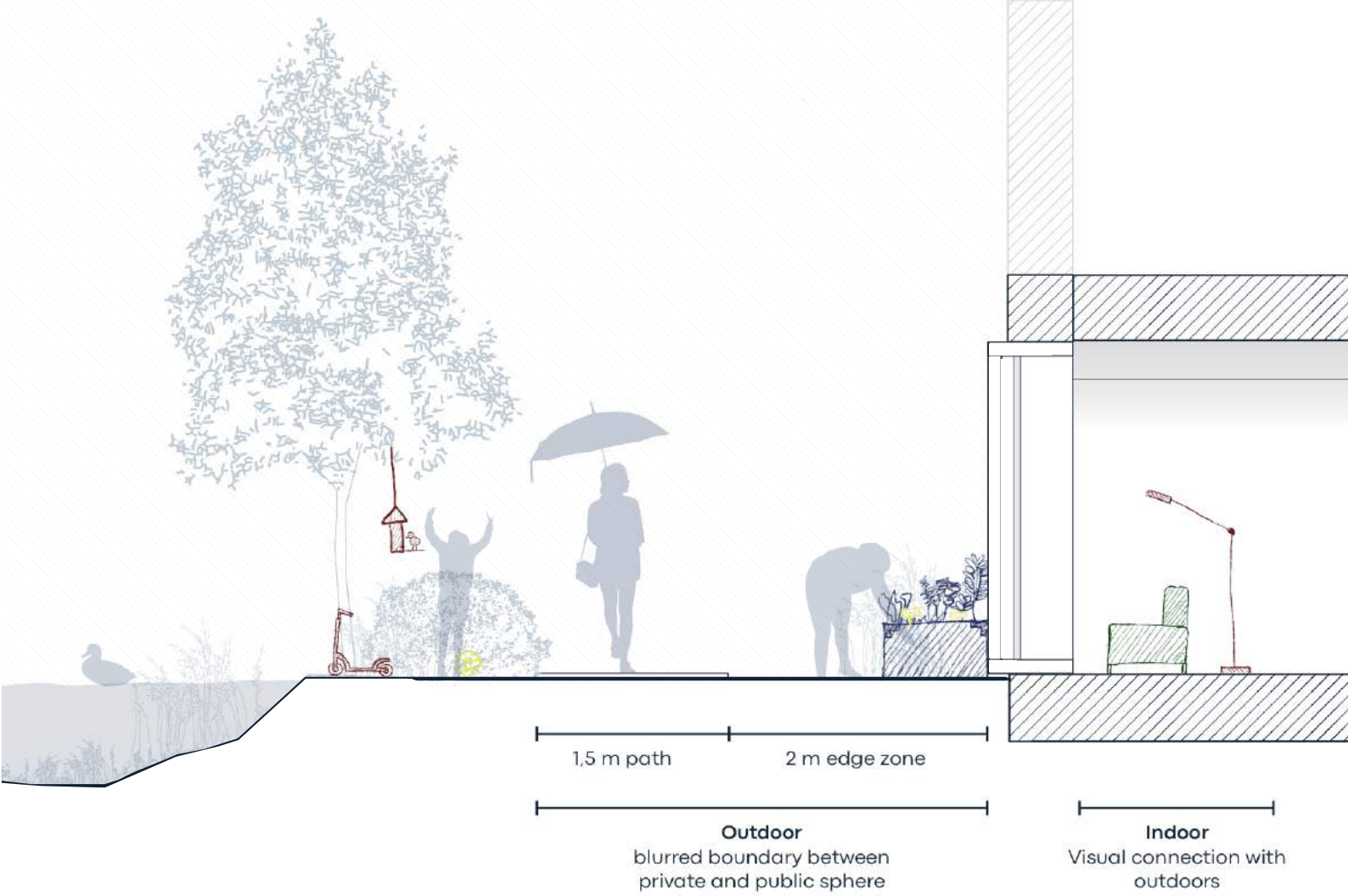
Ill. 77

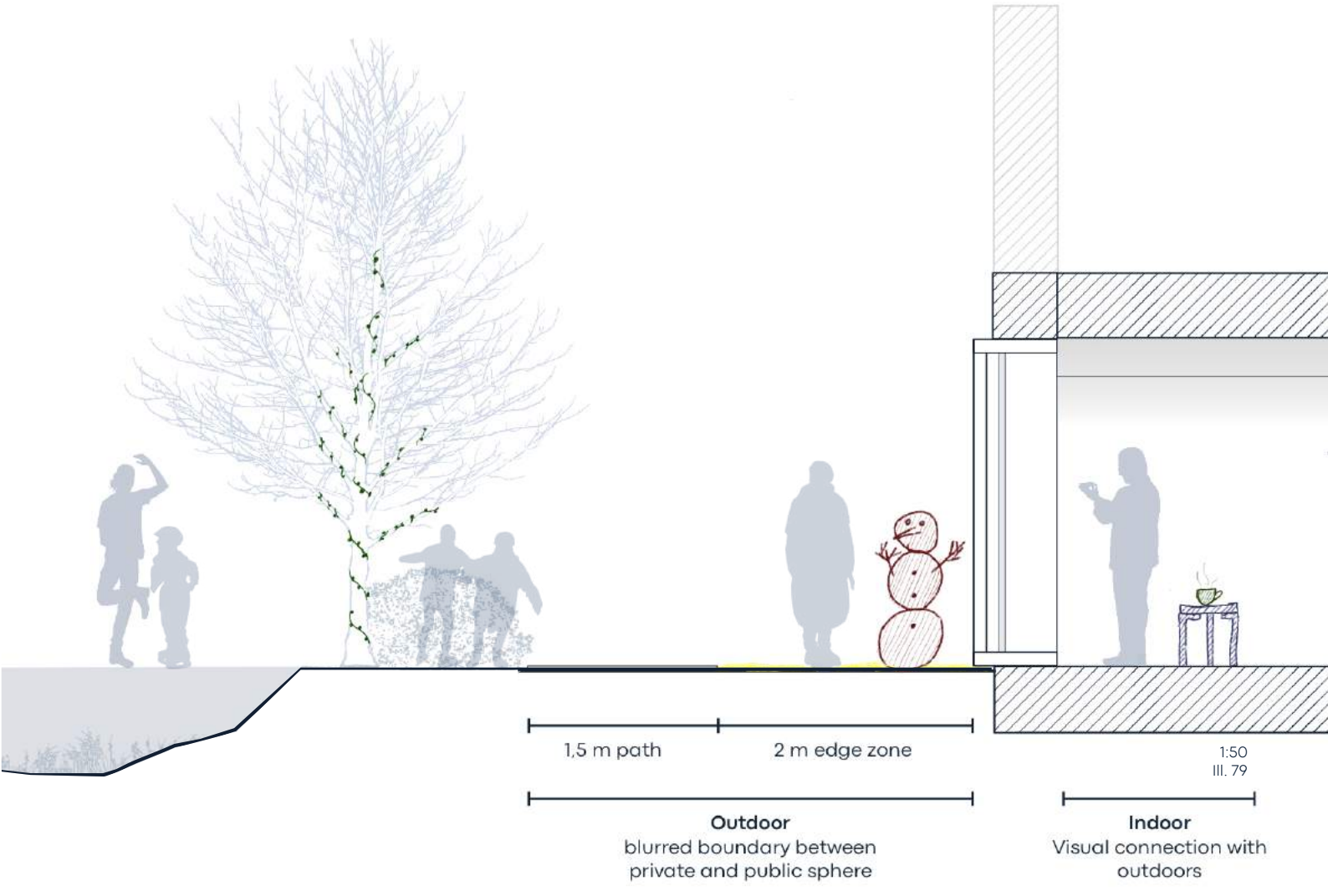
Diverse interpretation of the use of urban spaces





1:50
Ill. 78

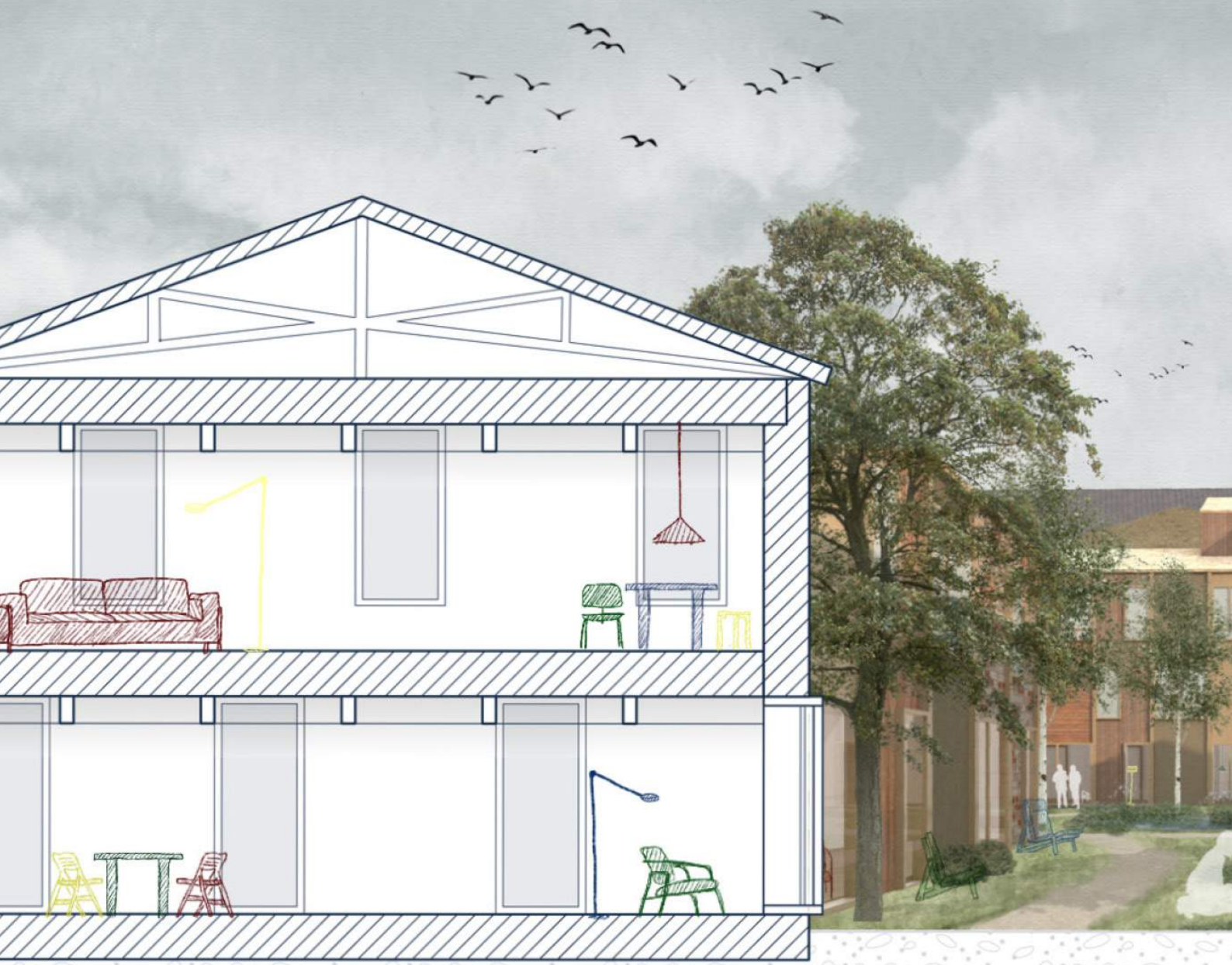

1,5 m path
2 m edge zone
Outdoor
blurred boundary between
private and public sphere
Indoor
Visual connection with
outdoors


1,5 m path
2 m edge zone
Outdoor
blurred boundary between
private and public sphere
Indoor
Visual connection with
outdoors

1:50
III. 79

Section through building C and E

Section of dwellings and urban space

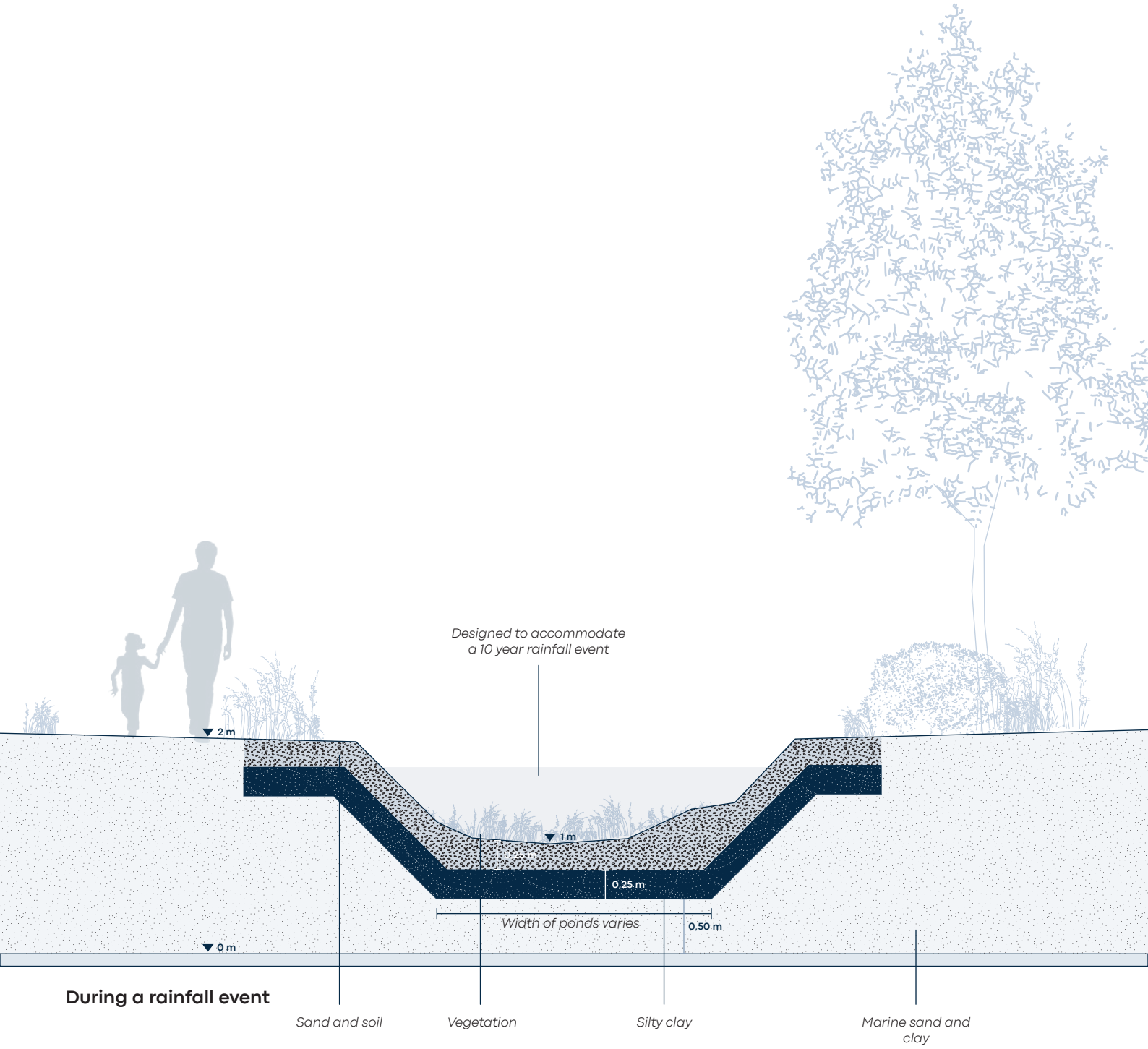


1:100
III. 80

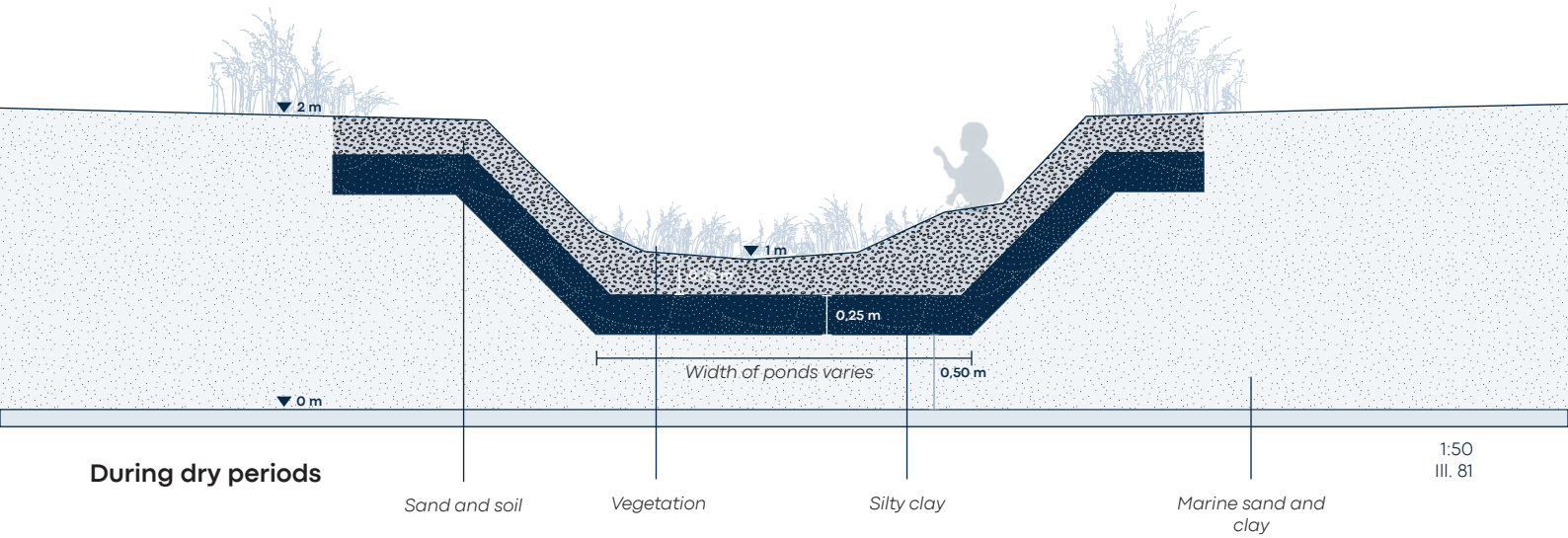
Rainwater management

Dry detention pond

Since observations regarding the microclimatic conditions of Christiania highlight the importance of integrating SuDS in the shaping of the urban spaces, a technical drawing has been prepared showcasing how rainwater management can be manifested into a specifc design proposal that both allows for detention of rainwater and recreational use. More specifically, the illustration below demonstrates a proposed construction of a dry detention pond. In case of the specific development area which has been detailed, calculations have been indicating a necessity to establish a total of 310 cubic meters SuDS in order to accommodate a 10-year rainfall event cf. appendix 9. Moreover, this is also evident in the plan of the selected development area where different sizes of detention ponds have been implemented into the urban spaces. Thus, it should be pointed out that the exact placement of these ponds is flexible, but should aim to be spread somewhat evenly across the area in order to reduce the travel time of rainwater from catchment area to pond.



During a rainfall event



During dry periods

1:50
III. 81

Epilog

In this section, this most essential key points of this thesis will be collected and concluded upon

Conclusion

By interpreting the content of a traditional development plan, this thesis aims to present a robust, elastic and democratic plan for how to reconcile Christiania with the construction of 15.000 sq m of public housing.

This has been attempted accomplished by ensuring that the identified strategies are resilient and effective against unforeseen changes in society which will influence the current development of Christiania. Furthermore, robustness of the project has been further exemplified by prioritising sustainable design solutions, such as preserving green structures, implementing rainwater management and minimizing CO2-emissions of future constructions. Not only do these measures enhance the environmental resilience of the area but also support recreational activities, contributing to the overall quality of life for residents. Moreover, elasticity is demonstrated through the conducted phase plan that allow incorporation of new knowledge throughout the development process thereby enabling the project to meet future needs. More specifically, this development has been structured so that the determined phase plan can stretch and be prolonged in order to adapt to changing circumstances and evolving requirements. Additionally, the elasticity is embodied in the flexible design of the dwellings, facilitated by an internal grid system that allows for customization based on individual and societal needs. This adaptability ensures that the living spaces can evolve over time, reflecting changing preferences and trends while maintaining the dynamic atmosphere of Christiania. Lastly, a democratic approach is ensured by fostering inclusiveness and transparency, which support equality in deciding how urban spaces should develop and progress. This project emphasizes the importance of active citizen involvement beyond traditional methods. The Danish planning system typically engages citizens through formal initiatives like public hearings, local plans, and environmental impact assessments. However, this report advocates for a more substantial integration of informal, bottom-up approaches to urban planning. To achieve this, the project proposes various strategies for enhancing community engagement. These include implementing temporary experiments and social happenings to ensure continuous learning and adaptation throughout the development process. By involving citizens directly in the idea development and even the design process, the project aims to foster a greater sense of ownership, belonging, and empowerment among both existing residents and newcomers.

In conclusion, `Reconciling Christiania` provides a comprehensive and forward-thinking development plan that aligns with the project`s vision. By creating a framework for new, inclusive, and vibrant neighbourhoods, the proposal harmonizes the cultural heritage of Christiania with modern urban development needs – more specifically, housing shortage and public housing. Through its robust, elastic, and democratic approach, the project sets a precedent for sustainable and community-focused urban planning, ensuring that Christiania can thrive while accommodating future growth and change.

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Illustration 18: Data from Ladybug, Solar conditions in Copenhagen. Available at https://energyplus-weather.s3.amazonaws.com/europe_wmo_region_6/DNK/DNK_Copenhagen.061800_IWEC/DNK_Copenhagen.061800_IWEC.zip
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Data: Screening for oversvømmelse fra nedbør (bluespot-screening)
Source: https://kamp.klimatilpasning.dk/nedboer/bluespot

Illustration 20: Photo of cyclists.
Title: Copenhagen, Denmark, A young couple ride bikes through Christiania
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Illustration 34: Scandibyg (no date) ALMENBOLIG+, https://jaja.archi/. Jaja Architects. Available at: https://jaja.archi/project/almenbolig/?fbclid=IwZXh0bgNhZW0CMTAAAR3yVbt-IHKxWAZT-dYu8Bb5WxjUJ00AXgEzMOdtppu1RYUDzZRhzedRjZ1A_aem_Af0nhK-TwxZbw9aBb-EjhNZ8wXfdE6uji-YuUHUu9ePAB0q3TfyFO8k-_42qnK7o-SNXYYiAJKbk4MngAYo3FTVGkC (Accessed: 26 May 2024).

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Illustration 40: Photo by KAB-arkiv (1979) - indret Selv Deres Bolig: Bogen om Flexibo, Følfodsvej. København: KAB. Download available at: https://www.sab-bolig.dk/boligafdelinger/alfabetisk-oversigt/flexibo

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Illustrations 52-55: Photos by Wejse, A.N. (no date) 0223 Karréerne Bassin 7 Housing, sleth.dk. Sleth. Available at: https://www.sleth.dk/portfolio/karreerne-bassin7/?fbclid=IwZXh0bgNhZW0CMTAAAR2RsaaMLMmrbwroRmXAVkC-3K9SGvawMpP_l1fuJkktv_06wtLu_1O1b38_aem_Ad4CliaBcGLJkXcDNXfE4S7tCHngaIFbLrasW6AYMLSxPfl6nhJFSIPhwm9JdOfKE3XHvePLKUsoFruiJoDsW4jN (Accessed: 01 May 2024).

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Ill. 82 contains data from GeoDanmark (Accessed Marts 2024)
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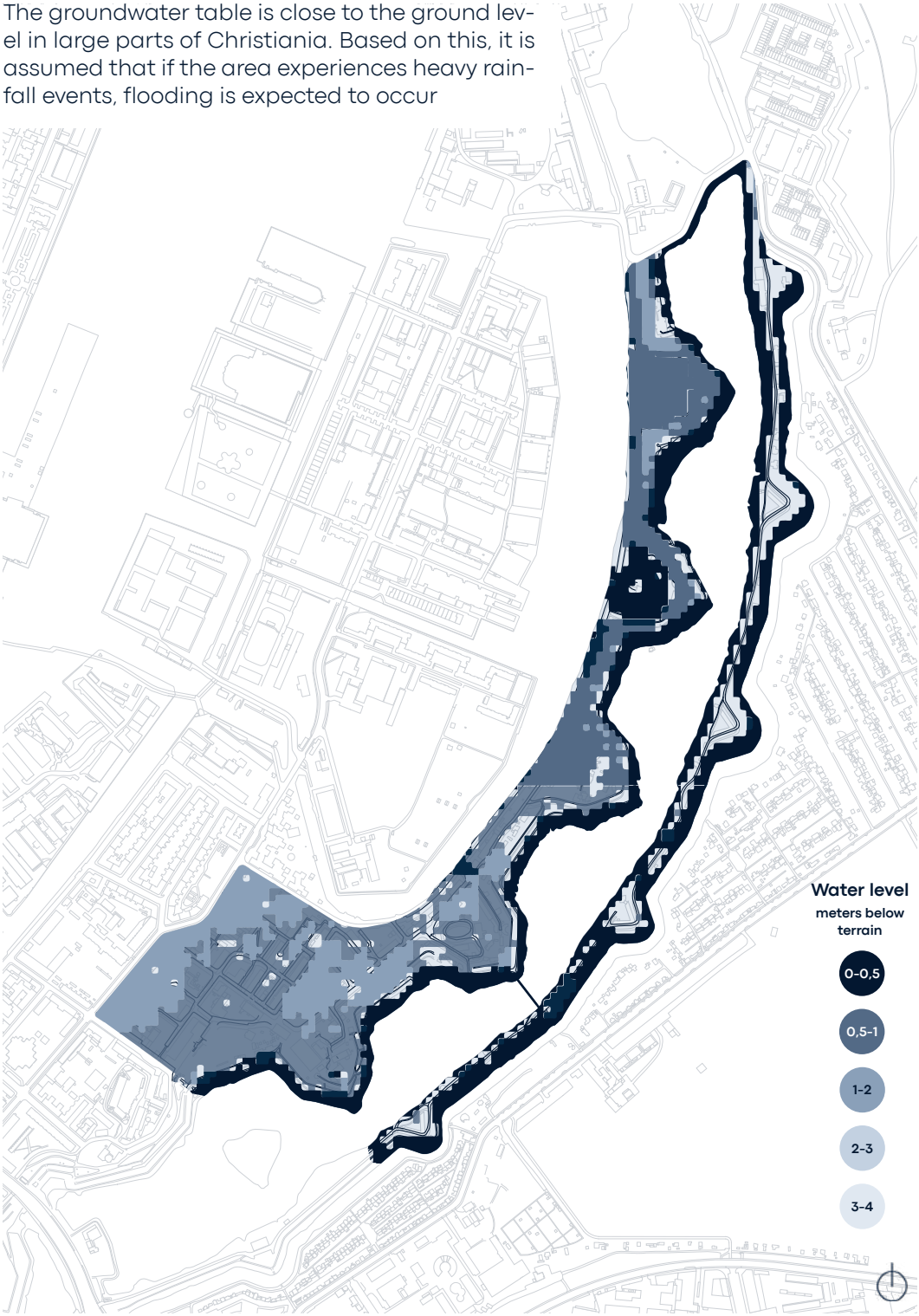
Data owner: GeoDanmark
Data: Danmarks Geografi - GeoDanmark
Source: Dataforsyningen.dk
And data from Klimatilpasning | KAMP (Accessed Marts 2024)
Data owner: GEUS i samarbejde med bl.a. Styrelsen for Dataforsyning og Effektivisering.
Data: Screening for terrænnært grundvand
Source: https://kamp.klimatilpasning.dk/grundvand/dataset1?value=-summer

Noise pollution
Ill. 83 contains data from GeoDanmark (Accessed Marts 2024)
License: Creative Commons Attribution 4.0 International
Data owner: GeoDanmark
Data: Danmarks Geografi - GeoDanmark
Source: Dataforsyningen.dk
And noise data from Miljøstyrelsen / Miljøministetiet
Data owner: Miljøstyrelsen / Miljøministetiet
Data: Danmarks støjkort
Link: https://miljoegis.mim.dk/spatialmap?profile=noise

Appendix

Groundwater table

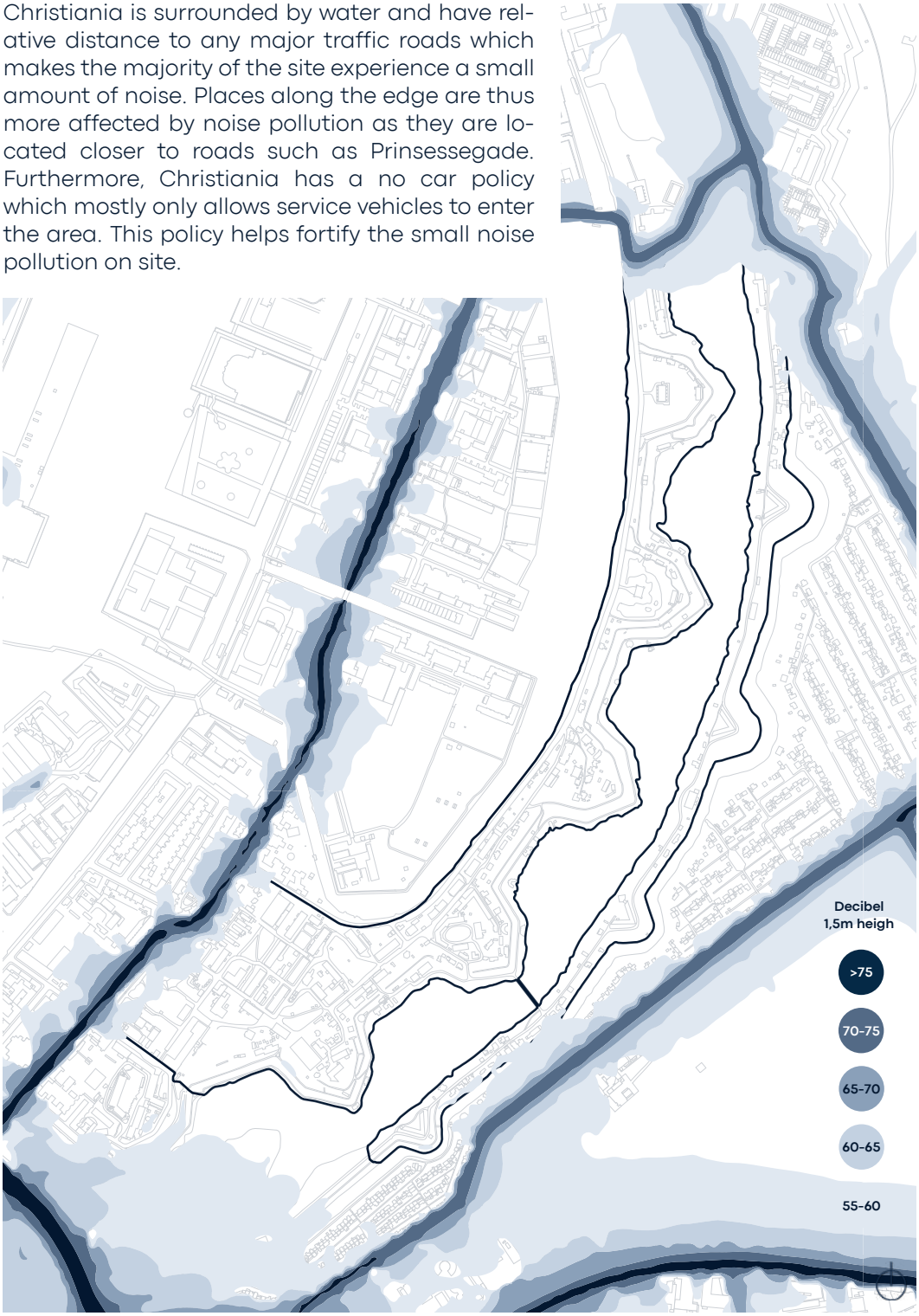
The groundwater table is close to the ground level in large parts of Christiania. Based on this, it is assumed that if the area experiences heavy rainfall events, flooding is expected to occur



1:10.000
III. 82

Noise pollution

Christiania is surrounded by water and have relative distance to any major traffic roads which makes the majority of the site experience a small amount of noise. Places along the edge are thus more affected by noise pollution as they are located closer to roads such as Prinsessegade. Furthermore, Christiania has a no car policy which mostly only allows service vehicles to enter the area. This policy helps fortify the small noise pollution on site.



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Ill. 83

Appendix 3

Interview with KAB (Københavns almene boligselskab)

28.02.2024
The interview has been conducted in teams, and the following information consists of notes taken during the interview. The notes have been translated from Danish.

Information
• Name: Kim Geertsen
• Background: Manager at KAB
• Kim's thoughts on new public housing in Christiania:
• There needs to be a social housing organization to facilitate, but there weren't really any willing or able, including KAB. Therefore, it was suggested that it would be best if they formed their own housing organization. There is now a new political housing organization that the municipality has approved.
• KAB acts as the interpreter, merging Christiania with municipal legislation, etc., and helps them establish a new organization.

Answers to questions:
Is self-build and co-build possible public housing?
• The short answer is, yes, it is possible. There is a concern from Christianites that there will just be a large block without the possibility of co-build and self-build. Especially since social housing is one of the most regulated types of constructions in Denmark. They have experience with co-build and self-build in KAB. What is crucial is that social housing must be financed by mortgage credit. The emphasis here is on obtaining their "collateral," which must ideally last at least 30 years, which is the term of the loan. You can always build a core where you can then self-build the rest, so the mortgage lenders have collateral, and you can add, for example, a conservatory yourself. It is also important to consider whether what you are building can be insured.

• An important question is to address the technical construction aspects, so the next tenant does not inherit a building with e.g. mold – the technical construction must be in order.

• There might also be a possibility to alter the "skin/facade" but not the core, and to build small extensions yourself.

• Christiania wants everything that is built to be co-housing communities (info from interview with Mette Prag). Social and family co-housing communities already exist and function quite easily. How can one ensure a solid co-housing community in general in public housing?

• This is done in various ways. Typically, it's like this (and probably also in Christiania), you start by figuring out what you want to build. Then you form a working group where you discuss what their values and ways of living should be and write them down. This provides a foundation/guidelines for new residents. People who are interested then sign up on an interest list. To ensure alignment with Christiania, those highest on the list are invited to various events in Christiania, such as communal dining, to check the chemistry between new and old members (synergy process).

• This means it is very locally driven. However, there will also be hard-core elements involved. These might include ensuring, for example, that there are not only women and 50-year-olds.

• The co-housing community is unlikely to exceed 30 people. It should ideally be between 15-40 people per community.

Standards for Social Housing:
• 23,000 DKK per square meter for social housing. This is a requirement.
Maintenance must also be considered, such as renovation and waste management.
Therefore, there are net capital requirements and all that other stuff.

• How do we ensure that the rent doesn't skyrocket from the new to the old? This is where social housing comes in, as it is speculation-free.
The trick to cheap rent is to build small.

• KAB's participation can help reassure mortgage lenders with their good reputation.

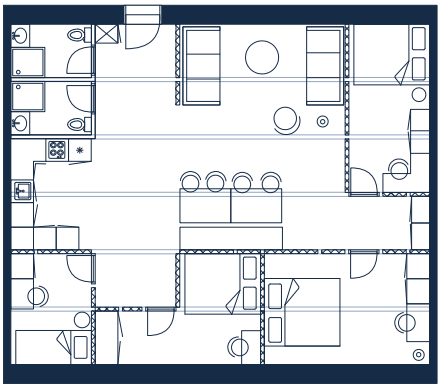
There hasn't been a new housing organization in

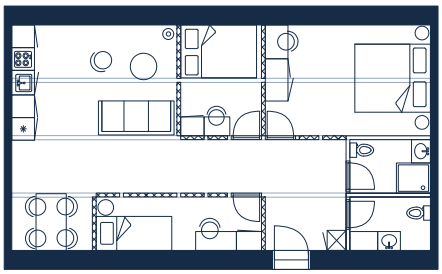
Copenhagen in 25 years – and now there is a new one in Christiania.

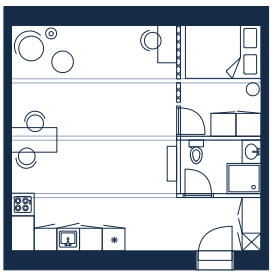
It's great that for once, it's KAB's partner (Christiania) that is pushing, not the other way around.

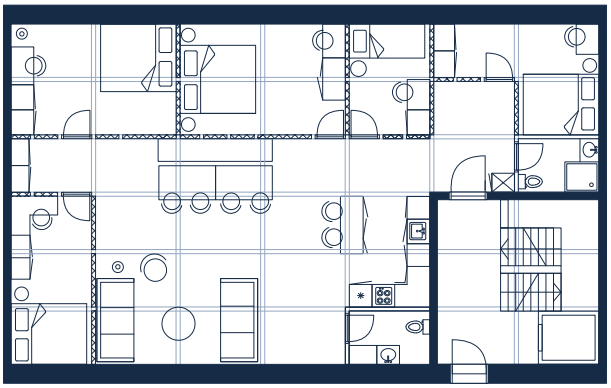
Design iterations a grid-system

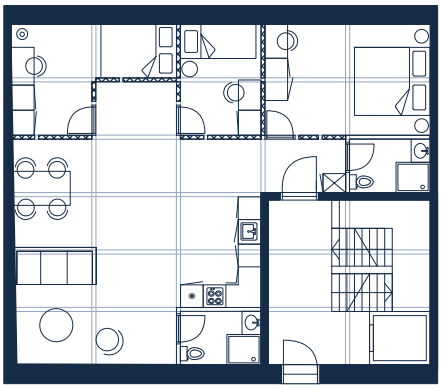
The plans presented on this page illustrate the process involved in the development of the internal grid system. As shown in the illustrations, plans that sololy support for a controlled grid system in one direction of the residences and are fully flexible going in the other direction has been investigated jf. ill. X-X. Additionally, iteration has been done on integrating the facility core into the grid system jr. ill. X-X. However, due to structural freedom, it was decided to add the cores subsequently to create greater flexibility in assembling and constructing all buildings in different ways depending on the area and volume.

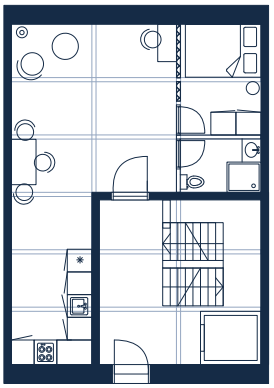












1.500

Appendix 5

Calculations of possible amount of reusable cladding

Example of cladding for reuse from demolition:
m2 facade with wood cladding:
40,5+40,5+67+68 = 216 m2 (194,5 m2 total because of brick foundation)
(1.940.000 cm2)

Size of each plank:
Width: 10 cm
Height: 250 cm
Spacing: 2 cm

10*250 = 2.500

1940000/2500 = 776 planks in total, if they were laying side by side, with no double layering.

Spacing:
2*250 = 500 cm2 area spacing pr. plank.
1940000/2.500+500 = 646,6667 external planks with spacing.

646,667*2 = 1.293 planks in total with the 1+1 principle if all planks can be reused.

Windowarea - wholes:
20 windows á:
- 80 X 170 cm
80*170 = 13600 cm2 area pr. window.
13600*20 = 272000 cm2 total window area.

3 doors á
- 90 X 210 cm
90*210 = 18900 cm2 area pr. door.
18900*3 = 56700 cm2 total door area.

56700+272000 = 328700 cm2 area for windows and doors.

1940000-328700 = 1611300 cm2 area planks with area for windows and doors subtracted.

1611300/3000 = 537,1
537,1*2 = 1074,2 planks in total

Waste coefficient:
Estimated waste from demolition and bad quality planks at 15%:

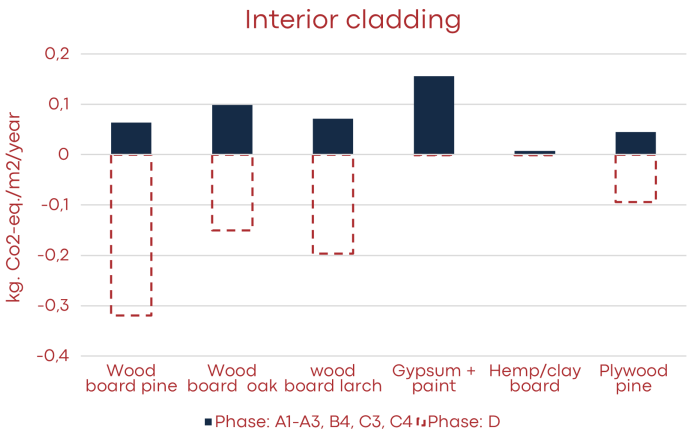
1074*0,85 = 912,9 planks in total available equivalent to:

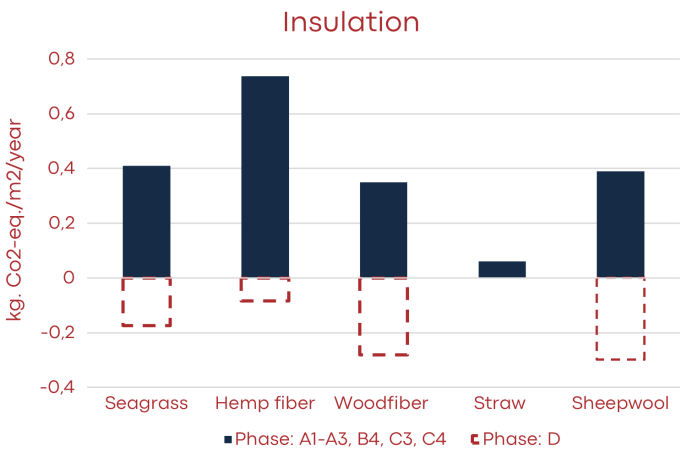
912,9*2500 = 2282250 cm2 (**228 m2 planks**)

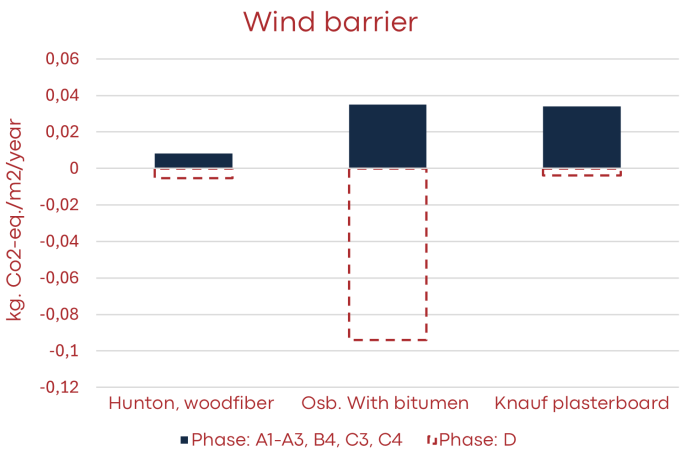
Appendix 6

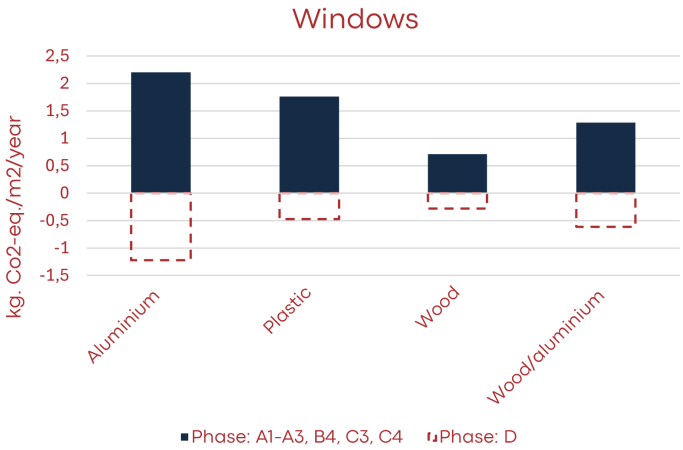
GWP of material components in external walls

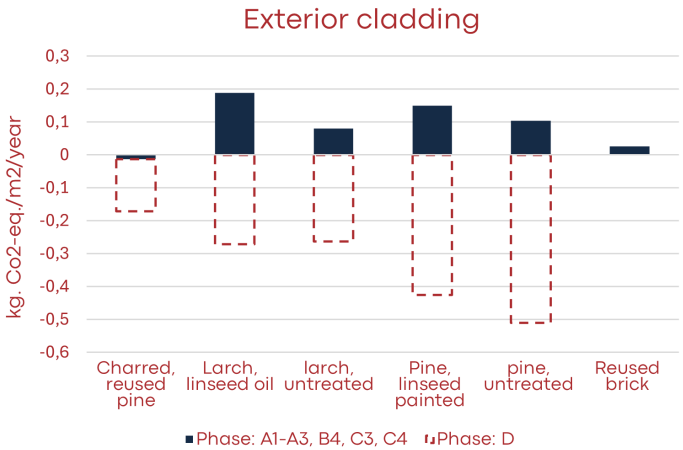
The graphs show the calculated GWP for various materials in different wall components.
The calculations are done in the program LCA-byg, and area divided into the five categories: External cladding, internal cladding, insulation, wind barrier and windows. This is due to the fact that these are the main components in an outer wall. The materials investigated in these are chosen based on their Northern European origin, and because they are somewhat common materials that are easy to acquire. Therefore, they comply better with the financial restrictions that public housing abides to, given the tendency for new and uncommon materials to be priced higher.
The lowest results from each component will be combined and the GWP will be investigated for one sq m of a complete wall, as seen in the following appendix.











Appendix 7

Combination identified of materials with low CO_2-emission

The calculation does not present a complete picture of the Co2 in the sense that energy used throughout the building`s lifespan, installations, and building core are not included. This is because of the conceptual nature of the project in this stage of design. This is also why the GWP aim is so low compared to the Danish building regulations, as it provides ample room for slightly elevated results, caused by windows, installations foundations etc. while still significantly staying below the regulations.

To make it comparable, the insulation properties are all set to a u-value of 0,20 W/(m^2K) with properties from Ubakus, to ensure a proper comparative basis, given that the different materials have different insulation properties, and therefore might need to be thicker.

Based on the results it can be concluded that the walls should consist of mainly recycled materials for cladding. Here mineral materials are an option. If re-used materials are not available, untreated new larch is a good option.

Information on u-value and thicknes from Ubakus: (Plag, R., n.d.)
Informations regaring GWP and EPD is from the program LCAByg: (`LCAbyg 2023`, 2023)
External EPDs not found in the program, but manually soured, are listed in the litterature list.

GWP unit: kg. Co2-eq./m2/year
Materials are listed from left to right

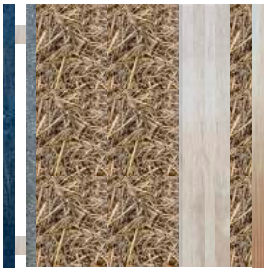
GWP total: 0,414
D-potential: -0,648

Larch - untreated
Hunton windbarrier
Straw insulation
CLT
Pine boards

GWP total: 0,359
D-potential: -0,384

Recycled brick
Straw insulation
CLT
Pine boards

GWP total: 0,321
D-potential: -0,544



Recycled charred timber
Hunton windbarrier
Straw insulation
CLT
Pine boards

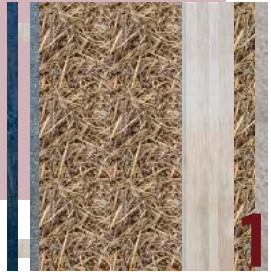
GWP total: 0,326
D-potential: -1,11

Larch - untreated
Hunton windbarrier
Straw insulation
CLT
Hemp-crete boards

GWP total: 0,271
D-potential: -0,847

Recycled brick
Straw insulation
CLT
Hemp-crete boards

GWP total: 0,233
D-potential: -1,01



Recycled charred timber
Hunton windbarrier
Straw insulation
CLT
Hemp-crete boards

GWP total: 0,319
D-potential: -1,11

Larch - untreated
Hunton windbarrier
Straw insulation
CLT - no internal cladding

GWP total: 0,264
D-potential: -0,846

Recycled brick
Straw insulation
CLT - no internal cladding

GWP total: 0,226
D-potential: -1,01

Recycled charred timber
Hunton windbarrier
Straw insulation
CLT - no internal cladding

GWP total: 0,364
D-potential: -1,20

Larch untreated
Hunton windbarrier
Straw insulation
CLT
Plywood

GWP total: 0,309
D-potential: -0,940

Recycled brick
Straw insulation
CLT
Plywood

GWP total: 0,271
D-potential: -1,10

Recycled charred timber
Hunton windbarrier
Straw insulation
CLT
Plywood

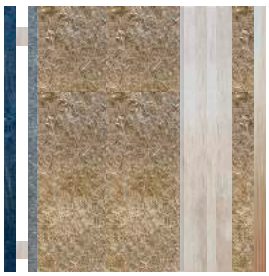
GWP total: 0,704
D-potential: -0,928

Larch untreated
Hunton windbarrier
Woodfiber insulation
CLT
Pine boards

GWP total: 0,649
D-potential: -0,665

Recycled brick
Woodfiber insulation
CLT
Pine boards

GWP total: 0,611
D-potential: -0,824



Recycled charred timber
Hunton windbarrier
Woodfiber insulation
CLT
Pine boards

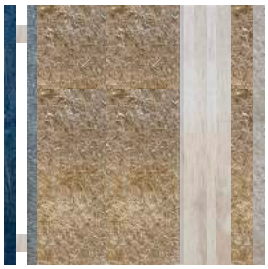
GWP total: 0,616
D-potential: -1,39

Larch untreated
Hunton windbarrier
Woodfiber insulation
CLT
Hemp-crete boards

GWP total: 0,561
D-potential: -1,13

Recycled brick
Woodfiber insulation
CLT
Hemp-crete boards

GWP total: 0,523
D-potential: -1,29



Recycled charred timber
Hunton windbarrier
Woodfiber insulation
CLT
Hemp-crete boards

GWP total: 0,609
D-potential: -1,39

Larch untreated
Hunton windbarrier
Woodfiber insulation
CLT - no internal cladding

GWP total: 0,554
D-potential: -1,13

Recycled brick
Woodfiber insulation
CLT - no internal cladding

GWP total: 0,516
D-potential: -1,29

Recycled charred timber
Hunton windbarrier
Woodfiber insulation
CLT - no internal cladding

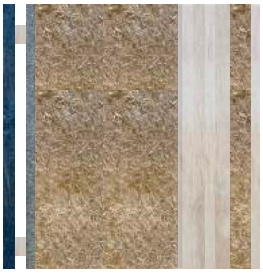
GWP total: 0,654
D-potential: -1,48

Larch untreated
Hunton windbarrier
Woodfiber insulation
CLT
Plywood

GWP total: 0,599
D-potential: -1,22

Recycled brick
Woodfiber insulation
CLT
Plywood

GWP total: 0,561
D-potential: -1,38



Recycled charred timber
Hunton windbarrier
Woodfiber insulation
CLT
Plywood

GWP total: 0,744
D-potential: -0,946

Larch untreated
Hunton windbarrier
Sheepwool insulation
CLT
Pine boards

GWP total: 0,689
D-potential: -0,682

Recycled brick
Sheepwool insulation
CLT
Pine boards

GWP total: 0,652
D-potential: -1,41

Recycled charred timber
Hunton windbarrier
Sheepwool insulation
CLT
Pine boards

GWP total: 0,656
D-potential: -1,41

Larch untreated
Hunton windbarrier
Sheepwool insulation
CLT
Hemp-crete boards

GWP total: 0,602
D-potential: -1,15

Recycled brick
Sheepwool insulation
CLT
Hemp-crete boards

GWP total: 0,564
D-potential: -1,30

Recycled charred timber
Hunton windbarrier
Sheepwool insulation
CLT
Hemp-crete boards

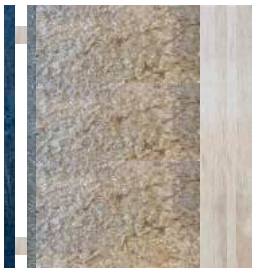
GWP total: 0,649
D-potential: -1,41

Larch untreated
Hunton windbarrier
Sheepwool insulation
CLT - no internal cladding

GWP total: 0,594
D-potential: -1,14

Recycled brick
Sheepwool insulation
CLT - no internal cladding

GWP total: 0,557
D-potential: -1,30



Recycled charred timber
Hunton windbarrier
Sheepwool insulation
CLT - no internal cladding

GWP total: 0,694
D-potential: -1,50

Larch untreated
Hunton windbarrier
Sheepwool insulation
CLT
Plywood

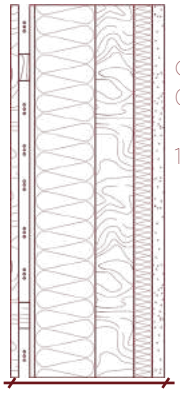
GWP total: 0,639
D-potential: -1,24

Recycled brick
Sheepwool insulation
CLT
Plywood

GWP total: 0,602
D-potential: -1,40

Recycled charred timber
Hunton windbarrier
Sheepwool insulation
CLT
Plywood

1

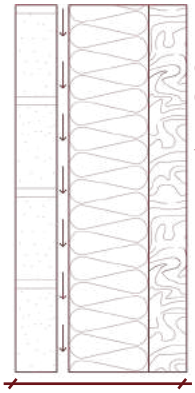


GWP total: 0,233

1:20

400 mm
U-value: 0,15 W/(m²K)

2

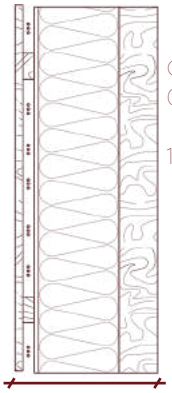


GWP total: 0,264

1:20

450 mm
U-value: 0,17 W/(m²K)

3

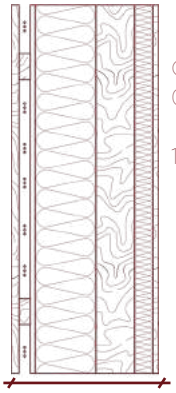


GWP total: 0,226

1:20

380 mm
U-value: 0,17 W/(m²K)

4



GWP total: 0,271

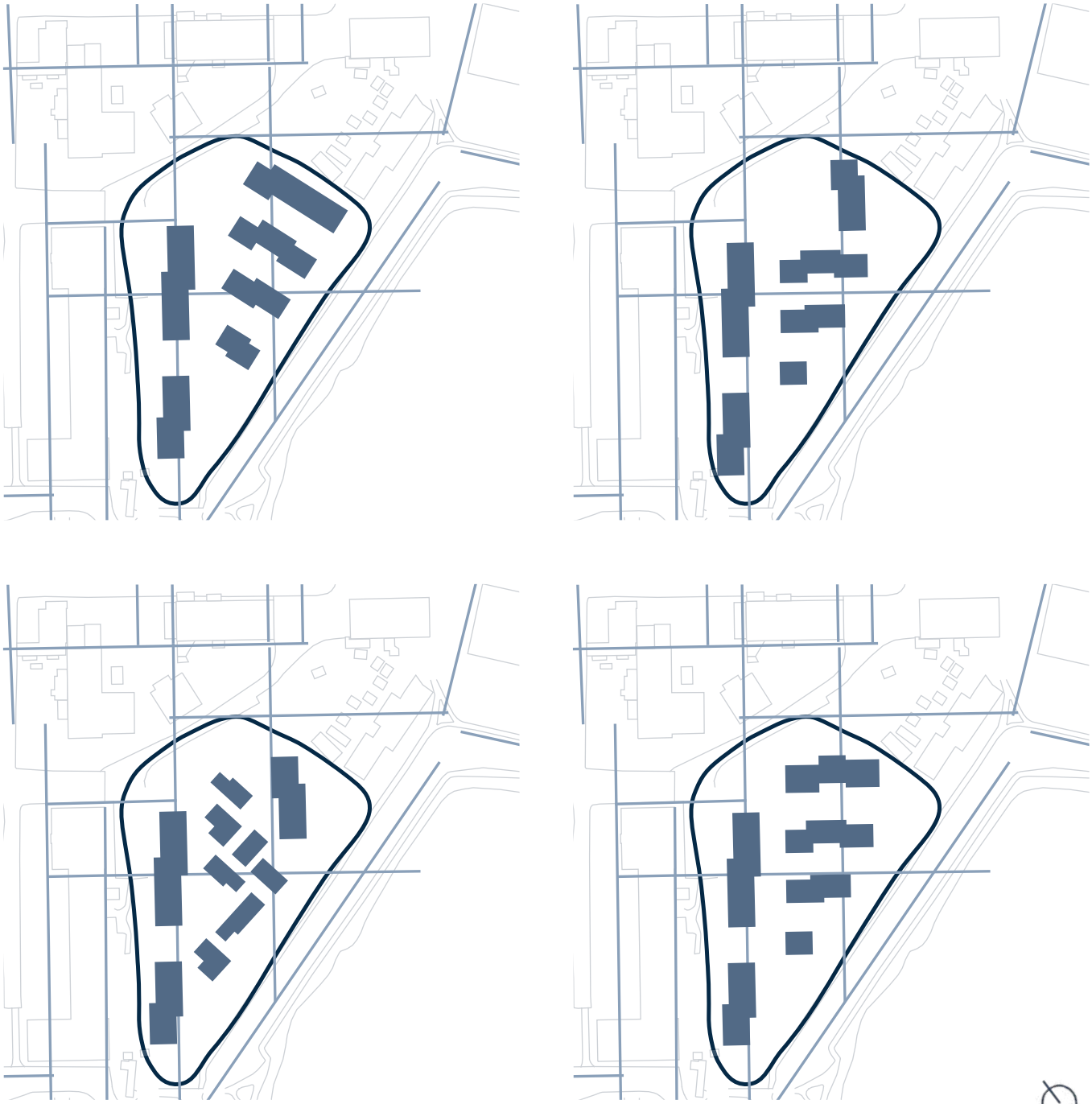
1:20

390 mm
U-value: 0,17 W/(m²K)

Appendix 8

Design iterations of building placement

Below, four iterations is showcased illustrating different placements of building volumes based on microclimatic conditions and dominating axes from the nearby architectural context.



1.500

Appendix 9

Dimensioning of SuDS

These calculations demonstrate the volume required for dry detention ponds in the event of a 10-year rainfall occurrence on plot F. As indicated, the pond's volume should be approximately 327 m^3 to accommodate such event. To facilitate this on-site, multiple dry retention ponds has been strategically distributed throughout the area.

Calculations of volume for basins

Formula			Values	
Qin =	Fr*i	Fr	4500	m2
Qout =	Fr*a	Fr	0,45	ha
V =	(Qin-Qout)*t	a	3,6	m3/ha*h

10 year rainfall event

	Hours	Intensity	Qin	Qout	Qin-Qout	Volume	Volume (+20%)
60	1	0,0349	157,14	1,62	155,52	156 m3	187 m3
120	2	0,0216	97,20	1,62	95,58	191 m3	229 m3
180	3	0,0158	70,96	1,62	69,34	208 m3	250 m3
240	4	0,0126	56,70	1,62	55,08	220 m3	264 m3
300	5	0,0112	50,22	1,62	48,60	243 m3	292 m3
360	6	0,0094	42,28	1,62	40,66	244 m3	293 m3
420	7	0,0086	38,88	1,62	37,26	261 m3	313 m3
480	8	0,0079	35,64	1,62	34,02	272 m3	327 m3
540	9	0,0068	30,78	1,62	29,16	262 m3	315 m3
600	10	0,0060	27,22	1,62	25,60	256 m3	307 m3

Regnintensitet 10 års hændelse		
9,7 um/s	0,0000097 m/s	0,03492 m/h
6 um/s	0,000006 m/s	0,0216 m/h
4,38 um/s	0,00000438 m/s	0,015768 m/h
3,5 um/s	0,0000035 m/s	0,0126 m/h
3,1 um/s	0,0000031 m/s	0,01116 m/h
2,61 um/s	0,00000261 m/s	0,009396 m/h
2,4 um/s	0,0000024 m/s	0,00864 m/h
2,2 um/s	0,0000022 m/s	0,00792 m/h
1,9 um/s	0,0000019 m/s	0,00684 m/h
1,68 um/s	0,00000168 m/s	0,006048 m/h

Calculated volume

Rainfall event	Volume
5 year event	m3
10 year event	327 m3
20 year event	369 m3

Appendix 10

Walk and talk with a Christianite

13.02.2024
The following information consists of notes taken during the interview. The notes have been translated from Danish.

Information about the interviewed Christianite:
• Name: Joker
• Gender: Male
• Occupation: Musician
• Family: Father and husband
• Residence: Built his own house in Christiania
• Political Views: Supports the decriminalization of cannabis
• History: Moved in as a squatter and has lived in Christiania for 35 years
• Smoking Habits: Started smoking cannabis at 13 and still smokes
• Views on Meetings: Believes that attending area meetings is more important than general meetings as they are the democratic foundation.

General information on Christiania:
• Christiania is divided into 15 areas with about 700 adults and 200 children.
• Services and Infrastructure:
• There is a construction office that offers advice during the building phase (technical services – water, etc.).
• The contact group manages communication with the rest of Denmark.

Community and Economics:
• Christiania is unique among other squatting communities because residents formed families and had children.
• "Christiania is not about getting rich."
• Everyone in Christiania receives the same wage, called "Christiania wage."
• All paid services contribute to the community fund, which totals 55 million DKK annually. Some funds go to property taxes.
• Christiania was purchased in 2012, with a renegotiation due in 2022.
• Christiania aims to buy the ramparts.
• No high-rises are allowed, a point of contention.
• Christiania is utilizing usage rights – the right to use rather than own.
• The foundation is governed by general meetings.
• Not owning property may make some feel compelled to stay.
• Children of Christianites do not have the right to move into Christiania and must apply like everyone else.
• Believes Christiania's peaceful approach is why it still exists.
• Experiments with alternative building methods.
• Need facilities for the elderly.
• The Best Things about Christiania:

Quotes
• "I could be concerned that only people who can afford to live in Christiania will move in."
• "The best thing about living here is raising children in a car-free city with a horse stable."
• "You can live a good life without money."
• "We would rather bend the rules than bend the individual."
• "We don't believe in A- and B-class Christianites."

Family life
• Building your own house
• The individual is more important than rules
• Wooden houses are typically from Christiania, while stone houses are from the military era.
• Car-free city – private car ownership is not allowed.
• Cooperative building, self-building, small and cozy homes.

Appendix 11

Interview with architects and board member of Fonden Fristaden Christiania: Mette Prag

13.02.2024
The following information consists of notes taken during the interview. The notes have been translated from Danish.

Infoformaion about the interviewed:
• Name: Mette Prag
• Background: Architect with her own studio `Plads` focusing on process and dialogue.
• Member of Christiania Working Group: A working group in Christiania that has been established to investigate various aspects of the development of the area.

General information from the interview
• Partnership with the Copenhagen Municipality: currently, there are seven projects in the process of being realized.

• Community Insights: Christiania is more than just its residents; it includes people who work there, volunteers, recreational users, etc. It would be great if more of these people could live there.

• Concerns: One of the initial questions/concerns was whether Christiania and social housing could be integrated. This remains unresolved. Three possible solutions were proposed:

• The Creation of their own housing organization: Organizations like FSB, AKB, etc., did not want to collaborate with Christiania, therefore this is necessary. The problem here, however, arises due to the lack of financing as there are no residents yet. Furthermore, this solution demands a lot of work and resources.

• Development Principles: There should be no A and B class Christianites. Everyone should attend general meetings, workdays, etc., equally.

• All new housing will be co-housing communities – currently desired. The Copenhagen Municipality supports this idea. The proposal is that each construction site will be its own co-housing community.

Concerns
• Do the housing units reach those who are supposed to live there? Therefore, there is a need to investigate who will live there before starting the design.

• The Copenhagen Municipality is very specific with their local plans, which do not align well with Christiania`s needs. Meetings are being held to revise this.

• People have strong disagreements about the future of Christiania. Especially in `Røde Sols plads`, there is much resistance to development due to "political PTSD" from previous failed processes that did not consider their needs.

• Most Christianites are concerned about the many new square meters and social housing – both in terms of new management and socio-political approach.

• It is also important for Christianites to investigate what they gain from the development and then communicate this.

• There is a significant need for senior housing, not only but also including these.

• There is also a need for more new and younger enthusiasts.

I • s it possible in the future construction to continue the current move-in process, where interviews and conversations are held with potential residents/applicants?

• Christiania wants to maintain the idea of co-housing communities and therefore believes that a building plot can correspond to a co-housing community. Additionally, they are discussing whether all 15,000 square meters necessarily need to be implemented as housing.

Current Operation
• Currently, there is no property ownership but usage rights. Additionally, there is a maintenance obligation for one`s housing. However, there is concern about the correlation between this and the `right of disposal` in social housing, where one can work on the interior to a certain extent but not the exterior.

• There have previously been conversations with Christianites where there was a strong desire for the possibility to influence or even build their own housing.

• The foundation is a significant milestone. They transitioned from a free town to a trading town. Now, social housing is also a significant new milestone.

• At large meetings in Christiania, 35-50 people participate each time. Decisions made at these meetings are taken back to the various area meetings. Additionally, there is information on the `Weekly Mirror` – however, all actors must be able to get information here, so not everything can be written – a political dance.

Future Use and Organization:
• There is discussion that an existing Christianite should become an ambassador for bridging the old and the new.

• It would be great if we could work with principles like extensions, co-construction, self-construction.

• The idea of the outside world versus Christiania is greatly challenged by development. The old Christiania may also be from another era – does it make sense to preserve this?

• They are in partnership with the Copenhagen Municipality, for example, with energy renovation and better heating supply for the whole of Christiania (the initiative is called: "Turn up for sustainability, stay warm"). Here, sea heat is a serious proposal.

• Mette is concerned that the housing will not suit the people who will live in them and therefore wishes it were possible to select the residents first and then develop the housing accordingly, thereby kickstarting the culture before they move in. Here one could also form a starting group that further develops the co-housing community.

• Christiania, in collaboration with KAB has developed a "AlmenBolig+" guideline, which should serve as a guide for how social housing should be built. They hope that now, in connection with the new social housing, they can help develop a new guideline based on this (social housing +++).

Common Events/Activities:
• Christmas for the homeless in the Gray Hall. Even people who have family to celebrate with participate, and everyone is welcome.

• What Should the New Construction Provide

New residents
• Ground floor workshops, opportunities for studios, etc.