

POSSIBLE FUTURES OF BARKARBY HANDELSPLATS

**→ NAVIGATING ITS DEVELOPMENT
THROUGH SCENARIO PLANNING**

KTH Royal Institute of Technology

AG2129 Project Sustainable Urban Planning

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ABSTRACT

→ Barkarby Handelsplats is one of Järfälla municipality's most important locations and draws thousands of visitors each year. Despite its prosperity, the retail park can not remain in its present form and function forever. Global trends and external changes will put inevitable pressure for development and the car dependent consumption hub does not resonate well with the municipality's sustainability goals. Therefore this report will look into possible future developments for the area by creating three separate future scenarios for 2050. The scenarios are based on current global trends, with one forecasting scenario and two "what if" scenarios exploring large scale retail and climate transformations. The aim of these scenarios is to investigate the potential futures and evaluate their consequences on Järfälla. They are therefore analysed in relation to Barkarby Handelsplats, looking into their respective opportunities and challenges. From this, it is explored how Järfälla municipality proactively can navigate the future, responding effectively to potential risks and embracing emerging opportunities. The analysis shows that there are several responses the municipality is recommended to consider, that would aid the development of Barkarby Handelsplats regardless of which direction the future takes. A conclusion is that Järfälla municipality should engage early with actors and stakeholders to facilitate the necessary transformations and make use of its neighbouring pockets of opportunity, Barkarbystaden and Järvafältet in its development. The given recommendations therefore focus on three objectives; mediating the change, creating strategies for urban transformation and promoting sustainable transport.

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1. INTRODUCTION

→ This report will discuss and analyse possible futures, outcomes and development of Barkarby Handelsplats. There have been, and will be, changes to the retail park and its direct proximity since the urban and dense residential development project Barkarbystaden is emerging. In addition, the municipality of Järfälla has ambitious goals regarding environmental adaptation with the aim to be climate-neutral by 2030 and climate-positive by 2050. Therefore, Barkarby Handelsplats is in a position where future development must be discussed. To tackle this, possible futures will be shaped through the method of scenario planning, where assumptions and expectations form potential outcomes within different themes. Factors like consumption habits, mobility, and climate change will be major drivers affecting how the area will develop over time. The predictions gathered, which are based on existing theory and investigations, will lay a foundation and knowledge base for the municipality and other actors that play key roles in the area's future.

1.1 AIM

→ The aim of this report is to explore the future development for Barkarby Handelsplats. This is done by generating three future scenarios for 2050, based on global and national trends. The scenarios are then analysed and discussed in relation to the retail park, looking into their respective opportunities and challenges. From this, it is explored how Järfälla municipality can navigate the future of the commercial area, responding effectively to potential risks and embracing emerging opportunities.

The main questions discussed in this report are:

- How could local and regional changes, along with broader societal trends, affect Barkarby Handelsplats in the future?
- How can Järfälla municipality respond to these possible futures while aligning with the municipal goals for 2050?

2. METHODS

→ In this chapter the methods and processes of the project are described. The main method of the project is based in scenario planning. The first part has the purpose of supplying a general picture of what scenario planning is and how it can be implemented according to different academic scholars. Following, it is elaborated how this project has carried out and implemented case-specific scenario planning in accordance with existing theory.

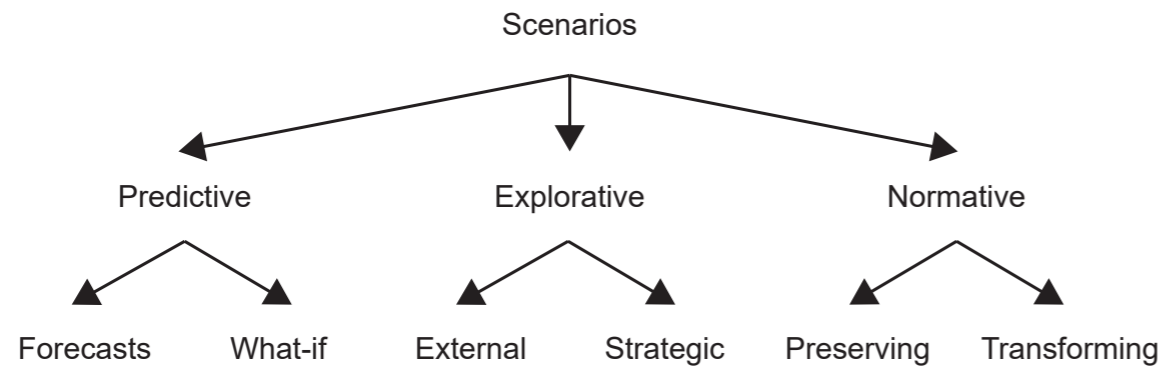
2.1 SCENARIO PLANNING THEORY

→ The use of scenario planning, a tool commonly adopted by organisations and researchers, helps prepare for the unexpected outcomes of the future. It involves creating narratives or stories about potential future situations based on critical factors and trends. Scenario planning helps deal with the unknown, allowing decision-makers to be more flexible and prepared in a changing world. The construction of scenarios in this project has been influenced by the theoretical insights gained while researching previous literature on scenario planning methods. In this case, no exclusive dedication to a single theory or operational approach has been applied. Instead, inspiration has been drawn from a diverse range of literature within the subject, to allow greater flexibility in shaping the possible development of Barkarby Handelsplats.

Scenario planning is a method that encourages holistic thinking and helps key stakeholders prepare for change (Börjeson et.al, 2006). The development of scenarios can also serve the purpose of improving decision-making and setting a trajectory for the future. This is achieved by recognizing and evaluating actions that shape the coming times, to further support policy objectives. Scenarios can also be employed to test the strength and resilience of policies, investment plans, and intervention strategies (ibid). The utilisation of scenario planning as method aligns with the overarching goal of this report, which is to offer a comprehensive perspective on possible futures for Barkarby Handelsplats across various themes.

There are many ideas and suggested frameworks regarding how scenario planning can be initiated in practice. One possible way of approaching and understanding scenarios is to divide and frame them based on characteristics. This is elaborated on in Börjeson's (2006) conceptual description of different kinds of scenarios (Fig.1). These categories are based on what a researcher or a person with interest within a subject would want to know about the future; "What will happen?, What can happen? and How can a specific target be reached?" (ibid, p.725). The first question can be responded to with so-called predictive scenarios, which can be divided into the subcategories forecasts and what-if scenarios. Forecasts are based on likely development, while what-if scenarios explore development affected by possible specific events, for example, a new pandemic. Explorative scenarios answer the question "what can happen?", and can be divided into external and strategic, where external scenarios deal with how external factors can evolve. Strategic scenarios on the other hand explore what might happen if we take certain actions in a given situation. Lastly, normative scenarios respond to how specific targets can be reached. Normative scenarios also have two sides to them, depending on how they deal with the system setup. Preserving scenarios are all about getting to the goal by adjusting what already is in place while transforming scenarios focus on reaching the target when the current setup is getting in the way of necessary changes (ibid). Figure 1 presents a summary of the different types of scenarios. Given the scope of the project, the question of "what will happen" was considered the most intriguing and suitable. Therefore, it was decided that forecast and what-if scenarios was to be generated in this particular case.

FIGURE 1: Conceptual description of different kinds of scenarios. (Börjesson et.al, 2006)



The "Futures cone", created by Voros (2017) was additionally used for generating the scenarios, see Fig. 2. By using this model, one can explore different possible futures, plan for uncertainty, and develop strategies that are flexible enough to adapt to various outcomes. It helps one to be better prepared for a dynamic environment, and to make strategic decisions (ibid). The cone widens as it extends into the future (Fig. 2.). This widening represents increasing uncertainty the further you move from the present. In other words, as you look further into the future, there are more potential scenarios and outcomes, and they become less predictable. The narrow window of probable futures also symbolises the difficulty in predicting accurately (ibid).

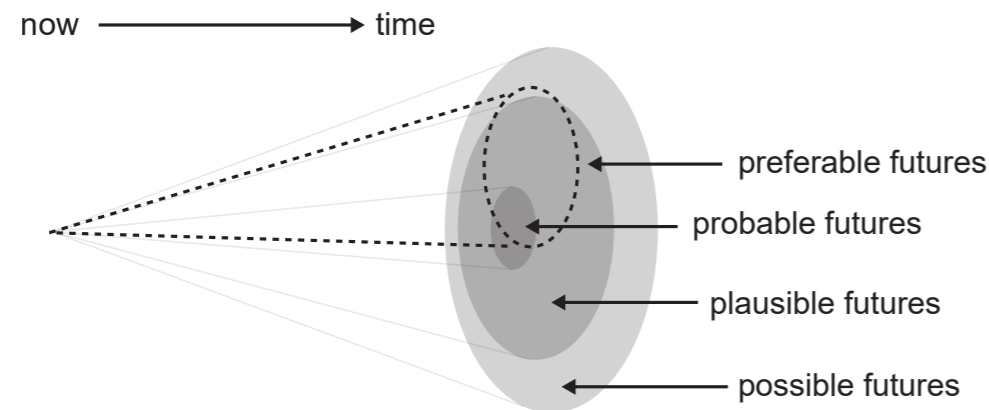


FIGURE 2: Visualisation of the futures cone (Voros, 2017)

2.2 SCENARIO PLANNING IMPLEMENTATION

→ In this chapter, the implementation of the method is discussed and elaborated on, with a focus on the work process in terms of gathering theory, shaping the actual scenarios and implementing them on the case at hand.

To determine the thematic lenses through which the scenarios would be developed, a thorough analysis of the area was crucial. Therefore, a SWOT analysis was conducted (see appendix), where Strengths, Weaknesses, Opportunities, and Threats of the area were identified. This way, the most relevant themes and pressing challenges for Barkarby Handelsplats were acknowledged. SWOT as a method was chosen as it can help clarify objectives, assess internal and external factors, mitigate risks, and make informed decisions, ultimately leading to a more focused

and effective work process (Helms, 2010). When building scenarios, this information is crucial since it provides a more reliable and thought-through foundation. In order to carry out the SWOT, an inventory of the pre-existing conditions was made. The SWOT was conducted in a workshop format, which involved all of the group members. When different aspects of the topic were brought up and discussed, a common understanding of the work process and limitations was easier to build as there had to be compromise, motivation and more consensus for certain decisions.

After gathering and analysing appropriate theory within the field of scenario planning, it was decided that three scenarios would be developed to explore a broader understanding of possible futures and themes, see figure 3. One of the scenarios was aimed at forecasting, meaning that emphasis would be put into identifying possible development based on the existing plans for the actual area and current trends in society. The focal point in this scenario, which was named Future Forecast, was the evolving Barkarbystaden and its implications on Barkarby Handelsplats. In the previously mentioned literature surrounding predictive scenarios, it is stated that forecasting scenarios can provide insight into potential future outcomes based on current trends and historical data (Börjeson et.al, 2006). It can be used to identify and assess risks, and assist in planning for urban development, transportation, infrastructure needs, and resource management (ibid). The aim with this scenario was to supply a reasonable picture of how the area can develop up until the year 2050, without zooming in on specific themes or topics, but rather to provide a general picture of possible development, based on what we know now. Referring back to the futures cone (fig. 2), the forecasting scenario would constitute a solid line within the probable future's section as it tries to predict based on current knowledge.

The other two scenarios are more focused on making broader assumptions, with a specific focus on themes connected to the retail park. They also aim to be slightly more drastic than the previously mentioned forecasting scenario. The traits of these scenarios makes them comparable with the what-if model mentioned in the literature (Börjeson et.al, 2006), as they explore an alternative development with specific and more extreme tendencies. The scenarios are named Retail Transformed and Climate Pressure (fig. 3).

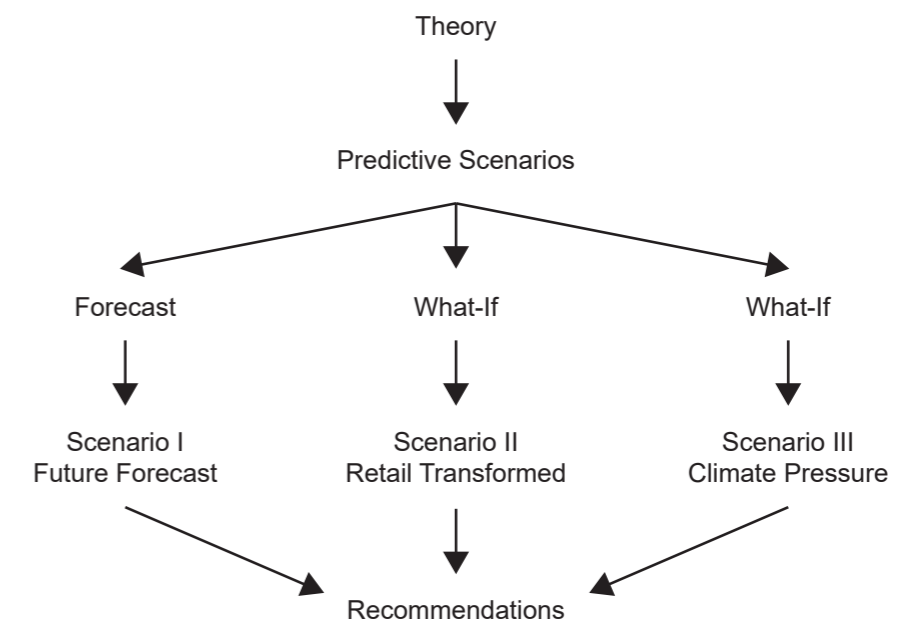


FIGURE 3: The project's three scenarios (own graphic)

The approach in the retail scenario is that the world has changed drastically in terms of commerce and shopping, while the climate scenario describes a society where we have adapted a lifestyle that is more in line with the current threats of climate change, but also imposed measures to become more resilient and prepared for weather events and extreme weather locally. This form of what-if scenarios can not only supply a possible picture on how the world may develop in different ways, but as the literature suggests, also set a trajectory and prepare for societal changes which can shape a more resilient and sustainable future (Börjeson et.al, 2006). Connecting to Voros model on various futures (fig. 2), these two scenarios would fit more into the plausible, possible or even preferable future as they are more visionary and less based on current regimes and trends.

After establishing the three scenarios on a general or global trend-level, they were all applied on the specific case at hand, Barkarby Handelsplats. The scenarios serve as a conceptual outlook on possible developments and interventions within the area as Barkarby Handelsplats changes. Therefore, the subsequent step was to analyse the impact they would have on the retail area. Here, the aim is to identify spatially situated insights about the future development. The consequence analysis encompasses foreseen changes in urban uses, social, economic, and ecological factors as well as the dynamics of stakeholders. This is crucial for developing site-specific recommendations, which constitutes the last step in the methodology. These aim to offer guidance on addressing or adjusting to potential outcomes of future development. Given that the municipality primarily controls the road network and has limited authority over parking lots or buildings owned by private entities, the recommendations are focused on policy, governance, and nudging. The intention is to provide practical and sensible insights to prepare for change within these constraints.

2.3 LIMITATIONS

→ There are several limitations with the methods used in this project. First and foremost, scenarios always have a limited predictive accuracy and assumptions sometimes base on other assumptions, making the outcome dependent on unstable factors. Although this is a clear limitation with the method, it is also what gives scenarios their characteristics. The purpose of them is not to predict a true future, but to paint a picture of what could happen and invite thinking outside the box. It is therefore crucial to address the scenarios in such a way that they are not interpreted as true futures. In this project the scenarios have initially been described on a broader societal level, while later being applied to the Barkarby Handelsplats context. Therefore, the geographical limitations are set to Barkarby and its direct proximity. The applicability of the global trends to the local context can be contested, and it is therefore emphasised that the consequences of the future scenarios on Barkarby Handelsplats are not set. It has also been a conscious choice not to include probabilities of different effects. Simplification and generalisation are two aspects this project has embraced, and with a limited amount of topics and scenarios the results of this report are in no way comprehensive or exhaustive. Finally, although much effort has been put on reducing its impact, subjectivity and bias from the authors and their

educational background is another limitation nested in the methods used to produce this paper.

3. INVENTORY AND ANALYSIS OF PREVAILING CONDITIONS

→ This section contains information on the prevailing conditions of Järfälla and Barkarby Handelsplats. The inventory was based on a site-visit and satellite images which were analysed to understand the physical conditions. This was then combined with statistics and existing development plans for the area and the broader Järfälla. As mentioned previously, an understanding of the site specific conditions are important for the scenarios, both in the process of creating them, applying them and analysing their consequences in the Barkarby context.

3.1 HISTORY AND REGIONAL CONTEXT

→ The retail park Barkarby Handelsplats in Järfälla municipality is a major commercial hub, catering shopping opportunities for the entire northern Stockholm area and the broader Stockholm region. It is situated in the central parts of Järfälla municipality, 20 km northwest of Stockholm city (see figure 4). Due to this proximity to central Stockholm, Barkarby Handelsplats and Järfälla as a whole occupy a strategically interesting geographical location in regards to industry, labour market and urban development. The retail area is currently considered a regional interest and has a vast catchment area, resulting in a lot of travel being made to and from the district (Järfälla Kommun, 2014).

The big-box retail activity started to grow in the 1990s when the Swedish military sold off land in the area and major commercial actors such as IKEA, Bauhaus and Barkarby Outlet established stores on the site. Barkarby Handelsplats has grown continuously since its establishment and in 2014 two new major shopping areas were opened in the south part of the retail area, Köpkvarter Flottiljen and Barkarby Gate (Barkarby.se, n.d). The big-box stores with furniture, tools and electronics were now complemented by a supermarket and retail goods such as clothes, shoes and sports equipment.

Situated right next to the E18 highway, the roughly 60-hectare retail park is largely car-oriented with paved surfaces like parking spaces and car roads occupying a majority of the area. Shopping and consumption are the dominant functions in the area, and the majority of the land is owned by private actors, which delimits municipality interventions. Although there is a lack of mandate on how the area will develop over time, the retail park is crucial for Järfälla. It works as an economic driver, creating a lot of jobs in the service sector while also bringing in tax revenue from commerce.

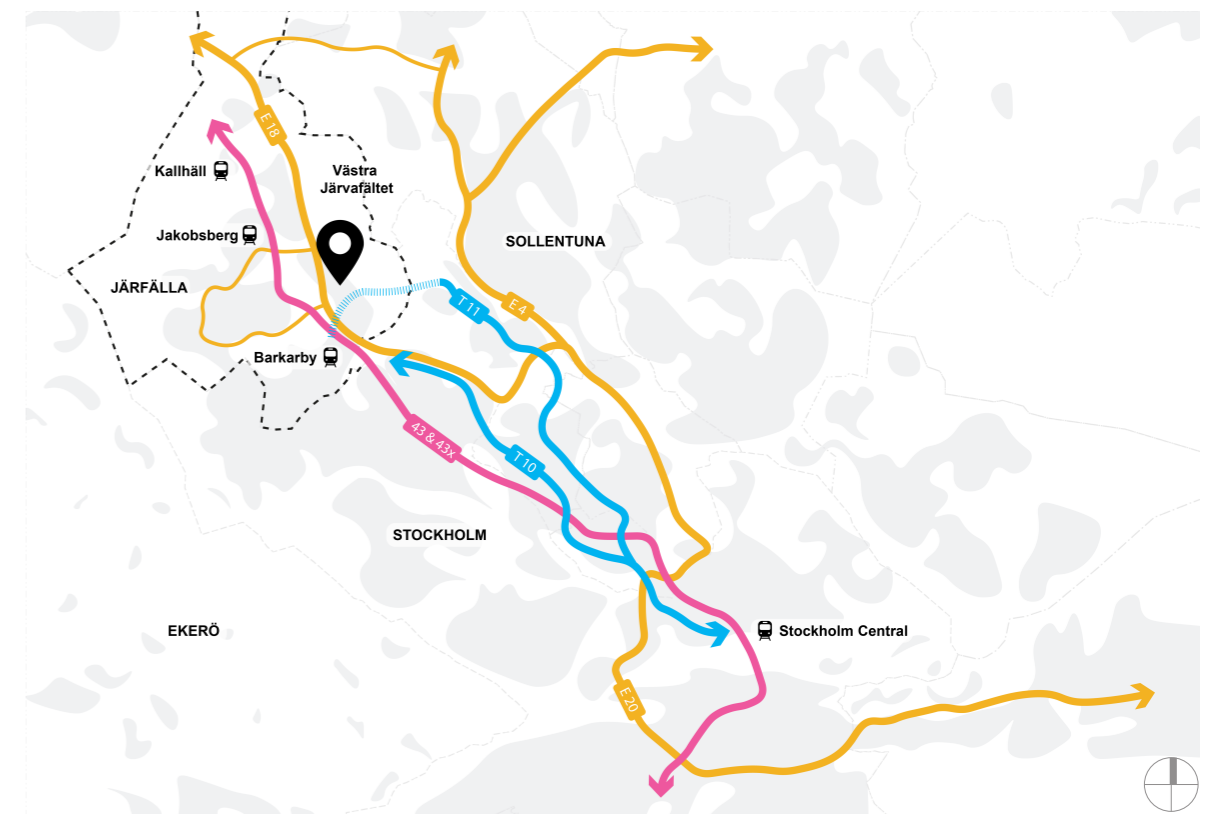


FIGURE 4: Location of the project site in the greater Stockholm region (own graphic)

Thanks to Barkarby Handelsplats's attractiveness, Barkarby and the whole of Järfälla is considered a good location for all types of retail and other space-demanding operations. Simultaneously, one of Stockholm region's largest urban developments is taking place right adjacent to the shopping district. Since 2012 Barkarbystaden has been emerging, providing 15 000 to 20 000 new housing units and building up the new Jakobsberg-Barkarby regional core. The blue metro line will also be extended and have two new stops in Järfälla (Järfälla Kommun, 2023a), and further in the future long-distance trains are planned to have a regional train station in Barkarby.

3.2 BUILT ENVIRONMENT AND INFRASTRUCTURE

→ Barkarby Handelsplats currently has a predominantly monofunctional urban form. The area is primarily designed to facilitate convenient shopping experiences through car travel, and therefore essentially comprises three dominant land uses: commercial buildings (box stores), parking spaces, and roads for car accessibility, see figure 5. Barkarby Handelsplats can therefore be characterised as highly car-centric. In the Climate and Energy Plan, the municipality stresses the need for a less car-dependent development of Barkarby Handelsplats (Järfälla Kommun, 2019). Infrastructure for cycling and pedestrian accessibility do exist, but these are limited and fragmented. Moreover, the vast parking spaces and roads result in extensive areas of hard surfaces. While these spaces do feature some planted trees, a notable lack of greenery within the shopping district is observed. This is a concern for several reasons, such as the lack of protection from heat during hot and sunny days and potential issues with stormwater management. From a broader perspective, this can raise concerns related to social well-being, particularly in terms of the municipality providing a pleasant and aesthetically pleasing environment.

Due to the low density of buildings and the monofunctionality of spaces, land use can be regarded as inefficient, particularly from the perspective of resource use. There is also a temporal dimension to this inefficiency, as the area has few intended usages outside the stores' business hours and during nighttime. The comprehensive plan for 2030 (Järfälla Kommun, 2014) addresses that functionally segregated areas like Barkarby Handelsplats tend to be depopulated in the evening, which potentially causes feelings of an unsafe environment. Furthermore, this relates to the issue of poor-quality public spaces observed in the area. Although the current shopping experience mainly revolves around what happens inside the stores, the urban form appears inconsiderate of activities and people beyond mere consumption. This can be viewed as an issue for various reasons, including concerns about land use efficiency and general public access to and usage of the area. In the municipal policy documents, Barkarby Handelsplats is described as a place for future development. In the current comprehensive Plan, the retail area is envisioned to be a dense multifunctional area with an urban character and a mix of housing and workplaces (Järfälla Kommun, 2014). Today, words such as functionally divided and time-dependent usage are connected to the place. The Comprehensive Plan does however imply that these negative attributes will be diminished if the retail would be combined with housing and other activities in the future (ibid).

Regarding the areas surrounding Barkarby Handelsplats, a significant barrier is formed by the E18 motorway, separating it from Jakobsberg Centrum and Söderhöjden to the west. In the municipal Comprehensive Plan for 2030 (Järfälla Kommun, 2014) plans exist to bridge this barrier, as part of the development of the regional core. As the development of the regional city centre involves further connecting Jakobsberg, Veddesta, Barkarbystaden and Barkarby Handelsplats, reinforcing and establishing new urban links between these areas is pointed out as a priority. The area south of Barkarby Handelsplats is currently undergoing severe transformation due to the development of Barkarbystaden. This entails not only the creation of a new urban landscape where the Barkarby airfield used to be, but also brings an influx of residents, new services, and increased flows of people in and around the area (Järfälla Kommun, 2023b). Moreover, the planned extension of the Stockholm metro line will include Barkarbystaden. This extension will significantly improve public transport accessibility to Barkarby and Järfälla, which is expected to further strengthen the integration of the municipality with Stockholm and the broader region (Järfälla Kommun, 2023b). Taken together, the development of Barkarbystaden will mean both physical and structural changes in the municipality that are important to analyse with regard to the future of Barkarby Handelsplats.

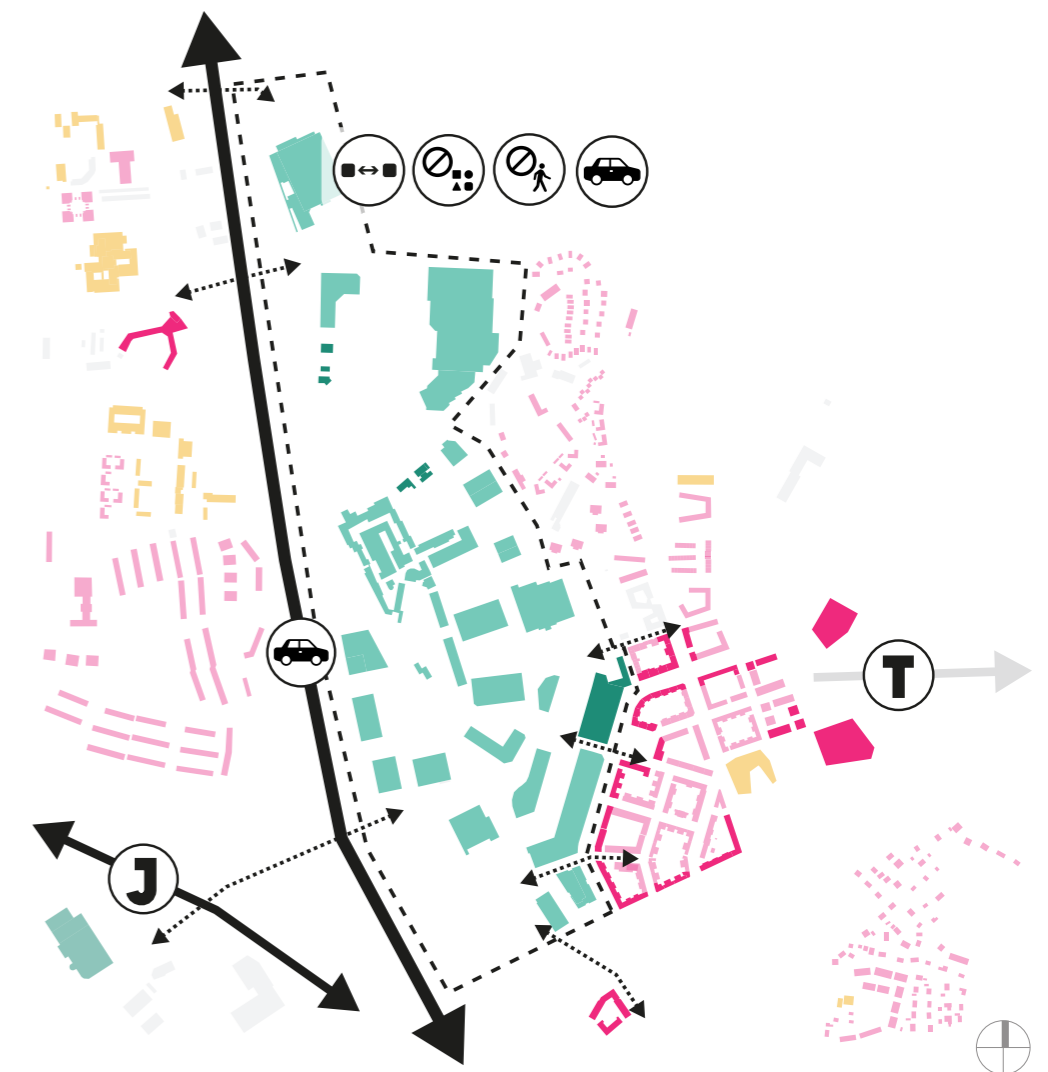


FIGURE 5:
Synthesis map
built environ-
ment and
infrastructure
(own graphic)

- Housing
- Retail
- Community function
- Mixed-use type I
Housing, Office, Retail
- Mixed-use type II
Office, trade, business
- Business
- Major road connection
- Minor road connection
- Major (future) train connection

3.3 NATURAL ENVIRONMENT AND ECOLOGICAL CONDITIONS

→ The municipality has many strategic policy documents regarding the natural environment and ecological conditions in Järfälla (Järfälla Kommun, 2023 c). The two superior governing documents are the Environmental Plan and the Comprehensive Plan. These two have their base in the global goals from Agenda 2030 and include all of Järfälla's goals in relation to ecological sustainability. They are therefore meant to guide all development in the municipality. Apart from these overarching documents, Järfälla also has more specific guidelines relating to green infrastructure, climate and energy, climate adaptation, biodiversity, stormwater treatment, chemicals and so on. Many documents are focusing on how Järfälla can develop and adapt to future climate change. There are however not that many that go into district or neighbourhood-specific details, and direct connections to Barkarby Handelsplats are therefore scarce.

The observations from the site visit and satellite images indicate a lack of green spaces, vegetation and ecological services in Barkarby Handelsplats. From an ecological perspective, the area is regarded as limited in its ability to provide a diverse environment that benefits other plants and species. For instance, the vast parking spaces and the non-ecological architecture of the store buildings may not effectively support a variety of natural habitats. In terms of vegetation in the area, this mainly consists of trees planted within the parking spaces and along the roadways, complemented by patches of landscaped lawns. Notably, one smaller contiguous green forest area is observed, nestled within the store buildings and parking spaces. This area equals roughly the size of two average parking lots. While this space certainly could be providing some ecological values within Barkarby Handelsplats, it appears as an isolated island surrounded by the other dominant land uses, see figure 6.

To the east of Barkarby Handelsplats lies Järvafältet, a large and interconnected green area that forms one of the regional green wedges, also referred to as Järvakilen. As outlined in the municipal Green Structure Plan (Järfälla Kommun, 2018) Järvafältet contributes significantly to the capacity of the municipality and the region to support a thriving ecosystem of plants and wildlife. Västra Järvafältet Nature Reserve is considered to be of particular relevance to Barkarby Handelsplats, as its southern boundaries directly border the northern parts of it. In the Green Structure Plan (Järfälla Kommun, 2018), it is emphasised that the E18 motorway constitutes a substantial barrier separating Järvafältet from other neighbourhoods within the municipality. The barrier is both limiting recreational access for humans and hindering the free movement and dispersal of plants and wildlife. In addition, it is also a source of noise pollution. However, in this same plan, the built-up environment of Barkarby Handelsplats is not explicitly mentioned as a barrier. Nevertheless, based on our analysis, it can arguably be considered as such due to the significant lack of green spaces, parks, and forest areas within Barkarby Handelsplats. Consequently, this urban form can be viewed as an obstacle to the seamless integration of Järvafältet's green qualities into the surrounding neighbourhoods of Järfälla. Nevertheless, the proximity to Järvafältet poses an

interesting opportunity for the future integration of ecological values and nature recreational qualities into Barkarby Handelsplats.

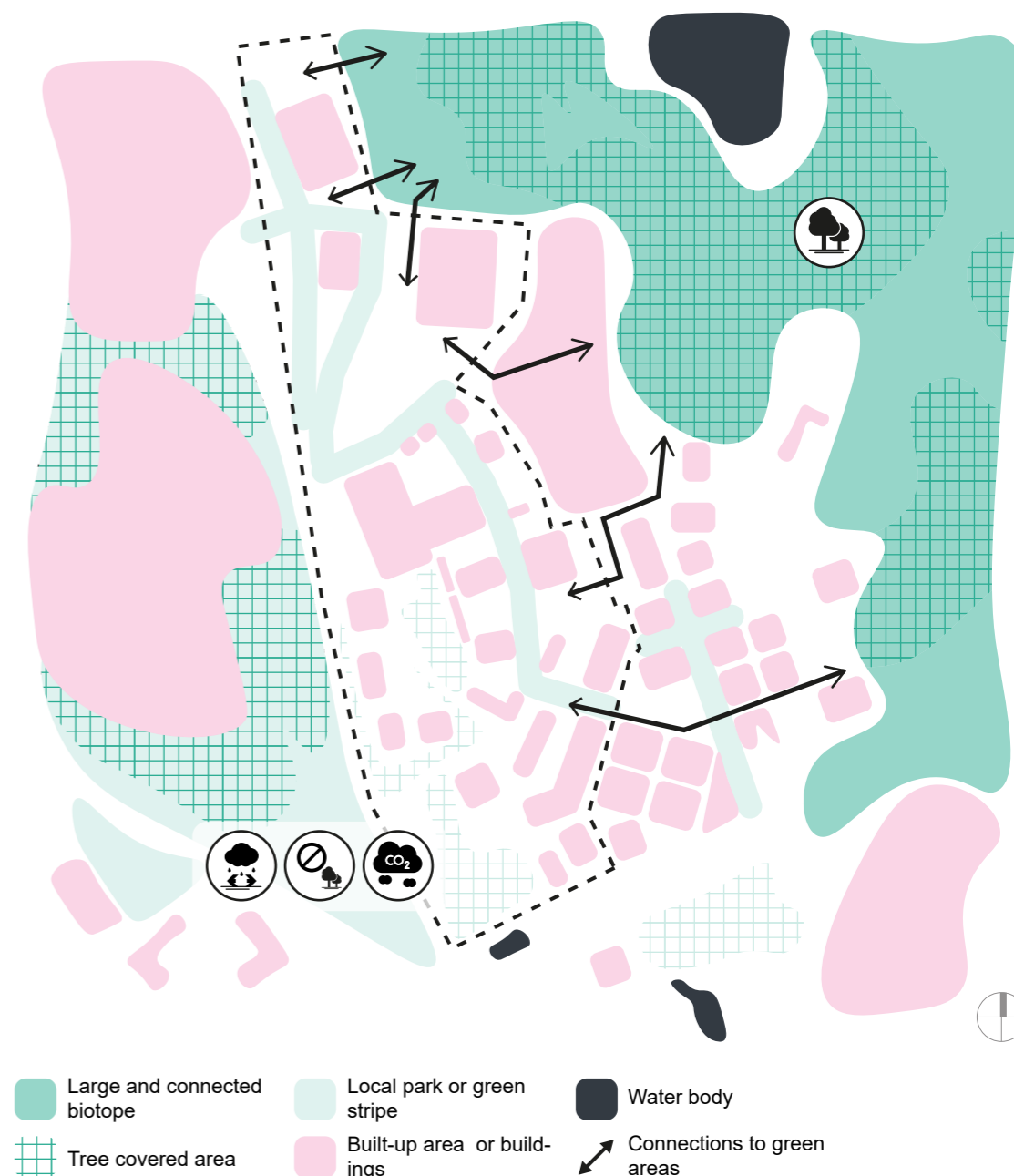


FIGURE 6:
Synthesis map
natural environment
and ecological conditions (own
graphic)

From the GIS maps below (fig 7a and 7b) it is evident that Barkarby Handelsplats is in a vulnerable position against some climate change consequences such as flooding and heat waves. In figure 7a heat stress is visualised with a gradient of weak and strong colours showing how large the risk of heat stress is. Barkarby Handelsplats has a much higher risk than the neighbouring areas. One contributing factor to this is the difference in green structure, where the low risk areas mainly consist of open green space from the adjacent Järvafältet. The hardscaped surfaces and heavy materials in the retail park absorb the heat in comparison to the adjacent greenery, which instead cools the environment through evapotranspiration from photosynthesis. Hence, a need for more greenery within the Barkarby Handelsplats area can be identified. This also applies to the second map (fig 7b) which shows potential flooding after a 100 year rainfall. Around many stores there seems to be a risk of water accumulating which could result in costly damages to the area. More greenery could mitigate some of the flood risks and would therefore benefit the area.

FIGURE 7 a & b:
GIS analysis. Heat
stress (left) and
flooding risk (right)
(own graphic)



3.4 SOCIO-ECONOMIC OVERVIEW

→ Järfälla municipality is facing a major population increase, where the new Barkabystaden is expected to grow the most. According to Statisticon (2023), the whole area of Barkarby has 12400 inhabitants and is expected to grow to around 31000 inhabitants in 2030 (Statisticon, 2023). Additionally, changes in the age structure is expected to follow more or less the same trend as today, where the dominant ages are between 25-35 and 0-10. Compared with Järfälla municipality today, there is a clear difference in the population structure in Barkarby, where the average is higher for the number of people in the 20-40 age group in Barkarby, but lower between 50-90 years (Statisticon, 2023). In 2022, a total of 15862 inhabitants in Järfälla commuted from another municipality to Järfälla, where most people commute from Stockholm, whereas 27 724 people commuted out from Järfälla, resulting in a net out-commuting from the municipality (Företagarna, 2022). Consequently, Barkarby will be a vital part of the developing regional core, transforming the now rather peripheral site towards being an urban centre.

Regarding the number of jobs in the municipality, around 80 % of people between the ages of 20-64 have an occupation (SCB, 2023), where trade is one of the largest sections. In 2020, 22% of the residents in the municipality worked in trade, which is 20 % higher than the national average (Företagarna, 2022). Therefore, Barkarby Handelsplats possesses a large amount of working opportunities, both for residents of Järfälla and commuters. As Barkarby Handelsplats is one of the largest retail parks in Sweden, it is an economic driver and beacon, both locally and regionally for the municipality. As Barkarby Handelsplats largely provides external trade it contains many large retail chains which strengthens the regional role of the shopping district. This, however, indicates an acceptance of a linear retail model that is environmentally unsustainable, while also lacking foundations for local businesses. Challenges for Barkarby Handelsplats are the shifting retail structures which can have detrimental effects if the area does not adapt to modern practices. The fact that Barkarby Handelsplats currently still functions well and has a strong economic foundation provides a leeway to try new things and transform.

3.5 JÄRFÄLLA MUNICIPALITY'S GOALS FOR THE FUTURE

→ This project aims to provide valuable insights and new outlooks for Järfälla municipality to consider in their planning of Barkarby Handelsplats in the future. Therefore, it's important that the project's final recommendations can relate to, or build upon, the municipality's own vision for the future. To achieve this, we've chosen to focus on the overarching vision goals in the municipality's comprehensive plan for 2050 (Järfälla Kommun, 2023c). The vision goals are as follows:

- **A climate-positive and innovative society**
- **Equipped for the future with strengthened natural and water environments.**
- **An attractive city center and municipal districts with a clear identity.**
- **Inclusive and vibrant living environments.**

As the municipality is currently in the process of developing this new comprehensive plan, detailed information about the plan beyond its overarching goals has been limited. However, we consider these goals as suitable and politically grounded indicators of where the municipality aims to be in the future. Furthermore, they are deemed appropriate since they align with the time frame of the scenarios for 2050.

4. SCENARIOS

→ In the following chapter, three future scenarios are presented. These are based on current global and local trends and are set in the year 2050. The first scenario is named Future Forecast, describing how the future could look like if nothing drastic changes away from planned development. Current values are extrapolated and developed in the same trajectory as today. In the following two scenarios however, a more extreme development is described exploring “what if” questions. In the Retail Transformed scenario, the retail conditions have changed drastically while the Climate Pressure scenario bears evidence of a major climate change development. The two extreme scenarios are however based on the Future Forecast scenario, with only a few focus aspects being different. In figure 8 the relationship between the scenarios, Barkarby Handelsplats and the recommendations is illustrated.

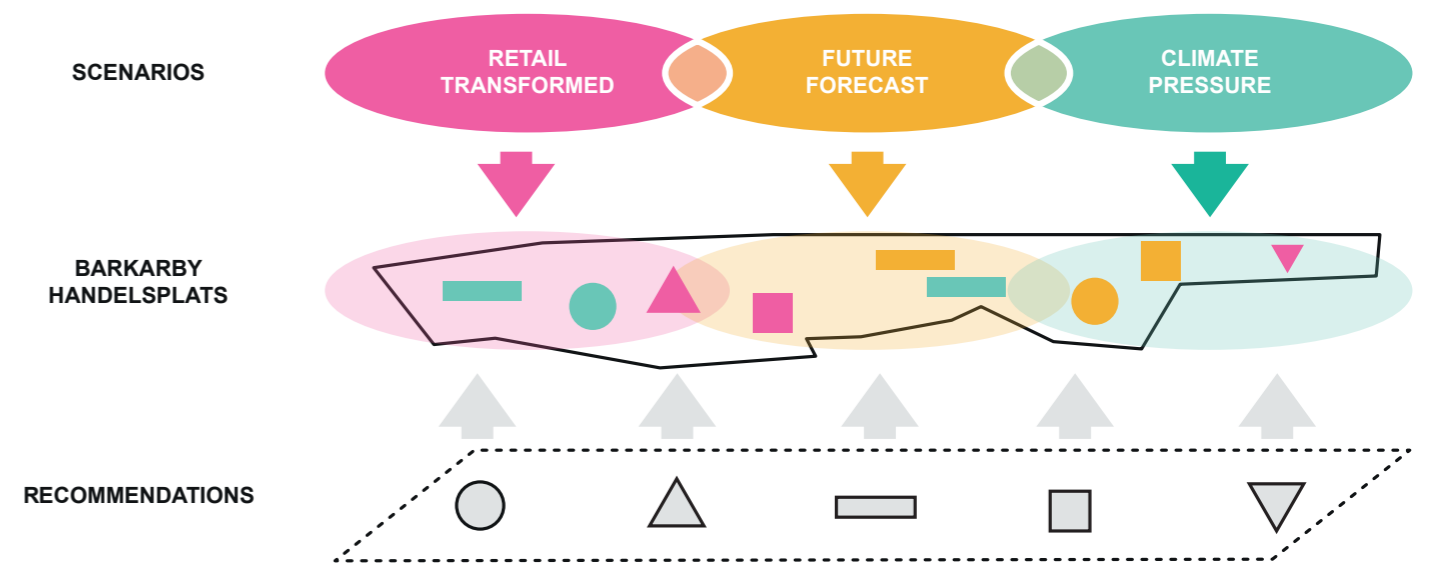


FIGURE 8: Relationship between the scenarios, Barkarby Handelsplats and the recommendations (own graphic)

4.1 SCENARIO I: FUTURE FORECAST

→ In the year 2050, the global growth imperative has remained stable, and the focus on generating economic growth continues to be the main driver of urban development. In this context, the demand for suburban commercial areas and retail parks has remained. However, as digitalisation has continued to advance, a growing share of the retail industry has shifted towards e-commerce. According to a forecast by Svensk Handel (2021), it is projected that by 2030, e-commerce will account for 40% of the total retail market. This has continued to develop, and as a result, by 2050, 50% of all trade is now done online. As a direct consequence of this, some occupational roles have disappeared as they can be replaced by autonomous solutions and Artificial Intelligence while other new job types have appeared.

As more shopping is done online, a certain decrease in car traffic to commercial areas and retail parks can be observed. Nevertheless, decades of extensive electrification of cars have sustained the dominant position of the automobility system (Marletto, 2014). Thereby, to a large extent sustaining the mobility patterns and convenient lifestyles deeply associated with the car, such as the travel to suburban commercial areas and retail parks. Thus, the availability and convenience of combining car travel with consumption is still regarded as important by many, particularly by residents and policymakers in less dense urban settings. The electrification of motorised transport has supported this continuation of car centred, but now more sustainable travel. In parallel, however, increased development and investment in public transport, walking, cycling, and shared vehicles have offered improved opportunities for more sustainable transportation modes.

Moreover, EU directives aimed at creating a sustainable and circular economy by 2050 (European Parliament, 2023) have meant moderate changes as a larger share of businesses now focus on a circular business model. A moderate change in consumer behaviour, due to a more overarching sustainability mindset among consumers, has resulted in increased second-hand shopping and a higher share of environmentally friendly products being sold. According to ThredUP (2023), second-hand shopping increased 28% in 2022 and has since increased even more sharply by 2050. In addition, commerce has evolved towards more individualised shopping, with a greater focus on the shopping experience (Retail Insight Network, 2023). However, this has once again not precluded the perceived importance of big box stores, as the convenience of such shopping is still significant and will compete with more sustainable retail (Svensk Handel, 2019), thus maintaining the car-dependent structure of retail parks in cities.

Finally, regarding climate change, the global temperature has risen by 1.5°C above pre-industrial levels. The weather patterns have become increasingly erratic, characterised by longer dry periods and heat waves, while heavier and extreme periods of precipitation are prominent, resulting in more frequent flooding (IPCC, 2018). However, the consequences are not so extreme that societal functions have transformed.

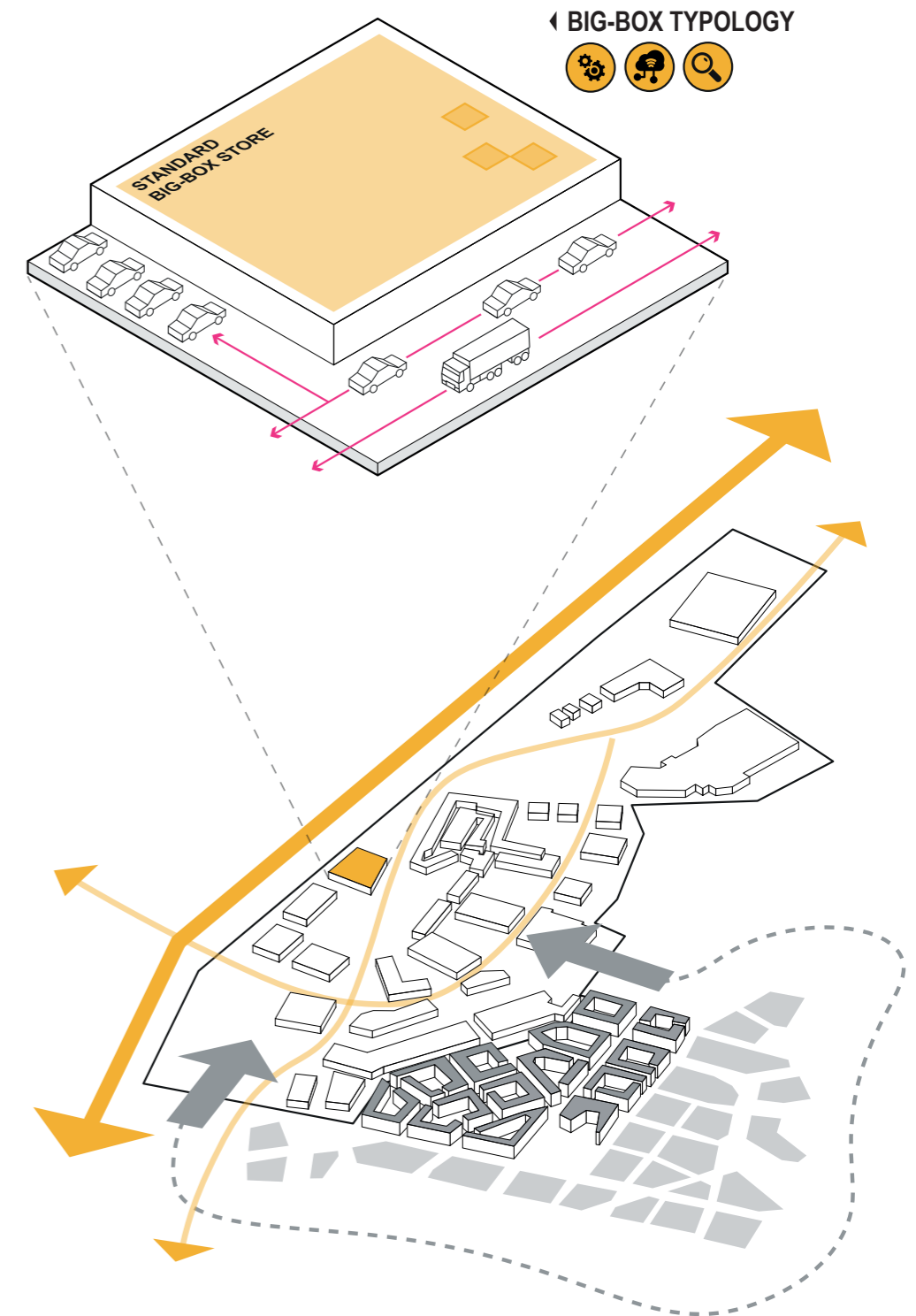


FIGURE 9: Spatial representation of the Future Forecast scenario within the big-box typology (own graphic)

4.1.1 ANALYSIS OF CONSEQUENCES ON BH

→ In relation to Barkarby Handelsplats, the Future Forecast scenario will see moderate changes in climate and retail habits, pressuring a few transformations concerning the urban environment and the design of the retail park. The development of Jakobsberg and Barkarbystaden as a regional core will result in more people living in the closely connected area, who will use the shopping district for everyday errands. Consequently, the retail district has to adapt to serve the larger everyday needs rather than its current focus on durable goods. Adding to this, the development of Barkarbystaden will increase the land prices in Barkarby Handelsplats. This is, alongside intensified competition for store locations, expected to lead to higher costs for both new stores to establish, and for remaining stores to continue operating in the shopping district. However the potential for more customers using the shopping area on a more daily basis could balance out the effects.

The overall drive for the development of Barkarby Handelsplats will remain economic growth as the site is anticipated to continue being a vital hub for Järfälla municipality in the regional context of the Stockholm region. From that point of view, Barkarby Handelsplats will continually be a car-dependent commercial area where the economic benefits of large chain stores, such as IKEA, clothes brands and sports stores are the main attractors and drivers. The development of e-commerce and a partial change in consumer behaviour will however require an adaptation to the new circumstances of retail. Therefore Barkarby Handelsplats could see a change to what the urban environment and the buildings are characterised by. For example, there may be fewer in store customers whereas logistics due to the higher activity of online shopping requires a greater spatial area. Some shops may have to convert, meaning a transformation into offices and logistics storage facilities. This results in a shift in the job types that is needed in the retail sector, with a greater focus on logistics and IT. For the remaining physical stores, a larger share than today will probably have to focus on the demands of the future consumer, which would mean greater consumption of environmentally friendly products. Therefore, more physical second-hand shops and rental hubs could be operating in Barkarby Handelsplats.

As stated in the Future Forecast scenario, the global temperature is following the current global goal of a 1.5°C rise above pre-industrial levels in the year 2050. This will have consequences on Barkarby Handelsplats as some areas will become more vulnerable to flooding, as can be seen in the GIS inventory in section 3.3. Flooding in certain areas could challenge the infrastructure's capacity to handle such periods. Furthermore, heatwaves will also become more frequent, and the pavement-dominated areas could be facing more urban heat island characteristics, making it unpleasant to visit the area during warm periods. Due to the continuous climate changes, higher energy usage will be needed for the infrastructure to cope with both warmer and cooler periods. Although climate change will pose some challenges for Barkarby Handelsplats, its impact will not serve as a significant threat, allowing it to maintain its function relatively unaffected.

As stated earlier, the car-dependent structure of Barkarby Handelsplats will still exist in this scenario, but the initiatives for walking, cycling, and public transport to compete with the car will most likely increase. One significant reason for this is the development of Barkarbystaden, which will lead to more people commuting to the retail park by walking and cycling. The overall public transport opportunities could increase with more bus lines due to the increase of inhabitants in the area, and the establishment of the new metro station and the regional train station that will be located in Barkarby. The transport infrastructure for traffic within Barkarby Handelsplats could therefore be accessible by more sustainable transport modes. However, as previously stated, the retail park will still have a car-dependent structure and is still characterised by paved surfaces with parking and loading areas. Although, there will be a gradual reduction in these aspects due to an increase in transport modes that do not require as much paved surface. Additionally, a larger share of transportation to and from Barkarby Handelsplats will be conducted by electrical vehicles, leading to increased charging infrastructure and reduced noise pollution.

4.2 SCENARIO II: RETAIL TRANSFORMED

→ In this scenario for 2050, society has experienced significant changes in consumption patterns and consumer behaviour, particularly in post-industrial cities of the Global North. Mainly driven by a steep increase in the utilisation and development of information and communication technologies (ICT), many sectors in society have undergone significant transformations, with the retail sector being amongst the most impacted. Foremost, e-commerce has taken over a vast majority of the retail sector, far surpassing the presence it has in the Future Forecast scenario. Hence, e-commerce has become the dominant method of shopping, with consumers relying heavily on digital platforms and online marketplaces for their purchases.

Decades of increasing flexibility to shop online and through mobile apps have raised consumers' expectations when it comes to the availability of shopping options. This change in consumer behaviour has also influenced their expectations for physical stores to remain open for extended hours, possibly even 24/7. This relates to a wider shift in which consumers have gained more power over producers and retailers, forcing retailers to adapt more to consumers' demands and to be more transparent regarding their operations (Helm et al., 2020). Also in this context, spurred by the trend of individualization, experiential shopping has emerged, with showrooming and show production becoming the norm to make brands more tangible and interactive (Von Briel, 2018; Hänninen et al., 2021) Therefore, the role of the physical store has shifted from primarily being the major sales point of goods, to now being a major point for the experience and exhibition of goods.

Additionally, as a result of the ICT development, automated workforces have taken over many tasks associated with logistics and retail, which has changed how the human workforce is deployed within these sectors. In cases where companies and brands offer physical stores, the workforce is increasingly focused on hosting and delivering experiences. With opening hours now extending into the night-time, work shifts are also distributed more across the 24 hours. Moreover, the automation and increased efficiency within various other sectors of society, have allowed for shorter workweeks, making 32 hours per week the new norm. This has opened up more leisure time which has increased people's interest in recreational activities, cultural experiences and niche markets, thus affecting why, what, and when people consume different goods.

Due to the prominence of e-commerce and the shifts in consumer demands, the need for logistics services has surged, requiring an extensive network of pick-up points. In this context, pick-up points have emerged as hubs and convenient meeting places for urban dwellers. Furthermore, technologies such as drones, have revolutionised delivery methods, making deliveries more efficient and timelier. Bike deliveries and dash deliveries are now commonplace outside the centres of the larger cities. The infrastructure for delivery services continues to expand as it has become the dominant method for acquiring goods.

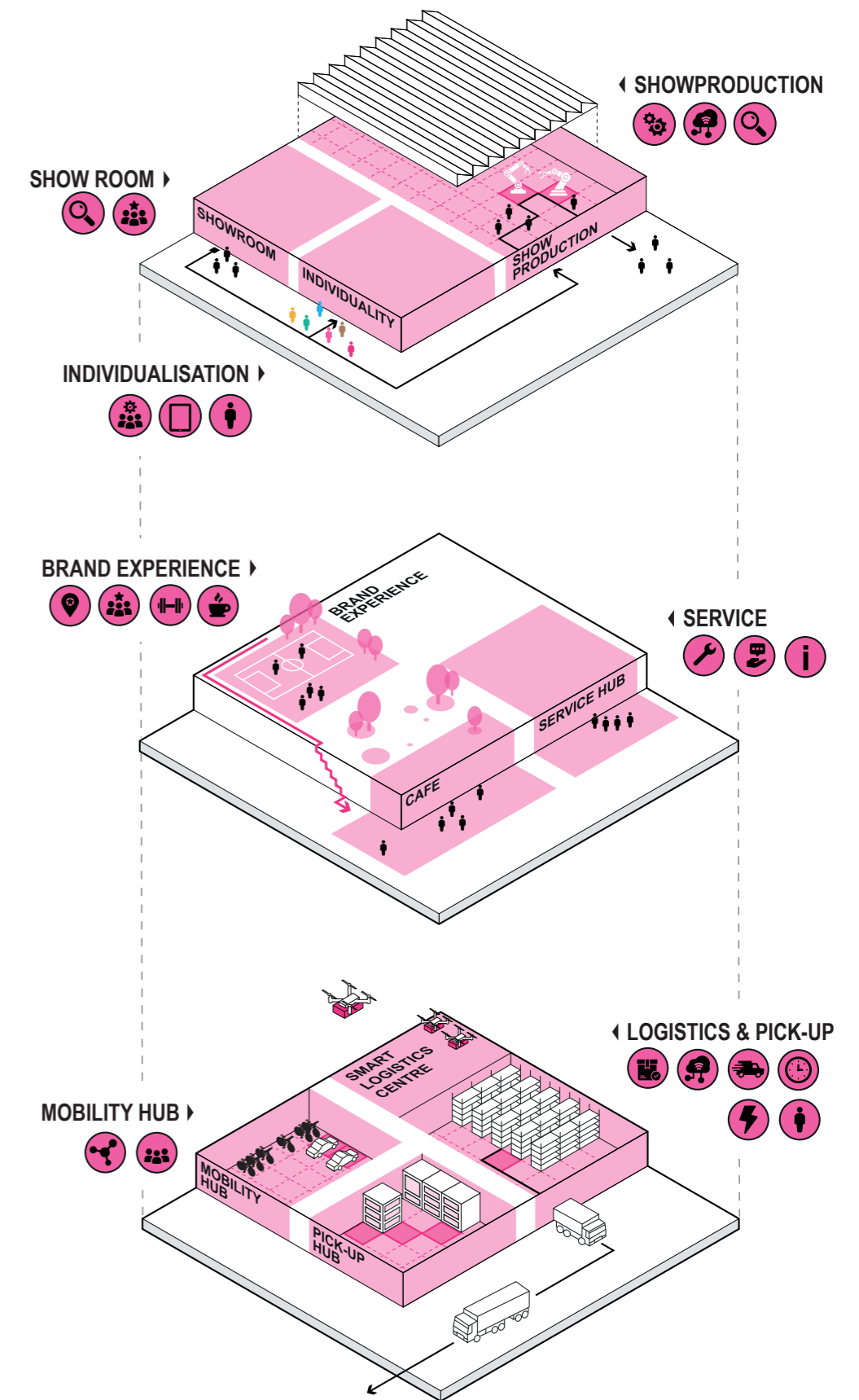


FIGURE 10: Spatial representation of the Retail Transformed scenario within the big-box typology (own graphic)

4.2.1 ANALYSIS OF CONSEQUENCES ON BH

→ Considering that the area's core function in 2023 is to facilitate in-person shopping at traditional brick-and-mortar stores, it is evident that the Retail Transformed scenario will demand substantial transformation in the retail park's operational functionality and physical structure.

Regarding operational functionality, some businesses within Barkarby Handelsplats will likely move towards providing interesting visitor experiences and showroom-based selling, aiming to engage customers seeking in-person interactions. Others may choose to transition their stores entirely into storage and logistics centres, focusing on fulfilling online orders and efficient distribution. As a result, the retail park could evolve into more than just a shopping destination, rather becoming a multifaceted hub encompassing everything related to delivery operations, as well as consumer services, experiences, and support that goes beyond what a website can offer. In other words, a cluster of experience shopping, local production and individualisation, and logistics.

These shifts would, by extension, require a transformation of the area's physical structure. This encompasses a reconfiguration of existing buildings' form and design, the addition of new buildings, and the repurposing of outdoor spaces to accommodate the new operational needs. However, certain businesses may not find it advantageous to perform logistics or experiential retail operations in the specific geographical location of Barkarby Handelsplats. For example, experiential shopping stores might, for certain brands, be more strategically located in central Stockholm. Consequently, a reconfiguration of the business landscape in the retail park will likely unfold, with the emergence of new companies, and potentially a reduction in the number of businesses present. This would also have consequences on the physical structure, as fewer and more space-efficient businesses would need less urban space. This could result in Barkarby Handelsplats having a more concentrated area for retail and logistics operations, thereby freeing up land for alternative uses such as offices, housing, education, sports and other recreation.

Changes in the presence and composition of consumers and workforce should also be anticipated. Primarily, consumer expectations and influence are to increase significantly in this scenario. To adapt to these shifting dynamics and meet the growing demand for flexibility and accessibility, businesses within Barkarby Handelsplats will likely need to extend their opening hours to accommodate a more 24/7 accessible environment. As a result, the flow of people to and within the area would become more evenly distributed throughout all hours of the day. Such a shift would potentially also require shifts in the area's physical structure with urban design oriented towards providing functional and safe environments around the clock. Furthermore, as people have more leisure time due to shorter workweeks, they are increasingly likely to participate in leisure activities and spend their money on goods and services. This boost in consumer spending can help counterbalance the decline of in-person shopping caused by e-commerce, as it may lead to an increase in the number of visitors seeking experiential shopping experiences and niche markets. Therefore, it becomes evident that the number of visitors attracted to the commercial

area in this future scenario greatly depends on whether the businesses present can cater to the growing demand for experiential shopping, niche markets, or goods that simply are not suited for online shopping.

In terms of jobs and employment, Barkarby Handelsplats's workforce will also be affected. Traditional retail jobs will decrease due to e-commerce, meanwhile, these may be replaced by jobs within the emerging areas of logistics and experiential retail. Nevertheless, as automated logistics hubs and stores focusing on experiences may require fewer employees than today, a decline in the number of people working within the retail park boundaries could be expected, given that Barkarby Handelsplats is not adapted to attract new workplaces, offices, and knowledge-intensive businesses to the area.

Importantly, with regard to all the above, a key determinant is how the development of the adjacent Barkarbystaden unfolds, and to what degree Barkarbystaden and Barkarby Handelsplats are connected and integrated as part of the planned regional core. Considering that 40,000 new residents are anticipated to move into Barkarbystaden, a substantial rise in the flow of people and the demand for services and recreational activities can be expected. However, the question remains to what degree these new residents (and the rest of Järfälla) will utilise the retail park to accommodate their needs outside of e-commerce. Potentially, those services could sufficiently be located within Barkarbystaden and other parts of Järfälla, complemented by the range of businesses in central Stockholm. On the other hand, if the integration is strong and the development of the regional core is successful, Barkarby Handelsplats might as well become a strategic hub within the broader Järfälla municipality. Nevertheless, a significant portion of the area's current visitors hail from outside Järfälla, from not just northern Stockholm but also from the broader Stockholm region. Therefore, another crucial factor to address concerning this scenario is whether Barkarby Handelsplats will maintain its status as a regional attraction and continue to be a relevant destination for residents from across the entire region.

4.3 SCENARIO III: CLIMATE PRESSURE

→ In this scenario, climate change has become the most pressing issue of the time. The consequences of climate change are prominent and politics has enforced several policies and laws to mitigate the effects of climate change. Instead of the IPCC (2018) global warming prediction of 1.5°C, this scenario world is moving towards 2-2,5 °C higher global temperature than pre-industrial levels. However, the political will and force against climate change are much stronger than today and the Future Forecast scenario. Climate change consequences such as extreme weather, biodiversity loss, food insecurity and increased health risks are however a lived reality. Disruptions due to infrastructure problems are not unusual, strongly affecting people's activities, lifestyle and time management. Therefore a lot of money is put into mitigation, adaptation and recovery from climate change disasters. This is partly funded by environmental tax while laws and policies are forcing people to change their habits. Climate neutrality is the main goal for both private and public organisations and authorities and there has been a shift to consumption-based carbon footprint calculations rather than today's geographical production based. Furthermore, the post-growth paradigm has gained traction globally, changing the economic structure towards a more circular economy. In general, this means that all types of consumption have become much more expensive, resulting in a less material-focused society.

The extreme climate-related challenges have affected society's structure and people's daily lives. In response to the severe climate change impact, public transport solutions and sustainable modes of transport are now at the centre of policy making. Electric options are booming as well as active modes of transport with pedestrian and bicycle paths taking more space in transport infrastructure. Simultaneously, the unpredictable weather conditions further disturb the logistics network, making delivery chains less efficient and hence less profitable to ship goods too far. Worldwide shipping has been forced to decrease drastically, strongly affecting both global and local logistics. In this scenario consumption and production is therefore more local and consumer's willingness to support businesses within their communities has grown. This relates to both food, energy and other goods, which further resonates with the consumers' changed behaviour. Given the increased awareness of climate issues and rising product costs, people have reevaluated their approach to consumption in terms of what sorts of goods they demand and how frequently they purchase brand-new goods. In this scenario, a stronger sustainability mindset dominates all consumption decisions and the general product is much more environmentally friendly. Second-hand shopping increases more than in the Future Forecast scenario, and so does the sharing economy. Traditional patterns of fast fashion and obtaining new goods or tools for occasional use are challenged, which has resulted in a highly developed digital and physical infrastructure supporting circularity and sharing.

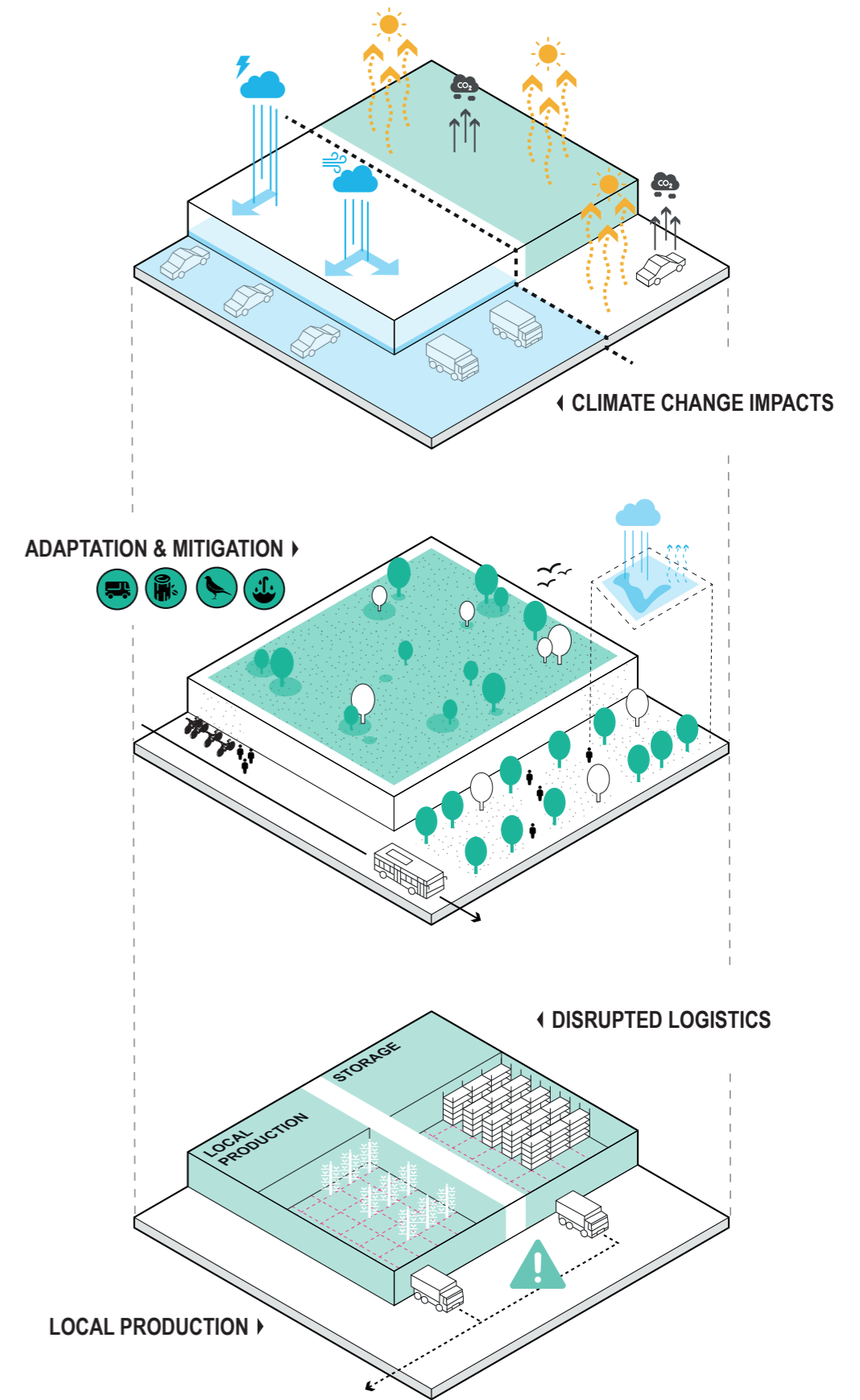


FIGURE 11: Spatial representation of the Climate Pressure scenario within the big-box typology (own graphic)

4.3.1 ANALYSIS OF CONSEQUENCES ON BH

→ In relation to Järfälla and Barkarby Handelsplats, the Climate Pressure scenario will have a significant impact on the area. Firstly, looking at the direct climate consequences, the area will experience issues with both high temperatures and flooding. From the GIS inventory and Järfälla's climate adaptation plan it is clear to see that areas around the stores and some roads will flood during heavy rainfall (Järfälla Kommun, 2022). As these types of downpours have increased dramatically, flooding problems within Barkarby Handelsplats will increase, causing risks of disruption to the daily operation. These disruptions lead to mobility problems for both goods deliveries and visitors. Therefore it is probable that the logistics chain will have to adapt and stores become less dependent on frequent and timely deliveries. Hence, larger storage spaces at the stores are to be expected. Furthermore, it will result in costly water damage and economic loss in sales and production. Therefore stormwater mitigation measures will be essential to maintain the area's function and usage in the future.

Simultaneously heat waves and warmer temperatures will also affect Barkarby Handelsplats (Järfälla Kommun, 2022). Today the majority of ground coverage is asphalt or other hard surfaces. These capture and reflect heat, creating a warmer microclimate during the evermore hot and sunny days this scenario encompasses. As temperatures increase, the discomfort of heat might lead to a loss of customers and visitors in the area. Furthermore, cooling costs for the stores will increase causing a risk of a negative financial spiral. For the retail park to maintain its attractiveness and function in this Climate Pressure scenario it is therefore necessary that the area undergo transformation that focuses on climate consequence mitigation. Thanks to the firm environmental politics these types of actions are politically supported and Järfälla will likely be expected to adopt a more green strategy, incorporating green infrastructure and nature-based solutions also in the Barkarby Handelsplats area. The proximity to Järvafältet is also an advantage that most likely needs to be utilised stronger than today.

The emergence of strong climate politics will have an effect on both Järfälla in general and Barkarby Handelsplats in particular. It is therefore probable that the retail area will have to develop into a more multifunctional space to cope with the pressure from climate change. Carbon taxes, transport policies and changed consumption habits all affect the commercial area and its original function. With less overall consumption and a greater focus on sharing and second-hand circularity, the activities associated with Barkarby Handelsplats will have to develop and adopt emerging trends in order to maintain and develop it as an attraction point. Hubs for renting tools, repairing broken items and buying second-hand products could therefore potentially become a new people attractor to the area. Relating to this is the global trend of local production and less worldwide shipping. Considering Järfällas long industrial history and the importance of the area as a hub of workplaces, incorporating local production on-site could be a necessary measure. Due to the consumers' change of attitude towards retail and consumption, the firms in the area will have to develop their business model which could lead to Barkarby Handelsplats becoming not only a place of sales and consumption, but also a

production site. This further implies that the types of jobs and occupations around the shopping district will have to change.

In relation to the stricter climate politics, the municipality's current goal of becoming carbon-neutral is ever so important. Currently, Barkarby Handelsplats is characterised by its car-dependent users and the urban form with large parking spaces and wide roads further promotes this type of behaviour. Implementing green transport options such as more public transportation, electric cars and car sharing would therefore probably be crucial to both reach the municipality's climate neutrality goal and the pressure from future global policies. This shift will have to be done in the entire municipality, but due to the retail park's car-focus character, the sustainable transformation will perhaps have an even larger impact on the area. Giving more space to active modes of transport such as walking and cycling, electric options and public transportation will probably also be needed.

4.4 SCENARIO SUMMARY

→ From the analyses above it can be concluded that there are a number of key aspects the municipality should address in their future development. Firstly, the impact of Barkarbystaden and the development of Jakobsberg as a regional core are significant and overarching challenges that need to be addressed regardless of the future direction. More local visitors and shopping for everyday needs is hence something Barkarby Handelsplats must consider. Also, the dominance of e-commerce and a shift in consumer behaviour puts a strain on transforming the area into a more experiential and logistics centred retail park. The demand for the physical form to change is thus high, resulting in both opportunities and challenges for the municipality and local businesses. No matter what the transformation will look like, it is evident that a cooperation between the urban development department, businesses and land owners is needed to ensure a positive and sustainable development of the area. Furthermore, related to climate change mitigation, adaptation of the retail area is essential to fit a more sustainable consumption mindset. Extreme weather, heat waves, floodings and other climate consequences need to be dealt with in both the retail area, and Järfälla municipality as a whole. Less consumption, more repair and reuse as well as a growing sharing economy ignites questions of how Barkarby Handelsplats's identity can and should change to enable a more sustainable lifestyle. As previously mentioned, actor participation and cooperation is crucial to manage a repurposing of the retail park that promotes the municipality's climate neutral goal.

5. RECOMMENDATIONS

→ In the following chapter recommendations on how Järfälla municipality can address the future development of Barkarby Handelsplats are discussed. The recommendations are grouped into three categories and in total there are nine detailed recommendations. The categories are Mediate the change, Strategies for urban transformation and Promote sustainable transport. Mediate the Change first and foremost addresses dialogue and governance between different actors and stakeholders in the development process. Strategies for Urban Transformation instead looks at physical urban interventions and strategies. Finally, with the retail park's multiple mobility problems, the last category targets a more sustainable transport. From the analysis of the scenarios and Barkarby Handelsplats, these three focuses were assessed to be the most appropriate and urgent. The recommendations are hence not divided by the different scenarios. This is motivated by the fact that many of the recommendations are appropriate to consider regardless of which directions the future takes. A focus is therefore put on synergies between multiple recommendations and multiple scenarios and a more holistic approach towards the future development is taken.

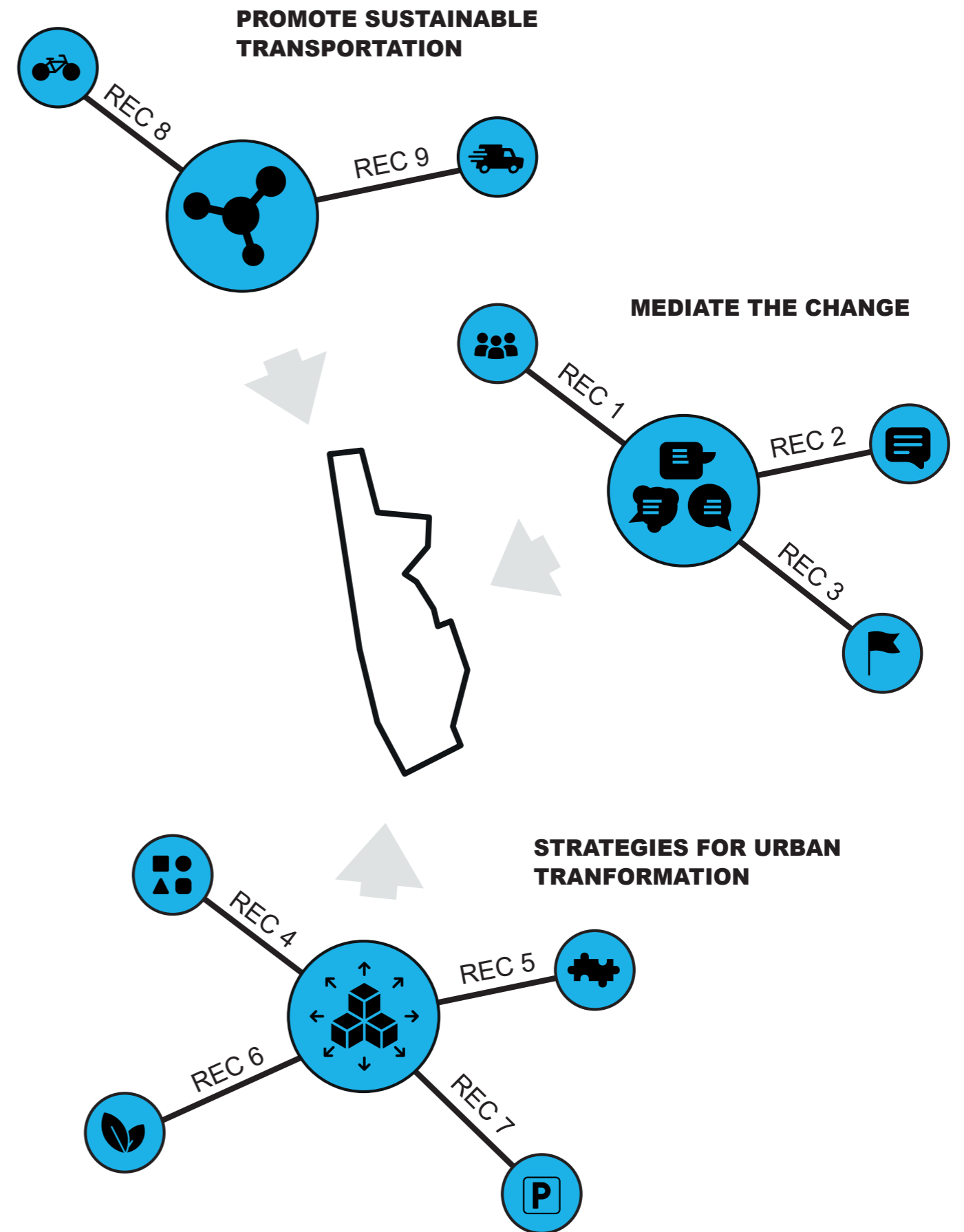


FIGURE 12: Overview on recommendations (own graphic)

5.1 MEDIATE THE CHANGE

→ As Barkarby handelsplats will experience major transformation over time, it is of high importance to initiate dialogue between different actors and stakeholders. Through consultancy, round table talks and exchange of knowledge, we argue that a proactive and resilient approach towards dealing with future challenges can be created. Collaboration paves the way to empower a diverse set of actors and to create a common understanding of how to navigate upcoming changes.

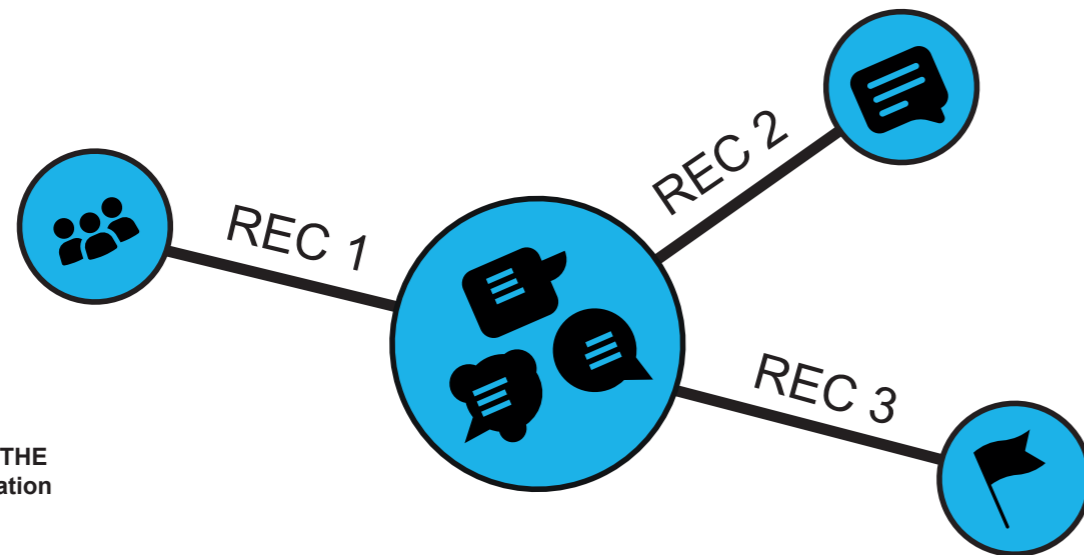


FIGURE 13: MEDIATE THE CHANGE recommendation cluster (own graphic)

REC 1: ACTOR-STAKEHOLDER COOPERATION

→ From the analysis of all three future scenarios on Barkarby Handelsplats it is evident that large scale transformations will be needed, regardless of how the development unfolds. Hence, many different actors and stakeholders will be part of and affected by the future plans. To manage this we recommend Järfälla municipality to initiate a forum for frequent conversation between the urban planning department, businesses, land owners, investors, residents and other interest groups. In this forum different interests, problems, solutions and proposals can be discussed in order to create the best possible outcome for as many as possible. The process of physically reconfiguring the area is long and has many obstacles due to the many interests present and the area's new strategic position in the Stockholm Region. Therefore, a proactive approach is prompted, wherein early meetings and cooperation between parties is essential. The form and function of this dialogue can and should vary depending on the stage and needs of specific projects, but should always aim to include relevant actors and stakeholders and bring the development in the retail park forward. To achieve a transformation of Barkarby Handelsplats in line with current municipal goals of for example climate neutrality, sustainable building and lifestyle, increased multifunctionality and urban form the municipality has an exciting, yet challenging task to mediate interests and govern the development process.

REC 2: MUNICIPAL CLIMATE ADAPTATION CONSULTANCY FOR LAND OWNERS

→ Environmental aspects of the built environment will become progressively more significant in the future of Barkarby handelsplats. As of now, the municipality offers a Climate and Energy Consultancy service to guide property owners on energy efficiency, ventilation, and insulation (Järfälla Kommun, 2023d). This act has the possibility of strongly contributing to fulfilling the municipality goal of carbon neutrality in 2030 (Järfälla Kommun, 2023c). A general broadening of this initiative, aiming to address aspects surrounding extreme weather, flooding and other climate related aspects in the built environment has the possibility of contributing even more to the preset goals. Therefore, we recommend an extended consultancy within subjects such as stormwater management and how to deal with heat islands. As the municipality probably has a broader expertise and experience in this field, the private landowners could benefit from receiving valuable advice on how to be resilient in their work towards climate adaptation. This measure could especially be valuable if there is a lack of competence regarding these questions from the private side. It could also contribute to lowering the threshold of actually working with these issues, as the cost of advice and investigation from the municipality would probably be considerably cheaper compared with private consultants in the same field.

REC 3: INCORPORATE BARKARBY HANDELSPLATS MORE IN THE MUNICIPAL GOALS AND PLANS

→ As of today, Barkarby Handelsplats is rather excluded from municipal documents, strategies, and goals, resulting in an unclear vision for the future of the area. Although it is briefly stated in some documents that the commercial area is envisioned to be a dense multifunctional area with an urban character and a mix of housing and workplaces (Järfälla Kommun, 2014), it is not explained through clear plans and objectives. Therefore, it is of great importance to review current documents, so that future strategies and plans can incorporate Barkarby Handelsplats more into municipal objectives and plans. This would bring clarity to what the future holds for the retail park, as it would be more embedded in the overall planning of the municipality. Furthermore, if any of these scenarios unfold in the future, it would demand substantial development in the area, hence municipal documents must provide clear guidance on the intended direction for the area. This would also bring clarity for landowners in Barkarby Handelsplats of what and how the municipality aims to develop the area.

5.2 STRATEGIES FOR URBAN TRANSFORMATION

→ To enable necessary development in Barkarby Handelsplats we recommend the municipality to take forward strategies for urban transformation. A more efficient land use with higher density and multifunctionality should be promoted. Furthermore, green infrastructure should be implemented to create an attractive, liveable and sustainable place.

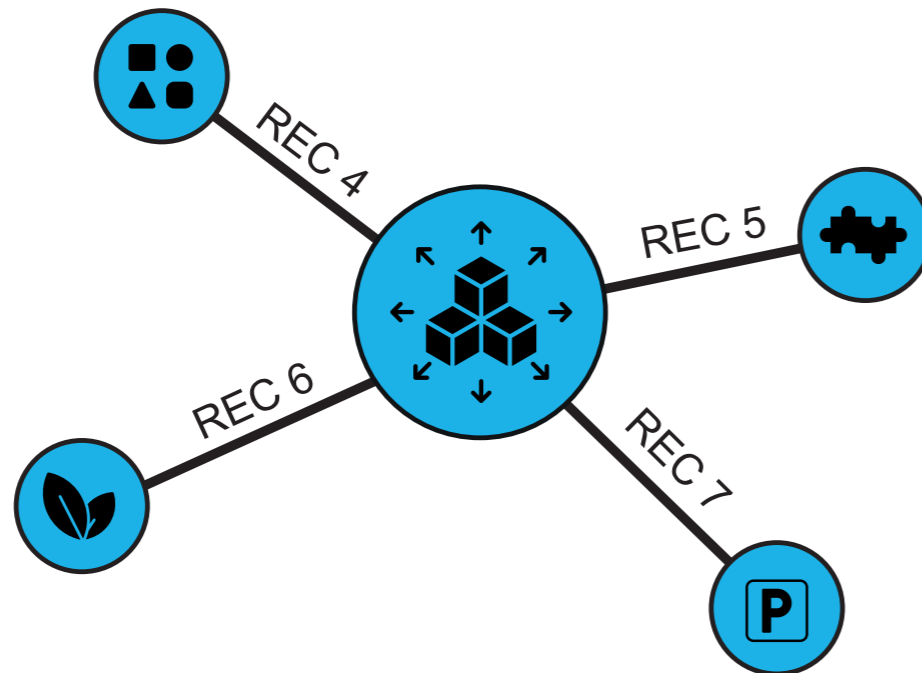


FIGURE 14: STRATEGIES FOR URBAN TRANSFORMATION recommendation cluster (own graphic)

REC 4: PROMOTE INCORPORATION OF NEW USES WITHIN THE BIG-BOX BUILDINGS

→ As the general function of the area and the uses within the Big-box buildings might develop over time, the municipality would benefit from adopting a flexible approach where there is room for change. This is most evident in the Retail Transformed scenario, but also the Climate pressure scenario. A possible outcome is that local production and manufacturing will become a larger trend, and therefore the business- or property owners might demand new uses within the existing buildings. The existing planning regulations in the area are limiting the use in these buildings to commerce (Järfälla Kommun, 2023e), which makes a repurposed Barkarby Handelsplats impossible. As society and stakeholders might demand new and innovative ideas in how to use these buildings Järfälla municipality has to be prepared to change the existing use within detailed development plans from commerce into industry, warehouses or other uses. Therefore we recommend Järfälla to change detailed planning regulations within the big-box buildings to open up for new uses. The general dimensions and design of the buildings are in many cases suitable for industrial activities, as there is a lot of room for machinery, equipment, storage, and movement of goods. This approach could also benefit in fulfilling present goals on how Järfälla should evolve until 2050. The goals for the new comprehensive plan is for example stating that resources should be used efficiently, and that reuse of materials and existing structures should be emphasised (Järfälla Kommun, 2023f).

REC 5: STRATEGY FOR THE INTEGRATION OF JÄRVAFÄLTET

→ Considering the current lack of green infrastructure and the anticipated impacts of climate change, Barkarby Handelsplats urgently requires more ecological elements and vegetation. This is crucial for absorbing floods, preventing heat stresses, CO2 absorption and providing habitats within the built environment for other species facing increased pressures. To address these challenges, it's essential to implement innovative strategies for green infrastructure development that should start today, looking to the year 2050. The urgency is particularly evident if the Climate Pressure Scenario becomes a reality in 2050. Even based on the more moderate climate change impacts in the Future Forecast Scenario, it's apparent that action is needed. Therefore, we recommend developing a strategy for utilising the adjacent Järvafältet and integrating its green qualities within Barkarby Handelsplats.

This strategy would entail spatial solutions that connect Barkarby Handelsplats and Järvafältet and eliminate the stark contrast between built-up land and green areas. This could be done by allowing the green features of Järvafältet to “flow” into the commercial area through green corridors that are designed with both humans and other species in mind. It could also involve the establishment of new green areas within Barkarby Handelsplats that are directly connected with Järvafältet through these corridors. In implementing this, we suggest avoiding strictly landscaped green solutions and, instead, allowing ecological elements to thrive and have a more unrestricted impact on different parts of the retail park. The strategy would also entail governance solutions regarding collaboration with land owners or the purchases of important land sections for a successful implementation.

The recommendation aligns with several of the overarching goals from the Järfälla comprehensive plan for 2050. Foremost, it would strengthen natural environments. Further, it would improve chances of becoming climate positive by 2050. Moreover, it could contribute to a more attractive regional city centre that is mindful of the future well-being of its residents and visitors. This is because the benefits would also go beyond ecological and climate aspects, extending to the social. Including improved air quality, reduced noise pollution, more spaces for tranquillity, and increased possibilities for residents and visitors to access Järvafältet more easily for recreational activities.

Finally, we see no conflict between this recommendation and the outcomes of the Retail Transformed Scenario. In fact, it will be essential for the effective functioning of any operations in the area, given even the most moderate climate change impacts.

REC 6: IMPLEMENT NATURE BASED SOLUTIONS

→ In relation to the above mentioned strategy for integrating Barkarby Handelsplats with Järvafältet and implementing more green structure, nature based solutions is a physical intervention Järfälla could utilise to a larger extent. As climate change problems such as heat and flooding will increase, nature based solutions utilise the natural capacity of greenery to mitigate the negative consequences. Green strips, trees along roads, flowerbeds and similar interventions are great at capturing runoff water, cleaning the air and balancing temperature in the local area. Equipping buildings with green roofs and walls is another example of how to incorporate nature based solutions in the urban environment. Utilising and promoting nature based solutions in future development plans follows the municipality's current climate adaptation plan where an emphasis is put on moving from problem identification to implementing solutions in both planning and construction (Järfälla Kommun, 2022). The vital role green infrastructure can play in relation to climate mitigation is also highlighted.

REC 7: STRATEGY FOR MULTIFUNCTIONAL PARKING SPACES AND LONG-TERM REDUCTION OF PARKING

→ The extensive parking spaces in Barkarby Handelsplats today pose several challenges for the future. Considering the Climate Pressure Scenario, it is clear that these large hard surfaces must be altered to avoid heat islands and severe flooding. Based on this scenario, there will also be strong societal pressure to transition away from car travel. Regarding the Retail Transformed Scenario, it is likely that the area's business landscape will transform, diminishing the role of private cars for transporting shopping goods and thereby potentially decreasing the need for the current extensive parking spaces. A common thread across all scenarios is that parking spaces will be perceived as inefficient land use over time, given the rising pressure on land availability. However, considering the Future Forecast scenario and, to some extent, the Retail Transformed Scenario, there is also a probability that the demand for parking will persist, as the area continues to attract large numbers of visitors. This creates a conflict in balancing parking availability for visitors while simultaneously addressing environmental issues and encouraging the use of more sustainable transport modes.

Taken together, there is a need to reduce the number of parking spaces in the long term. However, abruptly removing parking spaces and substituting them with other land uses that do not benefit business owners nor visitors would be unrealistic and challenging. Moreover, convincing the business owners who own the land to accept such interventions would be difficult. Therefore, we recommend initiating a strategy for the temporary multifunctional use of parking lots. This strategy would involve the municipality taking the lead in organising activities and events in collaboration with business owners on current parking spaces, targeting visitors and Järfälla residents. Temporary arrangements would be part of a gradual process of reducing total parking spaces, employing so-called „nudging.“ By offering a tradeoff for reduced parking availability, the risk of conflict can be reduced. This approach could benefit

all stakeholders and thus ease the transition to substantially fewer parking spaces in the long term.

In order to be a truly climate positive municipality by 2050, Järfälla will have to support the transition towards more sustainable mobilities. Repurposing parking and thereby reducing private car traffic to Barkarby Handelsplats is essential. The recommendation is therefore twofold: 1. Implement a strategy for temporary multifunctional parking spaces in the short-term. 2. Begin planning for significantly reduced parking spaces and the replacement with other uses in the long term.

5.3 PROMOTE SUSTAINABLE TRANSPORT

→ The transport sector will continue contributing to large emissions and a shift to more sustainable transport will be necessary in all three scenarios. Even though the transport infrastructure differs in the different scenarios, it is still of great importance that an overall shift in the transport sector occurs. Additionally, as local customers increase, the demand for short distance sustainable transport solutions will also intensify, as these visitors are in less need of a long car ride.

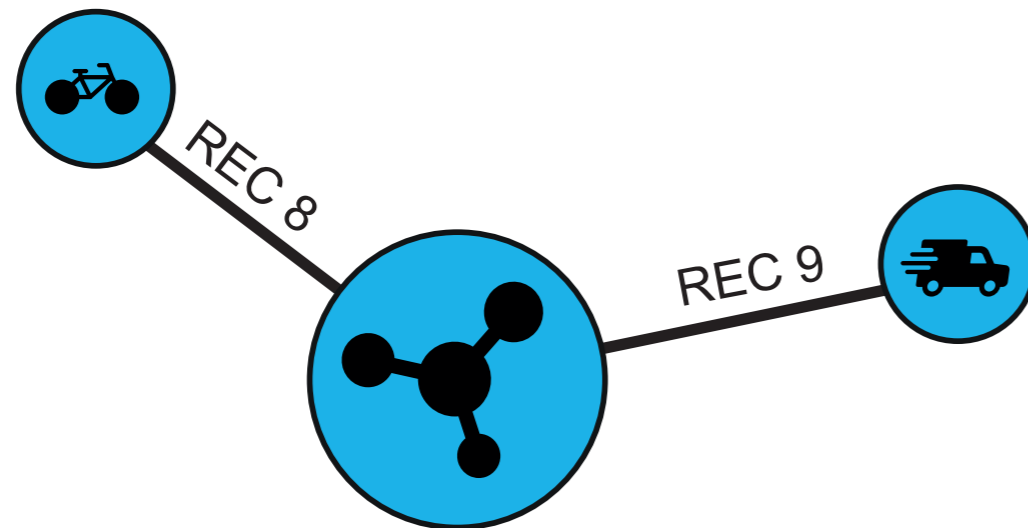


FIGURE 15: PROMOTE SUSTAINABLE TRANSPORT recommendation cluster (own graphic)

REC 8: IMPROVE OPPORTUNITIES FOR SUSTAINABLE INDIVIDUAL MOBILITY

→ To tackle the emission based transportation challenges, and provide sustainable transport conditions for local customers, we recommend an overall promotion of sustainable transport in the municipality. Firstly, this would entail that property owners offer more parking possibilities for bicycles, electrical vehicles, and car-sharing hubs, at the expense of regular car parking. By offering subsidies to property owners who provide parking facilities for more sustainable modes of transport, there is an opportunity for structural change and thus greater opportunities for sustainable transport. As the availability of parking facilities for sustainable vehicles increases in the area, there is a greater need for the municipality to enhance infrastructure supporting active mobility, which should involve allocating more space for cycling and walking to, from, and within Barkarby Handelsplats. This development further extends the opportunities to bridge the retail park with Barkabystaden, a crucial aspect for those who will use the site for daily needs. With the development of the metro station and regional train station in Barkarby, the need for more local transport options increase, and we see it as important to link the new stations with the retail area to facilitate sustainable transport for non-local visitors.

REC 9: PROVIDE SUPPORT FOR DEVELOPMENT OF LOGISTICS INFRASTRUCTURE AND NEW DELIVERY SOLUTIONS

→ As the Retail Transformed scenario, and to some extent the Future Forecast scenario, will involve major changes to the logistics infrastructure, it is essential that property owners and parcel companies are given the opportunity to test and implement new logistics solutions. Therefore, we recommend the municipality to provide support for development of logistics infrastructure and new delivery solutions. This recommendation would require providing support for companies to test more sustainable last-mile transport solutions and collaborate with parcel services to establish more pick-up hubs in order to enhance the opportunities for more sustainable last-mile delivery solutions. Furthermore, this recommendation implies evaluating the road network to find specific logistics traffic routes, which do not collide with the growing sustainable transport infrastructure. In cooperation with property owners, these routes could connect to loading terminals and pick-up points in a smooth way. Again, this is based on an active cooperation between the municipality, land owners and businesses, so it is crucial to initiate early collaboration between all stakeholders to clearly define how the process of development will continue.

Aligning these two recommendations with the municipal goals for 2050, it is an important action in order to be carbon neutral by 2030, and climate-positive by 2050. Additionally, it corresponds well with both the walking and cycling plan, which aims to increase the percentage of daily trips made by these modes of transport (Järfälla Kommun, 2019). At an overall level, these interventions are applicable to all three scenarios, but they may vary depending on the scenario. For example, the importance of shifting from individual car use to sustainable transport modes is to most pressing issue in the Future Forecast and Climate Pressure Scenario, where these measures must be started early to change transport behaviours, whereas the increase in logistics in the Retail Transformed Scenario may be the most substantial change, thus demanding more sustainable and innovative logistics solutions.

6. CONCLUSIONS

→ On a concluding note, the intention of this project has been to envision possible development in Barkarby Handelsplats. As of today, the area has an uncertain trajectory, which we aimed to explore and elaborate on by creating three scenarios for 2050. Returning to Voros' article with the future cone model (2017), the probability of these scenarios matching the actual future is very low, and what lies ahead becomes increasingly unpredictable the further into the future you look. We do however argue that the future might turn out as a hybrid of the scenarios we have constructed, with a mix of elements from different possible outcomes mentioned in this report. Other parameters not considered in this project will probably also affect how the future turns out. With this in mind, it is important to see our report as a source of inspiration rather than a prediction of future development.

While preparing for an uncertain future, it is of great importance that the municipality is proactive in navigating the development towards a desired outcome, and to align it with the municipal goals for 2050. The need to adapt to several changes must be recognized and addressed by the municipality, but also other actors operating in Barkarby Handelsplats. Therefore we have put an emphasis on stakeholder cooperation in the recommendations. The benefits from this project are the insights for potential futures that may not previously have been considered, and the consequences that these entail, while at the same time emphasising already acknowledged aspects to reaffirm their importance. Furthermore, the report serves as a guiding document for decision-making, outlining several actions required to steer development towards a preferred future, but also to spark ideas for further measures.

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APPENDIX: SWOT ANALYSIS

THEMES	STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
Geographical location	Next to a major highway and a commuter train station. Will also be close to the new subway station	Disconnected from rest of Järfälla by highway.	Growing strategic significance (regionally)	
	Adjacent to green area		High pressure on land by competing uses like housing and offices may lead to innovative spatial solutions	
	Next to Barkarbystaden			
Ecological aspects	Has some planted trees along roads	Vast areas of hard-surfaces & lack of Green Spaces	Proximity to Järvafältet / future integration with nature	Impacts from climate change Floodings? Heat islands?
		Non-ecological architecture	Cheap existing buildings --> better reconstruction feasible	
		No biodiversity		
		Not carbon-neutral		
Socio-economic aspects	Local and regional economic driver (attractor, branding)	Lack of local businesses	Strong economic foundation gives leeway to try new things	Potential future loss of relevance
	Employment opportunities	Empty outside business hours. Potentially unsafe during night-time		Decreasing direct economic benefits to local residents(?). Revenues benefit national / international corporations (?)
	Symbolic value for municipality and residents	Business models are linear and not circular		Shifts in retail structure and consumption habits
		Dependency on global production networks / limited resilience		Shift towards sharing and platform economy threaten the business model

Built-up environment and architecture	Efficient from a car/parking standpoint.	Car-centric / not walkable	High amount of underused space (car parking, roofs, streets)	Reluctance to change by retailers
		Monofunctional	Location next to Barkarbystaden may increase footfall	The area as a whole constitutes a barrier towards Järvafältet
		Low-density / ineffective land-use		Future expansion at the cost of nature areas
		Low quality public realm / no reasons to stay there		
Accessibility / Mobility	Accessible by car	Car dependent / not walkable - lack of micro-mobility	Future integration and connection with Jakobsberg and the Jakobsberg-Barkarby "regional city centre"	Increases in car traffic flows / congestion
	Regional connections by commuter train	E18 motorway constitute a barrier for pedestrian access	New Metro line	Changes in mobility patterns and mobility demands
	Walking distance from Barkarbystaden	Insufficient cycling access	Will see more pedestrians and cyclists as barkarby-staden grows	
Recreation	Close to the nearby nature reserve and säbysjön	Lacks parks, has insufficient walk/bike paths, a lot of noise, a lot of pollution etc.	Better connections to nearby nature reserve	
	Has some recreational facilities (gym, wellness, kid's play area)	No healthy architecture / movement-encouraging public space		
Services and amenities	Local services and shopping opportunities	Lacks small scale firms, mostly larger corporates or international companies	Services aimed towards pedestrians/local inhabitants	
Relation to other places within Järfälla	Position as major retail centre in Järfälla	Disconnected - highway as barrier	Could be part of a modern centre of Järfälla	Unorganised development of other centres within Järfälla: competition within the municipality
		Not a destination for everyday use		
Stakeholder		Reliance on big companies	Cluster of like-minded actors can facilitate bigger changes	Reluctance to change anything
			Collaborative management (branding, events, building projects, etc.)	Limited agency / influence of municipality

