*MSc. Sustainable Design - Civil Engineering Thesis*
*Aalborg University - Copenhagen*

# FACILITATION OF URBAN REDEVELOPMENT PROCESSES THROUGH NEGOTIATION SPACES

## A Conceptual Framework for Realising a Transformation of Hersted Industrial Park

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# TITLE PAGE

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# ABSTRACT

This research represents a design-oriented study regarding the realisation of Albertslund Municipality's desired transformation of Hersted Industrial Park (HIP) which entails a shift of use. However, the municipality do not own any land plots in the industrial area and the existing real estate owners, lead to a heterogeneous network with various conflicts and controversies, complicating the intended redevelopment.

Based on our research, we argue that the contextual initiatives of the local authorities for transforming an area, end up being void declarations of intent without realising that transformation. In that sense, to facilitate the redevelopment, Albertslund Municipality applies a conventional top-down approach, focusing on mobilisation of actors through a masterplan in the area of Hersted Industrial Park (HIP). However, our findings conclude that the constrictive and rigid nature of a masterplan, when applied in the existing complexity found in contexts, such as (HIP), creates more uncertainty in the actors of the network (real estate owners and developers) by limiting the inclusion of the interests of those actors, which makes actors to reinforce the 'lock-in' of their initial positions towards change in the area.

Our approach to the study case is built upon the use of Actor-Network-Theory (ANT) and Participatory Design, which highlights various conflicts of interest, perspectives and positions of the related actors, revealing their matters of concern and how they act. Based on that, we suggest a conceptual framework with the use of Negotiation Spaces at its core, in order to mobilise actors (real estate owners and developers) to become supportive of the redevelopment of the area of Hersted Industrial Park (HIP). That conceptual framework relies on an understanding of the tensions, controversies and matters of concern of the different actors, representing with that an alternative way for local authorities to approach the facilitation of change in areas where they do not own any land and they have to deal with a complex network of real estate owners, containing controversies and conflicts of interest.

By exploring the matters of concern (MoC) of relevant actors within the area intended to be redeveloped and exploiting MoC as drivers for change, local authorities can facilitate the engagement of relevant actors in a more iterative process to gradually transform the area 'step by step', easing the realisation of the desired redevelopment. We thereby, shift the focus point in strategic planning to embrace supportive actors and use them to redevelop in minor scale, 'contagiously' infecting others with a 'redevelopment fever' in the context of Hersted Industrial Park (HIP).

Within this specific case-study, we take stand on a strategically located land plot, owned by a supportive actor towards the intended transformation. In there, we take the first steps towards the transformation of HIP through negotiation spaces, exploring how that specific land plot can generate the agency to mobilise other actors (real estate owners and developers) to further redevelop other land plots. We additionally propose a set of negotiation themes, relevant for further redevelopment negotiation spaces between the relevant actors. However, we stress that those themes are a mere outline, as other settings or land plots will have distinctive matters of concern and actors related, which might result on a different set of negotiation themes.

From a holistic perspective, the importance of the new conceptual framework generated in this research lays on the affordance of 'redeveloping built environment', as a possible solution to some of the challenges that humans will face in the near future. In that sense, due to the expected increase of global population, if we continue the current trends of human development, there will be a further claim of natural environment to be transformed into built environment. In order to limit further negative impact of the expansion of human built environment in the natural environment, we need to look towards areas such as brown and grey fields, and revitalise them. Within this research we will thereby, investigate how to facilitate the realisation of the redevelopment of Hersted Industrial Park, a grey and brown field located in Albertslund, Denmark.

***Keywords:*** *Negotiation Spaces, Actor-Network Theory, Intermediary Objects, Urban development, Urban planning, Urban redevelopment, Participatory Design, Matters of concern, Mapping controversies, Staging, Design process*

# READING GUIDE

This materialisation of the master thesis entails two documents: a main report and an attached appendix. The core of the document is the report, which is divided in sections and chapters.

Throughout the report, each page includes the number and title of the chapter where it belongs, indicated in the top right corner. In case that you access this report in a pdf format, we have developed this report as an interactive file, making the index 'clickable' and the previously explained right top-corner to get back to the index. Along the report, we refer to previous sections and chapters, which also are interactive buttons, making the report quick and agile to navigate within.

We make use of the APA reference system as a way of indicating the contribution of other authors on which research this work is based upon. Consequently, we state author's surname and year of the consulted publication in parentheses separated by a comma: (surname, year). In the occasion of referring more than one publication from the same author and year, the reference system will add an alphabetic chart, resulting on (surname, 2019a) followed by (surname, 2019b). Furthermore, the extensive list of publications referred in this document can be found in the chapter '10. References' at the end of the report document.

In regards to the inclusion of graphic elements to illustrate elements in our report, we add illustrations and pictures, all of them elaborated by the authors of this report, unless that is indicated, which are then referred throughout the report as Illustration XX and Picture XX, respectively. In addition, to ease the emptiness of blank pages at the end of some chapters, we created collages with pictures (referred as Collage XX) with relation to the research case, which the reader should understand as mere 'moodsetters'.

Furthermore, some of the texts referred in this report will be included as statements or quotes, which will be indicated by italic text between quotations marks. In case of quoting published texts, the reference system will include a semicolon, followed by the page where the exact quote can be found in the referred publication, resulting on (surname, year; p. XX). In some cases, statements or quotes from publications or interviews might include information that is not relevant for the purpose that justified its inclusion. Therefore, to offer to the reader the exact section with the essential information required, quotes are being included with adaptations represented as [...], which will indicate that a section of the quote has been removed or by including a word between square brackets to indicate that word has been added in order to give meaning to the statement. Due to that some of the interviews were performed in Danish language, they were translated in order to fit the English language that has been used throughout this report. Lastly, the transcriptions of the interviews have been slightly adjusted to avoid the transcription of speech impediments or repeated expressions that might jeopardize the coherency of the ideas expressed by the participants of the interviews.

Regarding the appendix, it contains additional information that extends the understanding of our process and results, referred in the text as (Job title, Name of the person, interview, XX), where 'XX ' refers to the specific number.

# ACKNOWLEDGEMENTS

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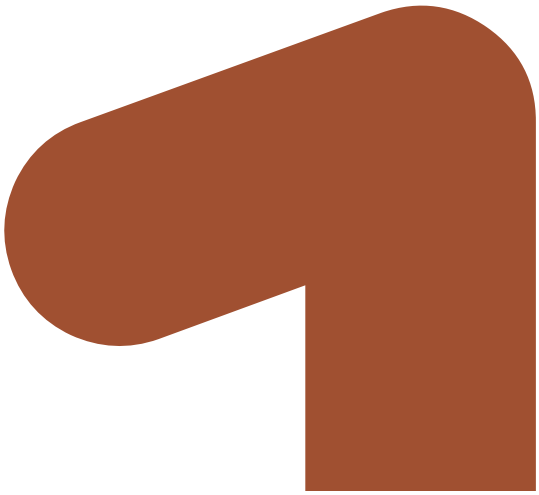
# Contents



# Introduction

Relevant information that provides an overview and general explanation of our thesis


1.1 Research Question


Research Strategy

# 1. INTRODUCTION

The growing population on a global scale in general and in urban settlements, in particular, is creating challenges for the future development of human settlements, enhanced by the further expectations of population growth and rural flight migrations towards towns and cities (United Nations, 2018)(Huang et al., 2018). Consequently, the increase of population is linked to an increase on the need for new housing to accommodate the future citizens and furthermore, the infrastructures related to the effective functioning of those settlements (transportation, sewage, public services, etc.) (Wenqiu et al., 2018).

In that context of population growth, the establishment of a public transportation infrastructure in the area of Greater Copenhagen, namely the light rail train (StorKøbenhavns Letbanen), is used by the Region of Greater Copenhagen (Region Hovedstaden) as a way for facilitating the accommodation of the increasing number of citizens settling in the region by creating a transportation across the 'Finger Plan', connecting multiple Municipalities surround the Capital of Denmark (Transportministeriet, 2015) (dinletbane.dk, 2013; 2017; 2019).

Albertslund Municipality (AM), is one of the eleven Municipalities that will be served by the new light rail connection, will count with one of the stations in the area delimited as Hersted Industrial Park. As part of the arrangement with the government of the Region of Greater Copenhagen for being served by the new transportation infrastructure, AM agreed on developing housing, office opportunities and the services related to it such as retail, etc. in the vicinities of the incoming station to accommodate their 'share' of increasing population in the region (Transportministeriet, 2015). At the same time, AM perceives the new redevelopment as an opportunity to increase revenue in the municipality by attracting new residents, aiming at becoming a more socially and economically sustainable municipality (Planner of Albertslund Municipality, Søren Kehr, Interview 08)

However, the area of Hersted Industrial Park (HIP) is still partially in use for industrial, manufacturing, office and warehousing purposes (City of Albertslund, 2019). Therefore, in order to accommodate the expected increased population, the area needs to undergo a transformation process to embrace the new use of entailing; dwelling, office & retail (Hested-industripark.dk, 2019).

For realising that transformation, Albertslund Municipality (AM) decided to initiate the process of redevelopment by elaborating masterplans for the whole Hersted Industrial Park. However, after the investment on two masterplans, which outcome did not result on any realisation of the intended redevelopment, the municipality of Albertslund is aiming at transforming the industrial area through generating a new masterplan, which is still under development while this research was conducted (Planner of Albertslund Municipality , Søren Kehr, Interview 08).

Those prior unsuccessful experiences regarding the implementation of masterplans implies that they did not function as an effective tool in the context of the redevelopment in Hersted Industrial Park. The constellation of real estate owners in the industrial area is complex, and the interest of developers towards supporting redevelopment in Hersted Industrial Park is close to non-existing. In addition, as the transformation of the industrial area is envisioned to be market-driven, this report will explore the tensions of the specific relation between the municipality of Albertslund and the developers (Planner of Albertslund Municipality, Søren Kehr, Interview 02).

According to critical perspectives towards planning, the processes of bargaining, negotiating and compromising, that planning process entails, have to be questioned (Albrechts, 2004). In line with that criticism, the findings of our research point out that the planning process followed by Albertslund Municipality in the context of the transformation of Hersted Industrial Park (HIP) has proven to be ineffective to realise the transformation of the industrial area. In that sense, the real estate owners in HIP are focused on performing their industrial practices, thereby being currently resistant to change their geographical location and infrastructure. Consequently, there are too many conflicting opinions regarding the redevelopment of the area, which limits the transformational affordance of the conventional approach towards planning, in this case, materialised on a 'formalised object' (Çalışkan & Callon, 2009) for the transformation of the whole area: the masterplan.

The whole area of Hersted Industrial Park (HIP) consists of a total of 166 real estate owners, therefore aligning the tensions between such a number of varied interests is difficult to achieve and has, in fact, already failed two times. Consequently, the level of scale that the municipality is negotiating in (a whole HIP scale), using the 'rigid' materiality of a masterplan as a medium, is not effective in the context of the redevelopment in Hersted Industrial Park, due to its ineffectiveness to include the diversity of opinions on its 'rigid' nature.

Therefore, to realise the transformation of HIP that Albertslund Municipality is aiming at, a different conceptual framework is needed, in order to produce a shift of focus towards the use of a more 'flexible' materiality, which can represent and evolve by including different interests. That flexible materiality is a core part of the interactions taking part on a 'negotiation space' (Pedersen, 2016), which should be not focused on the entire HIP scale but, instead, on a land plot to facilitate that a redeveloped land plot can interest other developers to transform Hersted Industrial Park.

## 1.1 Research Question

**How can we design, through negotiations spaces, a conceptual framework for redevelopment of a land plot in Hersted Industrial Park that can mobilise developers to embrace the desire of Albertslund Municipality of transforming the industrial area?**

## 1.2 Research Strategy

As guidance for the reader to follow the journey of the research to answer the research question, we within this section illustrate different subjects that we investigate within this report.

### 1.2.1 Hersted Industrial Park

The first aspect is to gain insights regarding the municipality and the industrial area of Hersted Industrial Park. These insights entail an investigation of their history and current context by knowing what is happening there and what kind of activities took and takes place in the industrial area. Furthermore, by exploring the area through semi-structured interviews and fieldwork observations, having a first-hand experience of the place, its relations and belongings. *'How is it to be there? why does it look as it is today?'*

### 1.2.2 Urban Redevelopment

The next element is regarding human development and its impacts on the urban environment from the perspective of the Anthropocene, planet boundaries and the implications of the different types of land-use, to justify whether or not it is a sustainable matter to redevelop an area such as Hersted Industrial Park.

We further investigate what the approach of conventional urban redevelopment entails and which consequences produce a result, which will be compared with the approach followed by the municipality of Albertslund regarding the redevelopment in Hersted Industrial Park. Furthermore, we research other trends or perspectives concerning the development of the built environment to provide a more extensive understanding of these processes. By gaining an insight in the current urban planning approach and its consequences, we can justify the need of facilitating a more holistic perspective in regards to redevelopment in the area of Hersted industrial Park and understanding our it differs to with the conceptual framework outcome of this report.

### 1.2.3 Transformation

The third aspect we address relates to the desired transformation of Hersted Industrial Park. In that sense, the industrial area has to change in order to embrace the new types of use; dwelling, office & retail. We thereby, investigate, contextualise and explain the change process that the municipality desires for the area. We will do that through opening up the implications of the incoming infrastructure of the light rail of Greater Copenhagen and the past and current perspective that the municipality of Albertslund had towards a transformation in Hersted Industrial Park.

### 1.2.4 Understanding our Empirical Research

The fourth aspect is concerning creating an understanding of our collected empirical research, which we will do through a mix of theoretical 'spectacles'. First, we will apply a socio-technical perspective through Actor-Network-Theory, which have been chosen due to its heterogeneous understanding of the actor's matters of concern instead of their matters of facts. Through the analysis of those matters of concern, we will be able to mobilize actors based on the moments of translation (Callon, 1986). However, the notion of mobilizing actors through a single intervention point/object has been criticised by some scholars as naive (Pedersen, 2016). Furthermore, instead of applying the approach of translation to mobilize from Callon (1986), we use the notion of navigation through Participatory Design' negotiation spaces to facilitate a process of alignment by applying the interests of the person involved in the space (Vinck, 2012)(Pedersen, 2016).

### 1.2.5 Conceptualization

We design a conceptual framework, which aims at mobilising developers to transform Hersted Industrial Park. For that, we will, though a design-process for redeveloping a single land plot, introduce a shift of focus from planning objects to an embracement of negotiation spaces.

*Collage 1:*
*Interactions with Participants*

# 2

# Methods

How did we gather empirical data? How did we process it?


Ethnographic Fieldwork


Fieldwork Observation


Processing data


Participatory Design


Brainstorming


Narratives

# 2.METHODS

The structure of this report entails two main parts. In this section, we will shortly describe those two parts and further explain the methodological tools we use for the gathering of our empirical material. In the initial part, we investigate challenges and difficulties related to the redevelopment of Hersted Industrial Park by gathering, processing and analyzing preliminary empirical data. We started by performing ethnographic fieldwork methods involving the key actors of our research case. We also performed a fieldwork observation in order to understand the urban context as a situated place and its related materiality. In addition, to process the collected data for further facilitation of the analysis section, we use a processing tool to cluster similar themes and identify common issues.

In the second part, we develop a conceptual framework with the affordance of dealing with those challenges and difficulties and open up for design possibilities for the redevelopment of a land plot that can enact existing owners and future developers to transform Hersted Industrial Park. Generated from solutions based on the analysis, we perform participatory design methods with the purpose of creating negotiated materiality. With that, by using Participatory Design methods and their related design objects, we gather further empirical material, in the shape of feedback and, through iterations, produce the design solution, which represents a showcase of the implementation of the generated framework.

## 2.1 Ethnographic Fieldwork

The illustration 01 shows the timeline of ethnographic fieldwork performed in interaction with actors during our research. The relevancy of ethnographic fieldwork lies on its affordance for gaining insights on human behaviours and social relationships (Shokeid, 2015). In that sense, the selection of the included participants is grounded in a need of understanding the field of study, in this case that involves creating an understanding about Albertslund Municipality, Hersted Industrial Park, the different practices taking place in there and their related actors. All in a context of urban planning and the redevelopment of an industrial area.

With that, our ethnographic fieldwork involved a planner of Albertslund Municipality, a politician with the position of Head of Economy and Environment Department of the municipality of Albertslund, the former and current Chairman of the Board of Owners in Hersted Industrial Park, citizens and members of different NGO's related to the development of Albertslund, as well as real estate owners, investors and developers. Furthermore, as presented in the Illustration 01 some of the interactions with participants suffered several iterations in order to follow up on the research and develop the design possibilities.

The methods we used as part of ethnographic fieldwork are 'semi-structured interviews' and 'roll the snowball'.

### 2.1.1 Semi-Structured Interviews

As part of our ethnographic fieldwork, we performed semi-structured interviews, used as a qualitative research method. The use of different close or open-ended questions based on specific topics we prepared beforehand need also to allow enough flexibility for including possible new directions in the interview, in a way that participants express their opinions, facilitating our insight on the research field (Newcomer 2015).

We approach participants with predetermined topics to be discussed, giving space to a flexible shifting of subjects and enabling the formulation of new questions that can happen during the conversation. In that sense, questions are not fixed, but they give guidance to the researcher to stay focused on topics while allowing deviation (Kellett, 2005).

### 2.1.2. Roll the Snowball

Referred also as the snowball method (Lindegaard, 2008), we use it for facilitating the involvement of a significant number of relevant participants in our research, gaining with that access to a broader understanding of the challenges and difficulties related to the redevelopment of Hersted Industrial Park. In that sense, as part of the interviews with participants, we gain their perception regarding elements to be analyzed, and at the same time, we also inquire information about new participants that might be relevant to include in our research. By including those new relevant participants, we can increase our circle of action, starting an inclusion process that ends when no more new participants are mentioned (Lindegaard, 2008).

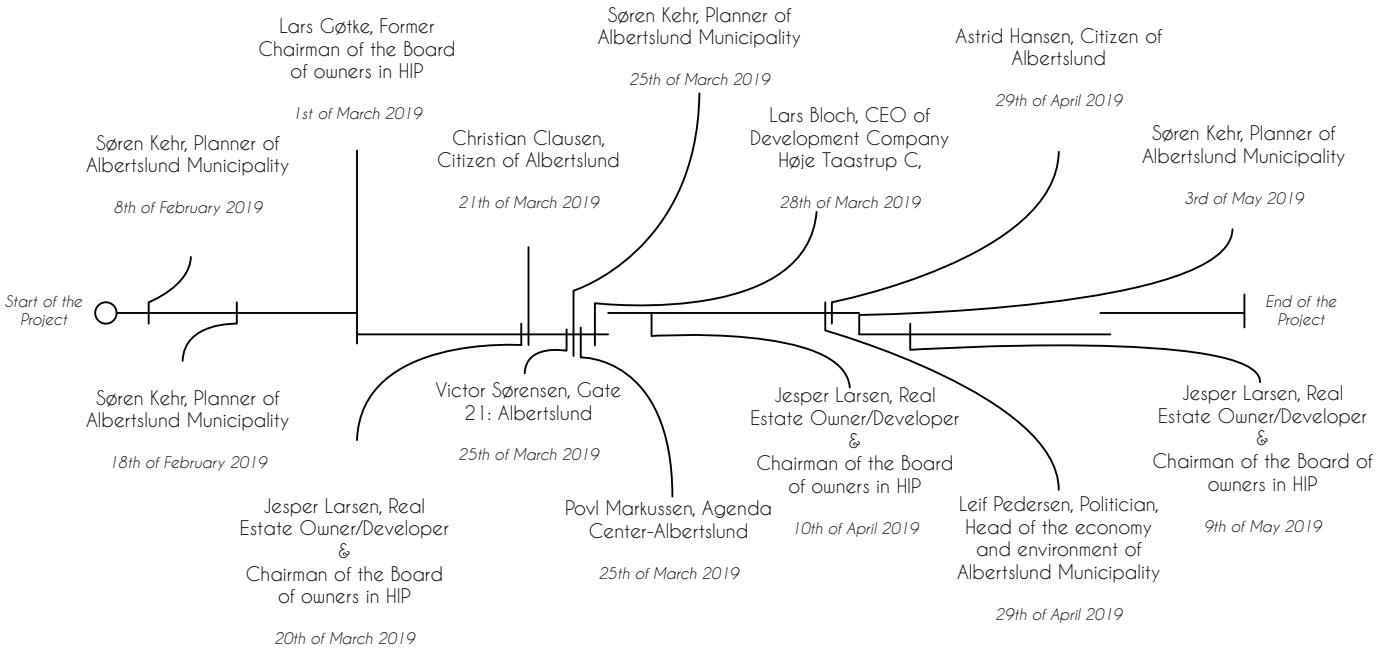



*Illustration 01: Interactions between participants and authors.*

## 2.2 Fieldwork Observation

As part of the gathering process of our research, we perform observations in the area of Hersted Industrial Park, captured through the use of Photographic Fieldnotes. In that sense, we use this method as a way of understanding the urban context as a place, exploring the physical aspects of Hersted Industrial Park regarding its transformation. For that, Photographic fieldnotes facilitate the visualization and transfer of situated findings, adding knowledge and information and giving a deeper understanding of the materiality within the research context (Pink, 2007)(Rasmussen, 2007). In addition, our field notes function as screening of qualities and parameters related to the existing materiality, such as materials, architectural styles, traffic and uses.

## 2.3 Processing data

By using affinity diagrams, we can compile the relevant gathered empirical data and observations, enabling the creation of categorised clusters of common elements (Beyer & Holtzblatt, 1998). The affordance of this method is the visual presentation and the organization of topics facilitating an overview of crucial aspects. It is performed by writing the data on notes and categorize it when those categories and groups of data are established, further common points and key elements appear, facilitating the processing of the gathered information (Holtzblatt & Beyer, 2017).

With the understanding of affinity diagram, we printed all the interviews and marked all the sentences with parameters, noted it in with the interview number and actor in Appendix 01: Table: Design Parameters - Interviews, while also marking the parameter on the whiteboard for a clustering. The notion of clustering the parameters into five categories helped in accomplishing an overview of the 29 individual design parameters *(Section 7.7)*.

## 2.4 Participatory Design

We use Participatory Design (PD) methods for designing a conceptual framework for realising the redevelopment of a land plot in Hersted Industrial Park, in order to, through negotiation spaces, facilitate the involvement of participants in the creative process (Pedersen, 2016). In that sense, with the inclusion of participants in the process, PD approach allows us to move the focus point of the design experience, conventionally located on the outcome of design, but rather moving towards the design process itself. With that, PD is not only a method to gather empirical material, but also a theory approach to design, which is a basis for the tool of negotiation spaces, which can be found in the *section '5.3: Participatory Design'*. As a consequence, we focus on the materiality and the participants that should be included in the negotiation spaces intended to mobilise them effectively (Pedersen, 2016).

It should be noticed by the reader that we acknowledge that discussions, compromises and bargainings are part of the existing practices of urban planning (Albrechts, 2004). However, when referring to negotiation spaces, we do not refer only to mere negotiations or discussions, but to a tool for ease controversies which will be further discussed in *'5.3.1. Negotiation Spaces'*.

It is also essential to state that using PD approaches, its materiality (represented in objects of design) and the use of negotiation spaces, facilitate the transfer and production of knowledge (Carlile, 2002)(Vinck, 2012). In the context of this research, knowledge relates not only to the gathering of the empirical data that grounds our analysis section but also to the knowledge that we use as a basis for the conceptual framework to realise the desired redevelopment in Hersted Industrial Park.

With that, our process of design should be understood as produced throughout the interactions with the multiple participants. Therefore we understand that, in this context, the design process started from the first interaction with participants, generating knowledge included in the conceptual framework outcome of this report and its implementation case-study. Therefore, the negotiating with participants, actively involving them within the design process, means that we have throughout the project designed with actors, whether its empirical data is being used for analytical purposes (such as understandings of how they act, position and relate themselves to the redevelopment of Hersted Industrial Park), or for the notion of aiding with specific design parameters for the local land plots.

## 2.5 Brainstorming

The generation of ideas can generally be understood as a crucial part of structuring creativity and innovation (Lichtfield, 2008). There are different techniques that can structure a brainstorming session. We use a progressive intuitive approach, 'brainwriting' method 6-3-5 for creating a structure of the idea-generation process (Schröder, et al. 2010). The application of the method refers to six designers/participants, who develop three ideas each within a timespan of five minutes. Nevertheless, the method was applied in a different manner in our research, as a more flexible approach for developing conceptual idea elements from our predefined design parameters. In that regard, this research has been performed by three sustainable design engineers included in the brainwriting session, generating ideas within a timespan for designing design-elements, which was fluidly decided upon agreement. In addition, a short presentation of each of the ideas was performed in order to have a collective understanding of the meaning behind the conceptual idea.

## 2.6 Narratives

Narratives are constructed on an event timeline which shed lights on qualities that want to be portrayed to readers and observers (Dawson & Buchanan, 2005). Concerning the second part of the report, we use the method of creation of narratives, which serve the purpose of engaging actors to embrace concepts. The narratives aim at having storytelling that steers selected actors towards the desired change. The narratives became materiality in the design process within negotiation spaces for the redeveloping of Hersted Industrial Park, showcased in the redevelopment of a land plot.


*Collage 2: Built Environment in Hersted Industrial Park & Albertslund*

# Literature Research

A state-of-the-art journey into what others wrote about the topics we discuss in this thesis


The Implications of Human Development


Planet Boundaries


Land Use Implications


Transformed Industrial Areas


Challenges of Traditional Urban Planning


Cultural Heritage in Urban Development

# 3. LITERATURE RESEARCH

Within this chapter, we will explore the implications of human development on the environment, introducing the notion of Anthropocene and planet boundaries to understand the full picture of the problem, that we are facing now and in the future. We will furthermore, look into the definition of land types, other examples of transformed industrial areas, challenges of the traditional urban development and the benefits of including heritage in the development process, all from a literature perspective, which function as fundamental background knowledge of the field that we approach with this research.

## 3.1 The Implications of Human Development

The transformation of the industrial area in Hersted Industrial Park represents an important focus for sustainable urban redevelopment, and such a transformation enables the re-use of already developed land rather than continuously developed urban sprawling on untouched land. In order to understand why it is important to shift focus, we need to open up the wickedness of urban development and its implications on the natural environment.

Since the appearance of carbon-based technological advances in the Industrial Revolution, to the late twentieth century, the core of the economic growth all around the world has been increasingly linked to the development of industrial cities, like the case exemplified in our research. As a result, today, there is a well-established relation between the increasing urbanization and the changes taking place in the climate and environment on a global scale (Pincetl, 2017).

### 3.1.1 Anthropocene

In relation to the impact of industrialised societies, a report published in 2014 concluded that one of the implications the human development has had on Earth, was the mass of land considered heavily degraded by human actions, which is equivalent to the surface of the United States and China combined (World Resources Institute, 2014) and over 50% of the planet surface has been negatively affected by human development, having a direct negative impact on biodiversity and climate (Hooke et al., 2012). Consequently, in terms of a geological epoch, there is a growing consensus that the world is moving away from the Holocene, which lasted around 12.000 years, towards a new era called the 'Anthropocene' (Crutzen, 2002)(Crutzen, 2006).

The fundamental difference between these two particular periods lays in the shift from a reasonably stable climate, characterised by biochemical cycles, to a more challenging state, characterised by changes in the climate triggered by human impact on the environment (Pincetl, 2017).

Another aspects to take into account are the consequences that environmental and climate change will have in the further development of cities, namely the increase of natural disasters and their impact on coastal communities, generating a need for accommodating in other inland places the immigration waves from climate refugees, which can have severe implications in a country like Denmark, mostly coastal and without much elevation over sea level (Miller, 2017). On top of that, the technological and scientific advances of the last centuries have allowed the vast increase of global population and life expectancy, resulting in a demographic explosion without precedents in history. That increase is expected to continue in the decades to come, rising from 7,6 billion people in 2017 to 9,8 billion people by 2050 (United Nations, 2017).

Consequently, that growth in population will put higher pressure on the development of existing and new urban areas, requiring for that a high input of resources and land use, being reclaimed from the natural environment. In that sense, the percentage of the global population living in cities will increase from 55% in 2018 up to 68% by 2050 (United Nations, 2018).

Therefore, to accommodate the increasing population in urban areas in the near future, it will be necessary to construct an immense amount of new buildings for dwellings, services and other related infrastructures, having implications on the remaining natural environment, which will be transform from natural to built environment (Roders et al., 2013). Furthermore, if the challenge of the population growth is addressed by applying a 'business as usual' approach, it will result on a further degradation of the natural environment and its related ecosystems, as referred by Ferwerda (2015),

*"...an alarmingly detrimental effect on our well-being. [Including] reduced security of food and water, depletion of soil fertility, reduced access to energy and its efficient utilisation, a decline in biodiversity, and the increased occurrence of extreme weather events (drought, floods, hurricanes)"* (Ferwerda, 2015; p.17).

Therefore, to address the challenges that the Anthropocene is presenting to the sustainability of human life on the planet, a new paradigm able to represent those risks was developed in a collaboration among researchers, resulting in the framework of the Planet Boundaries (Rockström et al., 2009).

## 3.2 Planet Boundaries

The framework of the Planet Boundaries (Rockström et al., 2009) creates an understanding of the planet we live on like a closed system, often referred to as Earth System, which represents the boundaries established based on the work of the researchers, an space where humans can develop within a safe operational space, however, developing beyond those boundaries will jeopardize the conditions on Earth which support human life (Steffen et al., 2015). One of the aspects addressed in the framework of the planetary boundaries is the 'land-system change', meaning the impact of humans in the natural environment by reclaiming land to transformed for the purpose of human development (agricultural, resource, infrastructure, settlement, etc.).

Furthermore, even when in the current framework the parameter regarding use of land appears as still under the 'safe zone', there is a consensus about the impact that reclaiming natural environment has on biodiversity and the capacity of regeneration of the environment and its natural cycles supporting the perception that the distance towards the boundary is reduced continuously (Rockström et al., 2009)(Fang et al., 2015)(Steffen et al., 2015)(Raworth, 2017). If we zoom in on a Danish context, the situation does not look better, with studies showing that the "land requirements for self-sufficiency under current bio-productivity are much higher than the available resources" (Fang et al., 2015; p.7), understanding the consumption of resources in Denmark as being unsustainable and impossible to continue with our existing practices.

## 3.3 Land Use Implications

The expected growth on global population (an increase of 2,2 billion people by 2050) will imply a boost of the emissions related to construction, due to the building activities needed to provide dwellings, services and infrastructure for the new urban inhabitants (Huang et al., 2018). However, the issues are not only related to the increase in global emissions. In that sense, in order to develop existing urban spaces and create new ones, an immense area of land will have to be reclaimed causing a drastic reduction of natural areas with severe implications on the environment (Wenqiu et al., 2018).

In addition, the current approach that grounds the urban planning and practices of the construction sector, based on a approach to planning that are causing severe impact on the natural environment, making relevant to generate an understanding of the current and future challenges regarding how the construction of the dwellings of the urban inhabitants of the near future will affect the environment (Roders et al., 2013)(Malekpour et al., 2015)(Huang et al., 2018).

Nevertheless, the demand for building new dwellings is not directly associated with a lack of vacancy of an already built environment. Just in Europe, around 15% of the existing office buildings situated in urban spaces were vacant on 2013, half of them being empty for at least three years (Remøy & Van der Voordt, 2014).

Population growth is not a constant of every city landscapes, and some cities have been experiencing a decrease of inhabitants or will decline in population in the near future. The reasons for that can be found in the low-fertility of the existing population, economic recessions, natural disasters or shifts in economic activities, which consequences and frequency can be enhanced by the climate and environmental change, which can also have an in Denmark (United Nations, 2018)(Roders et al., 2013). Furthermore, in both case scenarios, with an increase or decrease of the population soon, existing and new buildings (housing, offices or industrial) will become more relevant in terms of its potential for being repurposed. In that sense, the repurposing of the buildings that become vacant or underused following change in economic activity (like, for instance, the decrease of demand on office buildings in specific areas) should accommodate the increase of population or the demand of different economic activities (Remøy & Van der Voordt, 2007).

In a Danish context, human development and the expansion of urban settlements have had a severe impact on the natural environment in Denmark, demanding land for agricultural, industrial and housing areas that generated, as early as the 1800s, a situation close to total deforestation in the country (Stupak & Raulund-Rasmussen, 2016). Even when the situation has been reverted to a 14,3% of forest surface, the Danish land already taken or modified by human development created a detriment not only of the natural environment but also on the diversity on wildlife in the country (Jacobsen et al., 2012).

### 3.3.1 Danish Context

Regarding population growth in Denmark, the perspective of the Danish growth prospects of the population is a little lower than the global average, going from 5,6 in 2018 to 6,4 million people (Danmarks Statistik, 2019). This increase will generate a further pressure on the natural environment due to the land needed for creating new dwellings in Danish cities, specially in the area of Greater Copenhagen, where one third of the Danish population lives (Danmarks Statistik, 2019), also establishing for both developing the existing urban landscape and the urbanization of new areas.

By 2018, in Denmark, there were 1,66 million square meters of office space offered in the market labelled as empty and ready for lease or to buy, representing up to 6,9% of the total build office mass in the country. However, more locally in the region of Greater Copenhagen, the percentages of vacant office spaces are higher 7,1% which consists of 0,81 million square meters of office space not being used in the region (Danmarks Statistik, 2019).

In the context of urban design, the increasing pressure produced by the development of big cities while, at the same time, taking into consideration the social, economic and environmental aspects of human development are making necessary a new paradigm of urban development (Newton et al., 2012), as expressed by Grom et al.:

*"The increasingly changeable natural and environmental conditions affect the quality of life and quality of living areas, both outdoors and indoors. Mayors, governors, developers, and suburbanites desperately need alternatives to sprawl, and architects need to be re-engaged practically - and theoretically - with the unavoidable issues of ecological sustainability, social justice, mobile capital, consumer culture, ethnic and cultural identities, and politics"* (Grom et al., 2018; p. 16)

In that sense, in the context of urban development, the introduction of sustainability measures focus on the technological, political and social elements associated with the characteristics of the urban context, to ensure the balance between the urban space, humans and environment as a system. However, these measures are implemented to function in a stable and balanced environment, being unable to deal with the implications of drastic environmental degradation (Grom et al., 2018).

### 3.3.2 Categorisation of Land Types

By the traditional approach for city building of constructing on greenfields (understood as an undeveloped piece of land), we are impacting our planet boundaries by reducing the distance towards the safe limits of the Planet Boundaries framework in an unsustainable manner, which can be quantitatively associated with resource consumption and environmental degradation (Newton, 2012)

There is no current definition of 'unused land plots' offered by The Danish Environmental Protection Agency in Denmark. However, the term brownfields are widely used in scientific literature, one of the more commonly agreed upon definitions is made by CABERNET- International conference on managing urban land: Brownfields are in contrast with greenfields, are developed and then kept un-utilised, thereby, having no functional use. That results on an underused space which then suddenly becomes a threat for the environment, by an actual or future environmental corruption of the area, whether it is materialised in the soil, air or material nature of the space (Trkulja, 2018). In Danish context is has been estimated that there are around 30.000 land plots in Denmark, which can be categorised as a "brownfield" (Oliver et al., 2005). In the context of Hersted Industrial Park, land plots that have been kept with no current use would be then defined as brownfields. In contrast, other land plots in use would be categorised as greyfields, due to its possible potential of redevelopment.

The term greyfield is opposed to brownfields by representing a land plot that is not vacant, but partly in use, located in the urban space and has the opportunity to be regenerated and re-developed to improve the city in various facets (Newton, 2012).

*"Current brownfield and greyfield approaches to urban redevelopment are necessary"* (Newton, 2012; p.145)

*"Land use is a multifaceted phenomenon that can be viewed from several aspects. It affects sustainability and ecological resilience, but also economic competitiveness and social equity. Therefore, it is important that the redevelopment of urban land be aligned with future development potentials and intergenerational issues. [...] Efficient use of urban land is the basis of current and future strategies for the sustainable development of European cities"* (Trkulja, 2018; p.216)

The redevelopment of greyfields and brownfields has later arisen as an approach for re-visioning and transforming parts of the cities that 'have died' and a stage where the original industrial-era functions have no place in that given area. These brownfields areas are occupying prime waterfronts as well as industrial sites in large metropolitan areas (Newton, 2012). The fundament for the current and future of sustainable development strategies for European cities is an effective and resourceful use of urban land and at this moment referred to brown- grey-fields which offers unique possibilities in prime locations (Trkujla, 2018).

*"The regeneration is necessary in that they are sustainable in the long term and resilient to intensive changes in urban systems confronted with demographic growth, rapid urbanisation, climate and many other natural changes and disasters"* (Trkujla, 2018; p.216)

Throughout the recent years' land-use change has been at the centre of politics & science sustainability debates due to the correlation with "climate change, loss of biodiversity and general pollution" (Nijkamp et al., 2002). The pressures for urban redevelopment are growing in all major cities. A methodology for urban redevelopment is required, that provides a spatial framework for guiding interest and investment to brownfields and greyfields precincts, rather than the 'business as usual' which involves developing on greenfields, as referred by Newton (2012).

*"A new paradigm and spatial planning platform are required that will support timely multi-level and multi-actor stakeholder engagement, resulting in the emergence of consensus plans for precinct-level urban regeneration capable of more rapid implementation."* (Newton, 2012; p.138)

We thereby, within the context of Hersted Industrial Park need to investigate their current 'spatial planning platform'/process of enacting the transformation and embrace critical perspective to open up for a more rapid implementation approach (Newton, 2012).

## 3.4 Transformed Industrial Areas

Within this section, we explore similar redevelopment projects to Hersted Industrial Park, to learn from mistakes and successful experiences in the redevelopment of other industrial areas. In that sense, we find particular relevance in the case of the transformation of the inner harbour of Copenhagen, which represents a large scale redevelopment project of an industrial area that was transformed in order to embrace the practice of bathing in the water of the harbour. Its relevance relies on the approach to describe the transformation, which uses the same socio-technical perspective we take a basis in (Jensen et al., 2013).

In broader terms, the current use of industrial sites had a series of interdependencies between practices and established infrastructures, and these implications were from a transformation perspective, challenging to unravel and change in order to promote the desired shift of use. Through the use of a series of navigational actions, namely "an environmental enactment and a hygienic recreational enactment" (Jensen et al., 2013; p.566), the tensions in the network, entailing different clashes of positions towards the change, were opened up.

*"… The actors and authorities involved in developing specific urban places must inevitably deal with the intrinsic relationships between such places and the various large-scale systems that serve, occupy, or use them. This suggests that place-specific development or regeneration activities may play a salient role in modulating the broader socio-material systems and structures across the urban fabric."* (Jensen et al, 2013; p.568)

With that, Jensen et al. (2013) understand that, in the redevelopment of unique urban locations, is vital for the process to take into consideration the interconnectivity between relevant actors, human and non-human. Besides, it is needed a conscious interaction with those actors, whether it is by opening up for partnership or directly leaving them out (navigating through their matters of concern). Consequently, it is critical to be aware that such actors might have a direct or indirect impact on the intended transformation. Furthermore, Jensen et al. (2013) claim that redevelopment can have a broader effect on the larger surrounding systems and structures related to the physical aspects of urbanism. With that, the successful case of Copenhagen Harbor exemplifies, in a Danish context, that the relations between human and non-human actors and their different interests, should be taken into consideration when approaching the redevelopment of industrial areas, with particular attention at the relevancy of the processes taking place within interaction between actors (Jensen et al., 2013).

Urban redevelopment planning of an area can be done following various approaches; however, one of the most common methodology for developing is by merging land plots owners into 'development companies', which then creates a vision over the proposed redeveloped area (Jean-Paul & Christoph, 2002). In a Danish context, we research two of those development companies, as a result of this, referring to (re-)development projects, namely in Høje Taastrup C. and Køge Kyst. In both cases, the respective responsible development company has been established as a mix of ownership, with a public and private structure, and a full control of the area they envision to transform into a space suitable for residential, commercial and office use (Jensen et al., 2013)(Bloch, 2019)(Køge Kyst P/S, 2019).

The affordances of such an owner's constellation relate to the development of the process of master-planning for the area to be developed. In that sense, the planners developing the masterplan, with zoning and the more rigid local plans, will have to deal and negotiate with a single ownership actor (Jean-Paul & Christoph, 2002) (Jensen et al., 2013).

One of the common aspects among these presented cases of redevelopment of Copenhagen Harbor, Høje Taastrup C and Køge Kyst, is the involvement of the Municipalities in the process from a standpoint of a part-owner, meaning that the control of part of the land plots in the area, namely the ones that will initiate the transformation, is owned by the municipality. With that, municipality planners are more in control of how and when they can sell off pieces of land plots to developers, in order to initiate the desired transformation of the large-scale areas. Consequently, a Municipality without the status of part-owner, which enter a redevelopment process in an area without a constituted constellation of actors or 'development company' will have more limitations to realise or implement the vision of the local authority (Jean-Paul & Christoph 2002).

## 3.5 Challenges of Traditional Urban Planning

We will now explore the traditional approach to strategic urban planning to, later in the report, the perspective that into the specific context of Hersted Industrial Park (HIP), shedding light over some challenges that the application of that traditional approach might cause in the specific context of HIP. In that sense, even when the development of human societies and economies are build upon strategic urban planning, which generated our constructed environments (Malekpour et al., 2015), the process of strategic planning may function, or not, depending on the specific context but "...the question of whether and how it works, in what ways, for whom, and why is certainly open" (Bryson et al, 2009; p.173)

The traditional approach to planning built environment focuses on the control of the use of land by establishing a zoning system, steering the process of development of areas to ensure the fulfilment of needed or demanded uses.

> *"Planning's hardest critics have defined it as consisting of no more than a fairly rigid, mechanistically, applied sequence of prescribed steps often requiring huge amounts of information, power, and authority to complete; and typically divorced from processes, methods, and mechanisms of implementation."* (Bryson et al, 2009; p.174)

This locked understanding on urban planning which based that traditional approach, results on exclusion of important actors in the planning process (Albrechts, 2004). In that sense, in words of Albrechts (2004):

> *"... A planning process requires a capacity to listen, not just for the expression of material interest, but also for what people care about..."* (Albrechts, 2004; p.750).

With that, Albrechts (2004) advocates for a more flexible and inclusive approach to planning in order to make it more adaptive to shifts in economic and social environments and political agendas, supporting the need for a more flexible framework in contexts like the one in Hersted Industrial Park.

However, even when it is widely recognized by the sector that a more sustainable development is necessary, not only in the development of the built environment, but also in the planning of buildings, urban spaces and infrastructures, researchers such as Roders et al. (2013) and Malekpour et al. (2015) claim that some of the main challenges regarding the impact of the development of the built environment are far from being addressed.

In the perspective of Roders et al. (2013), one of the main challenges is regarding the highly fragmented nature of the existing networks of actors that confirm the construction sector (for example owners, investors, residents (users), architects, developers, etc.). Consequently, this fragmentation limits the impact of the measures that could be developed from national and local legislation regarding the environmental impact of the construction of new buildings, redevelopment of existing buildings, infrastructure and climate adaptations.

On the other hand, Malekpour et al. (2015), defines the situation of urban and infrastructure planning as a 'lock-in' situation, understanding that:

*"...the incremental approach to infrastructure planning, which has been the dominant approach for decades, perpetuates a planning culture which contradicts the requirements for sustainability transitions, by limiting the scope of alternatives to optimizing the status quo instead of creating conditions for change"* (Malekpour et al., 2015; p.1).

Therefore, according to Malekpour et al. (2015), if planners want to widen up the scope of their planning practices and facilitate change, they need to embrace a shift of planning approach.

## 3.6 Cultural Heritage in Urban Development

With notion of planning for urban (re-)development then it is critical that*"Cities have to consider the needs of residents, visitors, investors and other actors at the same time [...] In this process, the role of local cultural heritage is increasing"* (Oliver et al, 2005; p.11).

Cultural heritage is to preserve the tradition of objects and intertwined attributes of a society that have been handed down from generation to generation for the benefit for coming generations (UNESCO,2017), such as the experiences collected through generations by the citizens of Albertslund Municipality since its creation in the '60s. Since spaces are a social construction then urban planning should not solely focus on the development of land plots (places) but more so the societies of which space is meant to sustain (Oliver et al., 2005).

It can be challenging to preserve such cultural characteristics and often results in demanding higher investments. However, the embracement of such cultural traits in local geographical areas can be beneficial due to the opportunity to develop in unique and historical settings which are far from existing planning guidelines (Mulley et al., 2016).

# Empirical Research

A presentation of decisive empirical findings


Hersted Industrial Park


The DNA of Albertslund


Transport Infrastructure: Greater CPH Light Rail


Vision of Hersted Industrial Park


Previous Transformation Attempts

# 4.EMPIRICAL RESEARCH

Throughout our research, we kept in touch with the different relevant actors in the research context. With that, we have had several meetings with planners and politicians in the municipality of Albertslund, citizens of Albertslund, NGO's working towards a sustainable transition of Albertslund, real estate developers and real estate owners in Hersted Industrial Park. Therefore, those regular interactions with several actors, which timeline can be found in the method *section 2.1* Ethnographic Fieldwork of this thesis report, represent the core of our gathered empirical research, which we present in this section.

First, we present our context of research, gaining with those insights in Hersted Industrial Park and the municipality of Albertslund, where the area is situated. Secondly, we need to investigate, contextualise and explain the change process intended for the area. We will do that through opening up the implications of the incoming infrastructure of the light rail of Greater Copenhagen and the past and current perspective that the municipality of Albertslund had towards a transformation of Hersted Industrial Park.

## 4.1 Hersted Industrial Park

Hersted Industrial Park is located on the edge of East side of Albertslund Municipality, sharing borders with the municipality of Glostrup. See Illustration 02: Hersted Industrial Park. It was established as a planned industrial area back in the late '60s, in what it was an area occupied for agricultural purposes, namely a free-range dairy cow field. It developed motivated by a process of relocating companies in the industrial sector, which began to move out from Central Copenhagen in favour of establishing themselves in the surrounding areas of the Danish capital, as the increasing growth of Copenhagen pushed out primary and secondary sectors beyond city's boundaries (Bloch, 2019).

When the area was first landscaped, it was considered as innovative both in the sense of the size of the area and size of the buildings, successfully gathering an increasing amount of factories and warehouses in an area of around 160 Hectares (1.600.000 m2) (Albertslund kommune & Realdania, 2013)(City of Albertslund, 2019), which is the equivalent to 224 football fields.

In the early days of Hersted Industrial park (HIP), companies established in the area owned the land plot where they located, which was usual practice at the time. However, through the decades, market and economic practices changed.

Gradually, market conditions started to demand higher flexibility to companies in terms of location and space, in order to cope up with future expansion or possible contraction of their activities. Consequently, companies started to see the investment of owning a land plot too risky, favouring the appearance in the area of real estate companies, pension funds and other big investors, who bought the land to rented it out to companies (Hersted-industripark.dk, 2019) (Former Chairman of the Board of owners in HIP, Lars Gøtke, Interview 03).


*Illustration 02: Hersted Industrail Park*

Today, Hersted Industrial Park houses over 400 companies and around 10.000 employees, representing a heterogeneous space where some companies own their land plot, others are renting the space they occupy, while others land plots, containing office buildings or warehouses, are vacant or redundant, being held unused in the expectation of a future development (Planner of Albertslund Municipality, Søren Kehr, Interview 02)(Albertslund kommune & Realdania, 2013)(City of Albertslund, 2019).

Another relevant aspect of the area of Hersted Industrial Park is the heterogeneous nature of its 166 different real estate owners when it comes to decision making. Which makes challenging to align opinions or perspectives, even when it counts with a Board of Owners, as expressed by its Chairman:

*"As a landowner association, we have chosen to say that we cannot handle the landowners' interests together, they are simply too different"* (Chairman of the Board of owners in HIP, Jesper Larsen, Interview 04).

In addition, for further understanding of the area of Hersted Industrial Park, it is necessary to gain insight in the municipality of Albertslund, which is context where the industrial area is situated.

## 4.2 The DNA of Albertslund

Established in 1963, the new town of Albertslund was created as part of the development plan for the suburbs of Copenhagen, known as the 'Finger Plan' (Egnsplankontoret, 1947), see Picture 01. This plan entailed the creation of several high-density housing areas, which would develop surrounding the different train stations established along with the existing or planned network of railway lines. With that, these new settlements aimed at facilitating a controlled distribution of the growing population of the Metropolitan Region of Copenhagen following the Second World War (Knowles, 2012).


*Picture 01: The five fingerplan, by Lemberg* (2019)

At that time, private cars were not as convenient as they are today. Therefore, a fast public transportation system was needed to effectively connect the new suburbs and the Danish capital (Heland, 2005) (Knowles, 2012)(Citizen of Albertslund, Christian Clausen, Interview 05). In addition, the 'Finger Plan' implied the establishment of green areas between the new settlements and areas reserved for industrial purposes, such as Hersted Industrial Park (Knowles, 2012). In that sense, the development of Albertslund followed the same principles than the rest of the outcome of the new settlement of the 'Finger Plan', referred by Elinbaum & Galland (2016) as "concentrated dispersion of population".

However, Albertslund was the first of the new planned cities to be built as part of the Plan and, as a pioneer experience, it benefited from an experimental approach to housing, using an industrial production of prefabricated houses, in order to supply high quality and low price for residences. In addition, residential areas were segregated from industrial areas by surrounding them with trees and other natural barriers (Heland, 2005). With that, Hersted Industrial Park was consciously designed to be separated from the surrounding residential areas.

*"Industrial zones, were totally separated from neighbourhood units by the policy of zoning, [...] isolated from residential areas by encircling them or through woodlands favouring visual isolation"* (Heland, 2005; p.2).

Some of the main aspects which focused the design and construction planning of the residential areas in Albertslund, according to Heland (2005) were the presence of private outdoor space for each family, even in areas with a relatively high density of population, and the constant presence of trees, nature or other landscape features. Consequently, since 1967, the municipality has been developing forestry areas, resulting in a 60% of Albertslund covered by green area (Heland, 2005).

Nevertheless, heritage of the experimental and pioneer nature of the new settlement, together with its focus on environment, generated a tendency to attract rather left-wing population into the new town, which got involved in the management of the municipality from an early stage through associations and groups, which represent one of the main characteristics of Albertslund (Heland, 2005)(Citizen of Albertslund, Christian Clausen, Interview 05)(Citizen of Albertslund, Astrid Hansen, Interview 13)

*"Social housing is supported by the left-wing of the political scene. So, Albertslund with its support to the social housing movement has been related to social-democratic government and some of the strong characters of the social-democracy scene in Denmark were living in the Municipality."* (Citizen of Albertslund, Christian Clausen, Interview 05)

In addition, another of the main characteristics that define Albertslund is the percentage of social housing in the municipality, which represents up to 60% of total existing dwellings (Heland, 2005)(Citizen of Albertslund, Christian Clausen, Interview 05) (Planner of Albertslund Municipality, Søren Kehr, Interview 02 & 08), which has created some challenges in the municipality, as expressed by one of its residents:

*"Social housing attracts people with low income, attracting also difficulties. It is not a problem unique to Albertslund, but we have our share"* (Citizen of Albertslund, Christian Clausen, Interview 05)

Furthermore, the difficulties brought by a big concentration of social housing in Albertslund has also an impact on the municipality as expressed by Søren Kehr, planner in the City Hall:

*"There is a lot of people without jobs, with financial troubles and social problems and they all need to be taken care of. There are more of them in Albertslund than in many of the surrounding municipalities [So], to take care of that agenda it is needed to become more sustainable in a economic and social way [...]. We need to diversify the population, and in an economic way, we could solve it by private rental, because it is more expensive than social housing and the people whom move in would have more money"* (Planner of Albertslund Municipality, Søren Kehr, Interview 08).

In that sense, the funding of Municipalities in Denmark is done through direct negotiations between the Danish Government (the Ministry of Business and Growth) and the Municipalities' Union (Kommunernes Landsforening), to establish the yearly budget that the Government will assigned to the Municipalities (Scheibye, 2018). However, the Danish Government is pushing Municipalities for constant cost savings (Enghausen, 2018) reducing, consequently, the access to funding for the municipality of Albertslund. Especifically, the expenses in the municipality has to be reduced on 20.5 millions DKK for 2019 and on 32 millions DKK for 2020 (Albertslund Municipality, 2019a).

That together with the fact that Albertslund Municipality does not generate enough financial resources, put the municipality in a situation of dependency on the Danish Compensation Scheme System (udligningsordningen, in Danish), which ensure that Municipalities with less resources, like Albertslund, are able to provide their services to citizens. With that, when a municipality present some deficit in their accounting, receives up to 61% of that deficit in concept of help to cope with its negative effects. However, that also makes Albertslund as a municipality more vulnerable to modifications that the Danish Government might do to governmental delegations of financial funds, as expressed by Leif Pedersen, politician in Albertslund,

*"We are a socially challenged municipality, as we are very dependent on the equalization reform and the equalization in general. So if it gets changed, just a bit, it may hit us hard." (Politician, Head of the economy and environment of Albertslund Municipality,*(Politician, Head of the economy and environment of Albertslund Municipality, Leif Pedersen, Interview 14).

However, the construction of a new transportation infrastructure, which will serve among others the area of Hersted Industrial Park (HIP), is being used by the municipality as an opportunity to transform the industrial area into mixed-used as dwelling, office & retail. With that, the municipality aims at solving some of the expressed challenges by increasing their income. Nevertheless, to understand what that new infrastructure entails for the area and how the municipality perceives that the change of HIP might solve of the challenges of Albertslund, it is relevant to gain an understanding of the new transport infrastructure and the vision of the municipality for the future of HIP.

## 4.3 Transport Infrastructure: Greater CPH Light Rail

In the summer of 2013, the Government of the Capital Region of Denmark, together with the Danish Ministry of Transportation and 11 Municipalities belonging to the 'Ring 3' of the 'Finger Plan' (Lyngby-Taarbæk, Gladsaxe, Herlev, Albertslund, Rødovre, Glostrup, Brøndby, Hvidovre, Vallensbæk, Ishøj and Høje-Taastrup) signed an agreement to construct a Light Rail train infrastructure with the aim at connecting and creating growth in the suburban areas of the Danish Capital (dinletbane.dk, 2019).

With the establishment of the light rail on 'Ring 3' the members of the agreement focused on strengthening the development in the region of Greater Copenhagen by enhancing the collective transportation infrastructure started by the "the Finger Plan" from 1947 (DAC, 2010) and the S-train network related to it. In that sense, the new Light Rail stations will connect the 'fingers' of the 'Finger Plan' by a light rail infrastructure, working as an intended catalyser in the development of new urban settlements in the area. Coherently, the light rail was thought of as an incentive for renewing and repurposing urban spaces with better and more attractive conditions for residents and shoppers (Transportministeriet, 2015).

Once the light rail is open to service, expected by 2025 (dinletbane.dk, 2019), it will significantly facilitate the mobility of both local citizens, workers, students ect. In that sense, the light rail will connect critical educational institutions, such as DTU, and two large hospitals in the region, such as Herlev Hospital and Glostrup Hospital. Besides, the Light rail will represent a low environmental impact alternative for traditional commuters, offering new connection possibilities through public transportation in the area. With that, it is expected that the light rail will reduce the amount of car traffic around the main route "ring 3". However, that reduction in traffic will have a small impact if considered on a regional scale (Transportministeriet, 2015).

The expectations regarding the population growth in Albertslund Municipality refer to an increase of 23% between 2013 and 2040 (dinletbane.dk, 2017). Consequently, as part of the agreement signed with Municipalities, Government of Greater Copenhagen region and the Ministry of Transport, Albertslund Municipality agreed to redevelop the area of Hersted Industrial Park (HIP). Namely, by offering new 226.500 m2 dedicated to office space, 192.500 m2 of housing and 5.000m2 of retails, entailing, therefore, a transformation in the area to accommodate those future visions (dinletbane.dk, 2013; 2017).

Therefore, the municipality has specific visions regarding the future redevelopment of the area of HIP, making relevant opening up those visions to understand the process of transforming HIP and its challenges.

## 4.4 Vision of Hersted Industrial Park

As a consequence of the agreement for redeveloping Hersted Industrial Park (HIP) related to the light rail station project and the aim at increasing the income of the municipality by diversifying the social classes, attracting higher-income residents, Albertslund Municipality intend a transformation process of HIP, redeveloping the area from its current industrial use to mixed-used area with dwelling, office & retail. Moreover, for that, the municipality is elaborating a masterplan for the future vision of the area.

However, the intended redevelopment of Hersted Industrial Park faces several challenges: The first one is the lack of willingness of some of the real estate owners towards the change process, as expressed by Lars Gøtke, Former Chairman of the Board of owners in HIP:

*"Hersted is a good location. But it is a good location for the current purpose [...] The municipality is the one that wants to transform the area, not the companies that are out there in Hersted. They do not want to be transformed at all. They are quite happy with the area and its function, but of course, the municipality want to transform Hersted because of the light train".* (Former Chairman of the Board of owners in HIP, Lars Gøtke, Interview 03).

In addition, according to Lars Bloch, the level of rent that real estate owners claim in the area has been reasonably stable for the last two decades, facilitating a financially reliable situation in favour of tenants (in this case, the companies that operate in HIP), also limiting a further investment in the area.

Furthermore, a report elaborated as a basis for the new masterplan shows that some owners argue that the new light rail is going to make the area more accessible, generating a benefit for the industrial and commercial activity in the area by generating more exposure and more visitors for the companies in the area (Rambøll, 2018).

However, as we stated before, the owners of Hersted Industrial Park represent a heterogeneous group with different opinions, interests and, as a consequence, different perspectives regarding the future of the area. In that sense, as expressed by Søren Kehr:

*"...some of [the buildings] are rented out, and others are hold for the future and they will develop in there. It is a big mixed of people. Others are just landlords that have their companies in there. Some have gone bankrupt already, some have trouble to rent out the buildings or offices, others are becoming warehouse..."* (Planner of Albertslund Municipality, Søren Kehr, Interview 02).

In line with that, some of the real estate owners are willing to develop in the area. Among them, Jesper Larsen, which in his own words explains how he invested in the area and his will towards redevelopment in the area:

*"...we saw a property in Albertslund Municipality [...]. At the time we bought it, the future light rail station was planned close to that area and there was permission to make retail. So, we finally started with a company to develop for outlet stores, but then the financial crisis came. overturning the project [...]. We have have been waiting for this light rail to get closer and become a reality and that is what it has to materialize now [...] we have a desire to make a development and push the municipality a little to get started, discuss how the station should be exactly and what we can do with the project"* (Real Estate Owner/Developer, Jesper Larsen, Interview 04).

Another challenge is the fact that Albertslund Municipality does not own any land plots in Hersted Industrial Park, besides the main roads in the area. That challenges the manoeuvrability of the municipality regarding the redevelopment of the area, leaving that to the mechanisms of the market, as expressed by Søren Kehr, planner of Albertslund Municipality:

*"[The transition in Hersted Industrial Park] will be market based. We are just going to make a planning for it. We are probably are going to invest in some infrastructure and the light rail train is coming. But we are not going to go there and become owners and we will not build our own buildings in there. We want to just be a catalyst of change"* (Planner of Albertslund Municipality, Søren Kehr, Interview 02).

In that sense, Søren Kehr expresses the will of the municipality of Albertslund for developing the infrastructure in Hersted Industrial Park (HIP), a core element that he defines as the base for how to develop the area into mixed used of dwelling, office & retail (Planner of Albertslund Municipality, Søren Kehr, Interview 08). The importance of the infrastructure relies upon the fact that the municipality owns it, is needed for the normal functioning of the industrial activities in the area. Furthermore, as expressed by the Board of owners Chairman Jesper Larsen, a process of transformation like the intended in HIP might take up to 20 years. Because of that, the infrastructure in the area needs to embrace the new use of the area while the municipality *"will have to make sure that when the redevelopment starts companies can continue their businesses as usual"* (Chairman of the Board of owners in HIP, Jesper Larsen, Interview 12).

In addition, when Søren Kehr expresses about the 'planning' of the transition in Hersted Industrial Park, he refers to the masterplan that the Municipality is currently developing, aiming at facilitating the planning of the future of Hersted Industrial Park, understanding the redevelopment of area as a whole idea that has to express before the beginning of the transformation, as expressed by a politician of Albertslund's City Hall:

*"I think that is important to make a masterplan first, in order to create an interest for those who are close to the [light rail] station. Because they also need to know what comes after, around and the dynamics that come in between. If it is expected to have, for example, 10,000 people living in there, then they could imagine how the area will be on the long run and plan the establishment of supermarkets or restaurants in there. So, in that sense, I think it is important to create an overview of the development"* (Politician, Head of the economy and environment of Albertslund Municipality, Leif Pedersen, Interview 14)

However, Jesper Larsen, who besides being real estate owner and developer in Hersted Industrial Park is also Chairman of the Board of Owners, expresses about this perspective of 'needing a masterplan' in a different way.

*"The masterplan is just the municipality's vision. They present that vision to us [The Board of Owners], but we are not involved on it. We just can say whether we perceive that vision as good or not and we do not agree with that [...]. It is for sure that there will be some owners who will feel trapped [...]. Hersted is a very, very big area. By pushing the masterplan, the municipality is creating more uncertainty than certainty regarding the change [...]. The masterplan says that if you have a 200% [density] permission in here, you have only 40% over there. With that, you already have said what the value in both areas is. And today, that is a huge barrier for developing."* (Chairman of the Board of Owners, Jesper Larsen, Interview 04, 16).

In addition, other aspects related to the masterplan, makes the elaboration of this document challenging. For instance, the amount of resources that it requires by being a public document developed in a municipality, which results on a bureaucratic process as expressed by the planner: *"Every time we talk to a politician, it takes a month and a half"* (Planner of Albertslund Municipality, Søren Kehr, Interview 02).

Finally, to understand the complexity of any change process in Hersted Industrial Park, it is relevant to state that this masterplan, still under development, is not the first vision for a redevelopment of the area. In that sense, previous documents were developed by the municipality in 2007 and 2013, any of them resulting in a transformation in the area. For gaining an understanding of those processes and why they did not trigger the redevelopment of the area, we will further explain those past experiences. As the masterplan is a formal document being under process, that have limited access at the time of writing this report, we did not know how far the process of the development of the masterplan was.

## 4.5 Previous Transformation Attempts

As part of the journey towards transforming Hersted Industrial Park, Albertslund Municipality has developed two masterplans, both previous to the current one, which by the way is still under development while this thesis project is being carried out. Both masterplans, developed respectively in 2007 and 2013, they were produced after an architecture competition process, where the winning architecture firms presented some designs for the future vision of the area, with a redevelopment to be understood as the materialization of a whole concept (Hested-industripark.dk, 2019; Lars Gøtke, Interview 02). However, these masterplans did not succeed in achieving the desired change in the area. As explained by Søren Kehr, planner of the municipality of Albertslund:

*"The former masterplans did not succeed, mainly because they focused on; industries, offices, sustainable, green, productivity and there has not been a demand for office space, there has been a demand for warehouses, logistics but those buildings were already there so they could just move into existing buildings".* (Planner of Albertslund Municipality, Søren Kehr, Interview 08).

In that sense, Søren Kehr refers to the elements offered in the masterplans, which represent their focus points, were not demanded enough to generate interest in the different real estate owners in the area. Furthermore, others actors, namely the politician in Albertslund's Municipality (Politician, Head of the economy and environment of Albertslund Municipality, Leif Pedersen, Interview 14) and the current Chairman of the Board of owners (Chairman of the Board of owners in HIP, Jesper Larsen, Interview 04) point out at the economic crisis of 2007-2008 as an externality that limited the realization of those visions.

However, the former Chairman of the Board of owners in Hersted Industrial Park explained his perspective about the past masterplans experiences as an inference of the municipality in the industrial area by pushing down a transformation in an area where they do not own any land plot:

*"What happened there is like somebody enters your home and says: 'Well, I am going to renew your whole house. I haven't discussed the plan with you, the owner of the house, but our idea is quite good! Listen to us! We know what to do!' That is a strange way to do things, coming in with the masterplan as a hammer'* (Former Chairman of the Board of owners in HIP, Lars Gøtke, Interview 03).

In that sense, Lars Gøtke expresses an understanding of the masterplan as something the different real estate owners in Hersted Industrial Park did not have any involvement in terms of including their desires or perspectives, facilitating an environment of resistance towards the intended process.

Nevertheless, in contrast to the previous attempts and regarding the development of the new masterplan, still under development, Søren Kehr expresses higher expectations towards the possibilities of producing the expected change in the area of Hersted Industrial Park:

*"The new masterplan is offering housing opportunities, it is offering a new light rail station, which is crucial, and it is the primarily driver that wasn't there the last time [...]. DTU have made some analysis and they say that price of land around a station and housing [...] rise in value once the train is running".* (Planner of Albertslund Municipality, Søren Kehr, Interview 08).

Regarding that, Søren Kehr expresses the importance of the light rail as an entity of change, to produce a significant impact in the area once it is put into service. However, even when some of the real estate owners willing to develop, like Jesper Larsen, express the improvements of the new masterplan regarding the involvement of owners in the process, they still perceive the municipality's perspective regarding the importance of the masterplan as a limitation to the redevelopment:

*"[With] the new masterplan being developed [the municipality] have become significantly better. We have meetings with them almost every month at the moment [...], but it does not solve the issues [...]. The change must come from the landowners and some of them do not want this change [So] why then drive the big plan through? Couldn't you have done it quietly [...] focusing on some small area instead?* (Chairman of the Board of owners in HIP, Jesper Larsen, Interview 04).

In that sense, Jesper Larsen advocates for the focus of the municipality on developing smaller areas within Hersted Industrial Park, facilitating the redevelopment of the whole area by a focus on some of the real estate owners that are willing to support the intended change.

# Theoretical Framework

Theoretical 'spectacles' as foundation of our analysis


Actor-Network Theory


Enacting Change from ANT Perspective


Participatory Design

# 5.THEORETICAL FRAMEWORK

As analytical 'spectacles' we apply a mix of particular theoretical approaches. Therefore, in this section, we explain these individual theories and our specific entanglement of use.

Once explained the complex situation of Hersted Industrial Park (HIP) and the importance of a different understanding on how to approach urban transformation processes, we need to establish a theoretical background with the affordance of supporting a new approach to urban redevelopment. For gaining insight on who to negotiate with and how to proceed regarding the transformation of the area of HIP, we chose Actor-Network-Theory (ANT), which facilitate opening up possible interventional points for re-configuring the constellation of relations between relevant actors involved in the transformation of Hersted Industrial Park, due to its affordance regarding strategic planning as referred by Byson et al.:

*"ANT is well-suited to the task to discerning how and to what extent strategic planning in practice is inclusive, participative, and democratic."* (Byson et al., 2009; p.180)

Regardless of the referred suitability of ANT as a theoretical approach and its practicality by offering a descriptive 'snapshot' of the current situation, ANT also contains some flaws that we discuss later in this chapter. Furthermore, with the aim at enacting actors to start transforming the area of Hersted Industrial Park, we look towards participatory design, as the notion of 'negotiation spaces', previously referred on section *'2.4 Participatory Design'*, opens up for the understanding of materiality and its impact on the translation/mobilisation of an actor through more than a single intervention point (Pedersen, 2016).

In addition, this chapter identify how to perceive materiality as an 'intermediary object' (Vinck, 2012), which not only enable knowledge transfer between different socio-technical-worlds (professions), but also transform the understanding of the object, generating or modifying the knowledge embedded on its materiality, evolving through interactions and iterations within negotiations spaces (Vinck, 2012).

## 5.1 Actor-Network Theory

As our problem statement entails, the need to trigger actors (existing owners and future developers) for them to become mobilised and enact the desired transformation in the industrial area.

Byson et al. (2009) argue in their journal article *'Understanding Strategic Planning and the Formulation and Implementation of Strategic Plans as a Way of Knowing: The Contributions of Actor-Network Theory'* that in the context of strategic planning, ANT represents the most appropriate way to illustrate the existing combination of multiple actors, human and non-human, in a heterogeneous network.

Furthermore, the theoretical approach of Actor-Network-Theory (ANT), which offers a *"series of foundational principles to produce descriptions"* (Storni, 2015; p.167), was initially developed by Michel Callon & Bruno Latour in the early 1980, when investigating sociologists practices, with further development by Callon, Latour & Law (Lauritsen et al., 2007), entailing in the words of their developers that:

*"The sociologist interprets, sounds out, incorporates and states what the actors [..] want, what interests them and how they live"* (Callon & Latour, 1981; p.297).

A heterogeneous socio-technical network such as Actor-Network-Theory entails actors in the shaped of either human or non-human. It also entails the relations between those actors and their 'matters of concern'. In the context of the transformation of Hersted Industrial Park (HIP), gaining insight on the actors that belong to the network of the redevelopment of HIP can be used for mobilizing those actors towards the intended transformation of the industrial area. However, that affordance raises the question regarding which actors should be included and what makes a good description of the network of actors.

*"To put it very simply: A good ANT account is a narrative or a description or a proposition where all the actors do something and don't just sit there"* (Latour, 2005; p.128).

In that sense, actors in a network are not isolated, but connected and linked to others through relations, which need to be further described and analysed to give meaning to the description and justify the inclusion of actors (Latour, 2005).

The actors also have goals, interests and agendas of a specific kind, aiming at achieving them according to their understanding (Callon, 1986b). So, when actors act, they influence the network, affecting other actors and their relations. With that, actions made can stabilise or destabilise the network (Latour, 2005).

Even representing a complex and dense theory, the ANT approach has been widely used in different disciplines, such as social science, philosophy and technology (Cressman, 2009). In addition, the framework offered by ANT should be seen as a fluid and adaptable one, avoiding to implement it as a recipe (Mol, 1996).

Multiple concepts come out from the theoretical framework of ANT, as stated by Brodersen & Pedersen,

> *"ANT provides a theoretical foundation for considering which actors (human and non-human) to involve in heterogeneous design interactions and processes as well as a vocabulary to discuss potential conflicting matters of concern (controversies) and negotiation processes. As opposed to matters of fact, MoCs are characterised by being rich, complex, surprising and constructed. These characteristics make concerns political and open for discussion, negotiation, conflict and compromise.* (Brodersen & Pedersen, 2018; p.2)

In that sense, an analysis with the use of the Actor-Network Theory explores the desires, interests and goals of the actors, which are the elements that define their 'matters of concerns', in contrast with those aspects all the actors involved agree upon, shifting them into an objective reality or 'matter of fact' (Latour, 2005). In addition, Brodersen & Pedersen (2018) highlight the importance of applying this theoretical approach for opening up existing tensions and based on a profound understanding of the matters of concerns that trigger those controversies, facilitate their discussion and navigation.

Furthermore, to understand each actors matter of concern is essential to have an in-depth insight into the network and its functionality. Regarding that, by trying to impose its interests, each actor aims to 'steer' the network, and the actors involved to it, in a direction that would satisfy the concerns that the actor holds. Therefore, by identifying what it is that the actors wants or needs, and by acknowledging its position in the network, we can also understand which alliances, connections and agreements the actor could hold and with whom, defining the relation to other actors in the network and opening up the possibilities for how to influence them (Callon, 1986b).

In some cases, the description of the network can be simplified by creating a clustering of different actors, resulting in that cluster being represented in the network as one actor (Callon,1986a). Even when that simplification might be beneficial in terms of visualisation, it can also generate a 'blind spot', where some of the tensions, interests or controversies between clustered actors may remain hidden and out of sight. In order to avoid that limitation, it is relevant to introduce the concept of punctualization, understood as the operation of opening up an actor who entails a network underneath it (Hansen and Clausen, 2017). The actor (seen in this case as an actor-world) thereby constitute a system of sub-actors and relations between them.

Therefore, by studying this sub-network, the otherwise hidden relations become visible, widen our insights and understanding about how stable the network is. With that in mind, we apply punctualisations as a means to unlock certain actor-worlds within the Actor-Network, adding an additional layer which creates a more fundamental understanding of how the actors act in the heterogeneous network (Hansen and Clausen, 2017).

Consequently, with a clear understanding of the actors' matters of concern in the setting of the analysed network, which relates to how actors in Hersted Industrial Park perceive and act regarding the transformation of the industrial area, then we can enact change and mobilise them in a direction that enable the realisation of that intended transformation.

## 5.2 Enacting Change from ANT Perspective

According to the ANT approach, a change is driven through a four stages strategy or 'four moments of translation'; Problematization, Interest, Enrollment and Mobilization (Callon, 1986a).

In summary, the problematization is defined in the tensions of the network (situated in actors or the relation between actors). This stage entails gaining insight on the matters of concern of the actors, which understanding will ground the approach to solving these conflicts, using for that interessement device(s). By introducing an element with the affordance of generating interest in key actors, they get enrolled to embrace the desired change in the network and mobilised, shifting their initial position (Callon, 1986a).

To achieve that, ANT implies the mobilisation through an OPP (Obligatory Passage Point), which is the result of the alignment of actors towards the acceptance of new positions and relations assigned for them in a new 'snapshot' of the network (Callon, 1986a).

For the mobilisation to take place, interessement device(s) can become helpful, as they can provoke or inspire actors in the network to form new relations or change the nature of their relation with other actors (Hansen and Clausen, 2017). Interessement devices can vary in shape and affordance, being represented, for instance by a workshop, a physical object (e.g. a prototype), or a set of information (e.g. a publication) (Callon, 1986a).

However, the process of enactment of change in the approach of ANT, specially regarding the use of OPP, can raise criticism for being a single and static point that all actors (human and non-human) must submit to in order to be mobilised, delegating with that the power in the decision-making process on the figure of the facilitator, representing a many-to-one strategy (Pedersen, 2016). In addition, by representing a 'snapshot' of the current situation, ANT cannot show the active nature of networks, which are in continuous change, as a consequence of the actions taking place in the network (Storni, 2015).

Consequently, in order to produce a mobilisation in dynamic situations, such as the context of the transformation of Hersted Industrial Park (HIP), a many-to-many approach is necessary (Storni, 2015) (Pedersen, 2016). For that, our theoretical understanding on how to enact a change of ANT, in the context of HIP, is complemented with Participatory Design, as a more inclusive theory for involving the key actors in the intended transformation.

Summing up, ANT gives us the chance to identify relevant actors (human and non-human) involved in the intended redevelopment of the industrial area, the relations that connect them, their tensions and interests. However, to approach the enactment of change, we use the complementary theory of Participatory Design as an inclusive way to cope with the complexity of a heterogeneous and dynamic network of actors (Pedersen, 2016).

## 5.3 Participatory Design

As part of our journey to enact the transformation in Hersted Industrial Park (HIP), we use Participatory Design as a way to empower actors in the transformation process by involving them in the design process (Pedersen, 2016). With that, we are able to embrace the complexity, tensions, controversies and diverse perspectives of the network of actors by a mutual learning taking place in a stage, where participants and researchers can gather their means and knowledge in an evolving materiality with the affordance of generating a mobilisation towards the transformation of HIP (Brodersen & Pedersen, 2018).

Participatory design can be defined as the theoretical framework where actors get involved in the design process. However, there are several levels of inclusion and different theoretical understandings about what means to include actors in the process of design, generating other approaches such as co-design or co-creation (Sanders and Stappers 2008). Therefore, we define our understanding of Participatory Design (PD) in this report as the collective creative practice of designing, where participants have a centric position in the process the mobilisation towards the transformation in Hersted Industrial Park. In addition, to produce the interaction with the participants, materiality has particular relevance in the PD approach, as referred by Pedersen (2016),

> *"Using material objects such as drawings, mock-ups and prototypes in dialogue between different actors and the designer, is at the core of Participatory Design"* (Pedersen, 2016; p.3)

Consequently, the relevance of applying PD in the context of the transformation of Hersted Industrial Park is its affordance to change the traditional perspective of how to perceive what 'design' is. In that sense, PD approach enables us to move from a general understanding, where the 'final product' is considered the 'design', and focus instead on the 'process of designing'. With that, elements such as materiality and who should or should not be included in the design process gain more relevance. Consequently, this PD approach implies that we can create a 'final product' with the affordance of mobilising actors throughout the process itself, representing, therefore, an inclusive theory where the critical element is not merely the outcome (as a final concept or product), but a process where a materiality is produced and evolved being able to include, through iterations, matters of concern facilitating the alignment of actors by negotiation of controversies (Vinck, 2012).

### 5.3.1 Negotiation Spaces: The Place Where the Magic Happens

The concept of spaces exists in the Actor-Network-Theory to be the centre of network mapping, as the network is in constant motion due to the change of the matters of concern of the actors within. Therefore, a network could be described as a 'living organism' that is never in a 'still' state, which dynamic changes affect the relations between actors (human and nonhuman), creating new relations, ending existing ones, and change the perspective of the actors within a specific related topic (Pedersen, 2016).

In that context of changing relations among actors, the negotiations spaces framework offers the space where relevant actors and their intentions and visions are gathered, staging a ground where solutions can be negotiated (Pedersen, 2016). That makes negotiation spaces useful for aligning visions and interests between actors, facilitating the process of mobilisation in the heterogeneous network towards the transformation of Hersted Industrial Park.

As described in *section 5.2* Enacting Change from ANT Perspective, ANT uses the translation of actors matters of concerns through an obligatory passage point (OPP) in 4 steps: Problematization, Interest, Enrollment and Mobilization (Callon, 1986). Regarding this approach, having a single passage point represents an approach too optimistic in the context of Hersted Industrial Park, where actors are too diverse for being translated through a single intervention point. On the other hand, Participatory Design and the negotiation spaces can result in a democratic enrollment and mobilization of actors by developing spaces where the gathered matters of concern could be negotiated through iterations of an iterated materiality (Pedersen, 2016) (Brodersen & Pedersen, 2018).

With that, the network of actors in Hersted Industrial Park includes a significant number of actors (Albertslund Municipality, masterplan, Real Estate Owners, etc.) with conflicting interests, making the establishment of one point of passage an unreasonable task. Instead, using a democratic and involving process to includes the key actors in a staged negotiation space to develop a solution appears more reasonable and feasible. In addition, the negotiation spaces are not just simple gathering of actors, which already exist in the context of planning. Instead, they represent a theoretical framework in three phrases; staging, facilitating and synthesis interventions as illustrated in Illustration 03 (Pedersen, 2016).

For having the best possible outcome of a negotiation space, it is critical to planned carefully, or 'staged' as the framework calls it. As the design-oriented study takes place, we stage multiple activities where the 'stage' have created the possibility for participants to join and interact with certain materialities, such as; narratives, intermediary objects etc. (Brodersen et al., 2008) Furthermore, the framework of negotiation spaces emphasize on the facilitation of the 'space' and questioning how, which and with what materiality the facilitation is for, within the giving context. However, it not merely about staging and facilitating but also regarding how to synthesise the 'new' empirical data and transforming it into knowledge regarding 'what did we learn? and was it what we expected?' (Pedersen. 2016)

> *"Having engaging a whole range of diverse actors in the design process with conflicting viewpoints, the final solution represented the negotiations and insights generated as an outcome of these negotiations. Hence a lot of detailed and nuanced knowledge about the motivations and desires of various actor-groups was inscribed in the materiality presented in the space"* (Pedersen, 2016; p.97).

As described in *section 5.3,* materiality is the core of Participatory Design. In that sense, the materiality introduced in the negotiation spaces, represented in objects, enable the transfer and creation of knowledge that, through iterations with the relevant actors can carry on new knowledge and evolve, generating new shared meanings that facilitate the alignment of actors (Carlile, 2002) (Vinck, 2012). Therefore, in the following section, we open up and gain insight into those objects, their typology, and what they represent in the negotiation spaces as entities for mobilisation in the context of Hersted Industrial Park.

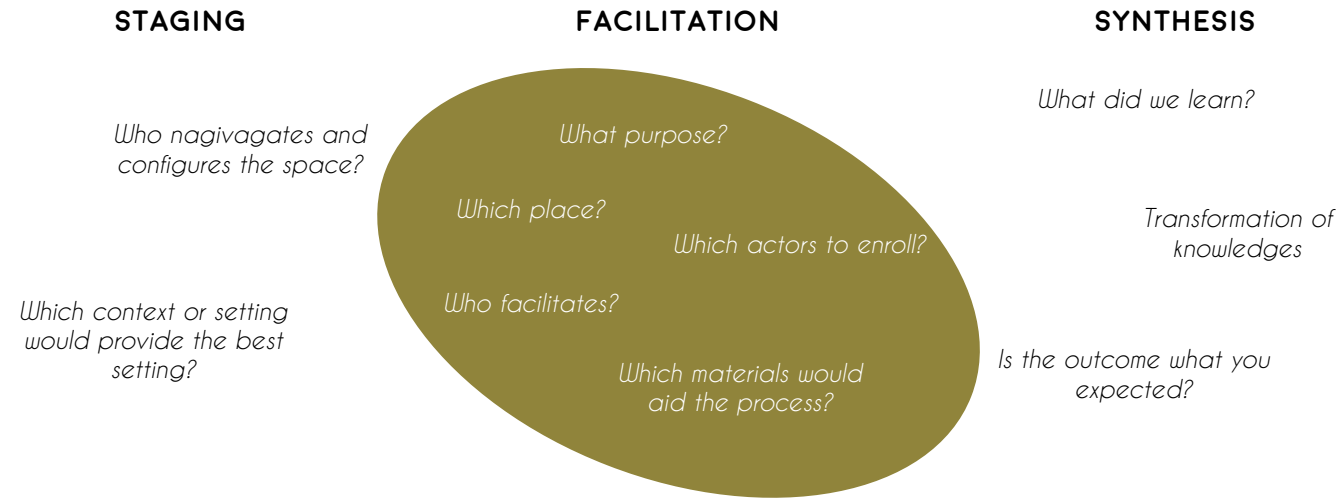



*Illustration 03: Negotiation Spaces, based on Pedersen (2016)*

### 5.3.2 Materiality

Objects are common in design contexts. Prototypes of products or blueprints can connect different communities of practice, going beyond their boundaries by creating a common ground where meanings can be discussed (Carlile, 2002), representing materiality that carries on innovation, as expressed by Akrich et al.:

> *"Innovation continuously transforms itself according to the trials to which it is submitted i.e. of the 'interessements' tried out. Each new equilibrium finds itself materialised in the form of a prototype which concretely tests the feasibility of the imagined compromise."* (Akrich et al, 2002; p.213)

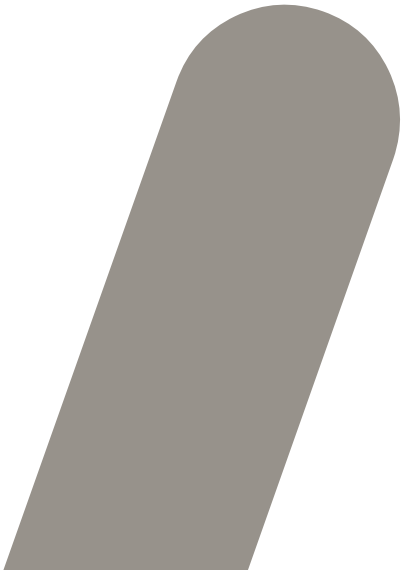
In that sense, in the context of the transformation of Hersted Industrial Park, the objects that negotiation spaces introduce go in a different direction to the ones observed in the ANT. In the case of ANT, the interessement devices represent the device designed to include the matters of concern of the relevant actors in order to have the affordance of interest their translation towards a single intervention point (Callon, 1986a). Instead, in the framework of the negotiation spaces, the materiality is intended to involve, encourage and provoke actors to get involved in the transfer, negotiation and creation of knowledge that take place in iterative spaces, which including their matters of concern can generate solutions that are agreed by the different actors involved (Vinck, 2012) (Pedersen, 2016).

The grounding of the objects included in our negotiation spaces approach can be found in the concept of Boundary Object (BO), as elements that are able to connect the understanding of different actors by establishing a common ground that facilitates knowledge transfer, its transformation and further creation of new knowledge across communities, professions and disciplines (Star & Griesemeyer, 1989) (Carlile, 2002). For being effective, those objects should establish a shared language for the different actors to express their knowledge, their meanings and engage in mutual learning (Carlile, 2004). Therefore, the introduction of BO can facilitate the establishment of common ground where matters of concern can be included and discussed. However, the concept of BO entails certain rigidity, since once introduced between the boundaries of actors, the object cannot be modified (Vinck, 2012).

As a contrast to the physical rigidity of Boundary Objects, the concept of Intermediary Object (Vinck, 2012) offers a materiality where meanings can be embedded in the object, having the possibility of evolving in several iterations. In that sense, intermediary objects are not only a shared ground for discussion and generation of new meanings, like boundary objects do, but a 'canvas' where actors invest, incorporating those new meanings in the matter of the object, affecting its shape and properties, which then will travel to the next interaction with the relevant actors, suffering further investment and modifications (Vinck, 2012).

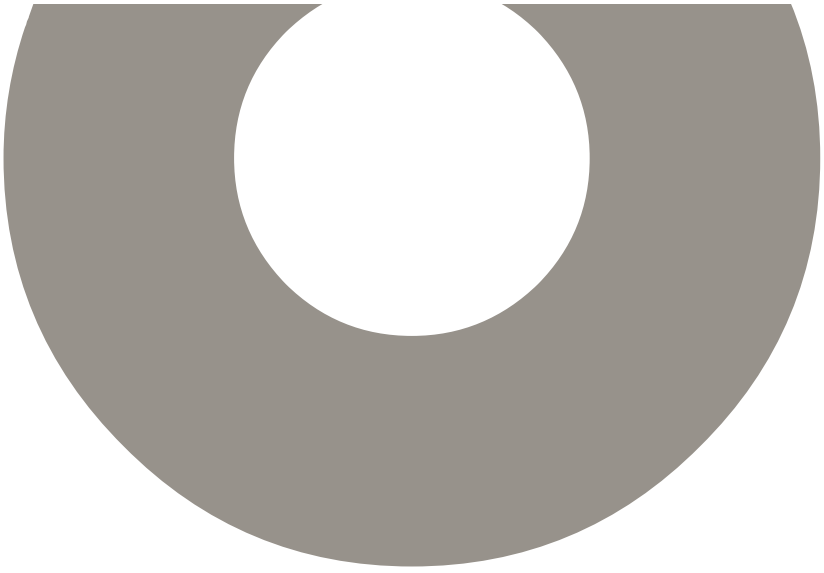
Therefore, it is through the use of Intermediary Objects in negotiation spaces that matters of concern, tensions and controversies can be discussed and, through iterations, the mobilisation of the actors in complex heterogeneous networks can be facilitated. In the case of the transformation of Hersted Industrial Park, the tensions between different actors and their matters of concern can be included in Intermediary Objects, facilitating the mobilisation of the actors by interacting several times with those objects, generating, negotiating and evolving new shared meanings that will get embedded on the objects, shaping them (Vinck, 2012)

*Collage 3: Textures of Hersted Industrial Park*



# Analysis

We start wearing our theoretical 'spectacles' to make sense of our empirical data




The Network


Industrial Practices


Transport: Connectivity


Change in Hersted Industrial Park


Limitations of the current transformation approach


Sub-Conclusion

# 6. ANALYSIS

As a mean to investigate objects and persons related to the redevelopment of Hersted Industrial Park, we apply Actor-Network-Theory to untangle the relationships and understand their specific interests rather than merely researching their positions as a fact.

The municipality of Albertslund is aiming at transforming Hersted Industrial Park (HIP), elaborating for that a masterplan with the intended purpose of creating a whole vision for the area able that interests the different real estate owners and developers of the industrial area to shift the current industrial use into dwelling, office & retail uses. Throughout our empirical research, we found that the area of HIP is a heterogeneous entity, where different perspectives regarding redevelopment can be found, from supportive to opposition, and where the municipality, as a primary motivator entity of the redevelopment, does not own any land plots in the industrial area, besides some transportation infrastructures in the area. This analysis aims to explore these specific tensions between the desire of a transformation in HIP of the municipality of Albertslund and developers. An understanding of the interests, objects and relations between such entities can help in perspective concerning how to manoeuvre around the tensions and enact a change in the specific context of which we analyse.

Therefore, a traditional approach towards the redevelopment of a large-scale area, such as Hersted Industrial Park, represents a challenge when its main promoter does not own properties in the area (Jean-Paul & Christoph, 2002).

## 6.1 The Network

After collecting empirical data and presenting it, we will analyse the findings of that empirical research through the theoretical framework of Actor-Network-Theory (ANT), in order to define the positions of the involved actors in the established network of the research case. In that sense, by using ANT, we can detect and analyse the different conflict of interests, views and backgrounds of the different actors, revealing with that their matters of concern (Latour, 2005). Consequently, the knowledge gained from the analysis should be considered useful for identifying intervention points that will ground the later design process, as it gives a better understanding of the problematization area and potential design solutions.

As we presented in *Chapter 5: Theory*, an analysis performed through the use of Actor-Network-Theory will open up the actors' matters of concern rather than their matters of facts. In addition, the analysis will represent a static 'picture' of the actors' positions towards the change in Hersted Industrial Park (HIP). Thereby, the analysis will be showing a 'snapshot' of the otherwise dynamic manoeuvring process of their relations towards objects and humans. With that, this 'snapshot' contains existing user practices and stake points that perceive a certain tendency of defining the actors' decision of doing/not doing.

However, analysing an ongoing process, such as the one that our research focuses on, can present challenges. In that sense, it can be challenging to set boundaries for when to take the 'snapshot' of the network of key actors and their relations, due to the fluid nature and constant evolution of matters of concern & relations. Those are two of the aspects that the transformation process in Hersted Industrial Park, from industrial to become mixed-use and embracing dwellings, offices & retail, is aiming to have an impact on.

In addition, we will open up conflicting interests in the network in order to facilitate a mobilisation towards the intended change in HIP. Generating an understanding of the actors' positions in the network of change, we will gather an in-depth perception of why and how they are related to certain actors and what their matter of concern are (Callon, 1986). Furthermore, that will ground their further mobilisation from their "starting points" to a more 'preferable' position in the sense of transitioning the industrial area. In addition, we make use of punctualizations in order to gain insight into the complexity of some of the networks of actors.

## Existing Network of Actors & Relations

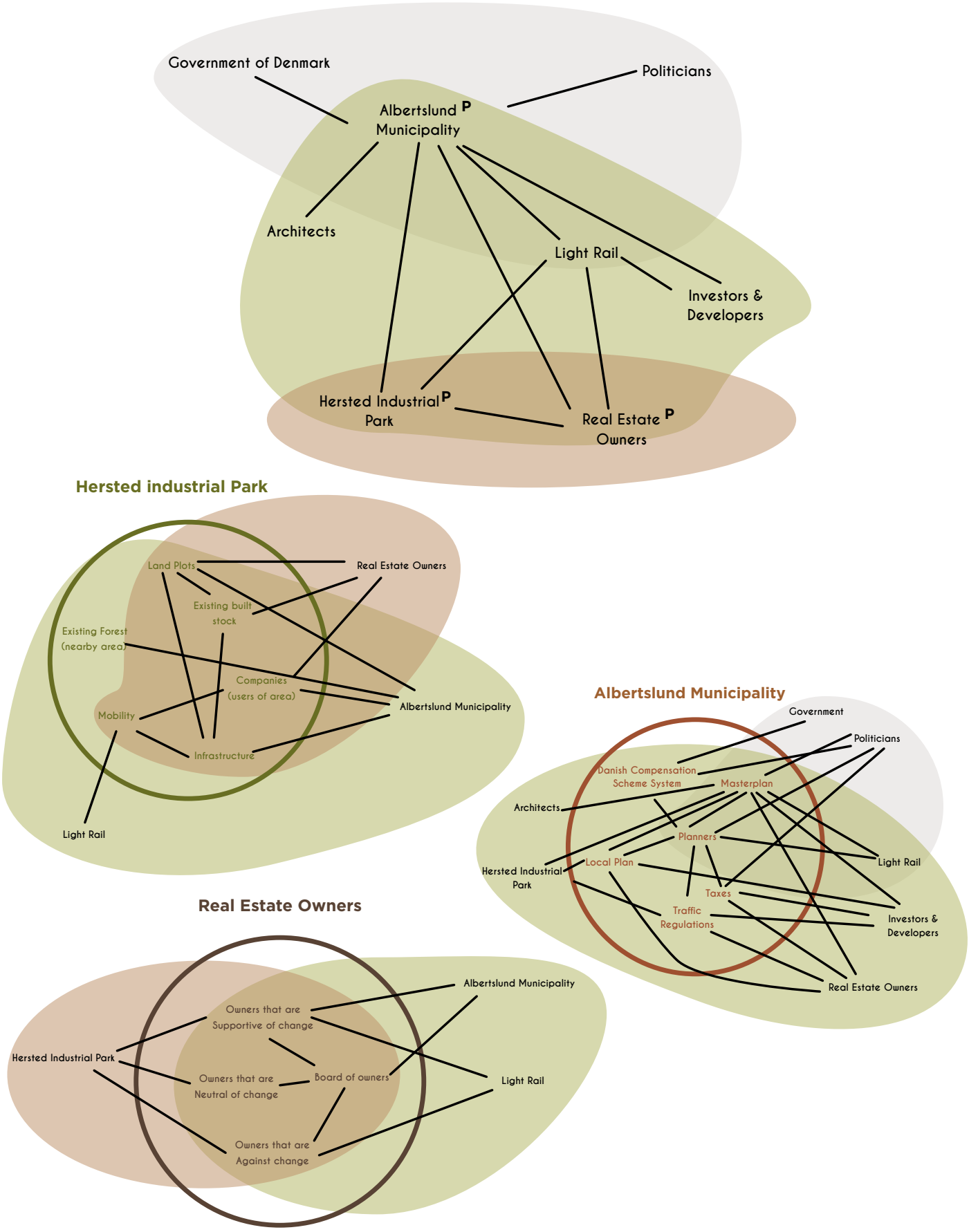



*Illustration 04: Existing Network of Actors & Relations, by authors*

The Illustration 04, represent human and non-human actors' relations with the use of black lines. The analysis of those relations and positions is relevant to make visible the contrast between actors' matter of concerns and their matter of facts, which can shape a perspective of the network in order to further stabilise or destabilise it through mobilising actors in the desired manner.

We additionally make use of punctualisations (Hansen and Clausen, 2017), referred as illustration with a bold **"P"**, presented in the separate illustrations of the opening of which punctualisations with a 'hard' circle. With that, such punctualisations opens up an actor-world to make visual its further relations and actors that impact the current process of transformation in Hersted Industrial Park.

In addition, the illustrations show different constellations of actors, which add to the capacity of the network for illustrating shared opinions among actors. With that, these constellations can be understood as actor-worlds (Hansen and Clausen, 2017), with underlying networks of actors related to each other by sharing certain practices (namely the industrial practices that currently define the area, connectivity regarding transportation and the change to be performed in Hersted Industrial Park), all of them being further explained in the following section.

## 6.2 Industrial Practices

The constellation of actors contained within the actor-world that represents the industrial practices are Hersted Industrial Park and real estate owners, and both opened up in punctualisations.

The area of Hersted Industria Park serves as an industrial area since it was planned, back in the early 1960s. As presented in the empirical research, real estate owners and current users have different concerns regarding the redevelopment of the area, with a range of positions that go from supporting the change to actively opposing it, including also some that are indifferent regarding a future transformation of the area.

### 6.2.1. Hersted Industrial Park

The actors contained in the punctualisation of Hersted Industrial Park relates to the geographical position of the place; land plots, existing buildings, infrastructure, the nearby forest, the mobility in the area and the companies situated in them.

The companies that use the area are concern about their commercial activities and how they will be affected by the decisions of real estate owners and the Municipality of Albertslund. In that sense, the companies are still embracing the industrial practices (which are, thereby, against the intended change of use) aiming at continue their current practices as they are, and produce the highest profit possible, while not having to pay higher rent (Former Chairman of the Board of owners in HIP, Lars Gøtke, Interview 03).

Mobility concern refers to the effective management of the transportation flows of the current industrial use of the area, mostly from heavy motorized transportation of people and goods, based on the current industrial practices.

Regarding the forest situated at the North of the area, its concern is not being negatively affected by the process of transformation in the area. However, the concerns of the situated actors in the industrial area focus on the use of the affordance that their materiality allows. In that sense, land plots, buildings and infrastructure want to be used for the industrial purposes they were developed for. With that, the infrastructure concern relates to providing the existing buildings and land plots with energy, water, drainage and paths for different means of transportation. In that sense, that matter of concern is directly linked to the current type of use.

Therefore, the change intended in the area from industrial to mixed used of dwelling, office & retail represents a process of decline of the industrial practices that defined the area, shifting towards different practices, related vision of the establishment of new use. Consequently, the concern of infrastructure and mobility will make them reluctant to change. In that sense, shifting the industrial practices that defined those actors will need their transformation for them to embrace the new practices in Hersted Industrial Park. For instance, the infrastructure will have to be modified as a consequence of the new kinds of mobility, such as pedestrian traffic or bikes, while allowing the 'business as usual' of the existing companies in the area, as expressed in the empirical data.

In the case of land plots in Hersted Industrial Park, their affordances (as industrial, office, parking, dwellings, parks, etc) and the typology of existing buildings in them (office, warehouses and industrial) can create agency into the municipality's and real estate owners' network by making use of the affordances that they allow (Hansen and Clausen, 2017), or by using the existing buildings for the purposes that have been designed for, repurposing them or tearing them down.

### 6.2.2. Real Estate Owners

In the punctualisation of the actor-world of the real estate owners in Hersted Industrial Park, the different perspectives regarding the redevelopment in the industrial area become visible. In that sense, as expressed in our empirical data, those perspectives include the support towards the transformation, its rejection and a third state of neutrality regarding the intended mobilisation (Former Chairman of the Board of owners in HIP, Lars Gøtke, Interview 03) (Real Estate Owner/Developer, Jesper Larsen, Interview 04).

On the other hand, as expressed in the empirical research, some of the land plots in the industrial area are empty or vacant, and therefore the real estate owners of those vacant spaces have a different manner of concern regarding the industrial practices, namely those owners are neutral to change or supporters of transforming (Planner of Albertslund Municipality, Søren Kehr, Interview 02 & 08).

In the first case, the neutral the actors are 'acting by not acting', meaning that they lack an active positioning regarding the change, which provokes, for instance, a situation of inactivity towards the change by not supporting it actively. In the second case, the active supporters of change have a concern of transforming the current industrial practices towards mixed use of dwelling, office & retail practices in order to put their property into value. Consequently, the disparity of positions regarding the change in the area represents a conflict of interests, generating tensions in the network.

The case of the real estate owners who are opposing the change relates to the ones that profit from businesses in Hersted Industrial Park, being satisfied with the current location as its benefits as an industrial area (Former Chairman of the Board of owners in HIP, Lars Gøtke, Interview 03). As mentioned in the empirical data, based on some of the findings of the grounding documents used to elaborate the current masterplan for the area (Rambøll, 2018), there is the perception in some owners that, far from facilitating the establishment of a shift of use in the area, the light rail station is able to make the area more accessible for customers and visitors, reinforcing with that the industrial practices in the area.

With that, the real estate owners that are against the change in Hersted Industrial Park have no interest in the mobilisation that the municipality of Albertslund is trying to push. In that sense, their matter of concern is to continue with the current use and industrial practices without disturbance (Former Chairman of the Board of owners in HIP, Lars Gøtke, Interview 03).

Due to the different concerns among the real estate owners regarding the future of the area, the Board of the owners, which matters of concern is to protect the interests of the real estate owners in Hersted Industrial Park, is not able to create agency in the network of the owners who are neutral or reluctant towards a mobilisation process of the municipality (Hansen and Clausen, 2017), as expressed in the collected data by Jesper Larsen, its current Chairman (Chairman of the Board of owners in HIP, Jesper Larsen, Interview 04, 12 & 16). In that sense, the Board of Owners does not represent a spokesperson for the owners regarding the intended transformation process (Former Chairman of the Board of owners in HIP, Lars Gøtke, Interview 03)(Real Estate Owner/Developer, Jesper Larsen, Interview 04). Consequently, that triggers the need for negotiation between the municipality and the mobilised owners in the transformation process, which are the owners that support the change in Hersted Industrial Park.

## 6.3 Transport: Connectivity

The constellation of actors in the actor-world of transportation or connectivity includes the light rail infrastructure, the governmental institutions in Denmark, the municipality of Albertslund and their politicians. As expressed in our collected data, as part of the agreement for the establishment of the light rail transport infrastructure, which involved the Capital Region of Denmark and 11 different Municipalities in the region, Albertslund Municipality agreed to redevelop the area of Hersted Industrial Park in order to accommodate his share of the expected increase of population in the Capital Region.

Therefore, the concern of the Capital Region of Denmark is related to the distribution of the population in the region, produced by an effective connectivity of the different settlements and municipalities in the area. In addition, attracting further population into the municipality of Albertslund is the concern of politicians (Politician, Head of the economy and environment of Albertslund Municipality, Leif Pedersen, Interview 14).

Punctualisating in the network of the municipality, we can visualize that the municipality planners consider the light rail station, positioned at the edge of Hersted Industrial Park, as being the trigger for redeveloping the area. Based on the argument of bringing value for future investors, the planners of Albertslund Municipality often refer to the report from known as "GEVIBB" (Københavns Universitet et al, 2014), which they consider as a 'recipe' for choosing the importance of parameters to be included in the masterplan (Planner of Albertslund Municipality, Søren Kehr, Interview 08 & 15). In addition, with the creation of the masterplan, the planners aiming at collecting

the matters of concern of politicians, creating then a non-human actor, the masterplan, able to function as a spokesperson of the politicians. With that, the masterplan, when finished, should create agency in the network of the politicians.

Finally, the matter of concern of the light rail regarding transportation is to support the mobility of citizens from different municipalities that will be served by the infrastructure, in order for them to get access into Hersted Industrial Park by the station that will be built in the area. Because of that, the location of the light rail station has particular relevance for the transformation of the area, by creating agency in the network of the municipality (Planner of Albertslund Municipality, Søren Kehr, Interview 02 & 08)(Real Estate Owner/Developer, Jesper Larsen, Interview 04). That could be further observed in the punctualisation of the network of the municipality, where the light rail station creates agency in the focus point of planners and the masterplan by defining what will be later developed as an 'entrance point' to the area of Hersted, which will have to be developed to handle the different types of mobility in the area, affecting with that the urban design outcome of the intended mobilisation process (Former Chairman of the Board of owners in HIP, Lars Gøtke, Interview 03).

## 6.4 Change in Hersted Industrial Park

Regarding the punctualisation of the network 'Albertslund Municipality', as we mention in our empirical data, the municipality of Albertslund present a dependency towards the Danish compensation system to cope with the funding deficit that the municipality suffers. In that sense, the concern of that Danish compensation system is to use its affordance, while aiming at the future independence of the municipality of Albertslund from it, as expressed by Søren Kehr, a planner in the municipality:

*"... we are looking for an independence [from] the 'udligningsordningen'"*
(Planner of Albertslund Municipality, Søren Kehr, Interview 08)

In that sense, the Danish compensation system has agency on the planners by defining the intended outcome of the transition, meaning the attraction of citizens with a higher income into the municipality of Albertslund in order to limit the deficit.

If we establish an understanding of planners as the actors that make strategic development plans, in the current context of Hersted Industrial Park, planners functions relate to the development of a plan for enacting a change in the Industrial area, which outcome is to accommodate a solution for the challenges of the municipality of Albertslund, namely 'social and economic sustainability' as expressed in the matters of concern of the masterplan.

Furthermore, if we refer to the punctualisation of the network of Hersted Industrial Park, the masterplan was initially intended also, from the perspective of the municipality planners and politicians, as an interessement device for the Board of Owners in the industrial area (Callon, 1986a), functioning as a portrait for real estate owners to "imagine how the area will be on the long run" (Politician, Head of the economy and environment of Albertslund Municipality, Leif Pedersen, Interview 14). As we mention in our empirical research, the Board of Owners was not able to function as a spokesperson (Akrich et al., 2002) of the whole network of real estate owners, due to the fragmentation of their interests, therefore, the interessement device of the masterplan did not generate an unified response in the owners network, as visualized in the owners' punctulisation.

Taxes, with their concern related to the income that they provide to the municipality of Albertslund, shape by their amount and stability, in the long run, economic activities and savings in expenses that can be avoided. Therefore, taxes in the municipality can generate agency in the network (Hansen and Clausen, 2017) of real estate investors and owners, as expressed by Lars Gøtke, former chairman of the board of owners of Hersted Industrial Park:

*"It is always a discussion about taxes [...]. Albertslund Municipality is claiming the highest percentage, while others areas nearby are claiming a low percentage. Of course, that is a good thing for the municipality but not for the companies or investors"*
(Former Chairman of the Board of owners in HIP, Lars Gøtke, Interview 03).

Besides the actors contained in the constellations of Hersted Industrial Park, the real estate owners and the municipality of Albertslund, the light rail and especially the location of its station, generates an agency in the actors who are connected with. In that sense, as we mentioned before, the light rail station creates agency in planners and the masterplan by defining the 'entrance point' to the area of Hersted Industrial Park, which will force a change to accommodate different types of mobility in the area related to the new housing purposes.

However, it is relevant that as expressed by the planner of Albertslund Municipality, Søren Kehr, that the impact in terms of rising prices in the area of the new infrastructure will happen once the light rail is functioning:

*"...DTU have made some analysis, and they say that price of land around a station and housing costs actually first starts to rise in value once the train is running, not [...] even 1 year before"* (Planner of Albertslund Municipality, Søren Kehr, Interview 08).

In that sense, if we analyse that from an ANT perspective (*Section 5.1*), by not being materialised as a reality yet, the light rail is creating agency (Hansen and Clausen, 2017) on both, owners that support and owners that reject the transformation process, by locking them in a immobility position, due to the risk that represents redeveloping based on a non-materialized actor (the light rail station) in Hersted Industrial Park. However, the actor still actively acts in the network and have re-positioned actors to take stand/opinion on its introduction.

In relation to the local plan, it offers a more detailed specification of the affordances allowed by in the spaces to be developed. In the case of Hersted Industrial Park, the local plans are produced in direct negotiations between the real estate owner of the specific land plot involved and the planners, which taking as a background the masterplan, are establishing a negotiation space, as referred by planner Søren Kehr, of Albertslund Municipality,

*"A few of the [local] plans will be purely municipality decision, but most of them are negotiated. [...] However, all the local plans are usually deeply coordinated."* (Planner of Albertslund Municipality, Søren Kehr, Interview 08).

Based on that, the local plans are concerned with regulating the behaviour of the developer in a small area, where the municipality of Albertslund acts as authority. However, due to the traditional top-down approach followed by the municipality, the focus point is on delivering a masterplan, developed prior to the local plans, functioning as 'regulating frameworks' for the more localised discussions, which limits the engagement of developers that might be able transforming the area, by neglecting their inclusion (CEO of Development Company Høje Taastrup C, Lars Bloch, Interview 11).

In the case of the regulations towards traffic, the matters of concern can be explained as keeping a safe separation of traffic and flows of vehicles and people, including the allowance of heavy vehicles, such as trucks with different sizes. In that sense, planners can, through regulations, limit the size of trucks that have access to the area, establishing speed limits or other security measures on the roads, as expressed by Søren Kehr, planner of Albertslund Municipality:

*"...we also lower speed on the roads by narrowing them and the large trucks they are not allowed any more, you take the traffic out"* (Planner of Albertslund Municipality, Søren Kehr, Interview 08).

As a sum up, we would like to emphasize the key role that, based on the analysis of our empirical research, planners of the municipality have in the transformation process of the different actors towards transforming Hersted Industrial Park. In that sense, planners represent, as referred by Søren Kehr, mediators between two social worlds (politicians and developers), which have a different perception of what the change in the industrial area and the redevelopment should entail:

*"...we need to put [developers and politicians] in a more controlled environment [...] and we, as municipality, would be the translator. And they speak to us, because we kind of speak the same language, when they talk to us the talk straight. One [developer] comes from an economic place and others [politicians in Albertslund] come from a place which is not capital friendly. The politicians (in social municipalities) can sometimes have difficulties in trusting the private capital developing in Albertslund, It a long tradition of social housing. There is a tension there"* (Planner of Albertslund Municipality, Søren Kehr, Interview 08).

In that sense, Søren Kehr, seen from an ANT perspective is aiming at keeping its position as spokesperson of both understandings (the understanding of developers towards the politicians and the other way around) and for that, it is necessary that those two actors do not establish parallel contact, which could generate a counter-narratives that could jeopardize its role as mediator in the process.

### 6.4.1 Former Transformation Processes

As we explained in the empirical data, the former masterplans were developed by the municipality in a top-down approach. In that sense, it was delivered as a finished product with the aim at interesting the different actors, such as real estate owners of Hersted Industrial Park, which did not succeed in doing. In the development of the current masterplan, planners are in conversations with the Board of Owners. However, the owners do not have any agency in the transformation process happening in Hersted Industrial Park other a simple confirmation if the concept offered by the masterplan is interesting to them or not (Chairman of the Board of owners in HIP, Jesper Larsen, Interview 04). That limited collaboration with related actors in the elaboration of the masterplans is derived from a 'locked' formalised planning approach that serves the development of these documents (Brown & Duguid, 1991).

## 6.5 Limitations of the current transformation approach

Based on our empirical research, the approach of Albertslund Municipality regarding the process of transformation of Hersted Industrial Park is trying to handle the complexity of the process by offering an interessement device to the different real estate owners contained in the area, represented in the different masterplans. With that, the municipality of Albertslund aims at producing a translation of changing the use from being industrial minded to dwelling, office & retail in the area understanding the place as a whole, going from an area of industrial practices to something different by embracing an idea coming from the municipality of Albertslund, which has no ownership in the area besides main roads.

The existing complexity of Hersted Industrial Park is proving that the several masterplans presented by Albertslund Municipality are unable to generate agency in the network conformed by the different real estate owners that occupy the area. In addition, the actor-world of the real estate owners' matter of concern of the area is highly fragmented, representing an unstable network which makes a mobilisation problematic by creating tensions in the network. As a consequence, that instability establishes the need of addressing the existing complexity dividing it in different phases, going away from understanding that the whole area can be transformed with a single translation process (Callon, 1986a), but instead in several ones that would gradually generate a process of agency in the network (Hansen and Clausen, 2017).

Based on our empirical research, we decided to establish the need for a focus area which triggers the change. We will be working within the area surrounding the future light rail station that will serve the area of Hersted Industrial Park. In that sense, as expressed by multiple key actors (Søren Kehr: Planner of Albertslund Municipality, Lars Gøtke: Former Chairman of the Board of owners in HIP & Jesper Larsen: Real Estate Owner/Developer & Chairman of the Board of owners in HIP).

*"The most important area in Hersted will be the one surrounding the light train station"*
(Former Chairman of the Board of owners in HIP, Lars Gøtke, Interview 03).

Furthermore, we understand that the masterplan can be a necessary element for the municipality of Albertslund, representing part of the current strategic planning approach that bureaucratic entities, such as municipalities, follow up when developing urban spaces.

However, the municipality of Albertslund is treating the masterplan as a solution, as an 'object' that it should be able to enact change by itself. By just existing. However, Albertslund Municipality did not take into consideration that the network that the non-human actor is aiming at enact change it is highly fragmented and stable resulting in a constellation of actors with different interests but comfortable in the current immobility in relation to the transformation of HIP. Without gaining insight in the conflicting matters of concern in the network and the processes that make that will mobilise the transformation of the area, the interessement device that Albertslund Municipality represents as the masterplan 'object', is unable to generate agency in the network.

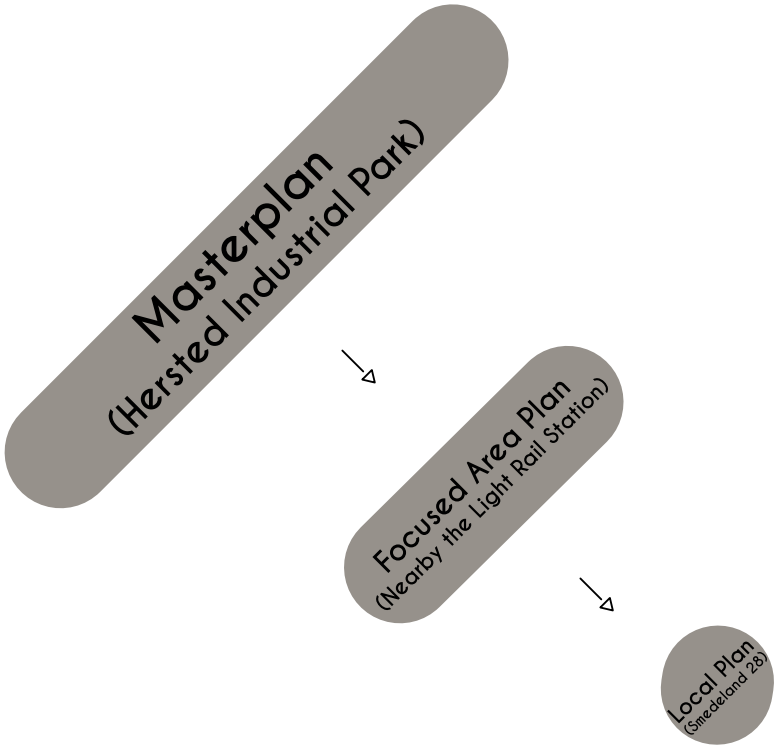
## 6.6 Sub-Conclusion

In order to facilitate change in Hersted Industrial Park, we must destabilise the current network, which is stable regarding the current industrial use of the area. That raises the question about the implications of creating instability and how it will impact the area approaching redevelopment differently. In that sense, there are different interventions points in the current situation of the area, but we need first to understand which interventions would push in which directions and how this affects the interessement of the actors in related networks.

Through the Actor-Network-Theory approach, we have discussed the conflicting tensions, interests of the different relevant actors related to the change of use in Hersted Industrial Park. In order to gain a better understanding of those actors and their relations, we applied punctualizations. In that sense, by opening up those actor-worlds of interconnections, we gained an insight into the variety of the actors involved and their matters of concern. For instance, in relation to the transformation of Hersted Industrial Park from an industrial area to dwelling, office & retail, the use of punctualization made it visible that some of the actors support the transformation process, while others oppose it.

The municipality of Albertslund and some of the supporting real estate owners function as advocates of the change in Hersted Industrial Park. However, some other actors in the network are opposing the transformation, motivated for their matters of concern (for instance, being satisfied with the current use of the area, or a feeling that the change is being pushed on a top-down approach by the municipality).

With that, even when the matters of concern to support or oppose the transformation process are diverse among actors, it is through the process of punctualization of the different actor networks that we gained an understanding of the existence of




*OBS: The size of the circles shows the amount of agency the object have in the process of translation from industry to dwellings*

*Illustration 05: Initial relation of hierarchy among the different planning objects.*

those two positions regarding the change in the industrial area and the existence of others, which are neutral to change. This is especially relevant when we look at the ownership of these land plots and the junction in between those interests. For instance, the area of Hersted Industrial Park is a vast network consisting of 166 different real estate owners, and the process of translating such a network is not free of challenges. In that sense, the translation process requires the alignment of the actors of the network in a context where the area is currently in use different from the intended as an outcome of the translation process.

Through our empirical research, we have been presenting the different objects of planning that exist in the process of change, namely the masterplan, the development plan and the local plan. Each of them is focusing on interesting a specific actor involved in the process. However, as shown in our analysis, there is one planning actor intended to generate, from the perspective of the municipality, agency and mobilisation in the network for the rest of actors involved in the process of change: the masterplan.

In that sense, the Municipality of Albertslund is having a top-down approach towards the process of development in the area of Hersted Industrial Park, using the masterplan as an key interessement device for the translation of the rest of the involved actors and as a basis for the development of focused area plans and local plans, as shown in the illustration 05.

However, based on our empirical findings, after two previously developed masterplans and a new one in development, that top-down approach has proven to be ineffective. In that sense, the masterplan is not able to generate the intended agency in the actors. This is due to the perception of some of those actors, namely the real estate owners opposing the change of use, which perceive that the masterplan does not relate or represent their matters of concern.

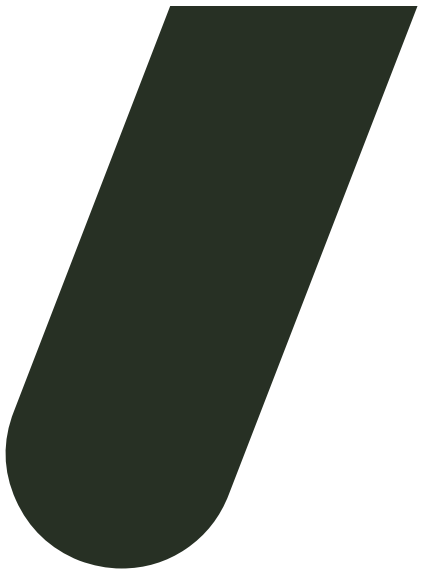
*"...I think the way they have done it, putting a masterplan out now for the whole area, gives some inconveniences [...]. It is for sure that there will be some owners who will feel trapped"* (Chairman of the Board of owners in HIP, Jesper Larsen, Interview 12).

Therefore, as expressed by Jesper Larsen, the real estate owners rejected the masterplan as medium for facilitating the transformation, proven the ineffectiveness of the municipality's Obligatory Passage Point (OPP) (Callon, 1986a).

# 7

# Design Synthesis

We unravel the analysis and start categorising a structure and form of the the ‘design’




Conceptual Framework for transforming Hersted Industrial Park


Implementation of the Conceptual Framework


Traffic Screening


Screening of Nearby Space Buildings


Redevelopment Canvas


Negotiation of Design Parameters


Design Parameters

# 7.DESIGN SYNTHESIS

As we previously explained in the sub-conclusion of the analysis chapter, the relations between the different objects of planning in the network, namely masterplans, are at the main focus, which represents one of the fundamental issues that ended up with the failure of the process of change in prior experiences in the area of Hersted Industrial Park. We, therefore, propose a shift from focusing on developing planning objects like the masterplan to negotiations regarding the desired transformation of the area.

## 7.1 Conceptual Framework for Transforming Hersted Industrial Park

Based on the analysis of our empirical research, we propose the use of negotiation spaces to embrace the different matters of concern to mobilise actors and transform HIP step-by-step.

*"A developer wants to know everything, including the economic benefits, but that is impossible. Hersted is a very, very big area. By pushing the masterplan, the municipality is creating more uncertainty than certainty regarding the change."*
(Real Estate Owner/Developer, Jesper Larsen, Interview 16)

The strategic planning approach of Albertslund Municipality of developing yet another masterplan which entails; infrastructures, density for building etc., is ensuring rigid settings for Albertslund Municipality's vision of the opportunities for redevelopment it is closing down for negotiations and are not embracing iterations for developers to become interested and due to the complexity and the wickedness of redeveloping an area of such scale to comfort a new type of use.

Instead of the current practice of treating the masterplan as the agent of change, we propose a shift where there focus lies on negotiations for mobilising developers to redevelop the area, through negotiation spaces, which include a materiality s that have flexibility enough to evolve through discussion that takes place between the actors that relate to them. For instance, the vision for the comprehensive area of Hersted Industrial Park could be intended as a representation of the matters of concern of the politicians if it had the flexibility enough to have affordance for being used in a negotiation space between planners, real estate owners or developers. However, the masterplan should not be used in those negotiation spaces as an interessement device, aiming at serving as a constriction for the future vision of the area, but instead, as a mere representation of the politicians perspective, functioning as a spokesperson of politicians in the negotiation with others.

In that way, the object of vision for the comprehensive area of Hersted Industrial Park will represent a future vision once developed, but planners to facilitate and steer open-ended debates that have enough flexibility to absorb the matters of concerns of actors related to the transformation in the localised development of the comprehensive area, focused areas (such as the area close to the station) and the local land plots (the development in specific plots with agency to change). With that, the agency on the network of specific real estate owners will be produced by negotiations on a local level; the agency on the network of the owners of specific areas will be enacted by the vision for a 'focused area'. Besides, the masterplan is creating agency in the network of politicians and Municipality, which conventional approach to urban redevelopment requires having a general overview of how the whole area of Hersted Industrial Park would look like in a non-exhaustive full term.

By creating a new framework for facilitating urban redevelopment of an area which is partly in-use, we gain an understanding of the interestment devices that the Municipality of Albertslund can create and steer.

In the context of the desired transformation of Hersted Industrial Park into embracing new uses, a clustering of actors gathered in geographical areas on a more local scope will, through our approach of negotiation spaces, will be a different perspective that can be beneficial for the mobilisation by engaging different actors in negotiation spaces towards change. We will throughout the rest of the report showcase the implementation of our conceptual framework on a specific land plot, and exploring its potential to mobilise developers to embrace the desire of Albertslund Municipality of transforming the area.

## 7.2 Implementation of the Conceptual Framework

Within this section, we will explore the implementation of the new framework on multiple levels of Hersted Industrial Park, investigating where and how we can stage negotiations with actors to mobilise developers to redevelop the industrial area.

### 7.2.1 The Comprehensive Area

Due to the complexity of transforming Hersted Industrial Park, hereby, referring to the tensions in the network and especially the ownership constellation in the area, it is critical to include the real estate owners' matters of concerns in the redevelopment, when facilitating a mobilisation process. Albertslund Municipality is mere using the masterplan, which only incorporates the visions of politicians and their own, creating conflicts in the network as a consequence.

*"Treating the masterplan as the most important element is a very normal way to approach these development processes. I think that in Hersted, doing that thing is very complex, because of the amount of different owners. [...] Hersted is a very, very big area. By pushing the masterplan, the municipality is creating more uncertainty than certainty regarding the change."* (Real Estate Owner/Developer, Jesper Larsen, Interview 16)

When establishing a new masterplan, it will generate the notion of regulations in term of what can and cannot be built in certain areas. By forcing the vision into a masterplan, the municipality of Albertslund is limiting the redevelopment of the area, as expressed by Jesper Larsen (Real Estate Owner/Developer, Jesper Larsen, Interview 04). If we are to redevelop Hersted Industrial Park, we must intrinsically transform it by a more modest geographical area in terms that are entailing fewer land plot/real estate owners to align as seen on illustration 06: Hersted Industrial Park land plots. Due to the entanglement of researching an ongoing process of redevelopment, where the development of a new masterplan, which is still polished before release has set some parameters, are out of the scope to be re-defined.

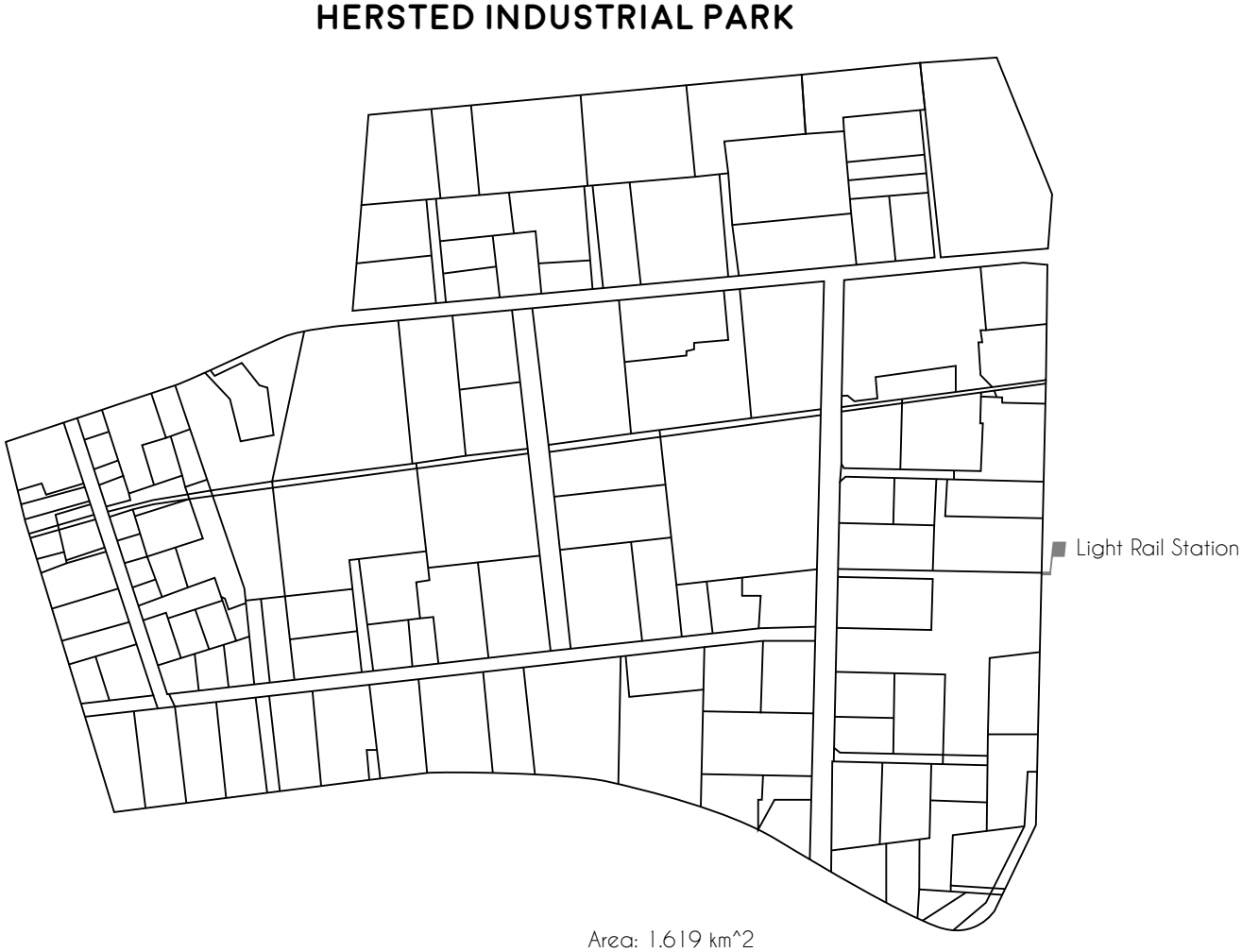



*Illustration 06: Hersted Industrial Park land plots.*

### 7.2.2 Focus Area

As a means of choosing a focus area which can be mobilised and embrace the redevelopment into a mix-use area, we look towards the matter of concerns for specific actors in overall geographical clusters and what objects are of interest for those certain actors as shown in i*llustration 07: Focused area plan near the coming light rail station* .

The redevelopment is firmly entwined with the enrichment of the public transport in the area (Planner of Albertslund Municipality, Søren Kehr, Interview 02&08)(Real Estate Owner/Developer, Jesper Larsen, Interview 04)(Politician, Head of the economy and environment of Albertslund Municipality, Leif Pedersen, Interview 14). Due to the position of the new light rail station at the edge of Hersted Industrial Park, we will screen the actors in that area.

We thereby started to contact land plot/real estate owners which were located close to the upcoming light rail station to map the specific owners position towards the municipality of Albertslund desire of transforming the area, in the timespan of the production of the thesis we were able to mobilise one supportive actor for partaking in a negotiation spaces, close to the station area; Smedeland 28, Jesper Larsen.

As this part of the project, we aim at exemplifying the possible benefits of our proposed new framework of mobilising actors to embrace an urban redevelopment situated in Hersted Industrial Park. Based on our discussions with the different actors, we rate the agency of change for the real estate owners in the selected area.

By knowing when the respective owners might have a desire for embracing the change, we can create a possibility for a more coherent strategy for the following years. If the goal for the municipality of Albertslund is to mobilise the real estate owners to sell or redevelop on their current greyfields or brownfields, a vision into a step-by-step strategy with a timeline for redevelopment in a focus area is a need to aid the redevelopment in Hersted Industrial Park.

This division/rating of four different opinions of real estate owners and the distribution of those opinions are based on our empirical research regarding some of the land plots, such of the cases of Smedeland 24, where its economic operations are expected to continue, or Smedeland 28, where the owners acquired the land plot with the aim at developing it later and thereby supporting the redevelopment. However, due to the limits of gaining insight into the opinion of some of the owners of the area, who declined to participate in this research, we decided to establish those opinions based on fieldwork observations about the level of activity in the land plots and a screening of financial situation of the real estate owners.


*Illustration 07: Focused area plan near the coming light rail station*

### 7.2.3 Local Area

With the knowledge gathered in relation to the will of real estate owners to support change in the focused area, we look specifically at open a negotiation space with the ones most eager to transform in the area. As shown on *illustration 08: Rating of real estate owners' desire to redevelop*, then there is one's owner who is rated most supportive of transforming Smedeland 28. This is due to, as we explained in the empirical research, the real estate owner bought the plot of land before 2007 in order to transform it, but due to poor financial timing, specifically the financial crisis in 2007-2008, the government of Denmark postponed the project and, with it, the proposed light rail station (Owner & Developer, Jesper Larsen, interview 04). When we contacted the real estate owner of Smedeland 28, Jesper Larsen then he stated:

*"The best case scenario, three to four years. But we actually need to be open when the station is opening in 2025. It is like a burning platform."* (Real Estate Owner/Developer, Jesper Larsen, Interview 12)

As one of the few actors stating a clear support the redeveloping and embracing the municipality's desire to transform the area, we propose a participatory approach for the engagement of negotiation between the entities. As stated in the analysis the developers' matter of concern, their intentions are to invest and get a return on their investment, thereby, they are interested in reducing their risk as much as possible in order gain that financial profit. If the redevelopment of single land plots is successful, then it would enact in the socio-technical system as a mobilization device proving the effectiveness of our conceptual framework, which might "contagiously infect" the area with a redevelopment 'fever' and attract other real estate developers to transform Hersted Industrial Park.

*"In the short run, if we have a success here, a lot of developers will knock on all the doors. That will create money for all the owners here, while helping the vision in the long run."* (Chairman of the Board of owners in HIP, Jesper Larsen, Interview 16)

However, for the redevelopment of Smedeland 28 to work as a mobilisation device, it needs not only to function as a development in its own entity, but it also needs to be designed to embrace the redevelopment of the other land plots. We thereby undergo a small evaluation of the surrounding urban environment.

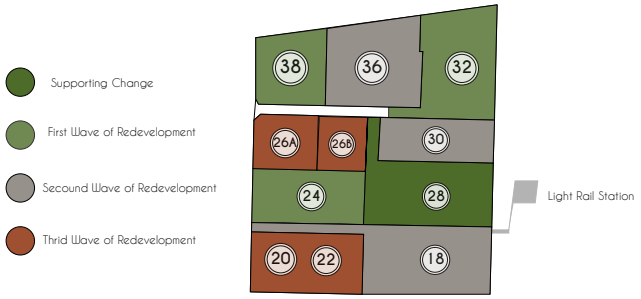



*Illustration 08: Rating of real estate owners' desire to redevelop*

We do that with a focus on the possibilities of repurposing buildings, which might have implications on the redevelopment of the local land plot, by opening up connection possibilities with surrounding land plots and support the decisions of repurposing the buildings instead of demolishing them.


*Illustration 09: Specific Land Plot in Hersted Industrial Park*

## 7.3 Traffic Screening

The investigation of the transport infrastructure is essential due to the holistic process of the redevelopment of Hersted Industrial Park, and the need for understanding how to act with surroundings of the land plot for the redevelopment to become a success. We are thereby, translating the possible tensions related to the infrastructure.

The transport infrastructure of the area comforts the current practices of the industrial companies with affordances of driving large trucks and cars around while having less of a focus on green spaces, walkability and cycle-ability, which are desirable urban qualities for residential areas (Agenda Center Albertslund, Povl Markussen 09).

As methodology of investigating the transportation infrastructure in Hersted Industrial Park, we performed fieldwork observations where by put ourselves as end-up users of the infrastructure of the main artery 'Smedeland' *(Picture 02)* as soft pedestrians, moving around the area as cyclists and pedestrians. In our multiple visits to the area, we walked and biked the street, noticing a long wide straight road with a large presence of trucks driving up and down.

The long straight lines of the 'effective' transportation system designed for the accommodation of motorised vehicles, that undermines transportation means like walking and biking.

While the road that is most likely going to be the connection between the upcoming light rail station and the main road works as an entrance to Scandic (a large truck company), when its put into terms as Jan Gehl (2010), it is unpleasant and unwelcoming to soft pedestrians, dull and monotone large open spaces. Based on that, it is clear that even for the redevelopment of a single land plot to become successful, some of the transport infrastructures have to be redesigned to embrace the new use of the area.

*Picture 03: Likely road from the main road to the new light rail station.*

*Picture 02: Main road "Smedeland*

## 7.4 Screening of Nearby Space Buildings

As explained in *Appendix D: Repurposing,* the construction of the 'built environment' in Hersted Industrial Park involved a significant investment in resources, both natural, material and economical, providing, as a result, some essential and needed societal blocks. Therefore, it is crucial to embrace as much existing urban development in the focused area as possible.

For that purpose, we perform a screening of nearby spaces and buildings of Smedeland 28, by revisiting the site and understanding the buildings, users, architectural styles and the current density of the location.

The Illustration 10 shows the different existing buildings in the focus area of Hersted Industrial Park and a rating system regarding different parameters, based on a '1-to-3-scale'. In that sense, the higher the grade of the building in the specific parameter, the better. Consequently, the lower the grade, the less it is possible to use the building for repurposing.

### 7.4.1 Material Quality & Value:

Regarding these aspects, the valuation process of the buildings responds to the worth of the materials used for the construction regarding future use. In that sense, the importance of the quality of the material and its value relates to the capabilities and affordances that those materials potentially have for future repurposing of the building. For instance, a building with a high-quality brick facade would get a higher grade in this parameter than a lower quality pre-manufactured concrete facade.

### 7.4.2 Condition:

In this case, the valuation of the current condition of the materials and the building itself, based on an exterior observation of the structure are relevant to determine the state of decay or need of maintenance that the building and its materials would require, in case of performing a repurposing of the existing construction. In that sense, a better condition of the building and its materials would qualify with a higher grade in the Illustration.

### 7.4.3 Feel & Appeal:

These parameters focus on our perception of the existing buildings, as we function as facilitators of future scenarios, and how those buildings could fit in the future visions. By that, we assigned a higher grade to the buildings that would offer, from our subjective experience and a better fit for the urban life we are aiming at nurturing in the area to be developed.

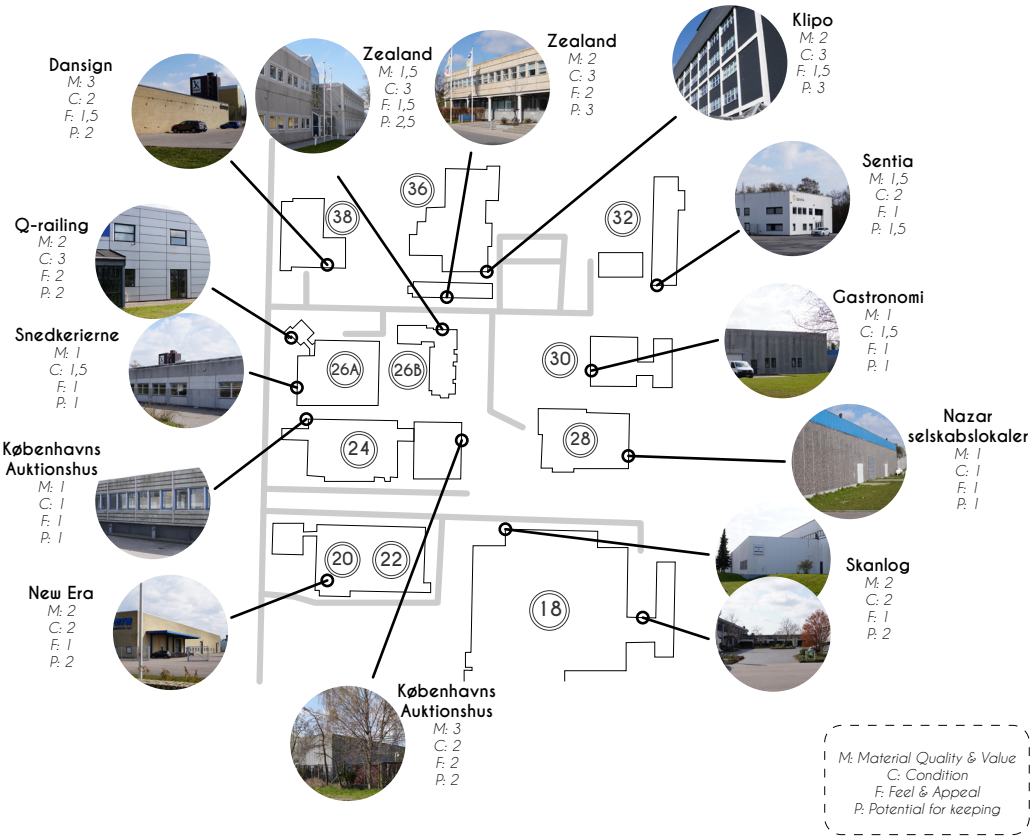



*Illustration 10: Screening of existing buildings*

### 7.4.4 Potential for Keeping:

This aspect includes the other three aspects referred before, representing a willing for redeveloping the building, while keeping it, or instead demolish it to develop in the plot.

Based on those parameters, we construct a basis for our understanding of the built stock that we consider as potentially relevant to be kept and which should be demolished as part of the redevelopment process of the area. In that way, we establish a future canvas of how the transformation progression will take shape.

In the *Illustration 11*, the different existing buildings, to be kept or to be demolished are presented, using for that a dark green color for the ones to keep, while the rest of the buildings are demolished and not shown on the illustration.

### 7.4.5 Possible Repurposing Ideas for the Current Urban Development

Repurposing intends to enlarge the lifetime of buildings. By doing so, we can enable a possibility of lowering material consumption, transport, energy consumption and pollution (Gregory, 2004)(Douglas, 2002). The socio-economic growth does require the construction of new buildings, although new buildings only make up 1.5-2% of the overall building stock.

There are different approaches to utilize the existing urban environment, and for inspirational purposes, we have gathered some the possibilities for future developers in Hersted Industrial Park and cross-referenced them to the screening of the buildings in the previous section this can be found on *illustration 12*. The digits underneath the illustrative ideas are street numbers on "Smedeland".

# Possibilities of Transforming Existing Buildings on the Street "Smedeland"

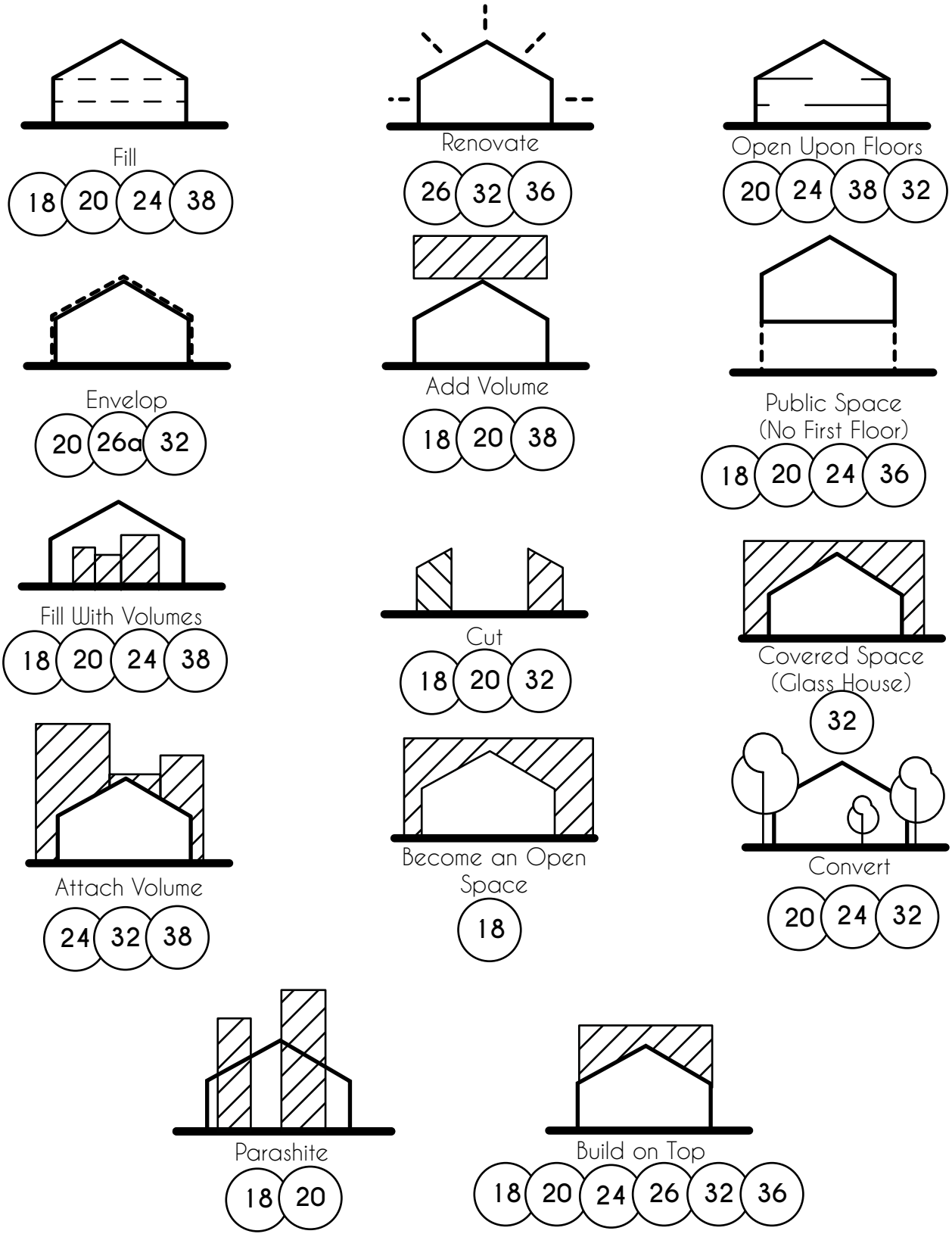



*Illustration 12: Possibilities of transforming existing buildings on the street "Smedeland" - Based on (SLA Architects, 2013)*

## 7.5 Redevelopment Canvas

We have now established which existing built environment that has the opportunity to be kept as part of the redevelopment of Hersted Industrial Park in the focused area near the station. We are fully aware that the transformation of HIP will not come overnight. However, the canvas will be 'painted' over a series of stages. In this section, we will open up for our conceptual framework to understand when and how the area will be transformed and if the initial redevelopment can potentially 'infect' developers, realising the change in HIP. An understanding of the full picture will contribute through our perception to shape negotiations and dialogue between key actors (municipality and developers) in the transformation process of the redevelopment, of HIP with the discourse around, Such as *"how should the first land plot position itself, in order to help the surrounding land plots to be redeveloped?"*

Through the investigation the specific area surrounding the coming light rail station that the real estate owners desire to redevelop which we presented in *section 7.2.2* Focus area *Illustration 08: Rating of real estate owner's desire to redevelop* and the understanding of the current built urban development, we paint a redevelopment selected focused area in Hersted Industrial Park in multiple stages. In that sense, as we mentioned before, the redevelopment will start with the land plot marked the *illustrations 13 - 16* (Smedeland, 28), which will be developed by 2025, coinciding with the expected opening of the light rail station, as expressed by real estate owner, Jesper Larsen:

*"...We actually need to be open when the station is opening in 2025. It is like a burning platform [...]. I think that will be some time in 2024-2025 that we will have people moving in here"* (Real Estate Owner/ Developer, Jesper Larsen, Interview 12).

Consequently, the opening of the light rail station and the first land plot to become redeveloped will facilitate a possible eagerness to redevelop for the surrounding real estate owners are currently supporting the redevelopment in the area and thereby, representing the first wave of redevelopment in the timeline of the area. We established that the first redevelopment wave would take a time frame of five years to be materialised since the establishment of the light rail station, meaning 2030.

That first wave of redevelopment, if successful, would generate more agency among actors who are related to the transformation, and become more support towards the redevelopment of Hersted Industrial Park'. That success, exemplified in the outcome of the benefit of redeveloping in the land plots, will act as mobilisation and spread the desire to transform the area, for those who were previously have been neutral to redevelop in the land plots they owned. In that sense, the first wave would create some agency in the network of the real estate owners 'neutral to the redevelopment', generating a second wave of redevelopment to be materialised by 2035. Finally, following the same line of thought, by 2040, all the land plots will be redeveloped once the transformation process reaches the owners who, in a first moment (back in 2025, when the light rail station opened), were against the redevelopment taking place in the Hersted Industrial Park.

### 2025

As mentioned before, at the time that the light rail is opened, the first land plot to be developed (Smedeland 28) should be ready to be used, as expressed by its owner, Jesper Larsen, in the previously stated quote


*Illustration 13. Representation of Hersted rail station area by 2025 showing in green the existing building in the first land plot to be redeveloped (Smedeland 28) and the station.*

### 2030

Motivated by the development produced in Smedeland 28 and the further impact that the light rail station in the area, further redevelopment in the area is produced, representing a second wave of change.


*Illustration 14. Representation of the second wave of redevelopment in Hersted rail station area by 2030.*

## 2035

By this moment, the real estate owners that were neutral towards the redevelopment are aware of the opportunities of transforming the area, while the risk of redevelopment has been reduced. Those conditions generate a third way of development.


*Illustration 15: Representation of the third wave of redevelopment in Hersted rail station area by 2035.*

## 2040

In this moment, the redevelopment has been transforming the all of the focused area, in the Illustration 16.


*Illustration 16. Representation of the final wave of redevelopment in Hersted rail station area by 2040.*

## 7.6 Negotiation of Design Parameters

Throughout the research, several interviews have been carried out and referred to as semi-structured interviews, however, our approach to semi-structured-interviews (Newcomer, 2015) is enhanced by complementary use of negotiation spaces, where we found that flexible materiality can be beneficial to shape and create new knowledge around, as described in section '*2.4 Participatory Design*'.

A series of interviews took place in order to shape the design parameters, throughout these interviews negotiation spaces took place at the following interviews; (Former Chairman of the Board of owners in HIP, Lars Gøtke, Interview 03)(Real Estate Owner/ Developer, Jesper Larsen, Interview 04,12 &16)(CEO of Development Company Høje Taastrup C, Lars Bloch, Interview 11)(Citizen of Albertslund, Christian Clausen, Interview 05)(Citizen of Albertslund, Astrid Hansen, Interview 13(Politician, Head of the economy and environment of Albertslund Municipality, Leif Pedersen, Interview 14)(Agenda Center Albertslund, Povl Markussen 09).

For explanatory purposes, we will describe one of the negotiations spaces as an example, taking place with a real estate owner & developer, Jesper Larsen. The goal of creating the negotiation space was to discuss possible design parameters and desires in relation to the redevelopment of the specific land plot. The creation of this negotiation space entails an understanding of how to stage, facilitate and synthesise the knowledge and outcomes that will be gathered in the interaction *(Illustration 17: Negotiation space between designers and real estate owner/ developer)*. We start by setting up the stage that is being navigated by designers throughout an interview, containing the desired outcome, then we introduce Intermediary objects (Vinck, 2012) during the interviews conducted, as flexible materialities to interact with.

The first materiality was concentrated towards the focused area plan, showing the light rail station area with nearby land plots, streets and paths into the area. With the help of foam blocks modelled as low-detailed volume representations of the existing buildings in the area as seen on *Picture 03*. Showing the nearby land plots and street, we opened the discussion in relation to the focused area, instead of only concerning a specific land plot. The movable foam blocks allowed the participants to express the potential composition of buildings (shape, size, height and purpose).

*Picture 03: Intermediary object: foam blocks, focused area and land plot..*

Through the understanding of negotiation spaces, the flexible physicality of intermediary object gave the affordances to that materiality for participants to express and develop their desires through the materiality.

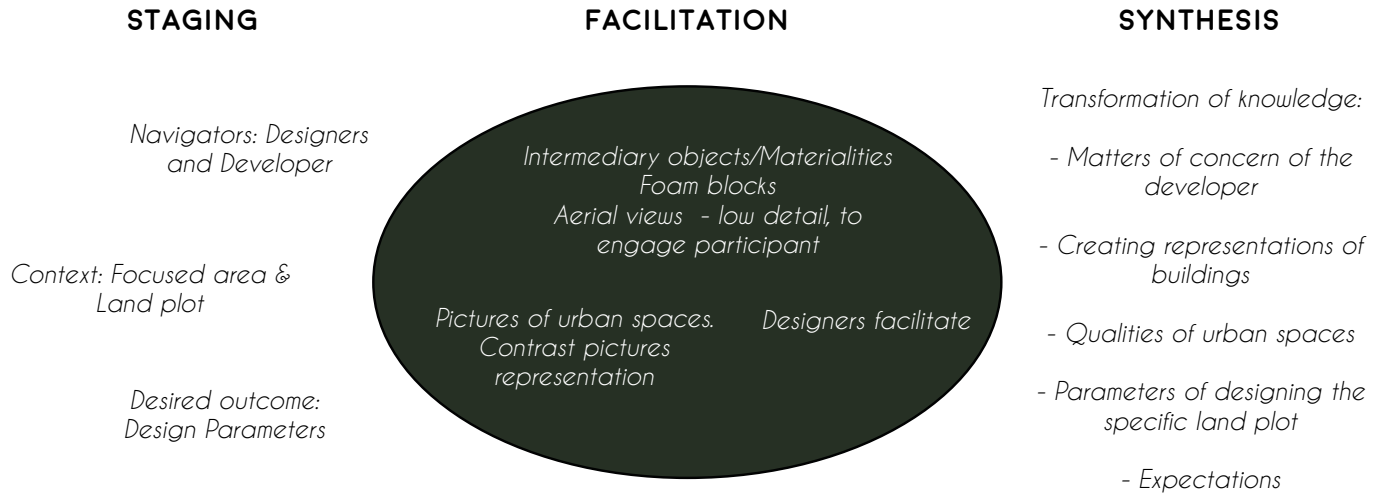



*Illustration 17: Negotiation space between designers and real estate owner/developer)*

The second intermediary object used in the interview was a set of pictures resembling urban qualities, activities and practices. The stimulating collection of pictures opened a dialogue of how the actor perceives the urban space, and what matters for each of them, the images on the printed cards were inspired by urban qualities from Jan Gehl (2010) which is represented on *Picture 04: Set of pictures showing urban spaces.*

*Picture 04: Set of pictures showing urban spaces*

The use of this particular negotiation space resulted in creating, transforming and transfer knowledge and gave a better understanding of developers' matters of concern. The materialities such as the plans, foam blocks and pictures used in the negotiation spaces were designed to achieve the goal of a better understanding of the developer's expectations and what design parameters the designers can work on in designing.

We have, throughout our design-oriented study, made use of multiple intermediary objects (IO) (Vinck, 2012) with diverse detailing levels, which have helped to direct the interviews with participants, due to the openness/closedness of the materiality. In context with the negotiation space previously explained, the first IO made use of low-detail foam blocks to discuss volumes and density-percentages. On the other hand, in the second IO, the images had a high level of detail that helped the participant to express their desires and wishes regarding more detailed visions of the urban space.

## 7.7 Design Parameters

In order to avoid misunderstandings, it is important to clarify that we have not an urban planning background. In that sense, the matters of concern expressed by the actors related to Hersted Industrial Park, include what they understand as urban qualities, which are treated by us as input that we then transformed into design parameters. Therefore, the reader should understand that we did not study urban qualities from a theoretical or literature perspective. Therefore, the urban qualities included in this section are the ones expressed by the relevant actors.

The design parameters are extracted through a process of condensing matters of concern into clustering 'designerly' topics, which can be applied in a design process. To put it in more simple terms, then we are taking the main interests of the actors interviewed throughout the projects and transforming them into parameters of which we can use to design the materiality (understood as the facilitation-medium) for aligning and 'ironing' out tensions to be applied in negotiations spaces between key-actors regarding the redevelopment of a single land plot. The why and how the design parameters will be used in the research will be explained more explicitly in the introduction of the *chapter '8. Design Space'*

The *Illustration 18* with design parameters has been developed through a breakdown of the interviews conducted as part of our empirical research which is shown in *Appendix A: Table: Design Parameters - Interviews,* Within this table, the reader will be able to cross-reference all the parameters to the given actors who expressed the matters of concern regarding what makes a redevelopment successful and thereby being able to mobilise other surrounding actors to follow that lead. Through the negotiations spaces that took place by the detailed transcriptions of the ethnographical semi-structured interviews we found quotes which was directly/indirectly related to the design of the building, use & urban spaces all directed towards a focused area surrounding the coming light rail station, with the notion of achieving a mobilisation of nearby actors (which we often referred towards as 'contagious infect' in the dialogues/negotiations with the interviewed actors).

# Design Parameters

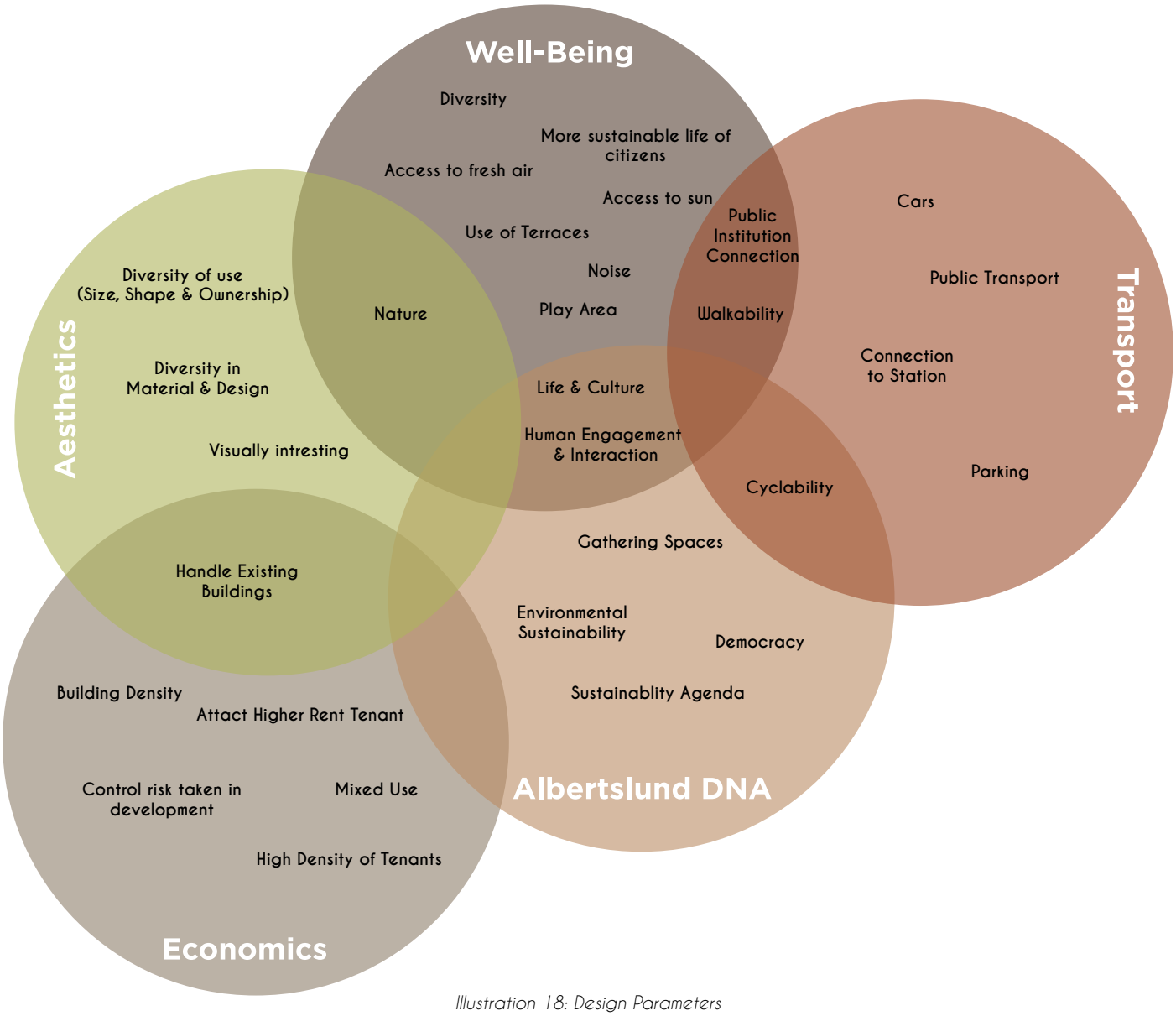



*Illustration 18: Design Parameters*

### 7.7.1 Well-being

It is of importance that the end-users of the designed residential, office, retail and surrounding urban space are satisfied with the redevelopment in order to become a successful entity and mobilise other real estate owners/developers to redevelop in the area.

We must acknowledge that our 16 interviews did not have the focus a direct focus on understanding particular end-user groups, such as future citizens of the area. We have nonetheless through the empirical research been in dialogue with experts on the area, and carried out a brief academic research about what is needed for people to live, can be found in *Appendix B: A Word-ness*, where we create an essential base-knowledge regarding well-being and what is fundamentally needed for human-beings to feel comfortable, in order to ground the dialogue with actors.

The parameters found in the well-being cluster have emerged by a series of actors involved (Planner of Albertslund Municipality, Søren Kehr, Interview 02&08)(Agenda Center Albertslund, Povl Markussen 09)(CEO of Development Company Høje Taastrup C, Lars Bloch, Interview 11)(Citizen of Albertslund, Christian Clausen, Interview 05)(Citizen of Albertslund, Astrid Hansen, Interview 13)(Politician, Head of the economy and environment of Albertslund Municipality, Leif Pedersen, Interview 14)(Real Estate Owner/Developer, Jesper Larsen, Interview 12).

### 7.7.2 Transport

As this redevelopment of Hersted Industrial Park has a vision of changing the use of the area, it has been a critical element for actors to emphasise the need of transportation infrastructure to support the envisioned soft pedestrians as a supporting element to urban qualities and as a more sustainable transportation method (Planner of Albertslund Municipality, Søren Kehr, Interview 02 & 08)(Real Estate Owner/Developer, Jesper Larsen, Interview 04 &12).

### 7.7.3 Aesthetics

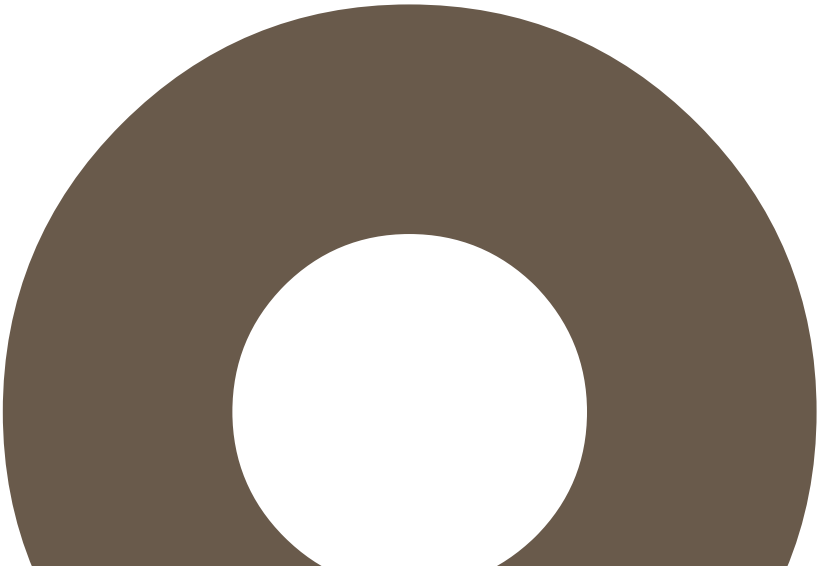
Concerning the negotiation of urban qualities, a set of inspirational cards regarding various urban spaces, practices and uses, have been used in multiple negotiations spaces as materiality to discuss aesthetic parameters. These parameters were raised as vital assets for the transformation to happen, especially a critique of the older monotone dull built environment raised in Albertslund during the 1970-90s was a fundament of the discourse. However, through multiple rephrasing of double-negation (e.g. by stating that Albertslund architectural-wise is dull, boring and a 'concrete jungle', resulted in a design parameter: visually interesting), resulted in a set of parameters such as diversity in building material, nature, diversity of use, visually interesting and how to handle existing buildings in the surrounding environment (Agenda Center Albertslund, Povl Markussen 09)(Planner of Albertslund Municipality, Søren Kehr, Interview 02&08) (CEO of Land development company Høje Taastrup C, Lars Bloch, Interview 11).

### 7.7.4 Economics

For the transformation to become a success, then there are specific economic parameters to be taken into consideration. While it can be handled in different manners, it is paramount that the redevelopment of the area will create the desired life of users that is part of the vision. This can from a users' perspective be understood by reasonable pricing of the apartments or office space offered, but also from the municipality's and developers perspective. If the redevelopment of a single land plot can spread and mobilise other nearby real estate owners and developers to invest in the transformation of Hersted Industrial Park, It has to show an economic profit (Planner of Albertslund Municipality, Søren Kehr, Interview 02)(Real Estate Owner/Developer, Jesper Larsen, Interview 12).

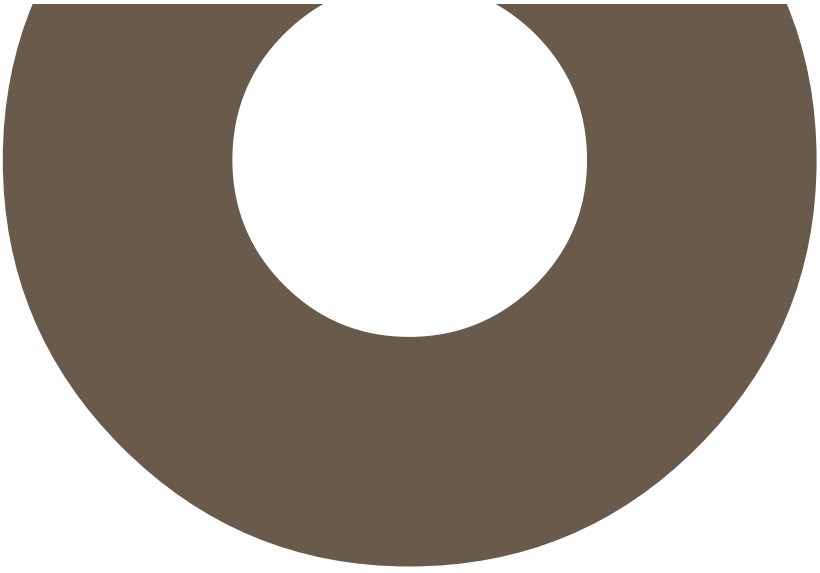
### 7.7.5 Albertslund DNA

Albertslund has some unique local cultural heritage, as stated in the empirical research *chapter 4.2* The DNA of Albertslund is was built by 'city planning pioneers' in the 60's that radically wanted to challenge planning approach at that time. We investigated the significance of including cultural heritage in redevelopment projects in the literature research chapter, more specifically *3.6 cultural heritage in urban development*, this examination of the profits of including some of the traditions in the surrounding built environment and the practices/ uses that it brings. Parameters such as cyclability, local democracy, environmental sustainability, just to name a few are of great importance for the culture of Albertslund (Citizen of Albertslund, Christian Clausen, Interview 05)(Citizen of Albertslund, Astrid Hansen, Interview 13)(Agenda Center Albertslund, Povl Markussen 09)(Planner of Albertslund Municipality, Søren Kehr, Interview 08).



# Design Space

We start a creative process of exploring possible solutions to mobilise developers.




Ideation


Conceptualisation: Combining Ideas & Materialisation


Description of the Concepts


Negotiation Themes


Conjointement


Sub-conclusion

# 8.DESIGN SPACE

In this chapter, we start a creative process that will condense the design parameters developed in section 8.9 into materiality, intended to function as a medium to be discussed within the negotiation spaces, which we held with municipality and developers, regarding the redevelopment of a single land plot in Hersted Industrial Park (HIP). This materiality of negotiation spaces is a shift from different objects of planning, that is standardized closed forms which does not have the flexibility to embrace new interests and mobilising developers to transform Hersted Industrial Park.

In that sense, after we generate the design parameters, based on the matters of concern of the actors in HIP, we brainstorm (section 3.5) about each of those parameters to obtain ideas with the affordance to represent those design parameters.

Once the ideas have been generated we moved towards a conceptualisation, where we assigned ideas to the different actors following a process where we ask ourselves, based on our knowledge of the different matters of concern, which ideas would represent better the expressed interests of the actors. That assignment of ideas to each of the actors was followed by a process of generating several visualisations with the affordance, again based on our understanding of the different interests of the actors, of representing how the specific land plot would look like if each of the actors involved would have the possibility to choose.

In addition, in order to explore other options beyond the matters of concern expressed by the actors, we decided to generate ideas and concepts for supporting visualisations that would entail some more radical visions.

The totality of the concepts generated where then introduced, as intermediary objects that would mediate discussions, in the negotiation spaces with the Municipality and the developer, in order for them to evaluate the concepts and produce, as outcome of the iteration, a set of negotiation themes that the participants discussed as being essential themes in regards of the redevelopment of the land plot in the context of Hersted Industrial Park.

It is important to state, that the core of our process in this '8. Chapter: design space' is the concept of combining different matters of concern into design materiality, as a way to handle the different tensions existing in the area of Hersted Industrial Park (HIP), regardless how the final visualisation should look like. In that sense, details related to the final architectural appearance of the design should be discussed in further iterations with other entities with broader expertise in the field, such as architects and planners. However, even when we act in this research as Sustainable Design Engineers, we also have architectural competences within our academic background. Therefore, because architectural firms have not been involved in the development of this research, we produced a 'conjoined' concept or visualisation as a materialised representation of the negotiation spaces we went through, which should not be understood as the result of an architectural project or a planning project, but instead as a mere hypothetical visualisation based on our process with redeveloping a specific land plot in Hersted Industrial Park, which further have the need to be detailed through negotiations spaces.

## 8.1 Ideation

After the extraction of the matters of concern from relevant actors, through the use of affinity diagrams *(section 2.3)*, we processed and clustered the different tensions, interests and controversies into themes, generating the design parameters we described in section 7.7. We created those design parameters as a way of 'digesting' matters of concern into a set of elements we could include into materiality, to be used as a medium for the actors' discussion for solving those tensions.

However, even when the design parameters are compiled into clusters that represent the matters of concern of the different actors, they do not necessarily have the affordance to be represented in a specific materiality. For instance, if we talk about access to nature as a relevant design parameter, that access could be represented in endless ways, for example by having a direct view to a forest, access to a garden or by including some trees on a backyard, and so on.

Therefore, to obtain a range of possibilities with the affordance of representing those different parameters, we went through a process of ideation, where we performed a brainstorming session *(section 2.5)*, to explore how the design parameters could be realized in the form of ideas (Lichtfield, 2008).

It should be noticed that the brainstorming session was held without the direct participation of the actors involved in the transformation of Hersted Industrial Park. However, those actors were indirectly present in the session by already including their matters of concern in the process of ideation.

With that in mind, from each design parameter, we produced around 5 ideas. As an example, we include the different ideas generated in the brainstorming session, which can be seen in Picture 05.

For communicative purposes, the extensive list of ideas generated has not been included directly in the report. However, as a way of inspiration, it can be found in a illustrative manner in the *Appendix E - Ideation Catalogue.*

Once we produced those ideas, we moved to their conceptualisation assigning ideas to the different actors, as explained in the following section.


*Picture 05: Ideation process*

## 8.2 Conceptualisation: Combining Ideas & Materialisation

In this section, we describe the process we followed to transform the generated ideas into materiality that support the negotiation spaces where actors can discuss and ease the tensions in the network of Hersted Industrial Park. In that sense, once we have our list of ideas, and questioned ourselves regarding which ideas would best represent the vision/interest of the different actors, based on our understanding of their expressed matters of concern.

Once each of the actors had a set of ideas assigned, we generated several visualisations. Each of them was representing how an actor would perceive the redevelopment of a specific land plot, by including the ideas assigned to that actor. For instance, if based on its matters of concern, an actor would prefer to redevelop the land plot focusing on pedestrianisation, low-density housing and green areas as the core ideas, the generated visualisation would reflect those ideas, creating a hypothetical redevelopment to represent them.

However, regarding these concepts, it is relevant to point out two aspects: The first one relates to their generation, which was produced without direct interaction with the municipality and the developer of the specific land plot. This conscious choice was based on the need for facilitating the first iteration within the negotiation space through presenting materiality, in order to facilitate a dialogue focused on gathering of negotiation themes without discussing how the redevelopment should look like in detail. The second aspect is regarding the purpose of the generated concepts. In that sense, they were intended as a medium for supporting the discussions, in negotiation spaces, concerning themes with the planner of Albertslund Municipality and the developer of a specific land plot in Hersted Industrial Park (HIP) in the context of its redevelopment.

It is relevant for the reader to notice that the research project relates to the transformation of a specific land plot in HIP, and it is not intended as an architectural project. However, when discussing the redevelopment with actors, they expressed matters of concern in the shape of urban qualities and architectural concepts. In the context of designing and initiating a conceptual framework for handling existing tensions in the network, we have addressed those expressed urban qualities and architectural concepts through the use of our theoretical approach *(Chapter 5)*. For instance, when describing negotiation themes, such as density and building heights, we use those concepts and qualities for aligning expectations between actors and enacting the mobilisation and understanding of each other's positions.

In addition to the concepts that came from the different actors' matters of concerns, we decided to generate some additional concepts, in order to explore scenarios for provoking 'unspoken' needs and desires of the actors, which might be hidden by the 'common sense' generated within practices, when introduced in the negotiation space, two radical concepts and one traditional.

The following *section 8.3*, functions as a further explanation regarding the reasoning behind each of those generated concepts.

## 8.3 Description of the Concepts

The intention of the concepts was clearly understood by the participants of the negotiation spaces (planner and developer), as expressed by Søren Kehr:

> *"I like the fact that they represent different actors [...]. It represents views and different interest regarding how the urban environment should be developed. Of course, what is going to happen is that all those interests are going to be mixed in a further design that include all of them in some way. It is an illustration of desires"* (Planner of Albertslund Municipality, Søren Kehr, Interview 15).

In this section, we further explain each of the concepts, which focus on the redevelopment of a specific land plot (Smedeland 28) seen from the perspective of a specific actor, that were interviewed, analysed and understood through the analysis *chapter 6*. By interacting with the concepts, the participants can explore creatively and discuss elements considered as negotiation themes. In addition, as we will mention in *section 7.6*, some the concepts were designed to represent a more radical perspective for the sake of triggering actors to get out of their comfort zone and facilitate a more exploratory reflection and discussion.

We furthermore describe the concepts by the use of narratives (Dawson & Buchanan, 2005) as a mean of complementing the illustrations. In that sense, our focus point is not on the way that the fluidity of describing the concepts at a narrative level adds a feeling of being present in the built concepts, which feeds into the understanding of why and how the specific concepts have been designed to accommodate actors matter of concern that where transformed into design parameters and then ideas, going further than the mere representations of ideas, as they are critically linked to the matters of concerns of relevant actors (Pedersen, 2016).

## 8.3.1 Hersted Byen

The concept 'Hersted Byen' have been designed from the perspective of the Albertslund Municipality, as seen in *Illustration 19: Concept ideas for Hersted Byen*. The main matters of concern for the municipality of Albertslund through the Planner of Albertslund Municipality, Søren Kehr, (Interview 02 ,03 & 08) are marked with a coloured circle and are to create an economical diversity and have a welcoming station square for the area near the station, as explained in the analysis *section 6.4* Change in Hersted.

When approaching Hersted Byen, sitting in the Greater Copenhagen light rail train, glancing in the distance, the building towers that rise over the vegetation, like big trees that have been growing over the centuries in the middle of the forest. However, when the light rail stops in Hersted Byen station, the vision is entirely different. The tall towers were not isolated in a forest but embedded in a neighbourhood, that welcomes visitors with a square with small shops, cafés and supermarkets, which are entangled with green areas and pedestrian streets filled with life. However, life is not only limited to the street level, but some hanging bridges also allow citizens to transit the space on a more jungle-like experience while getting closer to nature.

From within the city, apartments are visible in the towers, some bigger, some smaller, but all looking fancy, wondering how the view from up there might look. However, there are not only towers in the town, beyond the station square, but a few row houses are also gathered in clusters, with green areas in the in-between that looks like a minor urban forest which gives the impression of looking at small villages. A central gathering point in the form of a community-house is hosting some barbecue for the ones that recently moved in.

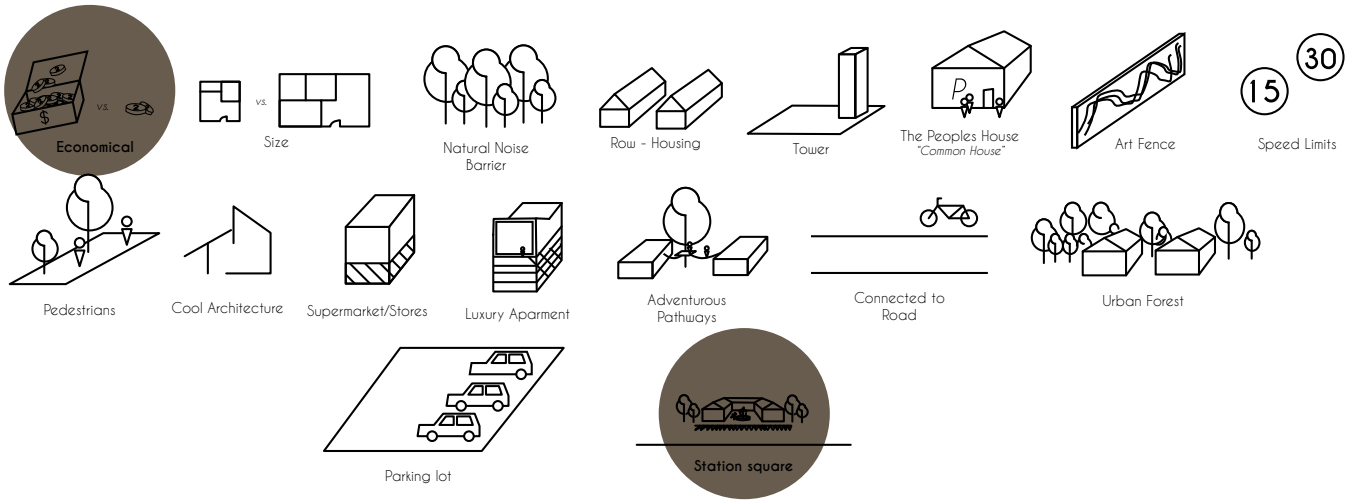



*Illustration 19: Concept ideas for Hersted Byen*

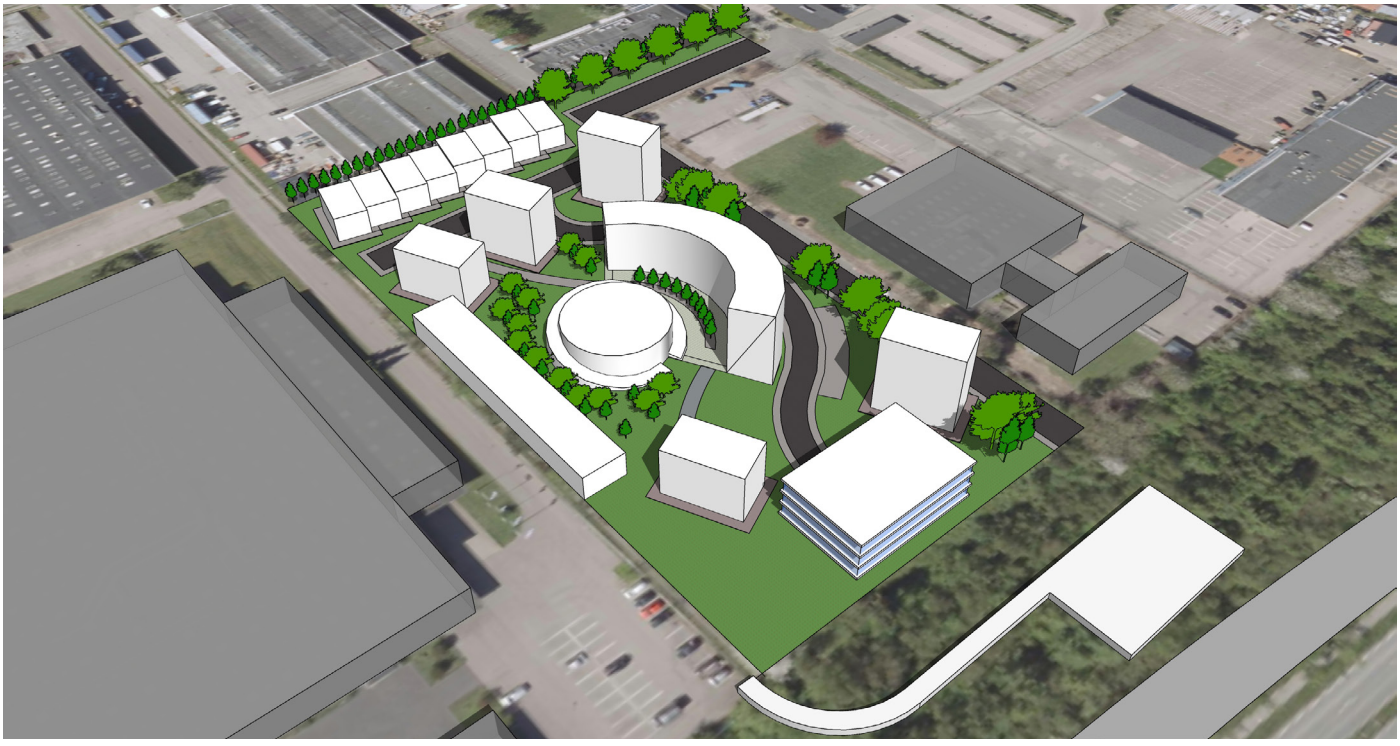


*Illustration 20: Hersted Byen*

## 8.3.2 City of Light

Through the notion of understanding the matter of concerns of the Developer the concept 'City of Light' has been designed, the collection of ideas related to the developer is portrayed in the *Illustration 21*: Concept ideas for City of Light and have throughout multiple interviews been collected (Former Chairman of the Board of owners in HIP, Lars Gøtke, Interview 03)(Real Estate Owner/Developer, Jesper Larsen, Interview 04,12 & 16)
and (CEO of Development Company Høje Taastrup C, Lars Bloch, Interview 11).

Key ideas for the 'City of Light' are to have a high density on the land plot, orientation to the sun and mixed use as indicated on the illustration 21 marked in coloured circles.

The aspects that attract the most attention when arriving at the city of light are the different levels of the buildings in the city and the large windows in the facades that face South, allowing to absorb as much natural light as possible. The concept of the city of light is based on taking advantage of the limited sunlight in Denmark. For that, balconies and rooftops are typical in the area, which embraces human interaction with the sun, taking specific note of the rooftops because non-residents get to the areas which are shaped with green elements and a cosy cafe – getting up by the walkable facade that gives the glance over the rest of Herstead and supervise the light rail station and all the pedestrians that are moving like ants.

In the ground level, the courtyards of the carrées allow enjoying the playground in the sun, while the pedestrian streets are full of life thanks to the different local shops, groceries stands and cafés.

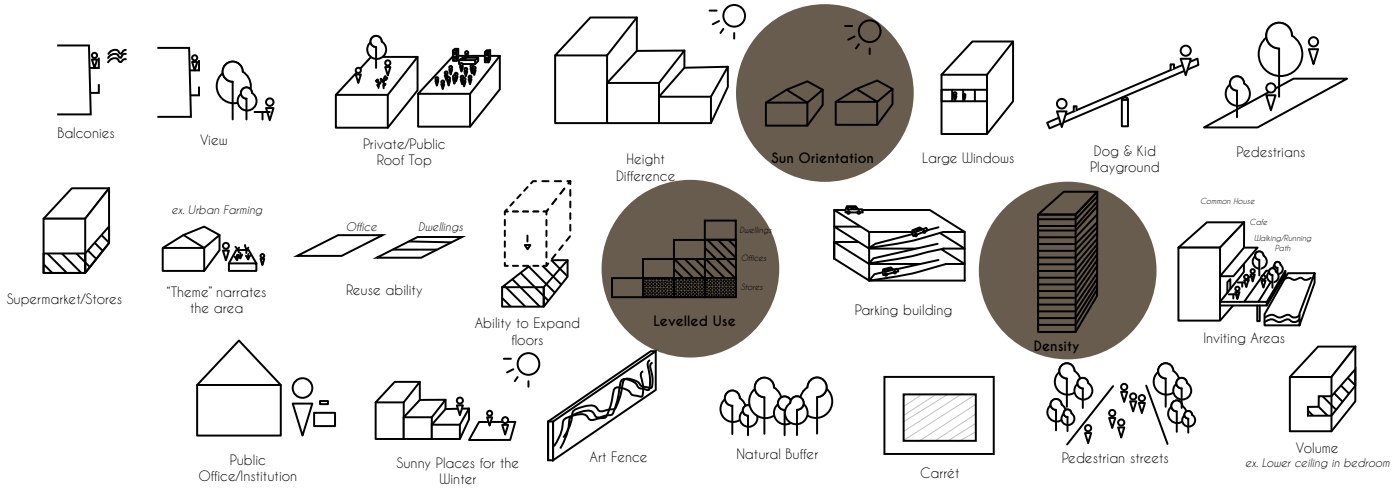



*Illustration 21: Concept ideas for the city of light*

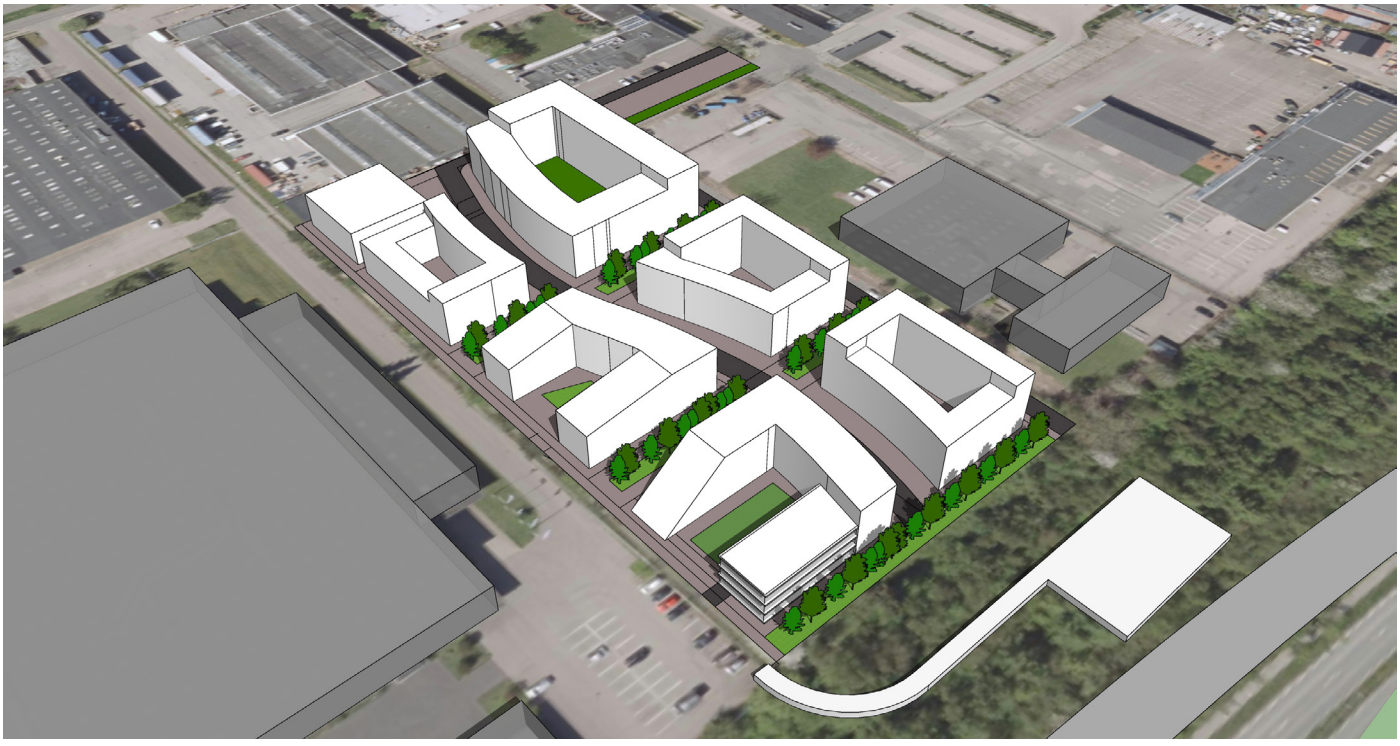


*Illustration 22: City of light*

However, life is not only for residents as some of the floors in the buildings are sharing with offices that provide their workers with big balconies to have a coffee or a break. People gather in the newly developed area after leaving their cars in the parking building, with different floors, which allows to visitors, residents and employees to walk around the city of light without worrying about car traffic.

The concept contains 6 to 7 blocks of "carrées" and other styles of building complexes, giving a choice to stage the execution of such concept. In other words, can be built on stages regarding time one by one, reducing the financial risk bearing on the developer.

### 8.3.3 New Hersted

The Concept New Hersted have been created with the Agenda Center (located in Albertslund) in mind. The notion by designating a concept to the actor of the Agenda Center is to disrupt the "standard" understanding of development due to their unique perspective of implementing sustainable practices in the area of Albertslund.

The narrative of environmental sustainability has been present in the Albertslund municipality. The Agenda Center works locally, in achieving a more "sustainable living" by implementing strategies towards emitting less CO2, minimising the use of water etc. (Agenda Center Albertslund, Povl Markussen 09).

In that sense, the matter of concern for the agenda center is to support the sustainable development of the practices of the citizens of Albertslund. For the redevelopment of Hersted Industrial Park and design parameters that have relevance for the specific development from the perspective of Agenda Center.

*"There's just been built a large building here in Albertslund centre, it's just a large ugly box and I'm always walking around it, in a 100 meter circle, in order to avoid it, there's nothing interesting about it at all. It is just a big grey box and nothing is interesting about it - why there is no city diversity like there is biodiversity"*(Agenda Center Albertslund, Povl Markussen 09).

*"We're currently living in a concrete city, if everything was cement there would be no birds, insects, plants, flowers or green stuff, it would not be human"*((Agenda Center Albertslund, Povl Markussen 09).

As stated in the previous quotes, Povl Markussen of the Agenda Center emphasises the need of constructing an architecturally diverse city and integrating it with biodiversity which has been illustrated with coloured circles on the illustration 23 Concept ideas for New Hersted.

By jumping off the light rail station in New Hersted, They are welcomed by the urban forest, full of eatable fruits, nuts and seeds, leading the way to the Sustainable Experience Centre. Residents can learn about how to fully embrace behavioural changes for a more sustainable life and understand all of the possibilities of the new Hersted in the different expositions that show tricks and experiences of Albertslund regarding sustainable practices. It is clear that the vibe in the area is much looser, and people are more welcomed due to engagement between people in the co-living arrangement and new framework for eco-villages.

Looking around on the facades and the buildings around, it is clear to see people have been involved to some extent in the design of their apartment, Since all of the buildings are filled with various diverse offbeat materials that create curious dynamics in the cityscape.

Back to the street, with the sound of water fountains and birds that take the urban forest as a home, guides the way along the organic-shaped pedestrian path, while enjoying a stroll around a small lake filled with collected rainwater while hearing the laughs of people that have a picnics on the rooftop gardens, without being disturbed by the noise or pollution of cars. Furthermore, New Hersted is filled with activities which are often exchanged with something new due to the culture and sustainable tax that all residents are paying for.

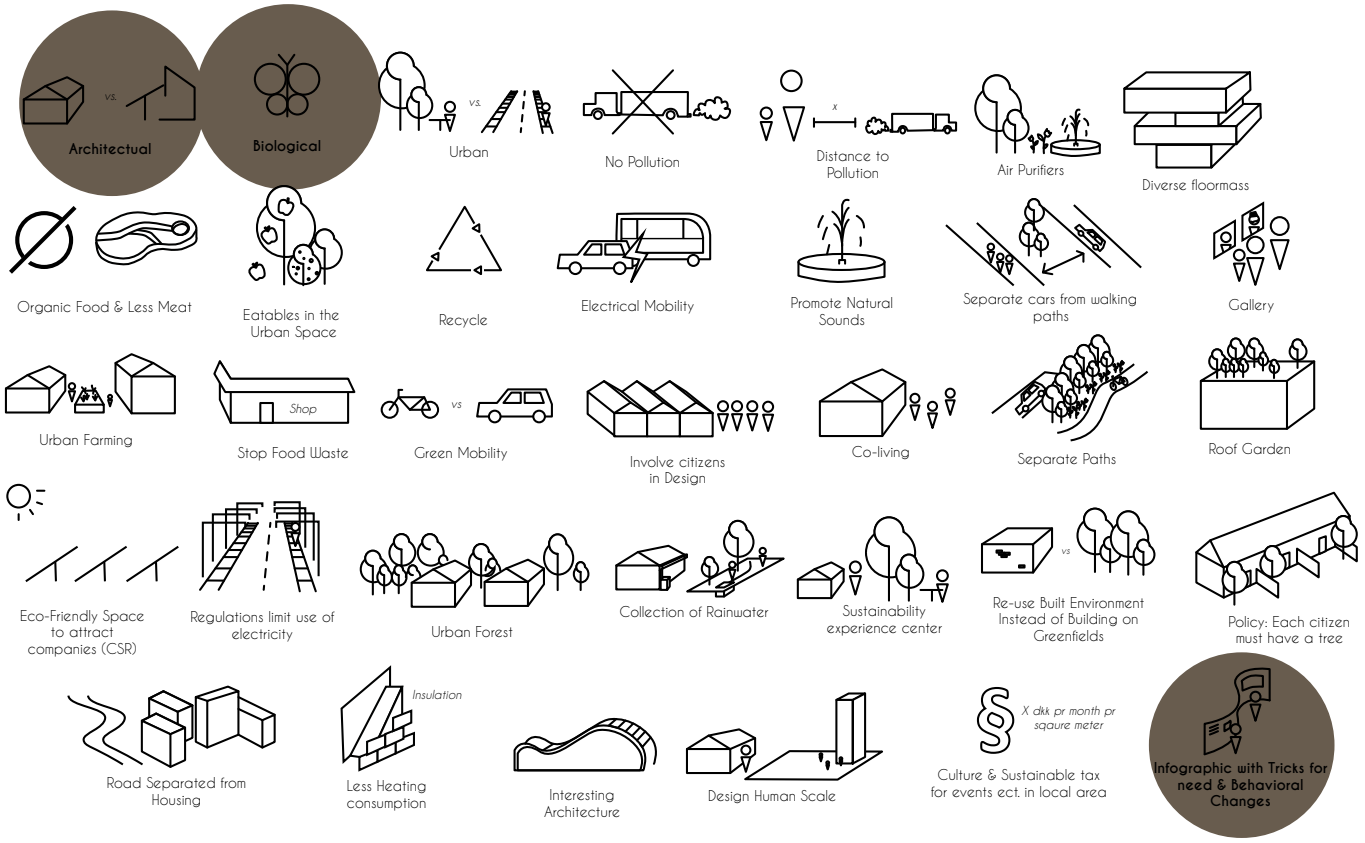



*Illustration 23: Concept ideas for New Hersted.*

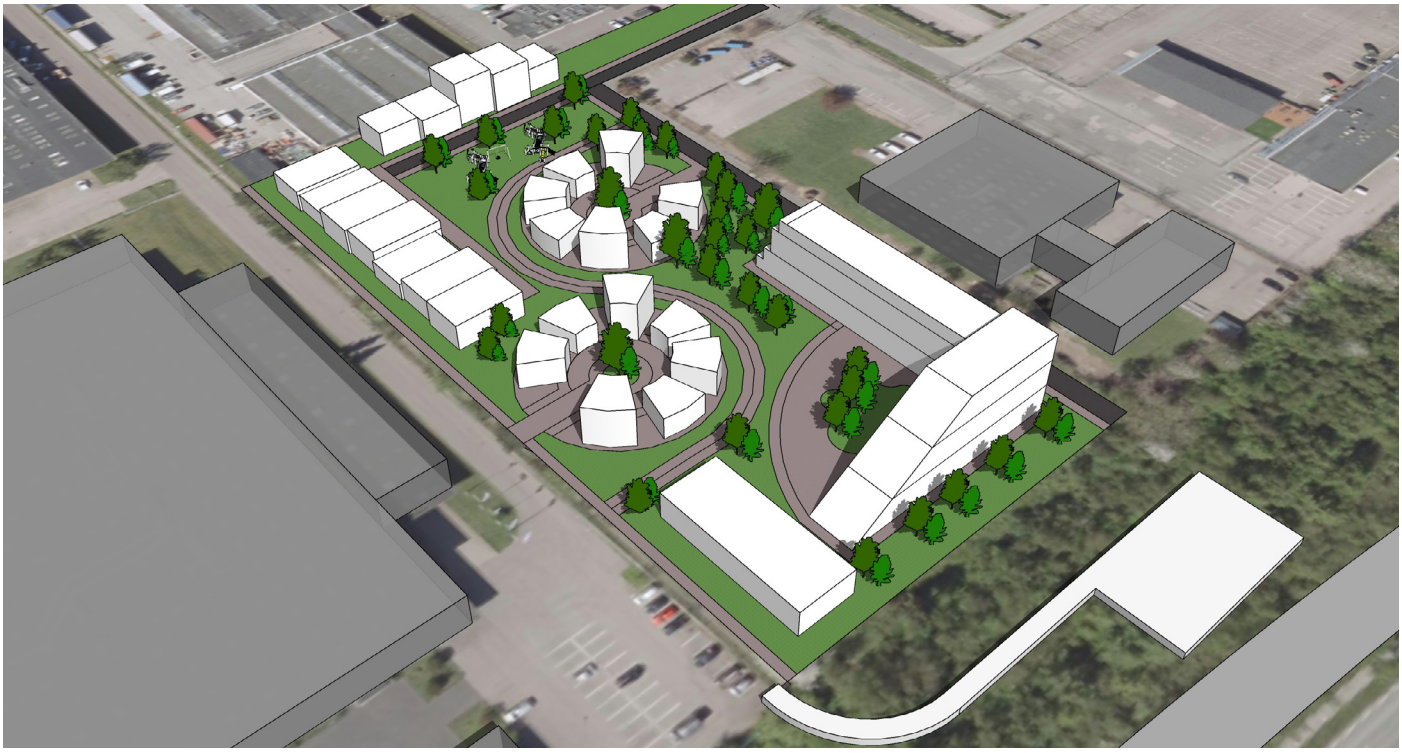


*Illustration 24: New Hersted*

## 8.3.4 The City for Citizens

The Concept 'The City for Citizens' is seen from our understanding of how we perceive it from a resident point of view. Even though we acknowledge, the empirical sample size is relatively insignificant by the interviews from residents in Albertslund. The notion of generating a concept from the perspective of the end users is still important to remember in a design phase and negotiations (Citizen of Albertslund, Christian Clausen, Interview 05)(Citizen of Albertslund, Astrid Hansen, Interview 13) and (Real Estate Owner/ Developer, Jesper Larsen, Interview 12). As illustrated in coloured circles in *illustration 25: Design ideas for the city for citizens* the main characteristics for the concepts is design for human scale, different levels in the urban environment and the involvement in the design phase.

When arriving at the city for citizens, walking down the main curve-shaped pedestrian street opens up space, dividing it to two main blocks of dwellings (north and south) with green areas where interacting with natural elements happens. Such as small hills and places to gather and perform some outdoor activities. Having a view to trees and a separation of traffic, with car traffic limited to the streets beyond the main artery of in the area, keeping cars away from the main facades of the buildings, which face towards the main pedestrian street.

In addition, the housing offered goes from different types of apartments and houses with different designs and built with different materials. Furthermore, the centre area function as a shared space or "people's house", where different activities can be done indoors. A café for the residents and some stands for street food, inviting residents to gather.

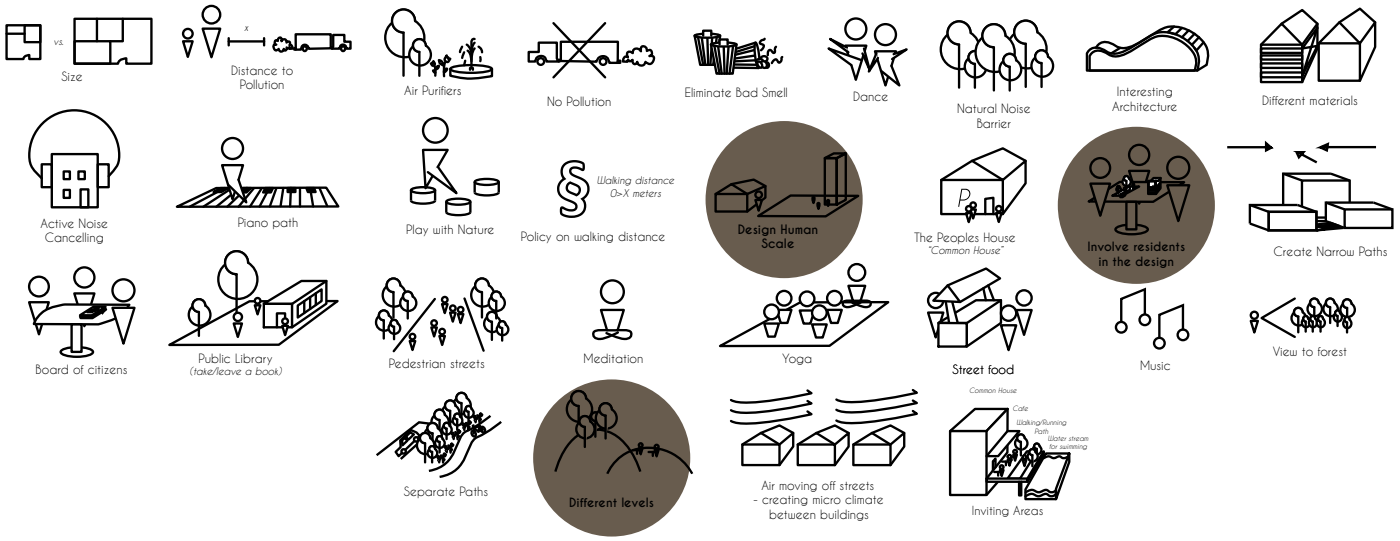



*illustration 25: Design ideas for the city for citizens*

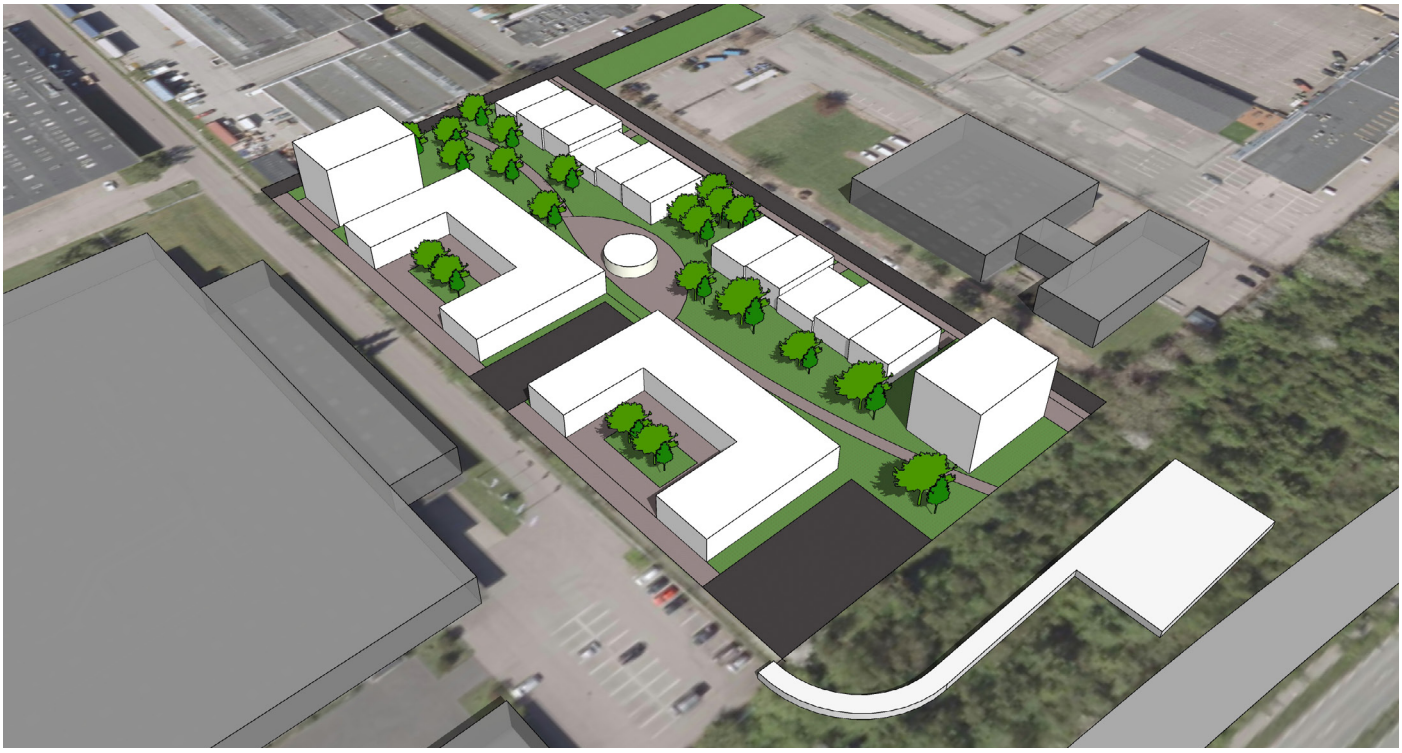


*Illustration 26: The city for citizens*

## 8.3.5 The Green Courtyard

The concept have been constructed on the basis of an interview with Leif Pedersen, Politician of Albertslund Municipality, the director of economics and environment with the reference to speak on behalf of the mayor. Leif Pedersen is from the political party of the 'Socialistisk Folkeparti' and from the understanding of local politics in Albertslund left oriented social parties have been "ruling" the municipality for more than 40 years (Citizen of Albertslund, Christian Clausen, Interview 05).

*"It must not become a concrete box and that is with emphasis on box!"*
(Politician, Head of the economy and environment of Albertslund Municipality, Leif Pedersen, Interview 14)

Key elements in the concept are design elements like; Carbon negative building, station square, architectural interesting & Houses on the top as seen on the illustration 27: Design elements for 'The Green Courtyard' marked by coloured circles.

Once arriving in the area, it seems that the whole neighbourhood is just a big carreé, which embraces the balconies and apartments to point towards each other comfortably, this effect clearly isolates the newly built area 'the green courtyard' from the rest of Hersted Industrial Park, which is still undergoing the construction. While approaching the big entrance to the area, realizing that is a combination of different kinds of buildings around a big green space that function as a focal point of living in the area, welcoming while keeping away the surrounding industrial buildings. The buildings are different in sizes, levels and shapes, constructed in different materials,

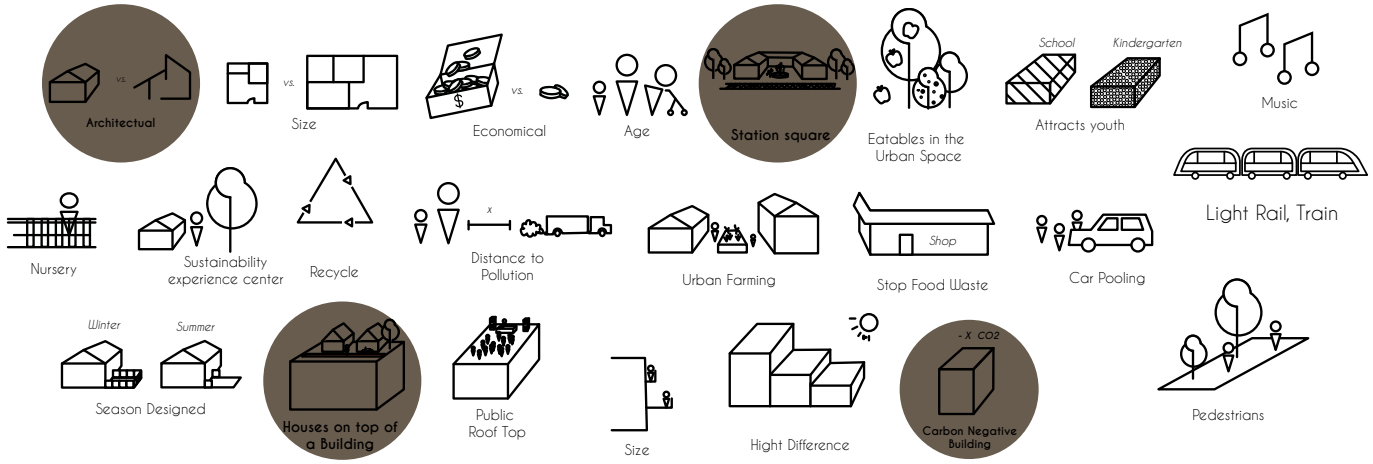



*Illustration 27: Design elements for 'The Green Courtyard'*

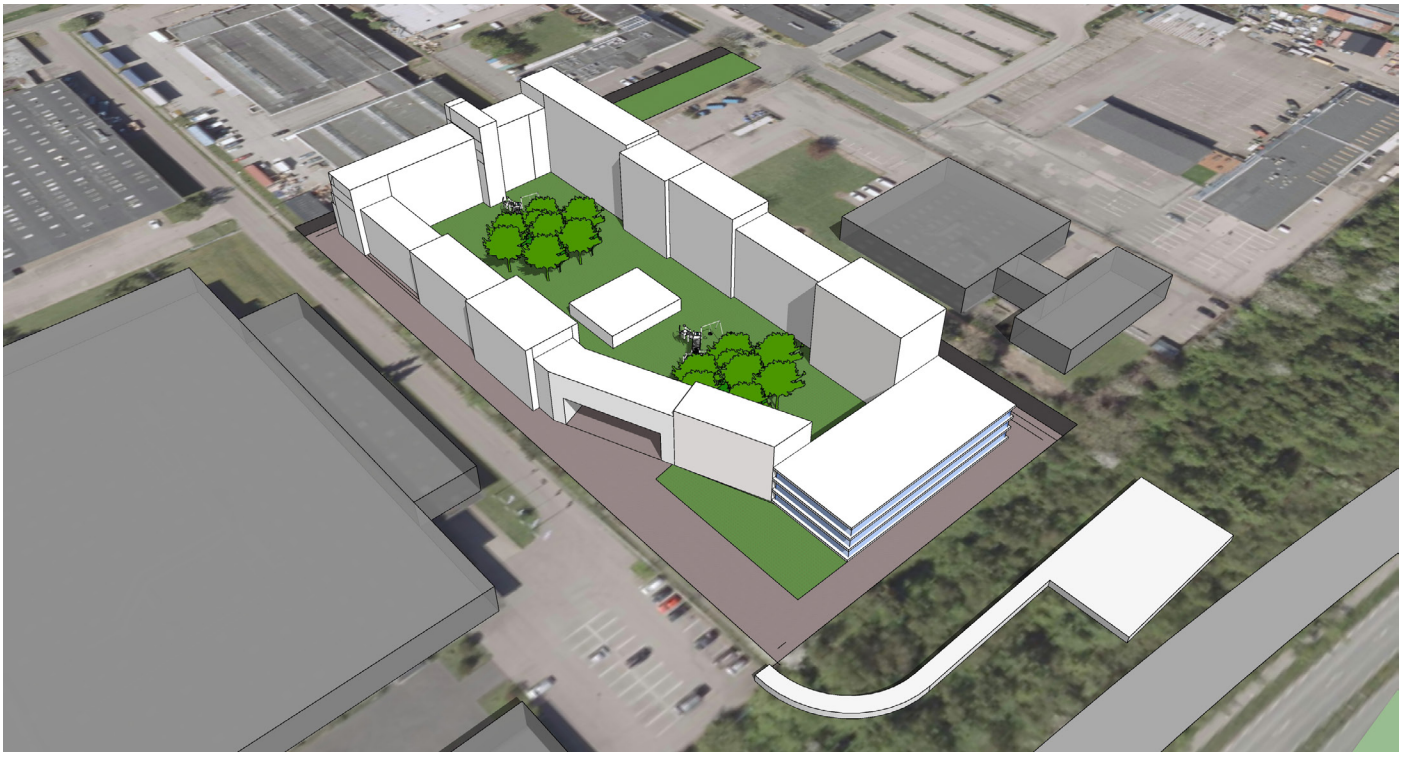


*Illustration 28: The Green Courtyard*

focused on being CO2 negative, such as wood or recycled materials and having balconies in different shapes and sizes.

The roofs of the buildings are full of life; some of them contain urban farming initiatives, green areas or even houses. On the other hand, the ground level of the buildings contains local shops, supermarkets, cafés and places for activities like fitness and sports. The courtyard hosts areas for doing barbecues, playgrounds spaces, sports, fountains and trees that can produce fruits and vegetables for the residents. In the centre, the community-house offers an indoor gathering space and a place for having a coffee or some lunch or dinner. Furthermore, the building close to the station functions as a multifunctional building with parking space, retail and recreational areas.

## 8.3.6 Roskildevej North

In contrast to the radical design concepts we created the 'Roskildevej North' to illustrate the traditional construction paradigme in the Region of Copenhagen. the contrast was constructed due to the intention of directing a discourse to debate the benefits and disadvantages to constructing the 'standard' of Danish buildings in Hersted Industrial Park. As seen on *Illustration 29: Design Ideas for Roskildevej* North the key elements are the building type of carrés and private parking.

No alarm bells are ringing and no surprises when arriving in Roskildevej North. A long, pleasant street with carreés. With balconies on both sides, a long line of row houses with private parking is creating a comforting danish well-known design.

When walking down the street — noticing that the residents of the area have had an option of choosing different sizes of housing/apartments and that the open spaces are filled with several playgrounds areas for children and families to gather around.

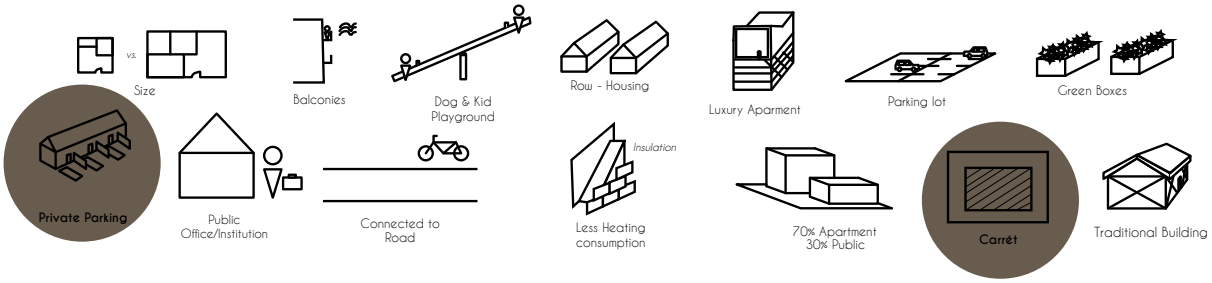



*Illustration 29: Design Ideas for Roskildevej North*

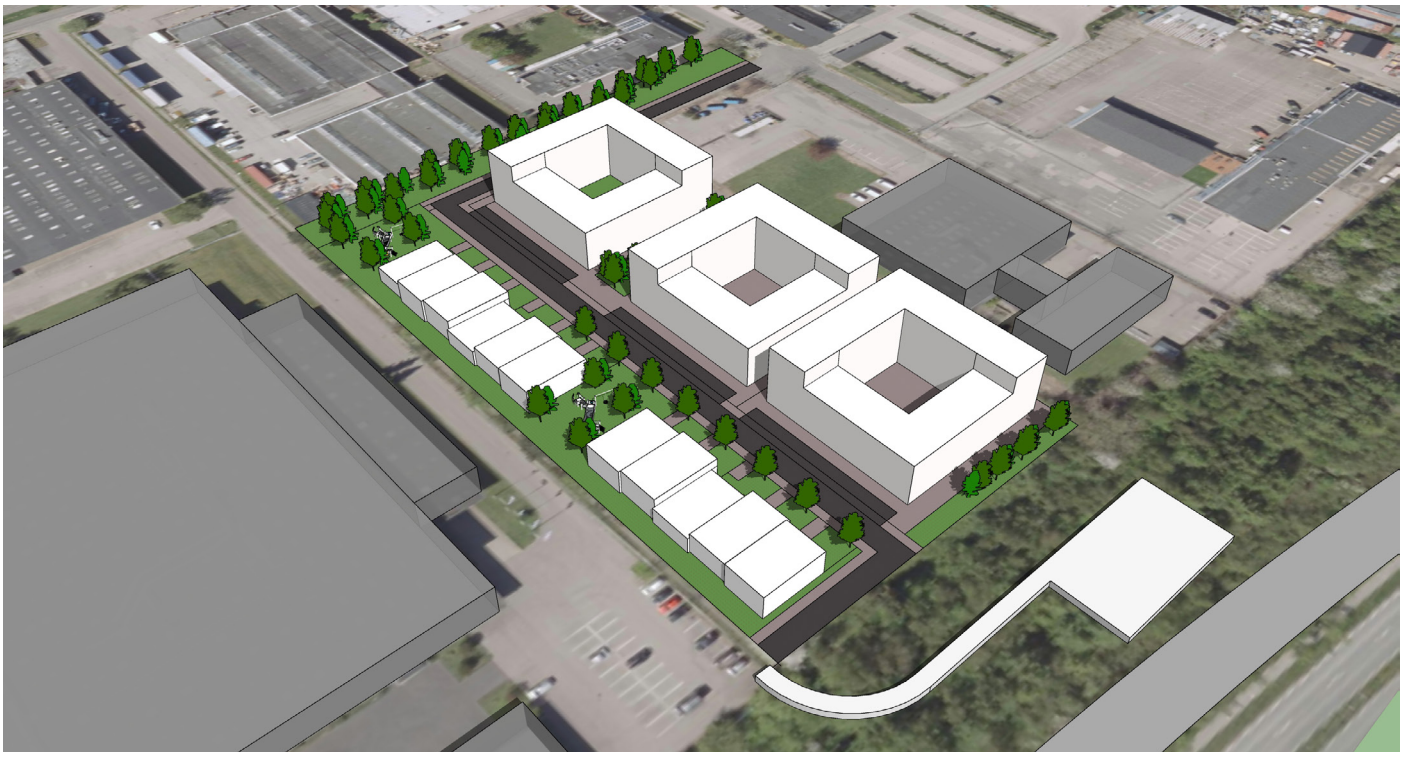


*Illustration 30: Roskildevej North.*

## 8.3.7 The Green Vault

Concept of 'The Green Vault' is one of two radical designs made in order to push the norms of development, these provocation concepts have been made to promote a more abstract discourse among actors in a valuation process due to its wickedness and create the possibility to open up for unknown needs. The key ideation elements for the concepts have thereby, been selected by the authors to provocate the redevelopment to built upwards in order to gain the desired density of the area as seen in *illustration 31:* Design elements for The Green Vault.

When arriving at the green vault, you get a feeling that nature has reclaimed the urban industrial area to its former state of being large green space for animals and forest. The area has large open-space on the ground level, where people interact with some grassing animals, e.g. cows, sheep and goats etc. Furthermore, you have the possibility of experience life on tree houses, connected on a set of hanging bridges. While also having some available land for cultivation and urban farming and plantation of eatables in between the trees.

On the underground levels, as a resident experience the possibility of engaging in the multiple community activities in the weekends, such as dance, meditation spaces or gathering spaces with bonfires, theatres or concert areas. The transportation in the vault is mostly human traction based, with electric cargo bikes for heavy lifts. Parking is partly integrated into the building as underground, which faces outwards to the large space for the activities to take place.

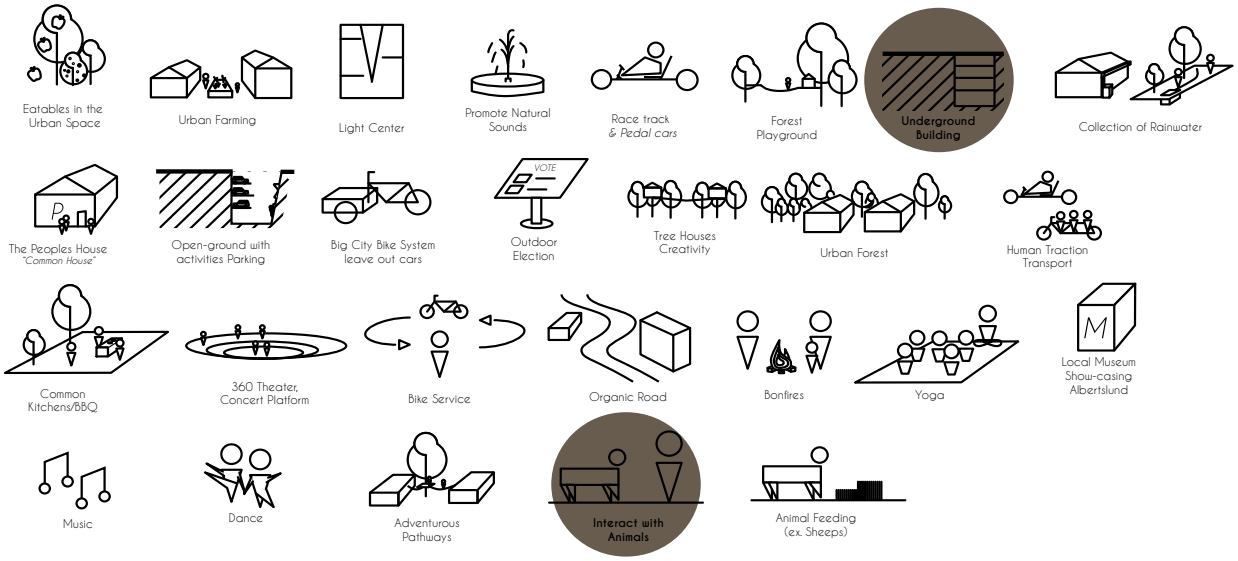



*Illustration 31: Design elements for The Green Vault*

*Illustration 31: The Green Vault*

## 8.3.8 New Era

The Concept New Era is the second of the two radical provocation designs as written in section 8.3.7 and is constructed with the notion of disturbing the discourse surrounding the normative concepts and provoke needs that are often seen to be "obvious" by the actors. On the *illustration 32*: Design ideas for the New Era key elements in the concept is the construction of ownerships a construction collectives which are marked by coloured circles.

In the New Era neighbourhood, the land plot has been divided in smaller plots, offering the chance as a new resident to develop own house, or conjoin a constitution of residents to create a collectivity for developing together.

Which means that when arriving at this area, the experience is new and revamped variations in architectural styles. It is giving the possibility of enjoying an urban area where the creativity of residents motivates diversity. In that sense, the developed urban space is in different heights, shapes, types and with different materials while many would take innovative solutions into their own doing.

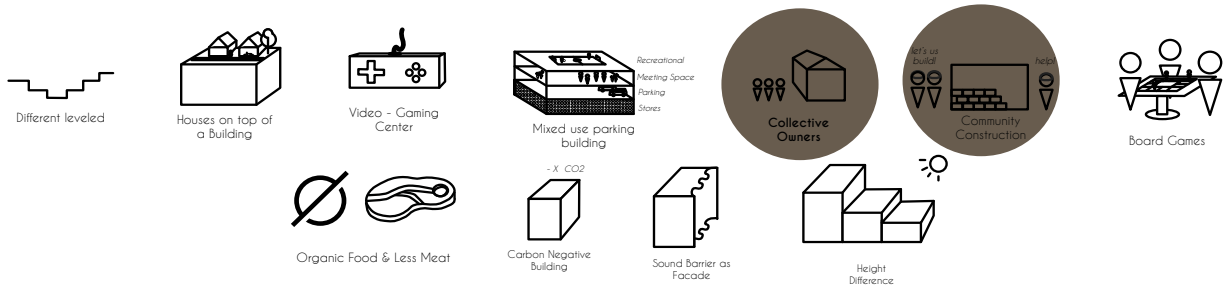



*illustration 32: Design ideas for the New Era*

*Illustration 33: : New Era*

## 8.4 Negotiation Themes

The aim at introducing the concepts as intermediary objects (Vinck, 2012) into the negotiation spaces with developer and municipality is to generate, through iterations, a set of themes that the participants consider as 'crucial' in the future design to be developed for the specific land plot. In that way, by having the key actors interacting, discussing and evaluating the concepts, we gain an even more profound understanding of their matters of concern.

### 8.4.1. Negotiation Spaces

Based on our theoretical approach of Participatory Design, Negotiation Spaces and Intermediary Object, we produced concepts of a specific land plot, further explained in the previous *section 8.3.* In that sense, the outcome of the analysis of this research *(chapter 6),* shows that the main tensions and controversies take place in the interactions between three key actors regarding the transformation in Hersted Industrial Park (HIP): The municipality of Albertslund and its relation with real estate owners in HIP and, at the same time, the relation that developers maintain with the municipality, exemplified in the case of the owner/developer Jesper Larsen and the planner of the municipality, Søren Kehr.

Those tensions and controversies are taken into consideration for the establishment of two negotiation spaces, representing the development of two further iterations: one with a planner of the Albertslund Municipality and another with a real estate owner/developer of a specific land plot. In each of those iterations, the developed concepts *(presented in section 8.3)* were discussed with the participants and evaluated by them, used also as medium for further evolving them, aiming at achieving a mutual agreement of themes to be included as base for a later redevelopment architectural design on a single land plot,

which mobilise other future developers to transform the area of Hersted Industrial Park (HIP).
The reason behind performing the iteration with each of the actors separately relates to some our empirical data, which points out that the real estate owner/developer, which is also the Chairman of the Board of owners in HIP, has been involved in prior discussions and meetings with the municipality along the process of development of the new masterplan. Therefore, the approach towards separate them in different iterations focuses on generating new meanings beyond the influence of those previous interactions between the municipality and real estate owner/developer.

Therefore, to understand what those iterations entail, how they have been developed and their intended outcome, we use the approach of Participatory Design (*section 5.3*), represented in Illustration 34.

Besides the creation of the materiality, that will be introduced in the facilitation phase (concepts and narratives explained in *section 8.3*), the negotiation space for the evaluation of the concepts. There is the staging phase that focuses on the preparations needed in order to develop an active space able to deliver the intended outcome, namely to obtain an evaluation of the concepts from the perspective of the key actors (Municipality and real estate owner/developer). That need for evaluation lies on the limitations of the conventional design process, usually developed through a set of demands and criteria to be included in the 'final product' (Cross, 2008). However, the complexity of the ideas to be incorporated and the intended flexibility that intermediary objects like the concepts need to have to embrace new meanings, make difficult that, from a designer perspective, to rate the concepts from an 'objective' point of view, justifying them. Thereby, the need for evaluation together with the key actors.

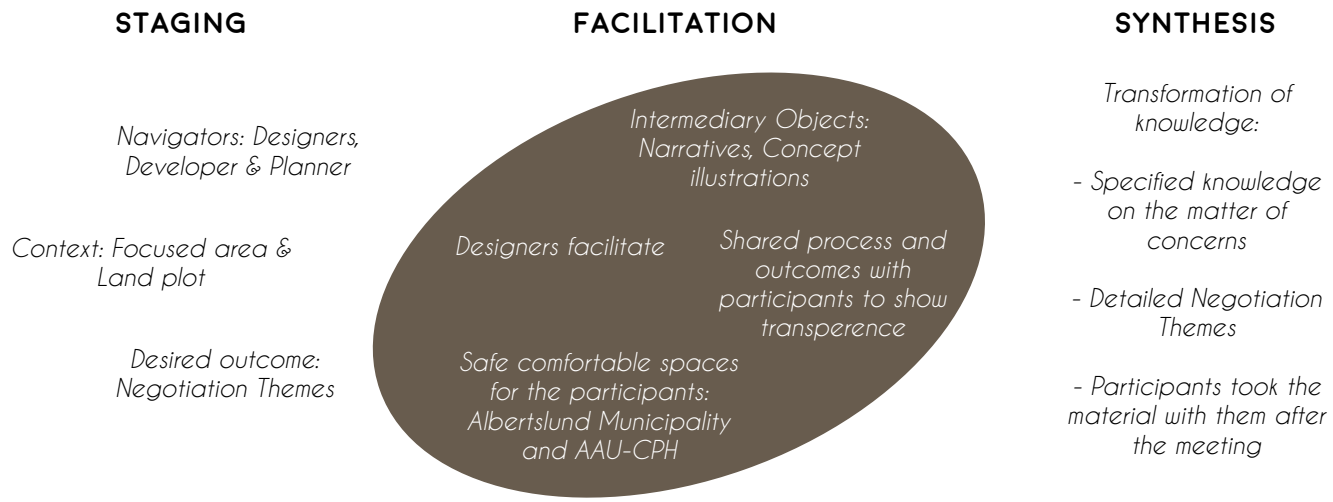



*Illustration 34: Participatory Design framework applied in the development of the iteration for evaluating concepts.*

The outcome of the negotiation spaces generated, instead, a set of negotiation themes that the actors involved consider as being central to the specific land plot of which we aim at redeveloping.

Once we understood the need motivation and the expected outcome of the negotiation space to be developed, we defined how to facilitate the interaction with the key actors, which represents the staging phase. In there, we present the concepts to the actors involved in the two iterations (Planner of Albertslund Municipality & developer) with the help of visualisations and narratives developed.

In that sense, one of the iterations included Søren Kehr (Planner of Albertslund Municipality, Søren Kehr, Interview 15). The other one was produced with Jesper Larsen; owner, developer and Chairman of the Board of owners of Hersted Industrial Park (Real Estate Owner/Developer, Jesper Larsen, Interview 16). In both negotiation spaces, we showed actors the same information; narratives and visualisations, discussing then their perspectives and evaluating the concepts. As a consequence of those discussions, the interactions with the actors also generated an understanding of what would be desirable in order to complement some of the concepts and, even further, formulate certain elements that, from their perspective, must be included within the giving context.

As described in *section 8.3*, each concept was explained through the use of narratives (section 3.6) that were intended as a way to expand the visualisation of the concepts (3D renderings) and their qualities to the actors involved in the negotiation space, representing not only a visual experience, but also invoke the feelings of a possible user during the journey through the area. Moreover, the narratives also included the ideas that were included in each concept and the reasoning behind it. In addition, as part of the facilitation, we encouraged the participants to justify their perceptions and perspectives in order to facilitate both criticism, evaluation and a deeper understanding of their matter of concerns, enabling the generation of new input to be included in the negotiation themes and concepts.

Throughout the following section, we present the outcome of the different negotiation spaces with the key actors. It is relevant to state that the effectiveness of the concepts as materiality representing matters of concern - through ideas - was exemplified by the fact that both actors, after the iteration, decided to take some of the concepts as a way of 'inspiration' or 'useful tools' for further discussion with other actors beyond the negotiation spaces that were intended as part of this research. In that sense, the intermediary objects we presented will become further used as intermediary objects in further parallel discussions with different actors we will not take part in.

## 8.4.2. Outcome of the Negotiation Spaces

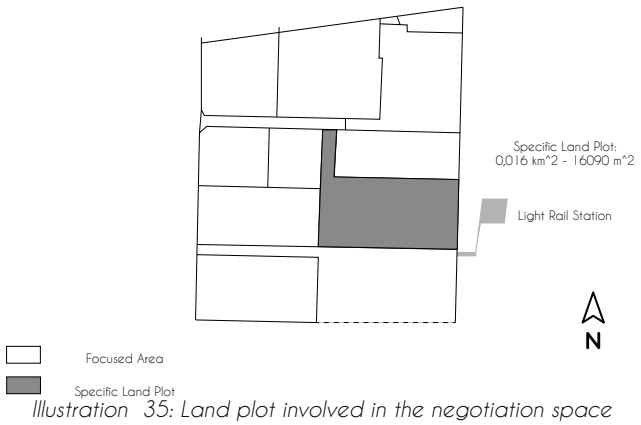



*Illustration 35: Land plot involved in the negotiation space*

Within this section, we will present a set of negotiation themes that have been central to the negotiations carried out throughout this research regarding a specific land plot (Picture 20). These themes should be understood as contextualised and might not be transferable to other negotiation spaces with redevelopment in mind, due to the change of setting, diversity of actors involved and matters of concerns that might be unique in each constellation. However, with those boundaries in mind, we also argue that the negotiation themes might be of aid to other negotiations while suggesting negotiation participants to keep an open mind towards other themes to be considered within the new context.

### Southern road

One of the aspects of special importance relates to the road situated on the South side of the land plot discussed, which is thought to be the main street to be connected with the light rail station. In that sense, the planner Søren Kehr *(Interview 15)* refers to that road as *"the most important traffic vein in the area"*. While both participants agree in the importance of the road itself as infrastructure for communication with the station, each of them presented opposite ideas about the kind of traffic that the road should support.

In that sense, while the developer Jesper Larsen *(Interview 16)* refers to its vision for the road as a pedestrian street with *"occasional car traffic, like taxis, but no parking areas"*, Søren Kehr (Interview 15) stated the need of having cars in what he defines as *"the main boulevard in the area"*. Furthermore, the Southern road is crucial for Søren Kehr as he perceive that *"the urban life should focus on the area where the cars run"*.

### Construction density

Regarding the density to be constructed in the specific land plot discussed in the negotiated space, both planner and developer agreed upon a 200

percent, meaning that if the land plot has a surface of 15.000m2, the developer would be allowed to build a total of 30.000m2. However, the controversies appear when they decide how that density should be distributed within the land plot to be redeveloped.

As we mentioned before, Søren Kehr *(Interview 15)*, gives special relevance to the southern road as an intended core of the urban life to be developed in the area. Therefore, he understands that the densest area in the land plot should be situated next to the road, going from densest to less dense in an axis South-North, with the North representing the less dense redevelopment in the land plot.

On the other hand, Jesper Larsen *(Interview 16)* understands the densification in a completely different way, building the densest area in the North-East corner of the land plot, going down in density towards West and South, establishing the highest density as far as possible from the southern road, which he justified as the best way to take advantage of the sunlight, which comes from the South. In that sense, with a density located in the South, he claims that "*the tall buildings are covering that natural light*".

### Green areas in the land plot

Further controversies were found regarding the inclusion of green areas in the land plot to be redeveloped. For instance, Jesper Larsen *(Interview 16)* understands that, as developer, a greater presence of green area in the plot is highly beneficial, stating that *"pulling the green part and [the nearby] forest into the area is a good idea [...] it should be a nice area with trees "*.

As planner in the municipality, Søren Kehr *(Interview 15)* states that *"green area space [...] would be used as something to attract more new residents. [However] we do not want to make green areas in this plot"*. In addition, he states that green areas should be understood as a part of a bigger picture, developed as a whole, like other infrastructures in the vision of Hersted Industrial Park, where the number, size and location of green areas are defined by the municipality, representing in words of the planner *"our responsibility to do these urban spaces and green areas"*.

### Mobility within the land plot

The developer's perception *(Interview 16)* regarding the mobility to be supported within the land plot focuses on *"shift the traffic to pedestrians and bikes towards the station, crossing the plot. In that way, you create life in the area [...] But I think that the area should be accessible only for residents"*.

While both participants agreed on the semi-public nature of the future path to be developed in the land plot, the controversies relate more to the importance of that future path. In that sense, while Jesper Larsen's perception focuses on creating life in the area by having residents using that pathway to cross the land plot, Søren Kehr *(Interview 15)* states that the transit of people should go through the southern road to support that infrastructure as the main artery, focusing in there the life in the area.

In addition, Søren Kehr points out at the necessity of closing down access to those paths in a physical way (with fences and controlled access for residents) following a perception of needed safety in the area, which will be explored as to its theme later.

### Managing road traffic

As we mentioned in the case of the southern road, Søren Kehr *(Interview 15)* understands that the road traffic should be focused on that road, following its perception regarding *"that the urban life should focus on the area where the cars run"*, due to the role of that role as connection with the light rail station.

However, the understanding of the developer *(Interview 16)* is to keep car traffic out of the section of the southern road that will serve its land plot. In that sense, his perception goes towards having road traffic in the North-West access of the plot, where there is an already existing road, suggesting the construction of a parking building at the end of it for the cars that will access the area, facilitating with that, the pedestrianisation of the land plot area closest to the light rail station.

### Blocking external annoyances

Due to the specific location of the land plot, close to a main road and surrounded by industrial buildings, one of the themes discussed by Jesper Larsen *(Interview 16)* is in regard to blocking the noise from the main road, which he understands as building higher density towards the road transportation infrastructure, to function as a noise barrier. In addition, the developer expresses the importance of creating attractive inner pathways and green areas in the redeveloped land plot, in order to focus urban life in there, getting away from the perceived annoyance of being located in an industrial area.

However, this last aspect of focusing on life towards the inner part of the land plot to avoid the vision of an industrial area was considered by Søren Kehr *(Interview 15)*, supporter of the southern road as main space for urban life, as a risk for creating islands in the redeveloped Hersted Industrial Park, as he states:

*"…people still think that it is a good idea to make these islands, where you can live, have communities and spend your whole life in the same neighborhood, but with that, you become cut off"* (Planner of Albertslund Municipality, Søren Kehr, Interview 15).

### Architectural variety and redevelopment in phases

The themes '*architectural variety'* and *'redevelopment in phases'* were both items that the participants perceived as valuable. In the first case, the variety in construction typology was seen as attractive, while the redevelopment in phases was considered as a quality for the reduction of the risk entangled in performing the first redevelopment in Hersted Industrial Park.

### Importance of the redevelopment of the land plot

According to the planner of the municipality of Albertslund, the redevelopment of the land plot has to,

*"fulfill only two or three functions: to be a main access point [for the light rail station] and to home half of the main boulevard in the [southern road]. As soon as the developers or owners see that people are moving in and they pay, then [other developers and real estate owners] will get interested on developing [...]. They would like to see [...] not that [Jesper Larsen] made the perfect project in that plot, but instead, [that the municipality] are going to build there the perfect infrastructure in terms of urban space, mobility, green areas and access to those green areas"* (Planner of Albertslund Municipality, Søren Kehr, Interview 15).

On the other hand, Jesper Larsen expresses that the redeveloped land plot should entail more than just a simple redevelopment, understanding that if they have to attract people to move in an industrial area partly in use, *"the area we develop should be a welcoming area both for the people who will live there and for the ones that pass by. The area should be more open"* (Real Estate Owner/Developer, Jesper Larsen, Interview 16).

### Connection with surrounding areas

Another important theme discussed in the negotiation spaces, seen as crucial by both participants, is the importance of connecting the land plot with the surrounding built environment, both with other plots, infrastructure and specially, the need of establishing a square as a primary connection between the land plot to be developed, the southern road and the light rail station, representing the main access point to the redeveloped Hersted Industrial Park.

### Visibility of the area

In addition, both participants expressed a need to have some high structure, able to fulfil two purposes. First, from the perspective of the planner *(Interview 15),* as a way of positioning the redeveloped area in a context, Hersted Industrial Park, hardly recognisable from outside, due to being hidden under forestry. Second, from the perspective of the developer (Real Estate Owner/Developer, Jesper Larsen, Interview 16) as a way to take advantage of the allowed construction density and include sunlight and viewpoint as added attractiveness for the future building.

### Uses in the land plot

Another relevant theme generated in the interaction with the participants is the kind of uses included in the land plot, in that sense, Jesper Larsen expresses, that *"It could be nice if one of the buildings [in the land plot] is intended as an office"*(Real Estate Owner/ Developer, Jesper Larsen, Interview 16), expressing with that a need for discussing the sectorisation of uses in the context of the redevelopment.

### Safety

Finally, this aspect was referred as crucial only by the planner of Albertslund Municipality, Søren Kehr(Planner of Albertslund Municipality, Søren Kehr, Interview 15), who mention it in the following terms,

*"Safety is an important parameter and if we would like to create urban life, we will have to focus on safety"*(Planner of Albertslund Municipality, Søren Kehr, Interview 15).

With that, some of his opinions were based on safety reasons, such as the perceived dangers of establishing spaces where non-residents could pass by,

*"Some level of surveillance is nice when people walk on the streets. It is not nice to be in a park at night when nobody else is there [...]. You will have people standing in there selling drugs, because they have an open access and they have places to hide"* (Planner of Albertslund Municipality, Søren Kehr, Interview 15).

## 8.5 Conjointement.

As we stated in the introduction to the '8. Design Space' chapter it is important to point out that the postulation of combining different matters of concern into design materiality, represents a way to handle the different tensions existing in the area of Hersted Industrial Park (HIP). The following description of a design conception is a mere representation of our current state of the process of redeveloping a specific land plot with the use of the proposed new framework introduced in section '7.1 Conceptual Framework for Transforming HIP'.

An evaluation of the outcome of the negotiation spaces, aimed at discussing the different concepts produced in section 8.3 Description of the Concepts, and an extraction of design themes in section 8.4, gave the basis for an iteration and conjoinment of design themes have taken consideration. Within this section we will characterise and define combination of concepts at its current state of the design-oriented study.

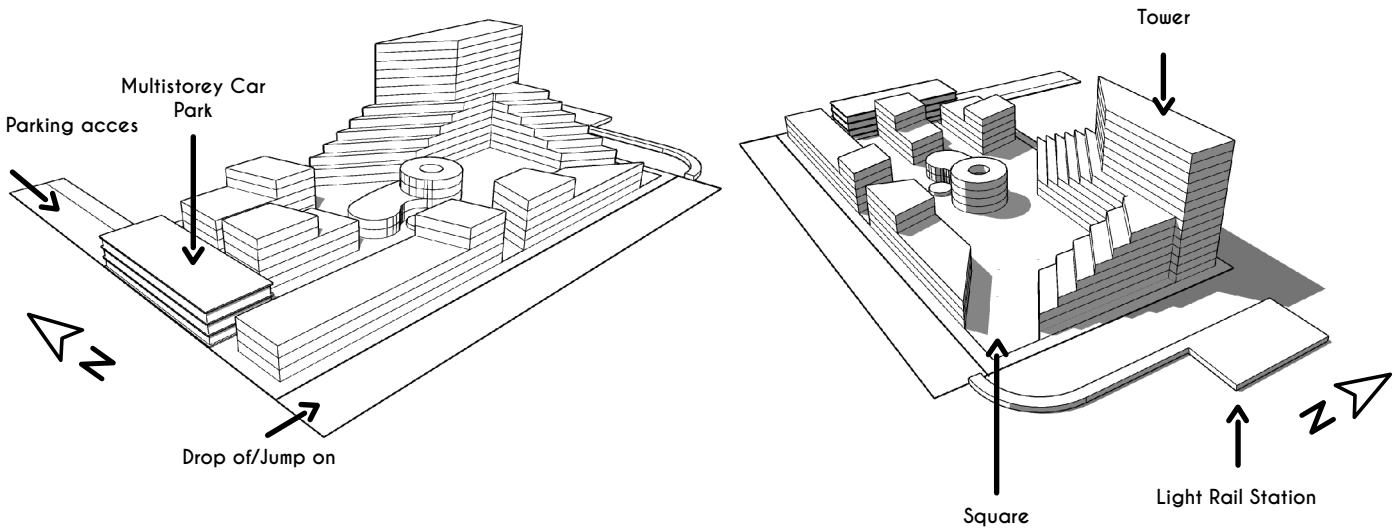



*Illustration 36: The current state of the concept*

### 8.5.1 The Welcoming Urban Space

One of the most critical themes throughout the negotiations of the concepts was related to the connection of the land plot with its surroundings. In this case, to make an appropriate welcoming urban space to be actively enjoyed by the users of the light train station (Politician, Head of the economy and environment of Albertslund Municipality, Leif Pedersen, Interview 14)(Planner of Albertslund Municipality, Søren Kehr, Interview 02 & 08). As bypassers and travellers through the station are going into and out of the area would activate and use that urban space filling it with life. As seen on *illustration 36*: the current state of the concept, the square is situated in the south-east part of the land plot, the closest point to the light rail station. The moment that users get off the station they will be welcomed with an open urban space that invites people in, the square is containing supermarkets, retail and coffee shops to be used by residents of the area as well as bypassers and workers that use the light train.

### 8.5.2 The Use of Existing Infrastructure

As streets already exist within the industrial area, building new streets seemed too redundant and economically inefficient. In the design, the use of the current transportation infrastructure, situated south of the land plot to be the 'river' that contains the traffic and passage as it leads to the station. It is investing in that street by having buildings accessing the "river" by having retail shops, services that would be used by bypassers and inhabitants, as seen on the illustration 37: Access in the area and Openings for Visual Attraction. This flow would be more welcoming to pedestrians and bikers while refusing trucks and heavy vehicles. On the north-west part of the land plot, a parking lot will be situated, keeping the cars away from the vibrant populated urban spaces and pedestrians movement.

### 8.5.3 Diverse, Functional and Well Situated

In the north-east section of the land plot, a large tower with progressive edgy design stands tall creating visual interestment from afar as illustrated on the *illustration 36:* the current state of the concept which resembles a landmark. The tower base starts as a large extended platform the gradually decreases in volume as it rises, creating terraces that are serving the users of that tower as access to the view of nature and sun, also giving the luxury of viewing the city of Albertslund.

The rest of the buildings in the land plot are aligned on the edges of the plot creating the inner organic-shape routes for residents and by-passers, which creates exciting pathways that raises the curiosity of pedestrians, through the middle of the land plot,

a stand-alone organic shaped building is breaking the monotony of the straight, edgy buildings, giving the diverse and architecturally exciting aspect to the design. Other buildings as well differ in sizes and heights as they serve the purpose of having sunlight for all the facades. Building blocks are continuous and related.

a heterogeneous overlapping, yet the green/build ratio is homogenous and harmonic which have been illustrated on Illustration 38: Greenery connection to existing forest and visual buffers of nearby industrial building. Trees and foliage function as buffers, visually and noise reductioning, from the neighbouring industrial buildings that exist at the moment and keep functioning as an aesthetic element later on.

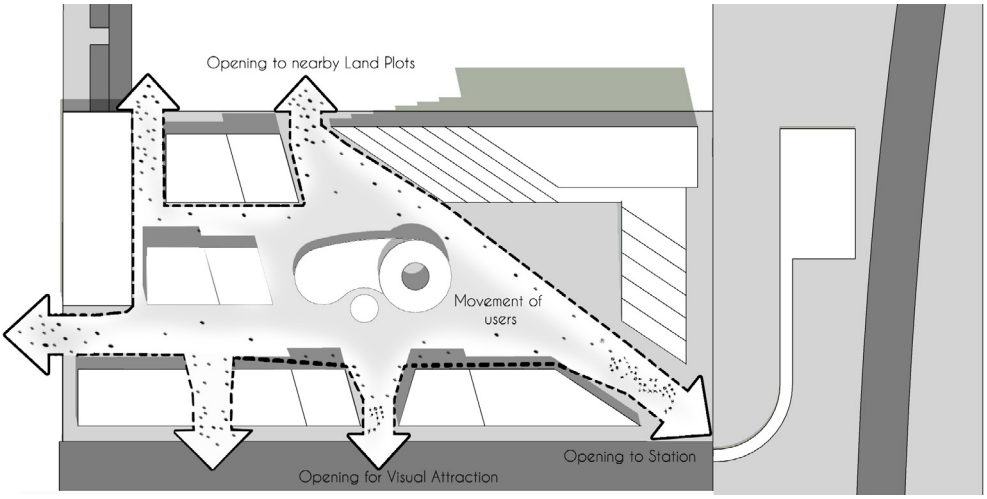



*Illustration 37: Access in the area and Openings for Visual Attraction.*

The positioning of the buildings is opening up to give access from/to the nearby land plots, as seen on the *illustration 37:* Access in the area and Openings for Visual Attraction. The openings to the nearby land plots create an opportunity for the real estate owners to connect their redevelopment to an area that is embracing the transformation of soft pedestrians and an urban space which are not industrial.

## 8.5.4 Connection to Nature

As a human need, the visual and physical connection to greenery/vegetation is crucial. The greenery in the land plot is connected to the natural forest creating

## 8.5.5 Reducing Risks

The density of building area is a central theme throughout the negotiation process, the validity comes from the matter of concern from the developers is of economic feasibility, getting more people to live there and use the area (Planner of Albertslund Municipality, Søren Kehr, Interview 15)(Real Estate Owner/Developer, Jesper Larsen, Interview 16).

Due to the composition of the buildings it can be built in "segments", creating the opportunity to reduce the risk of constructing the area, by building them in different time span.

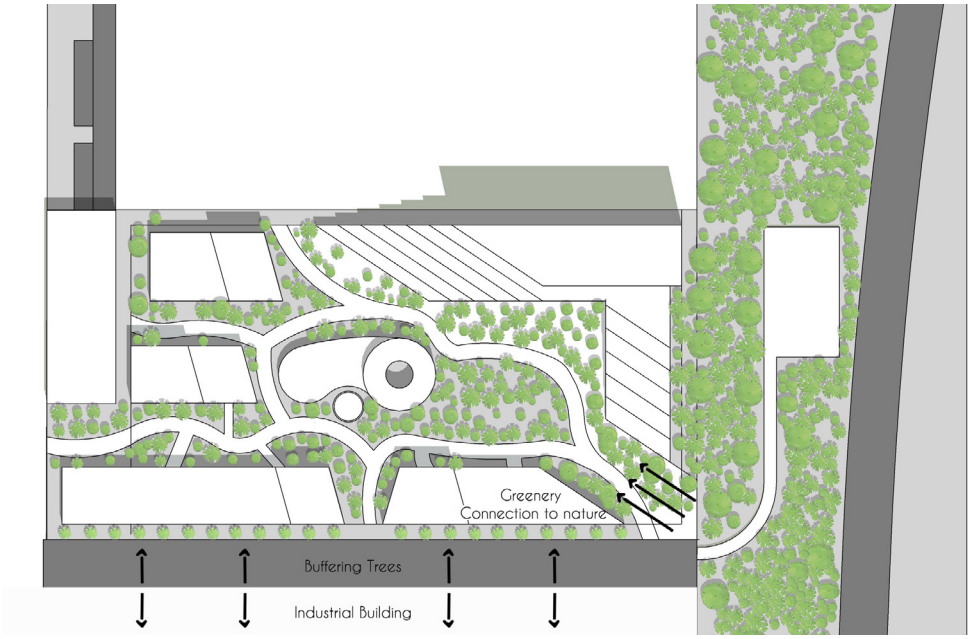



*Illustration 38: Greenery connection to existing forest and visual buffers of nearby industrial building.*

## 8.5.6 The Creation of 'Life' in the area after the Redevelopment

Designing the physicalities of a land plot/city/ neighbourhood is not enough to ensure the thriving community "life". Although the design of vibrant, welcoming urban spaces and comfortable, livable residential units plays a significant role in attracting residents and creating life is not the only factor in the success of such a thriving community. Parks, playgrounds, shops, cafes and cultural centres represent the physicalities that can improve social life. However, after interviewing relevant actors, we found that the successful implementation of 'life' might need further action. Through e.g social and cultural activities, such as music concerts, live performance and food markets etc. Those aspects can support the "life" we mentioned earlier, through a minimal fee collected from residents that, can facilitate such activities, as described by Lars Bloch, CEO of Land development company Høje Taastrup C:

> *"One of the things that all foreign studies show is that you can easily create a city but if you do not make sure that the city can work after the city is built you will never have life in the city, so there must be means to do something afterwards. There must be money to create life in the city."* (CEO of Development Company Høje Taastrup C, Lars Bloch, Interview 11).

As a way of representing, in a more realistic and situated way, the visualisation of our hypothetical conjoinment, we developed 3D views presented in *Illustrations 39 and 49.*

*Illustration 39: Current state of the concept from a south-west perspective*

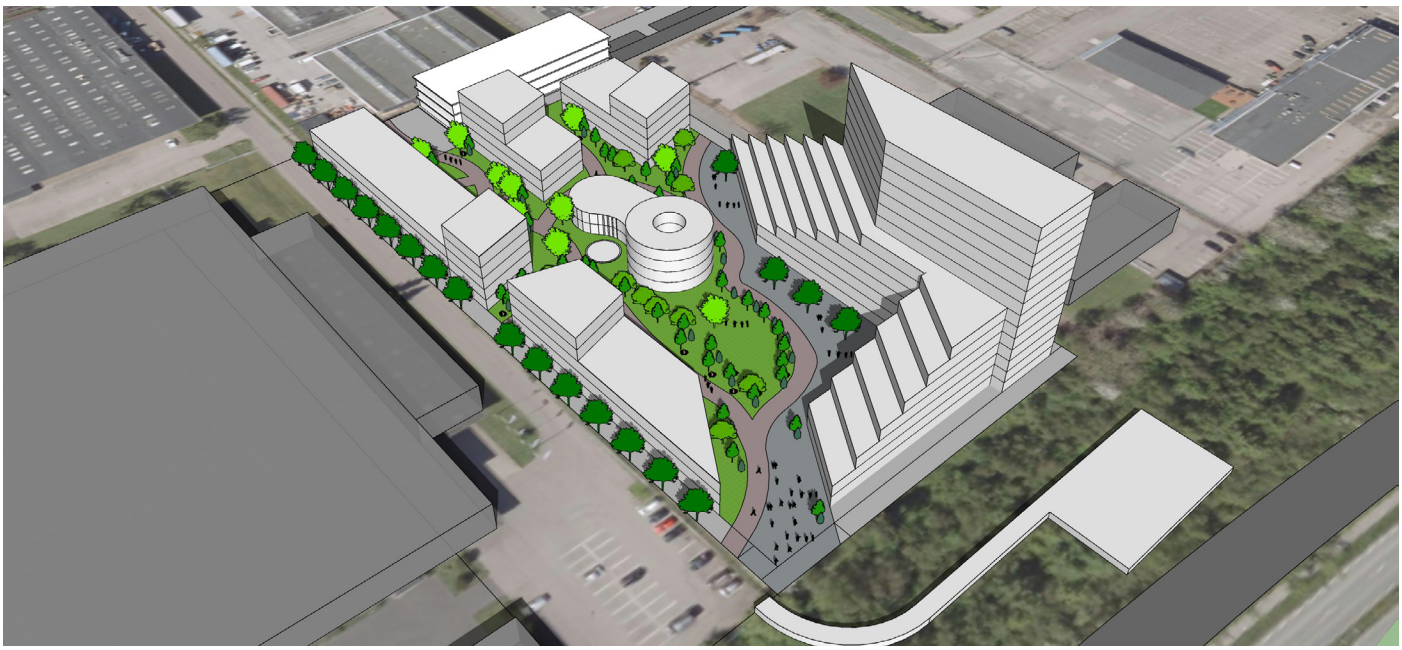


*Illustration 40: Current state of the concept, from a south-east perspective*

## 8.6 Sub-conclusion

After the evaluation of the concepts, we present a sub-conclusion of the findings or 'take away' elements relevant to other actors involved in the redevelopment. Even when those findings were generated in the context of a specific land plot, they can be understood as a non-exhaustive list of elements that planners, developers, architects and other actors related to the redevelopment of land plots in Hersted Industrial Park should take into consideration as guiding negotiation themes to negotiate. With that, those themes should be understood as topics or themes to be discussed in the negotiation spaces taking place as part of the implementation of the proposed framework in this report.

Furthermore, the redevelopment of Hersted Industrial Park could be understood as a puzzle formed of land plots *(Illustration 41)*, where each piece has a unique shape and a specific position within the puzzle.

In that sense, in the study case of this research, we analyse the shape and location of a unique land plot to be redeveloped, generating, as a result, a list of the guiding negotiation themes discussed in the negotiation spaces with the relevant actors of the specific plot. At the same time, the redeveloped land plot will need to connect and relate to the other plots it is surrounded by in order to create a 'fit' between different 'puzzle pieces'.

As shown in the *Illustration 41*, each puzzle piece is different, entailing different location, shape, actors involved in it and context. Therefore, due to that the study of other land plots is out of boundaries in this research, the referred guiding negotiation theme list should not be understood as fully applicable to every land plot in the area, but serve as inspiration to perceive other 'pieces' of the puzzle of land plots of Hersted Industrial Park in a context of redevelopment.

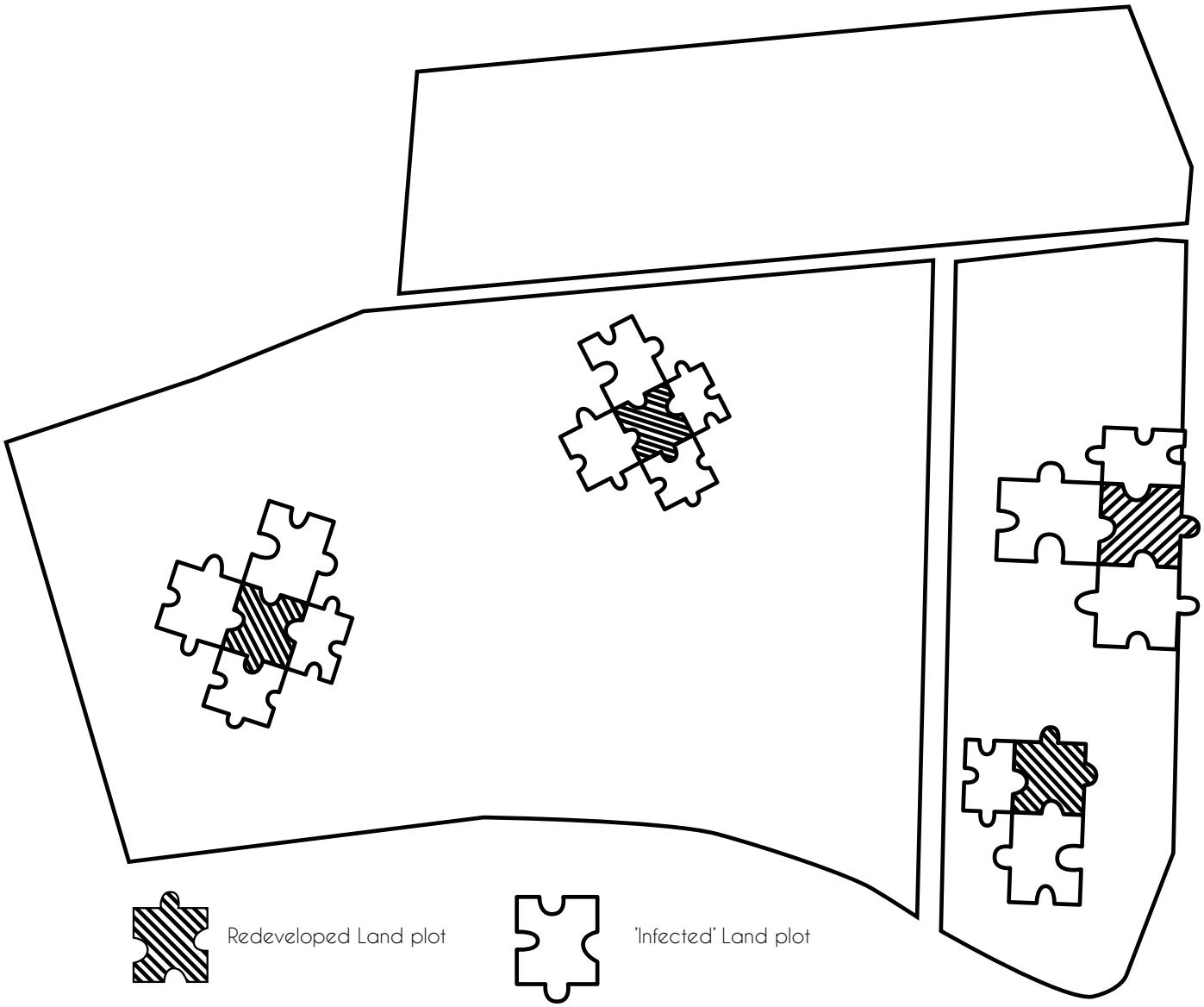



*Illustration 41: The redevelopment puzzle*

# 7

# Conclusion

We provide closure and point out main points out from the design-orientated research


Main Findings


Reflection


Limitations


Perspectivation

# 9. CONCLUSION

## 9.1 Main Findings

**Research Question:**

**How can we design, through negotiations spaces, a conceptual framework for redevelopment of a land plot in Hersted Industrial Park that can mobilise developers to embrace the desire of Albertslund Municipality of transforming the industrial area?**

Through empirical research, we have found that the municipality of Albertslund is currently using a 'standard' development process for the creation of change in the area of Hersted Industrial Park (HIP), understood as a top-down approach by a masterplan as a crucial 'interessement device' for the mobilisation of the key actors, represented by developers. Based on our empirical findings, we have found, through the use of Actor-Network-Theory and Participatory Design, that after two previously developed masterplans and a new one under development, the top-down approach followed by the municipality has proven to be ineffective to mobilise the actors to support the transformation that the local authority is pushing. In that sense, the use of the 'masterplan as an interessement device' approach in HIP has been unable to align real estate owners' perspectives to support the transformation or to interest developers to invest in it.

Due to the heterogeneous and complex existing network in Hersted Industrial Park (HIP), where some real estate owners and developers are supportive of the transformation of HIP, while others are reluctant to it, we conclude that instead on focusing on the industrial area as a whole, the focus should be on the transformation in smaller scale, namely on a strategically located land plot owned by an actor that supports the intended transformation. Consequently, our approach towards transforming HIP is through a new conceptual framework for the redevelopment of a strategically located land plot. Once it has been redeveloped, that land plot might have the agency to mobilise other actors (real estate owners and developers) to further re-develop other plots, make them more supportive towards change. By establishing negotiation spaces in a more localised scale, the municipality can work around limitations of the 'rigid formalised nature' of the masterplan, when intended as an interessement device for mobilising developers to invest. That can be achieved by the notion of enacting the change through multiple negotiations spaces of single land plots, initiating a redevelopment 'fever' able to 'contagiously' spread to the nearby plots.

Consequently, to facilitate the transformation of areas such as HIP, we emphasise the need for the facilitator of change(in HIP context, the local authorities) to create an understanding of the tensions, controversies and matters of concern of the different relevant actors, including them in negotiation spaces where, through constructive interactions with those actors, the facilitators of change will ease those tensions and controversies with the use of tangible materiality as a medium. As a result, local authorities will facilitate the generation of new and shared meanings with the key actors, easing the journey towards the redevelopment of areas like HIP.

As a further step, we recommend Albertslund Municipality to open-up negotiation spaces with key actors (real estate owners & developers), in order to further iterate materiality through discussions about various negotiation themes *(section 8.4: 'Negotiation Themes')*. With that, Albertslund Municipality will ease existing tensions, conflict of interests and controversies with those key actors. However, it is essential to stress that, in those negotiation spaces, the local authority needs to be open-minded and investigate new possible themes that the actors involved might be considered as necessary to be included.

## 9.2 Reflection

Our research aims at understanding how the design of a single land plot in Hersted Industrial Park (HIP), through the use of negotiation spaces, can mobilise developers to invest in the transformation of the industrial area and thereby, redevelop it into the desired vision of Albertslund Municipality for the area of HIP. Within this section, we will explore other possible scenarios, where our research could have progressed towards if we would have chosen logical alternatives to the direction presented throughout this report.

Through our empirical research, we explore the matters of fact of multiple actors in relation to Hersted Industrial Park and its transformation. However, with the focus on understanding current tensions within the redevelopment process and on unravelling them, through the use of negotiations spaces, we did not explore the end-users of the area to be redeveloped, such as future residents, retailers, companies or others. Therefore, gaining an understanding of the future end-users of the redeveloped industrial area and analyse them through, for instance, the 'personas' method (Blomkvist & Holmid, 2011) would have produced a different outcome in terms of generation of design parameters as well as creating a discussion about who are the desired residents for the industrial area once it has been developed.

As we state through the literature research, *chapter 4*, the expected increase of human development is going to have direct implications on the future of our societies. Regarding that, as the development leaves less land 'untouched', there will be an increasing need for redeveloping vacant land plots already developed. Therefore, with the case of Hersted Industrial Park, we could have measured the actual impact on sustainability aspects of the specific redevelopment of Hersted Industrial Park and questioned what the sustainable thing to do within this context, is to redevelop or leave it as it is.

Regarding the current use of Hersted Industrial Park, planners and politicians of Albertslund Municipality stated an 'emptiness' of use in the industrial area. However, throughout our fieldwork observations, it became clear that the industrial practices were still active and well 'alive'. Nevertheless, within this research, we have embraced the perspective of Albertslund Municipality regarding the partly in use status of the area without further questioning it. We did that in order to investigate how they could mobilise developers towards the redevelopment in Hersted Industrial Park. With that in mind, exploring how future scenarios of the industrial area would look like and, at the same time, measure properly the vacancy rate now and in the future.

The application of analysing our empirical research through Actor-Network-Theory approach led us to understand the interests, tensions and desires of the actors related to the transformation of Hersted Industrial Park. That understanding was then included on a participatory design-approach with negotiation spaces and related materiality. However, different theoretical 'spectacles' to investigate how to transform the industrial area could have been used, such as Practice Theory (Reckwitz, 2002) or Valuation Theory (Dewey, 1939).

In that sense, an application of Practice Theory would have entailed an investigation of routines and behaviours of, for instance, planners, real estate owners and developers etc. The relevancy of practice theory as an alternative theoretical framework is based on the impact of changing practices which can transform of established systems, as expressed by Shove (2004):

> *"...the transition to a more sustainable society is not just a matter of fulfilling stable and taken for granted needs in a more efficient manner. It is, in addition, a question of understanding what people take to be the necessary conditions of everyday life and of understanding how these concepts change and how they are socio-technically configured."*
> (Shove, 2004; p.9)

On the other hand, the Theory of Valuation (Dewey, 1939) could also represent an alternative pair of theoretical 'spectacles' for analysing how to mobilise developers to embrace the transition in Hersted Industrial Park. In that sense, valuation theory understands valuation as a vital component to the machinery of the reality in global economics, represented as 'actionised' entity we could have look into (Çalışkan & Callon, 2009)(Mortensen & Karnøe, 2016). With that, the focus would be on the understanding of how actors value the practices, objects and each other in the context of the redevelopment of Hersted Industrial Park. That would open a 'black-box', where gain access to the valuation frame of actors and, adding that knowledge into parameters, manipulate those values by re-/de-construction one or multiple valuation frameworks (Latour, 2000) (Çalışkan & Callon, 2010).

As the screening of valuation theory has been carried out as part of the research, the passionate and enthusiastic reader can find more about valuation in Appendix C: Valuation. A possible outcome/ effect of applying the theory of valuation could have resulted in an exploration of how to design for creating interest from an economic perspective with a valuation-framework consisting of parameters that go beyond the mere economic aspects.

While our project process navigated us towards focusing on a land plot for initiating the realisation of a transformation in Hersted Industrial Park, other opportunities might have been of interest to investigate. As a result of this, a specific idea for implementing a change in the area was presented through one interview with a politician of Albertslund, Leif Pedersen Head of Economy and Environment, who explained:

> *"I believe when we are seeing it from a political standpoint, that we have a small amount of power in the area due to the special constellation, we can only act as facilitators in the transformation process and I believe we are missing muscle from somewhere to force de development"* (Politician, Head of the economy and environment of Albertslund Municipality, Leif Pedersen, Interview 14)

In that regard, it could be interesting to explore how to create and structure an economic entity, from a governmental perspective, for redeveloping (partly-vacant) urban areas in order to revitalise some of its segments. Such entities, can act, for instance, with the notion of buying real estate owners out and relocating them in a different area, all with the purpose of protecting forest areas, which represents an already existing approach made by the Danish Nature Agency (Politician, Head of the economy and environment of Albertslund Municipality, Leif Pedersen, Interview 14).

## 9.3 Limitations

During the research investigating how to mobilise developers to embrace the redevelopment in Hersted Industrial Park, we faced some limitations that we will discuss in this section.

Throughout multiple interviews with a planner of Albertslund Municipality, Søren Kehr, there were certain limitations regarding the confidential nature of some relevant documents. While opening up the discourse regarding the ongoing development process of the new masterplan, some aspects that we considered as worth to be discussed were addressed by the planner of the municipality as non-debatable, or to be discussed in vague terms. That was justified by the municipality as a way to protect classified information regarding internal and strategic meetings, which belong to a more political arena out of the reach of this research. Those limitations were regarding, for instance, to our access to the new masterplan in order for us to analyse it. Also, access to the aspects related to the connection path between the station area and the rest of Hersted Industrial Park were treated for the municipality as classified, due to being under development during the period our research was carried out. Therefore, we argue that those limitations hindered the potential outcome of this study.

Furthermore, It was our intention to explore in depth the interests of real estate owners towards the transformation of Hersted Industrial Park (HIP). However, most of the owners we approached refused to cooperate in our research. Therefore, that limited communication to real estate owners of the land plots in HIP resulted in the creation of solutions based on certain assumptions, which can be seen in *section 7.2.2* 'Focus Area'. Those assumptions were regarding their desire to sell their land plots and, thereby, being able to assess further mobilisation for the transformation of the industrial area.

## 9.4 Perspectivation

As we come to the end of our study, we discuss some relevant aspects to open up in further research. In that sense, aspects such as, the new conceptual framework that we proposed in this study, might be relevant to investigate the applicability of our approach in different contexts. That also includes contexts outside the Danish regulations and laws or redevelopment processes that are not restricted to industrial areas.

Through our journey of exploring how to mobilise real estate developers to embrace the redevelopment in Hersted Industrial Park (HIP), we use design-oriented methods and the theoretical 'lenses' of Actor-Network-Theory and Participatory Design, with a focus on negotiation spaces. Furthermore, we establish intervention points regarding aligning tensions and controversies (between municipality, real estate owners in HIP and developers), that challenges the transformation of the industrial area.

The case that was presented in this research entails the process for redeveloping a partly-used industrial area, which is relevant to study due to estimations of population growth in Denmark, which point out at a further expansion human development. In that context, less land is kept 'untouched', resulting in a majority of the land transform to some extent into the built environment. As a consequence of the scarcity of 'untouched' land, scenarios for redevelopment of already built environment, such as the one discussed in this report, will become more common in the near future due to the need for revitalising built environment for the accommodation of future growth of cities, while avoiding further development on greenfields.

Within this research, we have proposed a new approach which is presented within the chapters: *7. Design Synthesis* and *8. Design Spaces.* It entails a shift from a traditional strategic planning process, which a focus on a formalised object (Çalışkan & Callon, 2009), namely the masterplan, as a catalyst for redevelopment to, instead, embrace 'negotiation spaces' between actors. In there, an evolving and inclusive materiality represented by flexible objects as a medium for the discussion, where actors can include their interests and generate a shared meaning, which will be evolved in further negotiation spaces (Pedersen, 2016).

Therefore, the shift of focus point towards these negotiations spaces and flexible materiality goes away from using a strategic plan, which entails specific regulations and rules, as a catalyst for developers to invest in the transformation or redevelopment of the built environment. Furthermore, even when the conceptual framework we propose is heavily contextualised in the area of Hersted Industrial Park, in this perspectivation section, we elaborate a further understanding about how this new framework might operate in other redevelopment or transformation experiences regarding built environment.

We propose, as portrayed in *illustration 42* Proposed negotiation of redevelopment in levels, we argue that, in similar contexts such as Hersted Industrial Park (a partly in-use industrial area, with a heterogeneous constellations of real estate owners, to become redeveloped by shifting its use), a new conceptual framework that is applicable to realise a transformation of an partly-used industrial area. In that sense, negotiation spaces should take place within different levels, or area scales, in connection with each other, as shown in the *illustration 42* (namely 'comprehensive area-focused area-specific land plot).

Those different levels relate to each other, and thereby, the negotiation spaces happening in those levels will generate visions as an outcome and, with that, entail the inclusion of various matters of concern and interests from a more considerable amount of actors.

Those visions will trigger the mobilisation of developers towards redeveloping the area, as the participants of those negotiation spaces will see their interests reflected on those negotiated visions. Furthermore, the notion of negotiation on the different levels can enact the redevelopment of a small number of land plots by, as shown in the case-study of Hersted Industrial Park, enacting future developers to invest and realise the intended transformation.

By creating a new paradigm shift in redevelopment for areas that are partially in use, we gain an understanding of different negotiations spaces in various levels of redevelopment, where a facilitator of change (In this study the municipality) can create and steer for initiate the realisation of a redevelopment in an area and include related actors in a more democratic manner, by having their matters of concern embedded in the outcome of the planning vision.

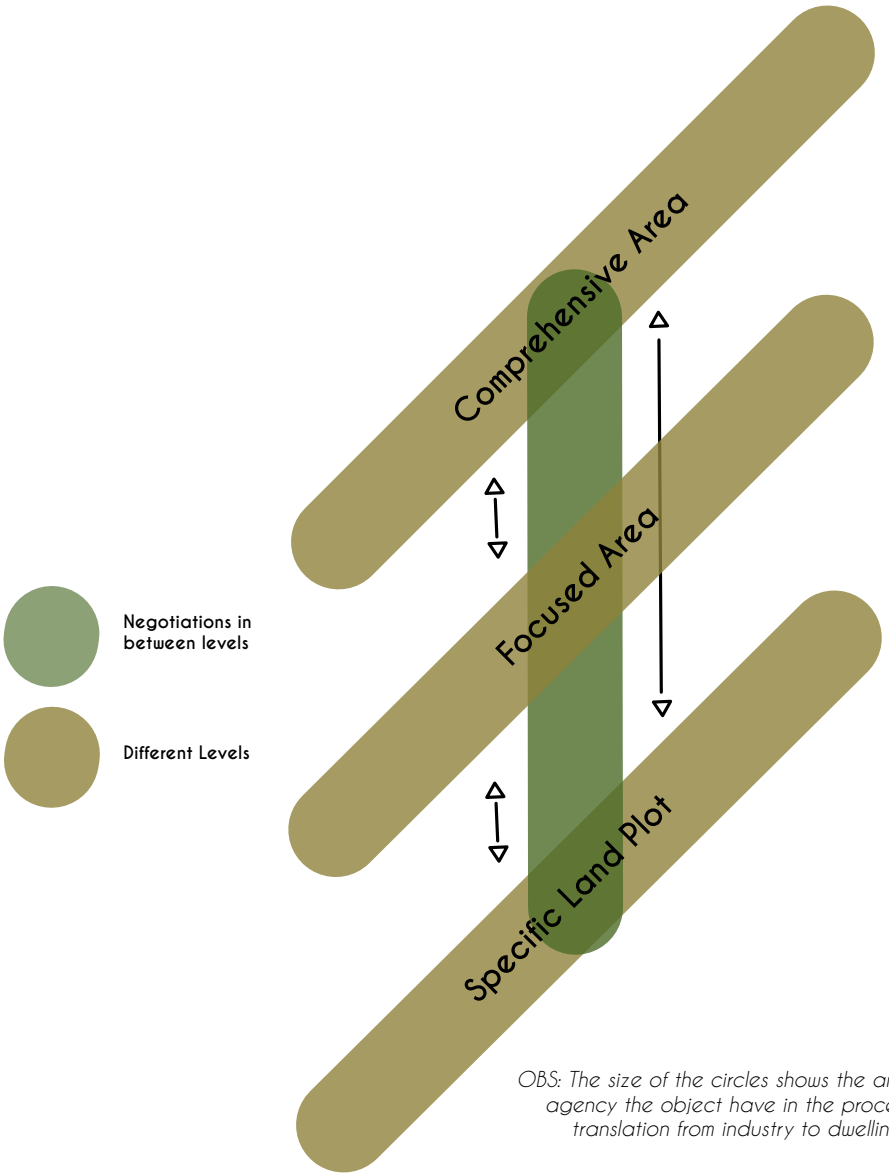



*Illustration 42: Proposed negotiation of redevelopment in levels*

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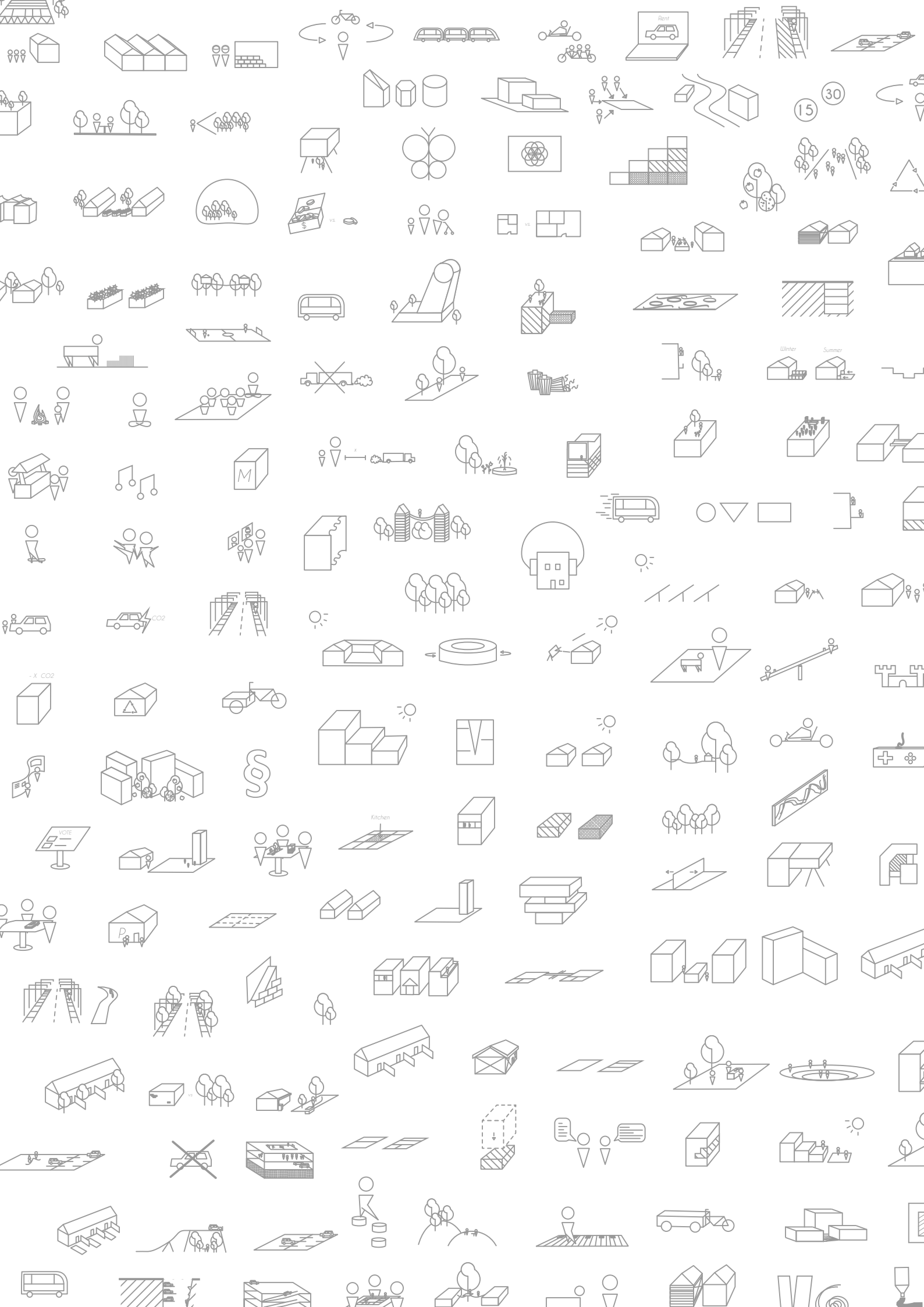
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