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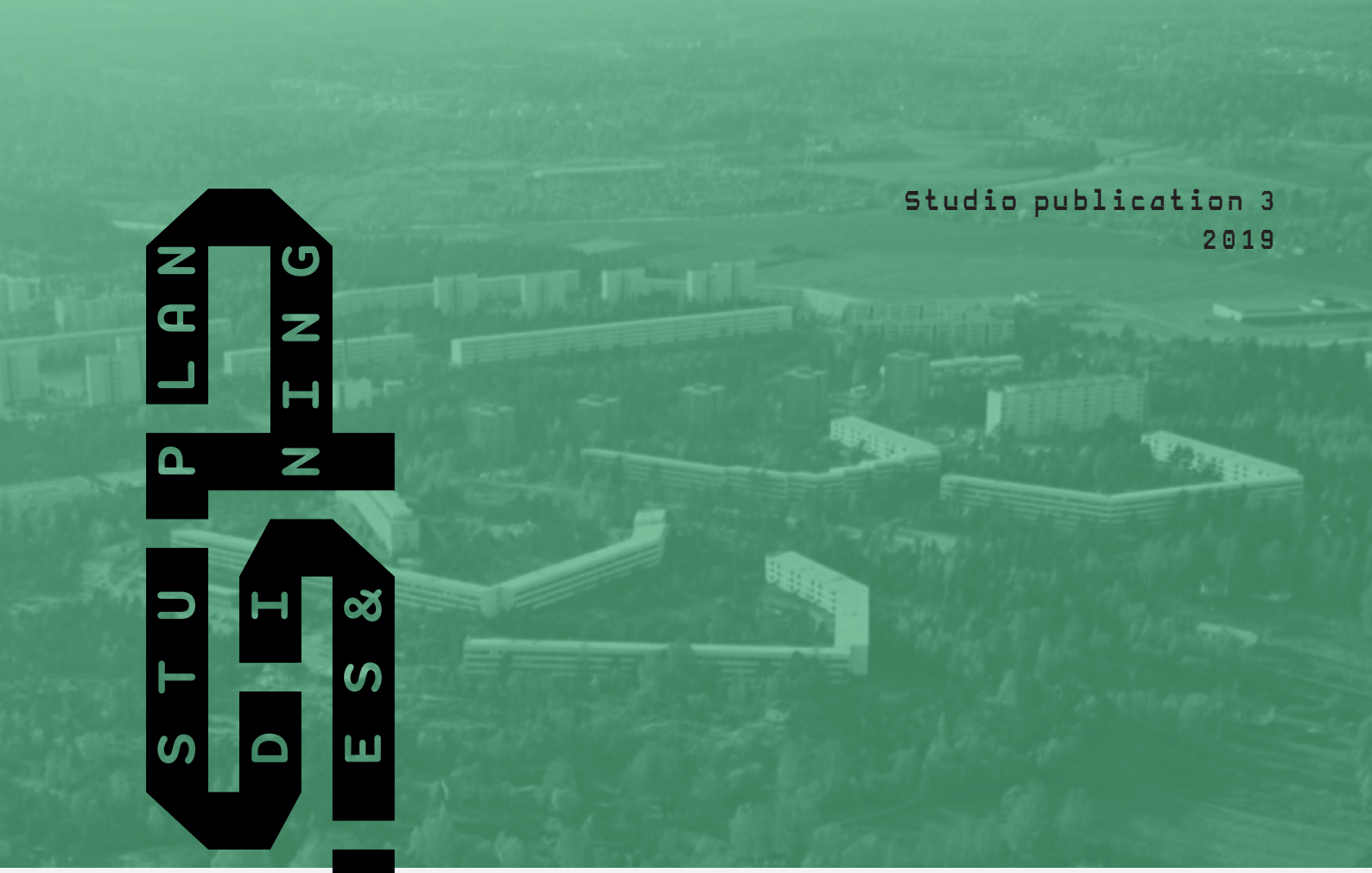

URBAN STUDIES & PLANNING

Studio publication 3
2019

SUB-URBAN FUTURES

RE-IMAGINING MALMI

Editors
Michail Galanakis & Anssi Joutsiniemi

Master's Programme in Urban Studies and Planning

Studio publication 3

Sub-Urban Futures: Re-imagining Malmi

Edited by Michail Galanakis & Anssi Joutsiniemi

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SUBURBAN SEEDS, NEEDS AND DEEDS

Anssi Joutsiniemi, Michail Galanakis & Teemu Jama

The public discussion in the past decade has centred around promoting urban life. More recently, we are encountering a new tone of discussion that suggests we put all our trust into visions of a sustainable life in densely-built urban environments. Despite an increase in public debate over the desire for classic urban features, at least in the Helsinki Metropolitan Region we are by-and-large on the very same track paved in the 1960's development and green field planning (see image below). It is no less ambiguous that while it may appear that municipalities are densifying, this holds true only in the very large scale; the actual development we see is based on scattered and accidental development, wherever suitable land parcels are available.

If we look at the community-structure formed by Helsinki, Espoo, Vantaa and Kauniainen, without the historic city centre, we may see that there are no differences in the way administrative municipalities are built as they reflect the same prevailing national suburban culture. The area of the historic centre, which is invisible in the lower map in figure 1., is home to 15% of the population of the Helsinki Metropolitan Area. In relation to the construction and development practices of the present city, the core city is more of a statistical distortion than a representative example of Finnish city making.

Planners, politicians, developers and consultants use the term "urban" profusely, perhaps more nowadays than

ever before. Still, the outcomes we see are very different from the classic perceptions most of us have of "Urbanity". If we take the architect's perspective, we may find micro-scale replicas of the "True Urban" in the newly-built parts of the edge city. If we alternatively take the planner's perspective, we may find plots of land with building rights that are equal to plots in the historic city centre. If we take the urbanist's perspective, we may surely find more signs of "classic" urbanity, such as skateboarding and graffiti, the farther we go from the centre. Finally, if we take the resident's perspective, we may see a history of small-scale, short-term, rapid, private and public **implementations**. We may find it extremely hard to recognise any typical "-scapes", like landscape, streetscape or cityscape. Worst of all, there seems to be little chance for escape either. This "*implement-scape*" is no more urban than suburban. It is a hybrid that, while interesting to study, is also demanding to live in.

From early on, Finnish suburbs, like in other parts of the world, received a very unfavourable head start. The prefix *sub* attaches suburb to the family of words that do not hint at any bright future. Consider the following group of words, none of which are very encouraging: *suburban, submission, subside, subduce, substitute, subtopia, subhuman, subdue, submerge, subjection, subsidize, subrogate, subversion, subterfuge, subdeb, subserve, subsist, subordinate, subvention,* etc. The Finnish term used, *esikaupunki,* is not much better.[1] It suggests areas that are not developed to their full potential, and are somehow in a stage of becoming (Joutsiniemi, 2006: 220). The common rhetoric and institutional structures seem to hide not only the seeds, but also the needs and deeds for meaningful urban development.

As educators, we attest that, indeed, the best part of working in academia – especially with students – is the possibility to get rid of the burdensome institutional baggage in ways that no planning stakeholders can do. In this process of imagining and re-imagining, the history of current suburbs have not always been suburban; it may have been favourable, or unfavourable sometimes, but not suburban. Before the great annexation of 1946, the present suburban fringe was administratively divided differently. The neighbourhoods of *Haaga, Huopalahti,* and *Kulosaari* had limited independence in the form of a *borough* (fin. *kauppala*; swe. *köping*). The rest of the region was part of the wide Helsinki rural municipality from the medieval parish of Helsinge. Maybe surprising to us nowadays, but Malmi was the administrative centre of that county. So, it is quite understandable to ask: what has happened in the recent past?

Our Urban Challenge Studio 1 is, chronologically speaking, the first signature course that students take when commencing their studies in the Master Programme in Urban Studies and Planning (USP). We started the course by taking students on a bicycle excursion in Malmi. They experienced the field they were to explore, while nudging them to perceive the "sub-urban" and "urban" conditions and their physical attributes. Social attributes were interlinked of course; however, our method was to lead students in a sensory engagement of spatial qualities without judgment. Starting our course with an excursion – a far cry from what we could plan for our incoming students this fall amidst the pandemic – and, with the help of Pia Fricker's exercises inspired by Strollology, we had exactly that intention - to encourage our students to shake off preconceptions and immerse in the experience of place. Through weekly assignments and constant iterations, we unpacked overloaded concepts such as density and diversity, that are used widely in urban planning, but also more alien-to-planning concepts, such as objectivity vs. subjectivity, reality vs. imagination, and true vs. fake. Our method aimed at encouraging students to distance their projects from the existing, pervasive institutional settings, and to focus on local potentialities they themselves identified. We did not hold back in alerting students to how could Malmi had been possibly imagined differently from the suburbia it has been developed into. Below we present a snippet from one of the course assignments; this one, entitled *Possible Futures of Malmi*, included a "fake" coat of arms for Malmi.

1 esikaupunki, esikoulu, esiliina, esinahka, esiselvitys, esimies, esilaulaja, esiteini, esivalta, esitys, esinäytös, esileikki, esirukous, esimaku, esineistö, esipesu, esitutkinta, esihistoria, esimerkki, esivanhemmat, esirippu, esilääkitys, esipuhe, esitäytetty…

Figure 1. Suburban zone of the Helsinki Metropolitan Area without the historical core. The top image shows the building footprint and the one below the farthest extensions of the urban boundary (2000-2015). The mapped area is 50 * 30 km. The study area of student exercises in Malmi is outlined in the upper map (Source: Vaattovaara et al. 2020).

Image of the Finnish blazon of Malmi arms: “Hopeakentässäsininen polviorsi, jossa kolme hirsttäistä hopeista, siivekästänuolta, joiden kärjet ja sulat kultaa.”

The proposal for a coat of arms constitutes supportive evidence that the documents date back to the later part of the 1950s. The creator of this coat of arms is unknown, but the style and composition carry a recognizable similarity to the works of Ahti Hammar and Gustaf von Numers.

The winged arrows hint at the optimistic future prospects of the local development for the entire municipality, and specifically the importance of Malmi airport. It seems that there existed a clear vision of local independence, and of steering away from the unclear administrative roles, land speculation, the deprived “suburban” social conditions, and the developments of the early 20th century (Harvia 1936).

In this volume you may find the thoughtful contributions of two esteemed USP teachers: Aalto University’s professor of urban planning Kimmo Lapintie, and Helsinki University’s lecturer on social policy Jani Vuoltenaho. We wish to thank them for sharing their valuable and poignant insights on urban development. Admittedly, however, the focus of this publication is our students’ output after approximately four months of study in Studio 1. Our students developed projects that surpassed our initial intentions and expectations, as is most often the case. We write here with awe while introducing to you, the reader, the projects of the students of USP from the academic year 2019-20. We have been calling them US-Peers and we hope they feel as proud of themselves as we are of them. Some managed to escape the trappings of institutional planning, some selected to play within the established rules; however, each one of these projects have something new to voice. Take a chance and listen.

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CHAPTER 1

Planning 2020 Urban Studies and Planning 2020

Urban Studies and Planning 2020 Urban Studies and Planning 2020

SOFT FACTORS AND PARTICIPATION AS THE HEART OF PLANNING IN CITY ATTRACTIVENESS

Our goal is to improve the image of Malmi through soft factors, which increase the city's attractiveness. We concentrate on safety, cultural planning, and citizen activism.

Liisa Amperla, Emma Piela
& Janita Jämsén

SOFT FACTORS AND PARTICIPATION AS THE HEART OF PLANNING IN CITY ATTRACTIVENESS

Currently, Malmi is going through an extensive transformation, from a neighbourhood with a challenging reputation to one of the new urban centres of Helsinki. What are the key factors that enable this change to happen? How to improve the negative reputation of the place? In urban planning, building spaces and focusing on hard factors, such as, infrastructure for example, may not be enough. Thus, people, especially those who have an attachment to a certain place, should be 'at the heart' of the planning process. In order to consider citizens' dreams and needs, it is necessary to develop a dialogue between them and different stakeholders. To achieve this, we must pay attention to inclusion within the city and how to strengthen this inclusion via participation.

In this work, we concentrate on how to improve the negative reputation of Malmi through a participatory approach where citizens are 'at the heart' of planning. As our starting point, we were interested in the needs of the people. In order to study the subject, we chose to look at a survey conducted by Helsinki city in 2018. As a result of looking at the survey answers we underline two factors that inhabitants wished to be improved in Malmi: safety and attractiveness. This was a starting point in finding out the needs of locals in the Malmi area, drawing on 1155 resident and visitor answers within the survey. As can be seen in *Picture 1*., some of the key factors that respondents wished to develop were related to improving attractiveness (Urban environment division, 2019). Developing attractiveness is connected to the residents' wishes for safety, tidiness, verdant areas and general pleasantness. These wishes concerned the centre of Malmi especially, which struggles with its outdated image. However, we acknowledge that the survey may not be a sufficient tool in representing the needs of the people of Malmi. Therefore, we took an additional interest in the needs of the local third and the fourth sector, and their perception of Malmi's challenges.

Both of the acknowledged needs - safety and attractiveness - belong to the group of soft factors. Soft factors normally refer to human issues in urban design, such as people, culture, politics, economics, and society (IGI Global, n.d.). Soft factors in city attractiveness refer to such features as the identity and history of a place, atmosphere and safety, tourist and nature attractions, events

Picture 1. Viihtyisä = cozy, attractive; turvallinen = safe; siisti = clean; vehreä = verdant (Urban environment division, 2019).

and cultural attractions. These features are appreciated by people who then want to remain in a place (Aro, 2016). This, in other words, refers to the retaining power of a place.

According to Charles Landry (2008), a successful city understands how to combine the dynamics of hard and soft factors. Cities with a strong identity will succeed during economically challenging times by keeping their inhabitants in the area (Koste, Neuvonen and Schmidt-Thomé, 2019). Moreover, cities will be expected to offer more pleasantness, memorableness and possibilities to participate in creating the city. Inclusion enables citizens to act in the city and to participate in activities or planning. Thus, creating places for citizens should be a collaborative process which involves different stakeholders and perspectives. Safety is an important aspect of placemaking and the creation of attractive and comfortable places (Project for Public Spaces, n.d.). In addition, safety has a significant role in image creation (Koskela, 2009), location selection (Kortteinen et al., 2005), and housing prices (Ceccatto and Wilhelmsson, 2012).

Our work aims to find ways to contribute to the means by which safety and attractiveness can be developed with the possibility of new found interests attached to the third and fourth sector. We have divided the work into two parts - improving safety and attractiveness through citizen activism - which are based on the recognition of needs. Both parts seek improvements while highlighting the role of participation. Particularly, we are interested in finding answers to the following questions: How to create safer and more attractive public spaces? How to acknowledge the needs of the local community and what kind of role can participation play in these? What type of participation tools can be used to give voice to different stakeholders, and moreover, to citizens to improve safety and attractiveness?

CITIZENS AS A PART OF URBAN PLANNING

Public spaces are a democratic right for all residents and they are an important element for a good urban environment (Perrault et al., 2020). Thus, all citizens should be equally involved and given opportunities to take part in urban planning. In 1969, Sherry Arnstein published her "*Ladder of Citizen Participation*". Arnstein divides citizen participation into eight levels wherein the top levels are about citizen power, the middle is about tokenism, and the lowest levels include non-participation. Citizen Power stands for residents who are in control or are strongly integrated as a part of planning processes in different ways and at different phases of the project. The intermediate part of the ladder includes levels which are called tokenism, which signifies the situation when stakeholders and citizens are used in making the participation process look more inclusive, and when citizens cannot know if their opinions will be heard at the end. At the bottom of the ladder is nonparticipation, wherein people are misled into thinking they are part of participation processes, even though they are not (Arnstein, 1969).

Inclusion and activism have been on the rise in Helsinki and has been recognized by the city. The city of Helsinki informs on its own website *Participate and Influence* (participation and citizen information unit, 2020) that one of its goals is to build a better city together with its residents and to hear as many different voices as possible. To achieve this goal it has launched the *Participation and Interaction Model* which is introduced on the same website. The entire municipal organisation has been engaged in participation principles, which are written in the city's administrative rules. The idea of the model is to promote the appreciation of residents' know-how in Helsinki. For example, as a part of the model, the city is opening up venues for all via the *Varaamo* online booking-platform. Moreover, it includes boosting regional collaboration with participatory budgeting and borough liaisons. Participatory budgeting is aimed at citizens of Helsinki having the opportunity to present ideas on how their own neighbourhood could be developed. Borough liaisons are municipality workers who facilitate dialogue

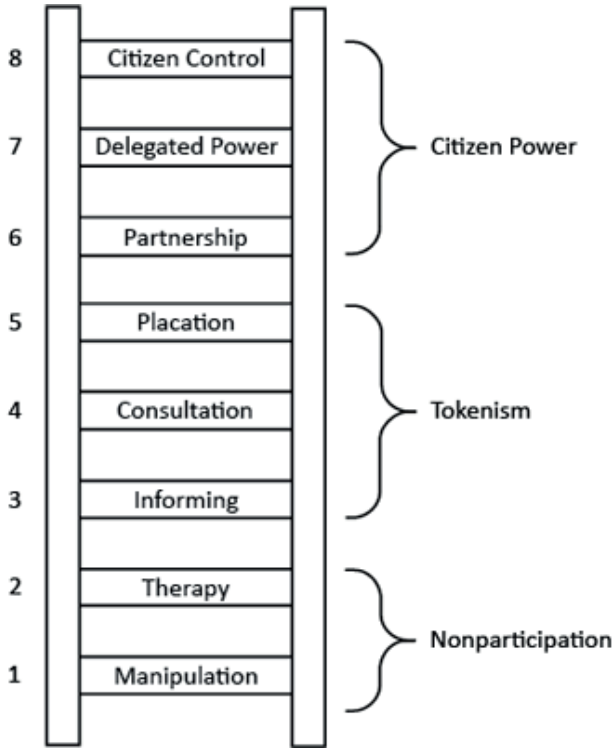
between residents and the city, and help neighbourhoods with the ideation of participatory budgeting. Their task is to promote citizen participation for improvements in their neighbourhoods. Every major district in Helsinki has its own borough liaison (Rissanen, 2019a; participation and citizen information unit, 2020).

METHODOLOGY

As noted, participation is well thought through in the City of Helsinki. Our idea was to use participation-centred approaches other than what the city of Helsinki is applying. Particularly, we consider the soft factors wished to be developed in the area. Thus, the reason to seek such approaches is to find alternative tools for the challenges of our focus area of Malmi. Overall, this study used different data collection methods, such as, interviews and observative walks. We were inspired by two different methods - design thinking and cultural planning. Design thinking was used as a base for investigating safety through a design-based safety investigation of the Malmi station. The cultural planning approach, on the other hand, was used for examining the activist view of Malmi.

DESIGN THINKING, CPTED AND A WALK

Design thinking provides an integrated approach not limited to rationality and being analytical, but which recognizes the ability to be intuitive, recognize patterns, construct ideas with emotional and functional meanings, and use different ways of expression (Miller, 2017). Through these notions, design thinking evolves as a kind of mindset of alternative creative solutions, in which the ideating and testing nature of the process is important. We want to highlight the design thinking approach in light of participation and such terms as co-designing and co-production, which are used in the field to describe the cooperation and participation of different parties in different designing processes. For example, Bovaird and Loeffler (2012, p.3) define community co-production of public services as "*[t]he public sector and citizens making better use of each other's assets and resources to achieve better*



Picture 2.
The levels of Arnstein's "Ladder of Citizen Participation" (Arnstein, 1969).

outcomes or improved efficiency". With this co-production and co-designing mindset, we advocate citizens' participation in the design process of their local environments in order to achieve more optimal outcomes.

One way of improving the safety of an area is through crime prevention through environmental design (CPTED), which has been used in many safety led projects and has proven to have some good results; although the means of the CPTED have not always been effective and have been criticized (Cozens & Love, 2015). For example, Cozens & Love point out that it has been frequently observed that negative socio-economic and demographic conditions can reduce the efficacy of CPTEDs. Additionally, the connections between design and crime is a highly debated and complex topic, which cannot be oversimplified (Taylor, 2002).

We consider CPTED as a design thinking approach similar to VPUU (Violence Prevention through Urban Upgrading) introduced by Maze (2020) in the context of designing for governance. As a South African governance project, VPUU is not limited to the built environment, but also considers 'social crime prevention' and acts as a key interface between the state and people, thus providing a positive example of participation and co-creation, also for the CPTED method. CPTED has been commonly divided into components as seen in *Table 1*.

In order to analyze these factors in the Malmi station, we started by taking one observational walk in the station area. This way we formed some initial impressions of the design of the station in terms of safety. We acknowledge the limits of our subjective experience as observers since a needed participatory method was not implemented in our limited scope. We took the walk mid-week, at around 6 pm on a dark November evening in 2019. At this time, the station bridge was moderately busy. Investigating the premises during different times of day, for example, during weekends or late at night, would have different implications on the analysis, since the amount and type of people change depending on the time of day.

CULTURAL PLANNING, ACTIVISTS VIEW OF USES OF A PLACE WITH INTERVIEWS

Cultural planning is an operational model of urban development with an emphasis on interaction. Hence, it is a way of practising inclusion in local planning (Hovi-Assad, 2019). In cultural planning, culture is understood as a wider concept than mere aesthetics. The local cultural practices of local communities and the local perceptions of place are essential to this understanding. This definition includes the meanings of the natural environment for locals (Bianchini, 2013). Cultural planning is a place-based approach where the idea is to use local knowledge as an asset in the planning process (Bianchini, 2013; Baeker, 2018). Moreover, a definite advantage of using cultural planning approaches is that it concentrates in a territorial remit. This territoriality is at the core of the research of the Malmi planning assignment. The idea, according to Bianchini (2013), is that cultural planning is able to cut through the divide of public, private, and voluntary sectors, as well as the divide between the concerns of different institutions and disciplines. It is intended as a method for revealing the hidden cultural assets of a place. This is often the case of third and fourth sector local knowledge. Hence, Bianchini (2013) recognizes people's creativity and their ideas as a resource for urban and regional strategies.

As cultural planning endeavours to answer the problem of the non-evident use and meanings of places it offers tools to include these aspects that often are not considered in the planning process. Consequently, hearing how citizens regard their experience of the environment offers an insight into this otherwise elusive content and can bring forward possibilities for co-creation among the stakeholders. Cultural planning methods lay emphasis on the participation of the local community. In this way, meaningful places can be understood as part of forming place identity. Using the method is normally a long process which can take years to complete.

In the recently published book called *Kulttuurisuunnittelu* (Cultural Planning, Häyrynen and Wallin, 2017), the cultural mapping procedure has been used previously in Finland, for example, in Nikkilä and in the Kok-

Components of CPTED	
Image management	environment that looks like it is cared for and supervised, for example vandalism is quickly repaired
Activity support	attracting safe activities, for example local events or other functions to attract legitimate users, eyes on the street.
Target hardening	form of access control, limiting opportunities for crime at the scale of a building, using stronger doors, locks, alarms etc.
Access control	helps define private and public space and who can enter, through fencing, walls, card entry systems etc.
Territoriality	clear sense of ownership in a space, so users are more likely to act as guardians, through design that defines private and public spaces
Surveillance	enhancing visibility, eyes on the street, windows, CCTV
Geographical juxtaposition	the influence of nearby land uses, for example pubs and vacant lots

Table 1.
Components of CPTED (adapted from Cozens & van der Linde, 2015).

keli-project at river Kokemäki (Häyrynen and Wallin, 2017), (Kokkeli-hanke). In their project, they used online mapping tools or surveys for engaging the citizens and finding out the meanings and uses of local places. A more conclusive cultural mapping and planning process, with participatory workshops with other level actors, was beyond our capabilities in the given timeframe. We decided to study the Malmi area operational culture via interviewing local actors about their uses and meanings of places. Firstly, we interviewed the borough liaison for north-eastern Helsinki, Outi Rissanen, about the actors of Malmi. As a result, we decided to interview the most active NGO and fourth sector actors of Malmi during the time of our project. We focused our questions on finding out the needs of local actors in strengthening their possibilities for citizen activity in the area of Malmi. In this study, we looked at two activist groups - the *Longinoja activists* and *Malmin seutu siistiksi roska kerrallaan-movement* (Making Malmi tidy by picking one piece of litter at a time). We conducted one interview at Malmitalo and the other by email. In these interviews, we asked open and semi-open ended questions to determine the uses and meanings of places for these activists. In order to achieve a more supportive environment in Malmi, we concentrated on the needs in facilitating the existing local activism.

SAFETY & ATTRACTIVENESS

In the next section, we have considered Malmi through its identified challenges - safety and attractiveness. We first look at the current situation concerning safety in Malmi and the results from our investigation regarding the problematic station. In the second part, we look at the current situation of the actors and the results from the interviews.

HOW TO MAKE A SAFE PUBLIC PLACE

Feeling safe in public spaces has been identified as an important factor in participation (Liska et al., 1988). As earlier mentioned, the feeling of safety has been identified as a main challenge within Malmi. Therefore, this first challenge is focused on the core of the problem - the Malmi station. We will identify the design needs of the station with the help of CPTED (crime prevention through environmental design). We use CPTED as a means of a design thinking approach, in which we highlight the importance of co-creation and inclusion.

In the survey of 2018 (Keskinen and Pyyhtiä, 2019), around 17 percent of Malmi residents felt unsafe in their neighbourhood late on Friday and Saturday evenings compared to the city average of 13 percent. This number had gone down from 30 percent in 2015 (the city average 16 %). Despite this improvement, Malmi is still considered to be one of the less safe districts.

In terms of socio-economic factors, most of the districts in Malmi are worse off compared to the city average, although it is not the most deprived neighbourhood in Helsinki (City research & statistics department, 2019). According to Kemppainen et al. (2014), living in a socio-economically deprived neighbourhood, and being close to a train station, are considered factors negatively affecting perceived safety. Kääriäinen (2002) concludes that having an unclean and unmaintained environment, combined with the accumulation of socio-economic disadvantages, also visible in public space, is the most challenging combination in terms of perceived safety. Finally, the perceptions of safety are also affected by the media through negative news (Smolej & Kivivuori, 2006). In Malmi, negative headlines about violence and drug trade, for example, together with its negative reputation, can have an impact on the perception of safety.

The current situation of the Malmi station

Station environments are often perceived as unsafe. According to Cozens et al. (2004), rail users consistently perceive risks of crime to be considerably higher than official statistics indicate. In several surveys, respondents have considered the Malmi station to be unsafe (Urban environment division, 2019; Rissanen, 2019b). An older assessment by the rescue department of Helsinki city

(2012) highlighted the feelings of threat at the Malmi station bridge, especially at night time. The station bridge is a pedestrian pathway located at the northern end of the tracks between two shopping centres (*Picture 3. & 9.*).

In general, substance abuse, littering, vandalism and thefts have been identified as challenges in the station area. Rissanen (2019b) interviewed locals who expressed their hopes for more services for substance abusers, such as a needle exchange, but also more security guards. Regarding the station, the interview respondents mentioned untidiness and wished for more common spaces and seating areas for people to spend time.

According to Siippainen (2019), property owners of the commercial spaces have been proposing closing of the station bridge at night time, yet the city has kept it open due to access to the trains, although different solutions to improve the situation are being investigated by the city. The urban environment division of the city of Helsinki (2014) hopes that the building of the new residential area at the old airport premises will make large investments towards the station more viable.

Results from the observative walk

In terms of image management, the station does not look well maintained: the surfaces look worn and littered, and there are clear signs of vandalism in the form of broken windows, graffiti and abandoned shopping carts (*Pictures 3, 4 & 5*).

In terms of activity support and attracting safe activities, the station mainly attracts passers-by in the form of commuting and shopping. There are no benches or places to linger at the station, apart from a few restaurants. In the shopping centre of Malmintori, there is a seating arrangement, which attracts youths and the elderly. Communal activities do not take place in the station and there would not be much space for these activities anyway. There would be more potential for communal activities in the surroundings areas, like in the squares in front of the shopping premises.

Access control and target hardening (*Table 1.*) are visible in the station to some extent; some spaces and pathways are closed to the public (*Picture 6.*). Referring to territoriality, a clear sense of ownership in space, and the divide between private and public space, could be more clear. For example, many doors need to be opened to go in and out of the station and in some cases one might feel uncertain which pathways are public. Many of these doors lead to seldom-used stairways to the ground level (*Pictures 7. & 8.*). The doors and infrequent usage of these stairways, make some pathways feel less public and safe. Especially in the case of the pathway seen in *Picture 8*, it is easy to see why a person would feel unsafe. In terms of design, the pathway is long and confined, and there is no visibility to the station which might have even more implications on perceptions of safety.

Another major factor in CPTED is surveillance, which is about better visibility and social control, through for example windows, CCTV, and more eyes on the streets. The station itself has some windows and few CCTVs, but still, there are many corners and places where a person would feel secluded. In general, the visibility from the station to the tracks is poor. While during the daytime the station bridge has quite many people, and consequently feels safe, during night-time the situation would possibly be worse.

The last component of CPTED is the geographical juxtaposition that refers to the influence of nearby land uses. Land uses that have been recognized to contribute to crime are, for example, pubs, gambling establishments, pharmacies, vacant lots, unemployment offices, alcohol stores, clubs, municipal housing, and commercial buildings (Cozens and Van der Linde, 2015; Sypion-Dutkowska & Leitner, 2017). In the map of the station (*Picture 9.*) it can be seen that many of these land uses are present around the station, which is likely to have some effect on crime and fear of crime, although these effects can be difficult to estimate. Municipal housing is also present in the area, although not visible in the map.

Picture 3. Graffiti vandalism at the station bridge.
Picture 4. Broken windows at a staircase.
Picture 5. Abandoned shopping cart in the middle of the station.

Picture 6. Forbidden entry to some of the tracks.
Picture 7. Seldom used staircase with poor lighting.
Picture 8. Another empty staircase leading to a dark parking lot.

Picture 9. Map of the station and possibly crime facilitating functions around the area.

HOW TO SUPPORT CITIZEN ACTIVISM AND CREATE AN ATTRACTIVE PUBLIC PLACE

We chose cultural planning as the method to investigate the strengthening of local identity, attractiveness, and the retaining power of the area. Focusing on some of the unheard citizen knowledge of the Malmi area, we give our account of the most active third and fourth sector actors in Malmi. Furthermore, during the study, we found similarities with placemaking and included this viewpoint as well. The similarities between the cultural planning approach and placemaking are found in the tools for community engagement, with the community being at the core of the place (Häyrynen and Wallin, 2017; Perrault et al., 2020). We differentiate cultural planning more as a method of investigating local knowledge and, respectively, placemaking as a theory or a method of turning spaces into places.

The current situation of the actors

Activists of Longinoja, from the gutter to the creek: Civic engagement in environmental management.

The Longinoja community is a successful example of citizen participation that has gained a significant foothold in Helsinki. Their participation has resulted in a role within policy-making. Their effort is a part of three initiatives of the City of Helsinki. In terms of participation, the effort can be seen as a functioning form of co-creation. It is a part of the *Small Waters of Helsinki program*, as well as *Securing the Biodiversity in the Helsinki Area* and *The Baltic Sea Challenge*. Its success is defined by becoming a part of these initiatives. The restoration activity has persevered for nearly 20 years. The effort started back in 2001. It has been acknowledged and rewarded with *"Perseverance in the voluntary restoration of the urban brook of Longinoja in the Malmi suburb of Helsinki"* winning the Finnish Biodiversity Award 2017-2018. The winner was chosen by the *National Committee of Finland of the International Union for Conservation of Nature* (Finland's environmental administration, 2019).

The community of Longinoja urban brook attracts a variety of participants. People from 1 to 98 years old are a part of the community. Yearly, the community organizes around 12 different sized events, hosting from 10 to around a 100 participants. The yearly life-cycle of the endangered trout includes phases that attract a large crowd. Especially around the time of spawning, there is active public engagement many times a week. Everyone can participate at some level. For example, the following of the trout is possible by a very low threshold of participation. The actual restoration requires more commitment and is done by a smaller group. With the longstanding attempt, the Longinoja restoration effort can be seen as a successful example of city citizen co-operation in improving an environment to benefit all. It is a grassroots level form of placemaking. Turning a ditch into a living urban brook that hosts the return of an endangered species is a massive effort. Furthermore, the transformed place supports a sense of community. It offers a low threshold facility for enjoying and restoring citizens' connection to nature amidst an urban environment and is also a place for locals to interact socially.

Make Malmi area tidy by picking one piece of litter at a time

The Plogging Community - Make Malmi Area Tidy by Picking One Piece of Litter at a Time idea started with a conversation about the untidiness of the Malmi area on a Facebook group. The most active people in this conversation took the initiative to organize a proper plogging Facebook group for the Malmi area. Some of their participants are involved in the Helsinki City Park Pals (puistokummit) activity. Hence, Helsinki city urban environment division provides the registered Park Pals with litter pickers, rubbish bags, and an insurance policy. They also arrange for the removal of the collected litter, if needed. The plogging activity can be seen as part of an international trend that started in Sweden. Plogging is jogging combined with picking up litter. It is part of an overarching environmentally-conscious movement. The problem of microplastics in our oceans has become more widely acknowledged and has made plogging more popular. One of the main goals is to reduce sources of microplastics in the environment.

Currently, events are announced on the Facebook page. There are 170 members in the group, but active participants of a particular event usually range from 3-8 people. In the year 2019, they organized 29 events. Unlike the *Longinoja community*, the threshold for participating in the events seems to be quite high. Despite the interest of locals, the number of active members has remained stagnant. Partly, this is due to difficulties in spreading information about the activity. Organizing the events is very time consuming and requires a high input from the group administrators. Documenting the events and posting online about the results are important parts of motivating participants. However, especially reaching people outside social media, for example, some of the elderly, the now absent city notice boards could be a means of distributing information. Hence, the more traditional ways of communication may prove to be more effective for some parts of the population. Furthermore, our interview revealed that a more traditional form of communication, through the grapevine, for instance, has been proven to be effective in finding participants for the events. Spreading information through someone familiar seems to be a useful tool and lowers the threshold for participation. Furthermore, facilitating cooperation with other local actors that are familiar to potentially interested participants could lower the threshold for participation.

In addition to the active community, there are solitary ploggers that might not participate in the events. Their efforts are considered equally important. The ideology of the group includes freedom of choice concerning personal input. As the activity is voluntary, and there are no employees, any effort, no matter how small, to remove litter from the ecosystem is meaningful. Hence, the ploggers take part in the activity according to their own interests.

The ploggers are interested in the attractiveness and pleasant atmosphere of the neighbourhood and collective responsibility. A surprising outcome was, considering the diversity within the Malmi area, that some ploggers considered all areas equally important. Their aim was more to do with the global goal of removing sources of microplastics from the environment. However, the emphasis of some of the other participants seems to be on urban forests. This reflects their own use of the local forests, and the need to keep these places free from litter. Partly, it is due to the fact that they are not high on the city management priorities and, therefore, have a substantial accumulation of litter.

Results: Participation by resident initiative results in a functioning method of placemaking

Resident originated placemaking works by facilitating social interactions among a variety of residents. It promotes a sense of community and shared responsibility capable of drawing people from the surroundings areas. According to the interviews, some of the important values behind the motivation for plogging were caring about tidiness, the well-being and pleasantness of the neighbourhood, and nature. One of their most important values is collective responsibility for the neighbourhood and community spirit. A similar phenomenon was expressed in the Longinoja community interview. They expressed that community spirit is the most important value they want to convey to the younger generations:

> *"It encompasses all, doing together, helping others, generating a good spirit and respect for nature."*

These kinds of activities facilitate social interactions among locals. The ploggers stated that it was easier to approach them when they had the litter pickers and were often recognized by local people. They expressed interest and gratitude in their activity and many started plogging themselves as a result of the encounters. In terms of placemaking, this can be identified as a means of triangulation facilitating social connections among strangers. Furthermore, the *Malmi ploggers* have organized a joint effort for plogging in the Longinoja area.

Understanding the activity requires listening to the activists and understanding their needs considering the Malmi area. Facilitating the activists' participation is important for improving operational preconditions and is essential to their participation. This kind of activism that is tied to a particular place promotes ongoing participation.

In the Longinoja case of how activism originated, placemaking has proven to be successful. It is capable of drawing more people from the surrounding areas and offering a sense of community. The shared responsibility also promoted by the Malmi ploggers offers a simple way of committing to the area and community. This is true for Longinoja as well. In securing the operational preconditions for the Longinoja community it was necessary to recognize the habitat requirements for the endangered trout. It calls for a wide enough perimeter around the brook. This can well serve as an area for recreational purposes. Water environments in the urban context are especially important in stress reduction of urban dwellers. Waterside environments have a stronger impact in stress recovery than a non-aquatic environment (Korpela et al. 2010). Considering the special requirements of the trout, consulting an expert is advisable. For example, monitoring of the water quality during any constructions in the catchment area is vital for the community.

The Malmi ploggers would benefit from the facilitation of more close connections to the area's other actors. One important improvement would be facilitating the event organization by more information distribution sources. The city of Helsinki notice boards offer activity information to those unable to access social media. As all participants are volunteers, the time, money and effort required for distributing and taking care of information sharing are scarce. If Helsinki city would facilitate the dissemination of information, then this would strengthen the operational preconditions for plogging. The ploggers' most prominent idea is to promote the attractivity of the Malmi area by enhancing the tidiness, comfortability, and hominess of Malmi (viihtyvyys). The group answers to this need for a sense of community and shared responsibility. Furthermore, their activity answers straight to the needs identified in the Helsinki city survey.

MORE PARTICIPATION, BETTER MALMI?

As mentioned earlier, people 'at the heart' of the planning processes can be an important and valuable asset. In Malmi, the challenges are safety and attractiveness. In this study we were looking for answers to the following questions: How to create a more safe and attractive public space? How to acknowledge the needs of the local community and what kind of role can participation play in these? What type of participation tools can be used to give voice to different stakeholders and, moreover, to citizens for improving safety and attractiveness?

In terms of our first challenge, relating to safety, our research shows concrete design-related challenges, while highlighting the importance of participation. The CPTED creates a framework which is likely to be beneficial in terms of developing and re-designing the station, although it should be noted that these tools should not be implemented with simplistic expectations since crime prevention is a complex issue. The second-generation CPTED similar in approach to VPUU (Maze, 2020), may prove to be a more suitable approach since it takes into account the social context, community connectivity, cohesion and culture, as well as resident participation (Cozens & Love, 2015). Crime prevention then happens, for example, through social cohesion and connectivity which nurtures mutual respect and self-policing. Therefore, cohesive and actively participating communities are an important aspect in terms of safety. Participating people using the station, from all walks of life, would provide more comprehensive insights into the realities of the safety of the station, also taking into account the most vulnerable and disadvantaged people using the station.

Therefore, the results of the safety challenge indicate that safety is an issue, which should be taken into account through participation. Planning and developing the area should not then be done, with safety and the attractiveness of a place in mind, without hearing from the local users of the station first and foremost. The current state of the matter indicates that in terms of Arnstein's ladder of citizen participation, the past planning, upkeep and development of the station have been closer to tokenism and non-participation since the wishes of the citizens have not yet been actualized.

In the interviews of the two actors, there were many components contributing to the CPTED framework. Supporting these communities creates a stronger sense of

ownership of the area and increases trust between the city officials and the residents. This contributes especially to the component of activity support in CPTED.

The community of Longinoja is very strong and has a strong sense of stewardship of the brook. In terms of the Arnstein ladder, they are at the level of citizen power. The community's longevity has strengthened their stewardship of the brook. The activist community is open to other actors of the area. They are explicit about enhancing the sense of community. This further encourages other local actors, such as local schools, to use the place and hence supports local social connections. Some of these other actors are local daycare centres and the schools of Pihlajamäki, Tapanila and Ala-Malmi, which use Longinoja for educational purposes. The school children's participation in this activist created place contributes to the idea of a sense of community. In addition, the newly opened nature trail of Longinoja has introduced the restoration work to the local public. This is in the core of what this activist group is promoting. Malmi plogging activity has partially become a part of the existing city park pals activity and has shown that this activity is easy to access for participating in the local area. However, the activity could be developed to become more supportive to the ploggers needs. Facilitating the communication among the area third sector actors would be of especial benefit to the activists.

The other two theories have their implications on the Longinoja practised activism. In terms of placemaking, the Longinoja gutter to the creek can be seen as an ideal example of activism based placemaking practice. Regarding Barsalou's (2018) idea of design thinking, the Longinoja process is extremely action-oriented and needs-based, creating successful outcomes of alternative solutions.

According to Brown and Wyatt's (2010) idea of design thinking, the Longinoja case is an example of constructing an idea with emotional and functional meanings and offering an alternative creative solution. Instead of looking at the gutter as a gutter, the activists saw the potential of the place. They have kept up with the effort with sisu for two decades and the success is indisputable. As many as 90 spawning nests have been found during last year.

According to the book *How to Turn a Place Around* (2000), there are 11 key elements in transforming public places into vibrant community places. Placemaking argues that the complexity of public spaces is rarely understood, and there is tacit knowledge in the local community. Cultural planning on the other hand emphasizes understanding the intangible heritage. In *How to Turn a Place Around* , their first element is the *Community is the expert*. This complies with the cultural planning idea of interviewing local actors. In placemaking, the seventh key element they identified was *Triangulation*. It was described as a process where an external stimulus provides a linkage between people and facilitates communication among strangers. In public spaces, this could mean the placing of facilities, such as, benches with other amenities to bring people together. In the case of Malmi, the plogging activity can be seen to operate as an instrument of triangulation. The active ploggers reported having the litter pickers facilitating a conversation with local residents. Similarly, the Longinoja place and activities bring people together. In addition to the brook restoration and monitoring activities of the endangered salmon, the Longinoja location is used for outdoor recreation, including plogging. Since 2018, a new nature trail has been built, with it becoming more popular. Parts of the trail are accessible by wheelchair. These improvements further add to the triangularity of the place. The project was implemented by The City of Helsinki's Urban Environment Division project based on the initiative of activists. They help in the maintenance of the trail signs.

The impression that comes through from the surveys and interviews is that Malmi seems to lack community spirit on some level. In both these investigated cases, activism has offered a means and a way of coming together for a cause and facilitating interaction among strangers. The Longinoja represents a classical placemaking by doing approach which is the eighth key element of placemaking. Activism has successfully produced a more people-friendly environment, making the spaces more community spaces. In the Ploggers case, the placemaking

can be seen perhaps more loosely and widespread, whereas in the Longinoja case it is more place-bound.

CONCLUSIONS

Our work built upon the results of a survey which the city of Helsinki conducted in 2018, an observational walk, and interviews we conducted. In the survey, safety and attractiveness were the most desirable aspects respondents looked for in Malmi, thus our work concentrated on these. From the interviews, we found the activists' emphasis was on the subjects of a sense of community (yhteisöllisyys) and shared responsibility, both of which enhance safety, comfortability and contribute to the attractiveness of Malmi. These forms of participation in social activity are significant in creating the social wellbeing of this area. Similarly, the VPUU approach suggests the importance of social inclusion in planning for safety.

We recognize that our study reveals but only a thin slice of the whole situation of Malmi stakeholders. Our results indicate the potential of using a cultural planning approach in developing an area and the potential of using local knowledge. Furthermore, by using placemaking tools local solutions to the challenges of an area can be found. Including more stakeholders in the process could reveal more of the local solutions to local challenges.

In our work, we conclude that safety has not been taken into account well enough by the city in terms of participation, though citizens have taken matters in their own hands and have reached higher ladders of participation. Furthermore, safety and attractiveness were improved by local activism. It could be argued that some answers to the locally perceived shortcomings are already being considered inside the community and answered by local activism, and are in fact reasons for the uprising of some forms of activism.

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Malmi seutu siistiksi roska kerrallaan

Longinoja community

Outi Rissanen

Michail Galanakis

CHAPTER 2

WILD MALMI:

ANIMALS AT THE PLANNING TABLE

We approached the planning of a future Malmi as a layering of habitat structures for different animals (Siberian flying squirrel, northern goshawk, brown trout, white-tailed bumblebee and humans). Our planning problem was to negotiate how these diverse habitat needs could overlay onto the existing Malmi landscape and still allow an increase in human population.

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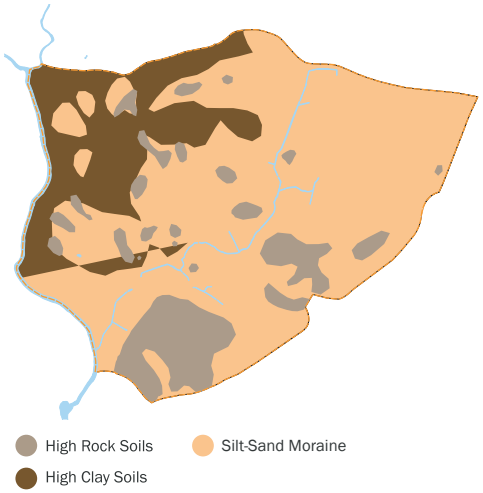
INTRODUCTION

Malmi is a peri-urban neighborhood characterized by a few densely occupied centers and two agricultural corridors along the Longinoja Stream and the River Vantaa. Biotope analysis of Malmi reveals that, in its present state, it is a complex mosaic of domestic gardens, old growth forests, agricultural haylots, open meadows and industrial brownfields (Copernicus, 2017). This complex habitat structure exists not because of deliberate planning efforts but because of the complex geophysical and hydrological character of Malmi, wherein high-clay soils and flood risk have discouraged dense residential development in large patches of the district (Kaupunkiympäristön Toimiala, 2017). Contemporary engineering and stormwater management means that the conservation of this defacto open space is no longer guaranteed. Proposals like the Malmi Airport project demonstrate that increasing development pressure on Malmi is likely to result in a decrease in open space and changes to its current habitat structure (Helsinki Planning Department, 2015).

When planning new development in urban areas, like Malmi, a traditional planning process involves the consideration of a large number of stakeholders in the local socioeconomic system: governments, residents, businesses, NGOs and social institutions. In planning, it is often who is invited to the planning table that defines the outcome. Over the last century, the "who" involved in planning has been expanding continuously from a select elite to a broader set of socio-economic interest groups. Still, patently absent from planning tables are the voices of *animals*. While animals can not speak with intelligible language, their actions, presence in cities, and the vast amounts of knowledge the scientific community collects about them, can be considered a "text" equivalent to political voice (Metzger, 2014).

In planning for a future of Malmi, we propose to make these voices a central concern by introducing the habitat needs of animals, including humans, to the planning process. The failure of the planning process to include animal voices in the past has resulted in familiar conflicts, like those surrounding the stoppage of the Raide-Jokeri tram project due to encounters with Siberian flying squirrels (*Pteromys volans*) and needlessly threatens urban biodiversity (Metzger, 2014; Selonen & Mäkeläinen, 2017; Yle, 2019).

Our research on Malmi is approached as a form of role-play scenario planning, in which we as researchers embody and understand the habitat needs of five "flagship species" and represent those needs at a gamified planning table. This strategy, inspired by German ecological planners Wolfgang Weisser and Thomas Hauck, recognizes that considering all animals, or "ecology" as a broad nebulous goal, can make planning for biodiversity a cumbersome process. Instead, by selecting a few flagship species, species which have cultural, ecological and local significance, we are able to limit ecological considerations to a



Malmi Soil Analysis
Data used: (Kaupunkiympäristön Toimiala 2017)

Malmi Urban Biotopes Analysis
Data used: (Copernicus 2017)

more digestible form, usable in the planning process. Planning in this way will not conserve all possible species, but the flagships species will act as conservation surrogates, supporting other species within or having similar dependence on their habitat structures (Selonen & Mäkeläinen, 2017; Wessier & Hauck, 2017).

APPROACH AND GOALS

While urban land-use may seem like an insignificant driver of Finnish biodiversity loss compared to forestry and agriculture, we argue that the inclusion of animal voices in the hypothetical planning of Malmi is necessary for three reasons:

(1) With 85% of Finns living in urban areas (World Bank, 2019), the dominant opportunity to experience contact with animals will occur within urban areas, not in remote forests. This contact, occurring casually and in the course of daily life, is critical to preventing the "extinction" of natural experience and apathy of urban dwellers toward nature elsewhere (Standish et al., 2012).

(2) Animals have the potential to make Malmi a more attractive neighborhood. In a world where places compete with one another like businesses, soft attractions and quality of life factors are becoming increasingly important planning considerations (Florida, 2003). Wildlife has the potential to become one of these attractions. As organizations like the Friends of the Longinoja demonstrate, wildlife viewing and volunteerism can create community engagement and social connectivity (Standish et al., 2012; Longinoja.fi, 2019).

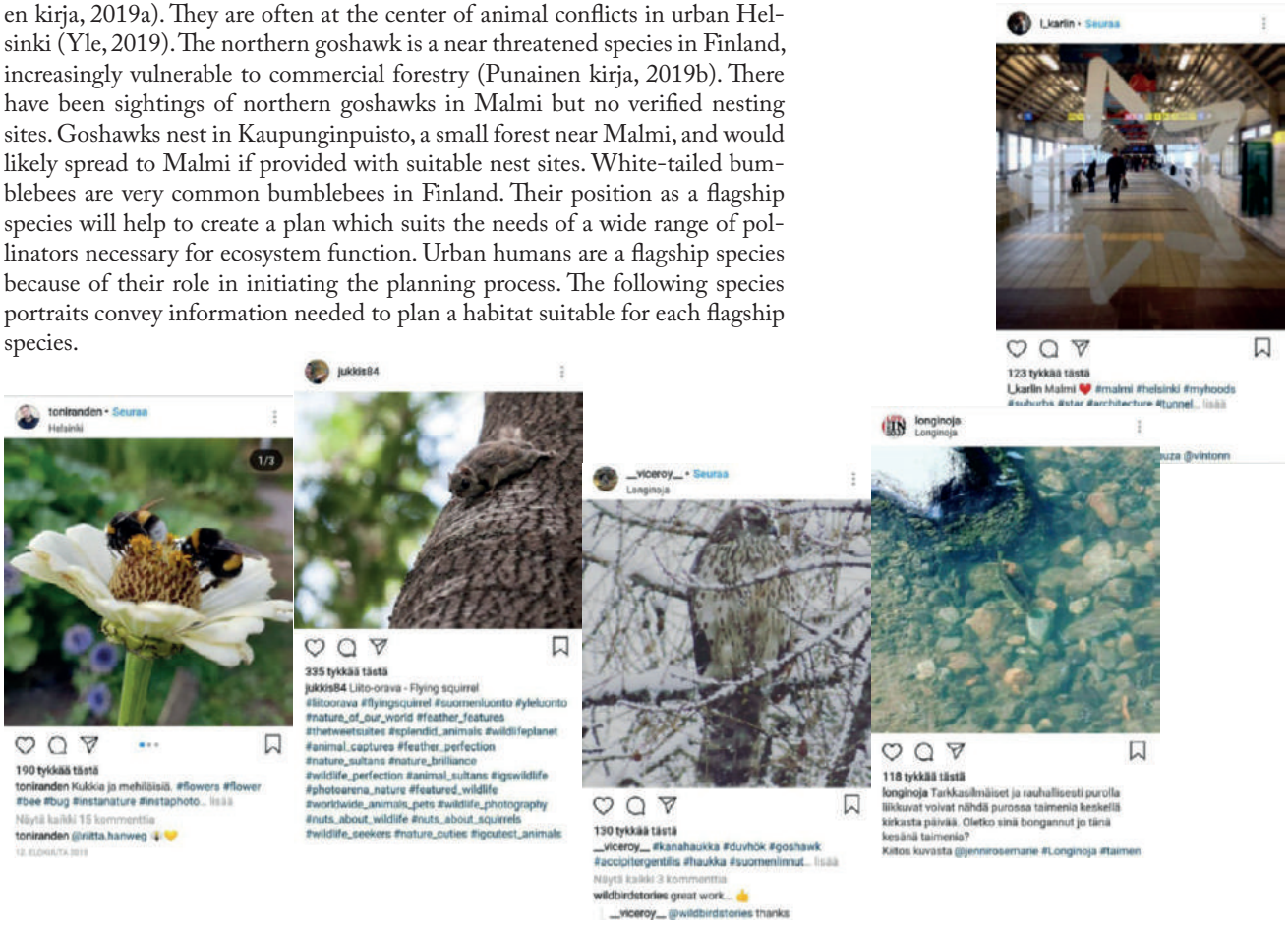
(3) In a world that is increasingly global, animals are reminders of what makes a place unique. Every city in the world has cockroaches, pigeons and rats. Only a handful of cities in the world have Siberian flying squirrels or brown trout. These species have the potential to create a sense of place (Standish et al., 2012; Wessier & Hauck, 2017).

Headlines like these are evidence of the gap between socio-economic and animal needs in city planning leading to the disruption of both (Yle 2019).

Efforts of groups like the Friends of the Longinoja (2019) demonstrate that community action centering around non-human urban residents can create positive neighborhood identities.

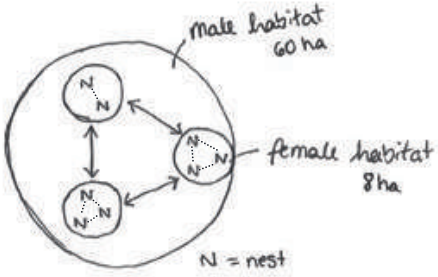
FLAGSHIP SPECIES

Five different animal species from different taxonomic groups were chosen to represent Malmi: Siberian flying squirrel (*Pteromys volans*), brown trout (*Salmo trutta morpha trutta*), northern goshawk (*Accipiter gentilis*), white-tailed bumblebee (*Bombus lucorum*) and the urban human (*Homo sapiens urbanus*). Brown trout and Siberian flying squirrels were chosen because of recent media attention surrounding their conservation status. Sea migrating brown trout are endangered in Finland (Louhi et al., 2019). These trout are an iconic species for Malmi because of the popular community-driven restoration of the Longinoja stream, one of the few sites where sea migrating trout still spawn in Finland (Longinoja.fi, 2019). Flying squirrels are classified as a vulnerable species in Finland and a protected species by EU law (Lammi & Routasuo, 2018; Punainen kirja, 2019a). They are often at the center of animal conflicts in urban Helsinki (Yle, 2019). The northern goshawk is a near threatened species in Finland, increasingly vulnerable to commercial forestry (Punainen kirja, 2019b). There have been sightings of northern goshawks in Malmi but no verified nesting sites. Goshawks nest in Kaupunginpuisto, a small forest near Malmi, and would likely spread to Malmi if provided with suitable nest sites. White-tailed bumblebees are very common bumblebees in Finland. Their position as a flagship species will help to create a plan which suits the needs of a wide range of pollinators necessary for ecosystem function. Urban humans are a flagship species because of their role in initiating the planning process. The following species portraits convey information needed to plan a habitat suitable for each flagship species.



Siberian Flying Squirrel *Pteromys volans*

A gliding rodent living throughout Eurasian boreal forests from Northern Europe to Japan[1]. The flying squirrel is vulnerable within the EU[1]. Due to urbanization and habitat fragmentation, populations are decreasing[1]. Flying squirrels are nocturnal and rest during the day in their nests[2]. They are rarely observed by humans.



HABITAT

Siberian flying squirrels need spruce-dominated mature forests with a mix of deciduous trees[2]. The male habitat extends over 60ha and can include several female habitats (8ha)[2]. Usually, there is a core area within the range[3]. Male individuals move between female ranges. Females behave territorially and have several nests within their range and move between them regularly[2]. They nest in tree cavities, twig nests and nest boxes[2]. A female range should consist of one dense forest patch connected to other patches and foraging sites by a network of less dense woodlands.[2] Individuals can move between smaller (young) forest patches (>1ha) and fine-scale features such as large single trees and sapling stands[2]. In Helsinki, human residential areas are typically used for moving and foraging but not nesting[2]. Thus, males are more often found in human habitats[2]. Flying squirrels move by gliding between trees. Optimally, trees are taller than 10m and no farther than 20m apart[2,4].

SERVICE

for humans

dispersal of seeds

DISSERVICE

for humans

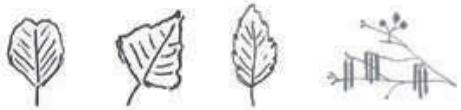
interruption of construction

interruption of logging

Bureaucracy and legal fees

DIET

Siberian flying squirrels forage for buds, catkins and leaves from deciduous trees like the common aspen (*Populus tremula)*, grey alder (*Alnus incana)*, black alder (*Alnus glutinosa)* and birch *(Betula spp)*[1].

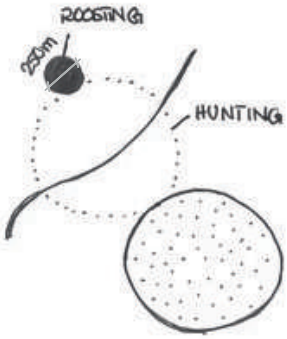


THREATS

Since flying squirrels have a limited gliding distance of 20m, their habitats are severely limited by land-use fragmentation[2]. Siberian flying squirrels are the prey of Ural owls and other birds of prey[1,3]. Commercial forestry means a loss of available nesting locations, fragmentation and vulnerability to predation[3].

Northern Goshawk *Accipiter gentilis*

Large forest-dwelling birds of prey. There are about 10,000 northern goshawks distributed throughout Finland[5]. Some migrate to Central Europe and the Mediterranean in winters while others over-winter along the Baltic Coast[6]. Recently the goshawk has become near threatened in Finland due to loss of old-growth forests and increase in human forest exploitation[7].



HABITAT

Goshawks form lifelong mating pairs and often return to the same nesting site every spring. Over their lifetime they make high investments in permanent nests, constructing 1 meter high "twig castles" in sturdy coniferous tree branches[8,9]. When nesting, female goshawks do not leave the nest[6]. Male goshawks must hunt near the nesting location in order to frequently return food to their chicks and mate. For this reason, suitability of nesting sites within close proximity to prey sources is the primary constraint in goshawk habitat suitability. When nesting, goshawks are highly adverse to disturbances and need thick forests, about 250 meters or more in width. When hunting goshawk prefer high vantage points overlooking large open areas[10]. Bogs, grasslands and agricultural fields are preferred hunting areas[9]. Based on observations of other nesting locations in Southern Finland these hunting areas are usually 750-1000m in width and follow streams or rivers which are attractive to prey[10].

SERVICE
for humans

- pest control
- majestic appearance
- wildlife viewing

DISSERVICE
for humans

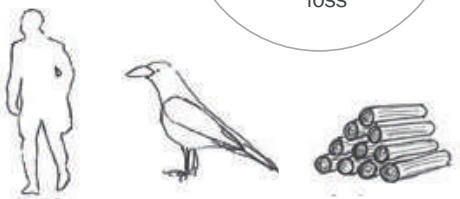
- predation of pets
- fear
- game population loss

Goshawks are capable of catching and eating large prey animals such as pheasants and hares moving over open ground. They also eat smaller urban prey like rats, pigeons and seagulls[8].

DIET

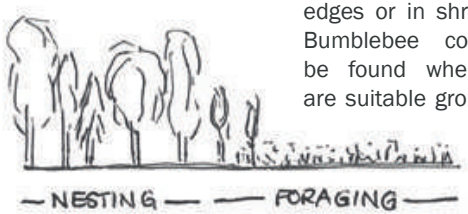
Human hunters (*Homo sapiens venandi)* destroy goshawk nests because they view them as a threat to the wild game population[9]. The hooded crow (*Corvus cornix*) consumes goshawk eggs and can harass mother hawks so severely that they abandon their nests[9]. The forest industry often destroys potential and active nesting sites in mature forests.[7]

THREATS



White-tailed Bumblebee *Bombus lucorum*

Large member of the order Hymenoptera distinguished from other bees or wasps by their fluffy appearance. They are a generalist, short-tongued bumblebee and the most common in Finland. A bumbleebee colony has an average of 120 workers for one queen.[11] The White-tailed Bumblebee is an important pollinator for wild plants including berries.

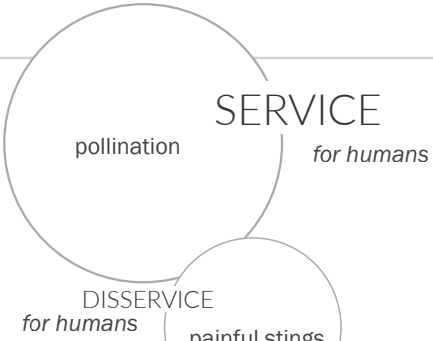


White-tailed bumblebees are ground nesting bumblebees that form colonies in small premade cavities in the ground, most commonly the abandoned nests of mice and vole located on forests edges or in shrubby areas. Bumblebee colonies can be found wherever there are suitable ground cavities but they favor those in warm, south-facing slopes. White-tailed bumblebees have a flight range of approximately 1 kilometer from their nest. They forage wherever flowering plants can be found but the best flowers for bumblebees are ones with lots of nectar and high quality pollen. Besides the nectar and pollen quality the temporal distribution of flowers is important. Foraging areas should have sufficient flower sources from early spring to late summer. Therefore a diversity of flowering plants with different blooming times is needed. Spatial distribution of flowers is also important. Flying long distances requires a lot of energy and exposes the bumblebees to additional stress. The best food sources will be located near nesting sites and in dense clusters.

HABITAT

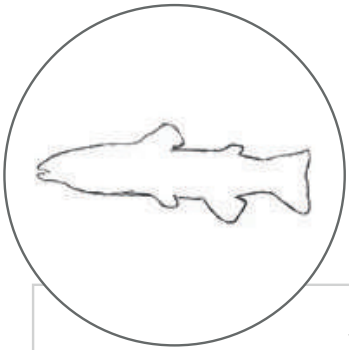
Bumblebees collect nectar and pollen from a variety of flowers. Preferred flowers include red clover (*Trifolium pratense*), willowherbs (*Epilobium spp.*), vetch (*Viccia spp.*) and goat willow (*Salix caprea*).[12]

DIET



Urbanization processes reduce nesting habitats and limit foraging areas. Pesticides used in agriculture can be toxic to bumblebees when foraging in agricultural areas. Habitat fragmentation decreases available foraging habitat and habitat connectivity. Fragmented habitats increase bumblebee foraging time which causes stress and mortality.

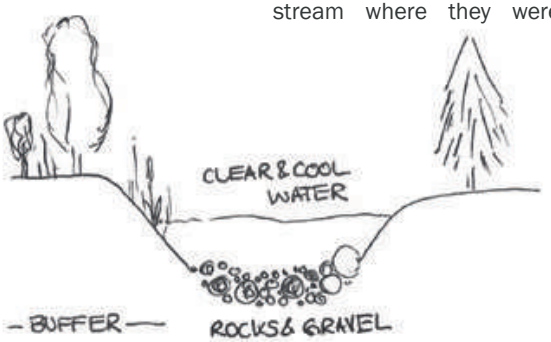
THREATS



Brown Trout *Salmo trutta morpha trutta*

Brown trout have 3 distinct forms: sea trout (*S. t. m. trutta*), river trout (*S. t. m. lacustris*), and stream trout (*S. t. m. fario*). Differences between these brown trout forms are in their adulthood habitats. The trutta morph described here is a sea migrating trout. The sea migrating brown trout population in Finland is critically endangered[13].

In spring, mature brown trout migrate from the Baltic Sea to the same river or stream where they were born to spawn[13]. A newborn trout spends its first few years in its home stream before it returns to the sea where it will mature fully. Trout require clear and cool moving water. The bottom of their streams should be lined with big rocks to provide protected places for spawning where water doesn't move too rapidly[14]. Trout also need a layer of gravel to hide their eggs from predators. Vegetated buffer zones between water bodies and agricultural or urban areas are needed to stop excess nutrient flow into water and prevent eutrophication. Tall vegetation such as trees in the buffer zone will also provide shade to keep the water cool on hot summer days.



HABITAT

SERVICE
for humans

recreational fishing

food source

DISSERVICE
for humans

more expensive dam projects

In the sea, brown trout feed on Baltic herring, sprat and other small fish. In rivers and streams, less than one year old trout feed on plankton and small bottom-dwelling invertebrates. Bigger trout in freshwater also eat larvae and small invertebrates

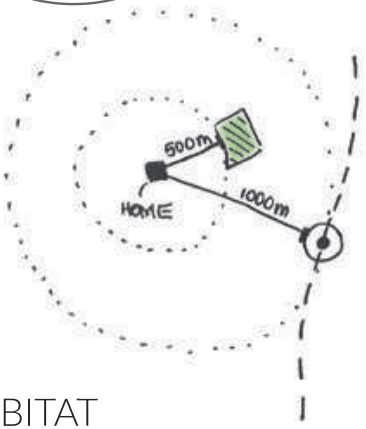
DIET

Hydropower dams disturb trout migration to spawning streams. Nutrient leakage from agricultural land and pollution from urban areas leads to eutrophication making rivers and lakes unsuitable for trout[t15]. Fishing, especially with nets, reduces to the number of mature trout capable of reproducing[14].

THREATS

Human *Homo sapiens urbanus*

A large, intelligent primate distributed globally with colonies formed in built environments especially near oceans and rivers. Migrates sporadically by ground, water and flight. Even though they produce few offspring, urban human populations are increasing with recruitment and assimilation of rural human sub-populations.



Urban humans live alone or in small family units in dwellings built from concrete, wood, steel and clay called a "home." Suitable homes need proximity to systems of ground transit to connect individual family units to other members of the colony. Urban humans do not use automobiles like rural or suburban humans and thus need to be close enough to walk to these transit centers. Urban humans have an average walking range of 1km to the nearest transit and service center.[16] Urban habitats require continuous open areas suitable for walking and cycling between dwelling places and transit centers. Urban human habitats should have close proximity to green areas in order to sustain psychological and physical health. Green areas for recreation should not be more than 500m from family dwellings and no less than 6000m^2 in area.[17]

HABITAT

SERVICE

for other species

- food supply
- special habitats

DISSERVICE

for other species

- habitat fragmentation
- hunting and poaching
- pollution
- reduction of species richness

Urban human diets are dominated by avocados, oat milk, gluten free bread and hormone-free, free-range chicken. Food is acquired in grocery stores which can be found within built habitats.

DIET

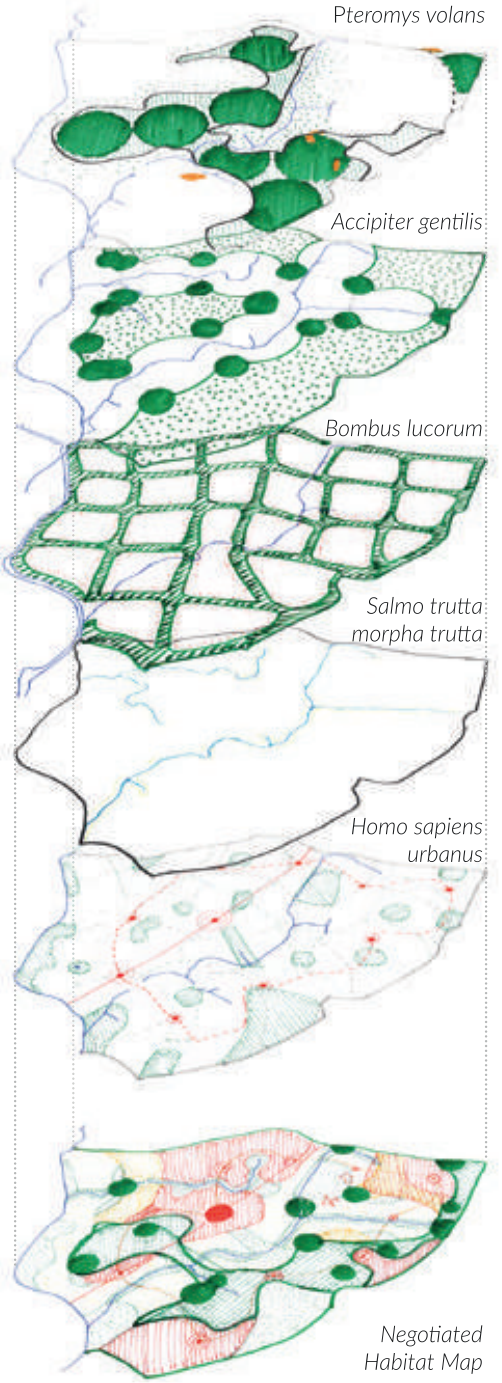
Although urbanization means the enlargement of urban human habitat, it also creates vulnerability to natural disasters and drives global climate change. Natural disasters have the power to destroy parts of the habitat and cause interruption in the supply of food. Individual *Homo sapiens urbanus* occasionally injure or kill others of the group.

THREATS

PLANNING PROCESS

The aim of our planning process is the negotiated existence of all five animals in Malmi. The animal voices are treated symmetrically: *none is dominant over the others*. Metzger (2014) demonstrates that "negotiation is not about suppressing or obliterating difference (which is the focus of consensus planning) but celebrating differences through mutual adjustments". A successful negotiation means creating conditions which increase every participant's wellbeing instead of increasing one participant's wellbeing at the expense of another's. Doing this is a complex process that we approached in a compartmentalized and sequential manner. Initially, we represented the needs of an individual animal with an optimal habitat map. These maps show the ideal habitat of each species, assuming that any existing land use and any existing building could be changed. The only parameters were those given by the Earth itself - soil, hydrology and the ability of land to sustain vegetation communities required by the animal. For the human optimal habitat map the existence of the central railroad was treated as a fixed parameter since it exists external to the scope of our intervention.

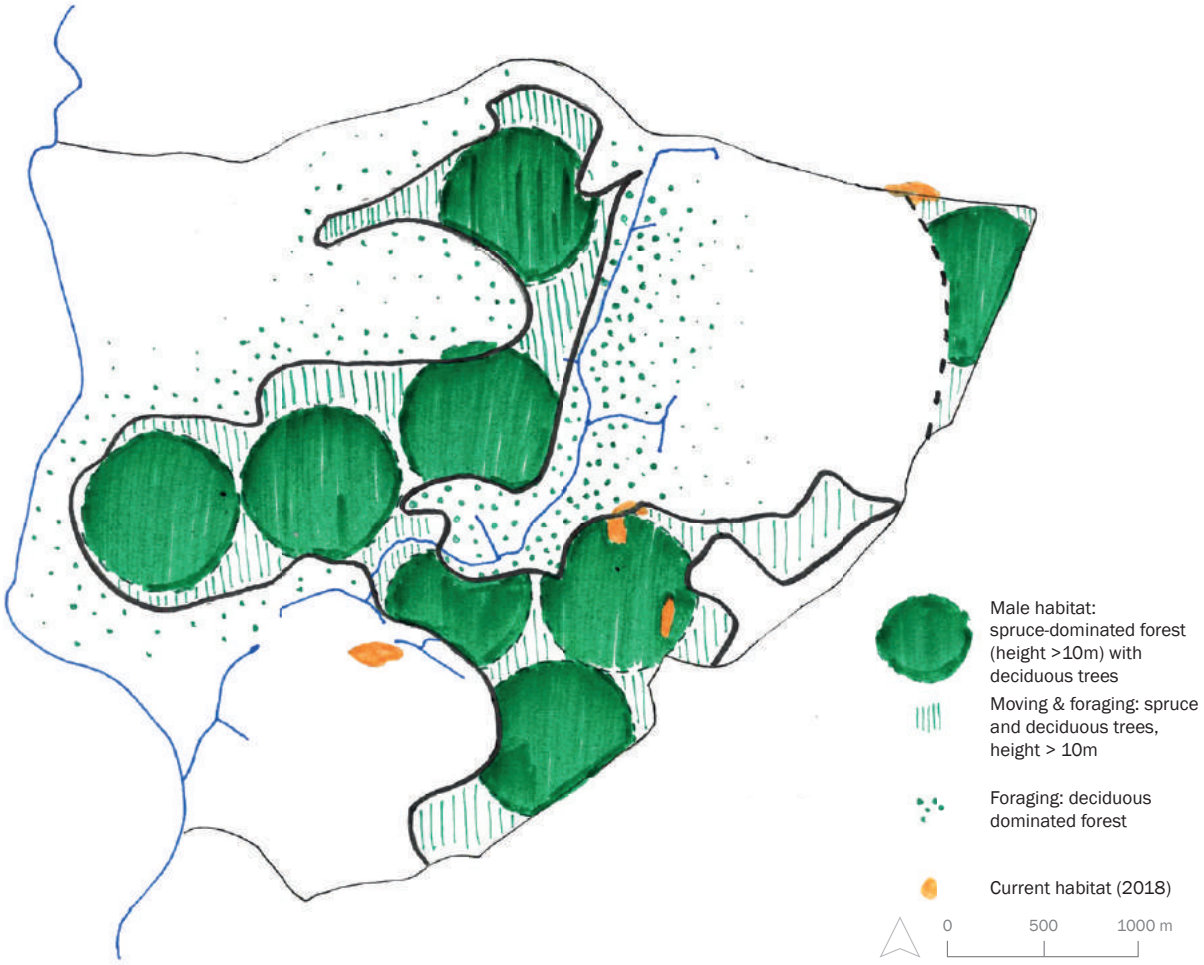
All 5 optimal habitat maps are overlaid to create the "negotiated habitat map". Overlaying the optimal habitats reveals conflict areas, such as where the northern goshawk's need for open space would exclude significant potential habitat for humans along the Ylä-Malmi stream corridor. It also reveals opportunities for collaboration, like the flying squirrel and northern goshawk sharing dense forest patches. Important to this process is that none of the species experiences a decrease to their available habitat. This means that not every habitat will be maximized, but none will be reduced from their present extents. A strategy for achieving the negotiated habitat was not to create only mono-functional areas but focus on developing hybrid typologies which could have utility for multiple species. While the Siberian flying squirrel would benefit from converting most of Malmi into a dense, undisturbed forest, the competition for space in a city will not allow a huge area of mono-functional dense forest. To maximize the utility of land we conceived of hybrid areas of forest and low density human habitat. The amount of dense, undisturbed forests is kept at the minimum necessary for nesting and the hybrid areas become suitable foraging ground. The negotiated habitat map of all flagship animals still does not consider existing land-uses and urban structures. As an additional step the negotiated habitat map is overlaid on existing conditions. We compared what we wanted to achieve with what already exists and thought through what actions would have to happen to change Current Malmi to Future Malmi. The future habitat map of Malmi is the final result. This map consists of 12 basic land-use typologies which together form a "habitat mosaic".



OPTIMAL MALMI I

SIBERIAN FLYING SQUIRREL *PTEROMYS VOLANS*

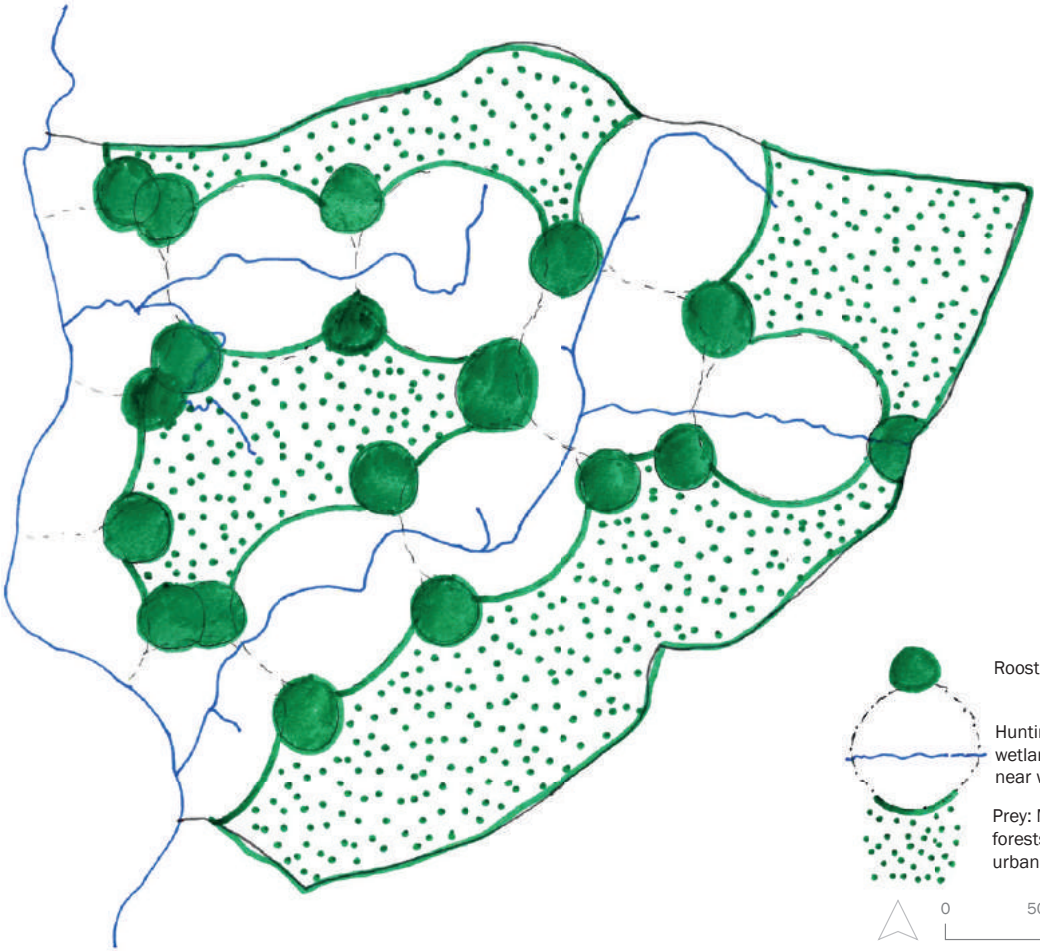
The Siberian flying squirrel prefers to nest in Norway spruce. Forests high in Norway spruce typically occur in silt-sand soils. Thus, the areas suitable for Norway spruce also become optimal for nesting squirrels. All other nearby forested areas will act as foraging ground and buffers between territories. Existing flying squirrel nesting sites (Lammi & Routasuo, 2018) are marked because they will be prioritized for conservation as it is easier to maintain existing nesting sites than to try to establish new ones. A continuous forest connection across the Longinoja to Ylä-Malmi will be required to access new potential habitats.



OPTIMAL MALMI II

NORTHERN GOSHAWK *ACCIPITER GENTILIS*

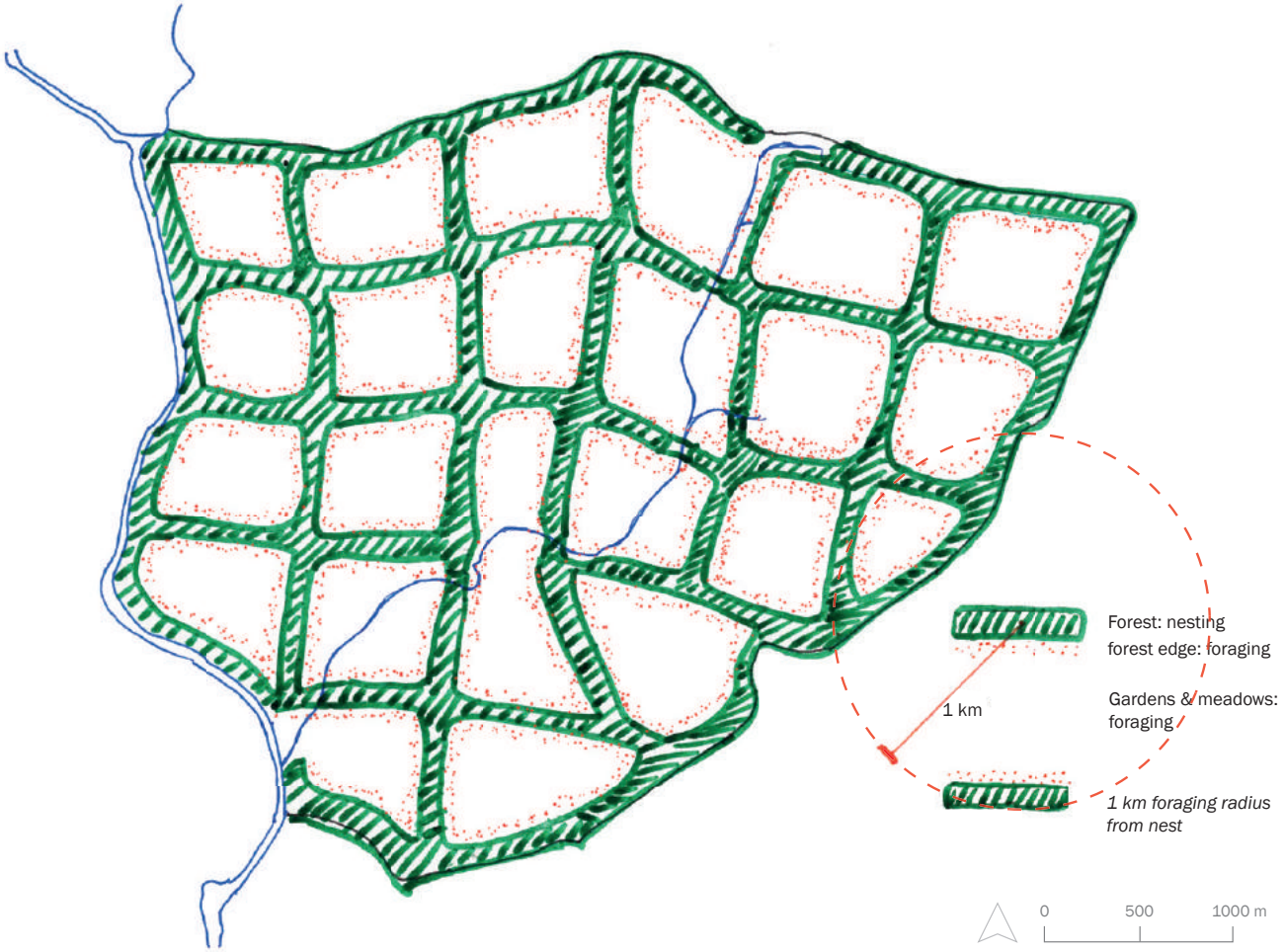
Malmi's water bodies form the spine of the goshawk's habitat structure, attracting sufficient prey density to sustain hungry nestlings. Unobstructed hunting grounds are required around these water bodies to provide a hunting area that is within optimal distance (1km or less) of available roosting sites. Suitable roosting sites should consist of dense forest patches. Optimally, they would be numerous, providing nesting pairs with opportunities to situate themselves near the most favorable hunting grounds and away from external threats. All other land not dedicated to hunting or roosting should serve to replenish prey populations.



OPTIMAL MALMI III

WHITE-TAILED BUMBLEBEE *BOMBUS LUCORUM*

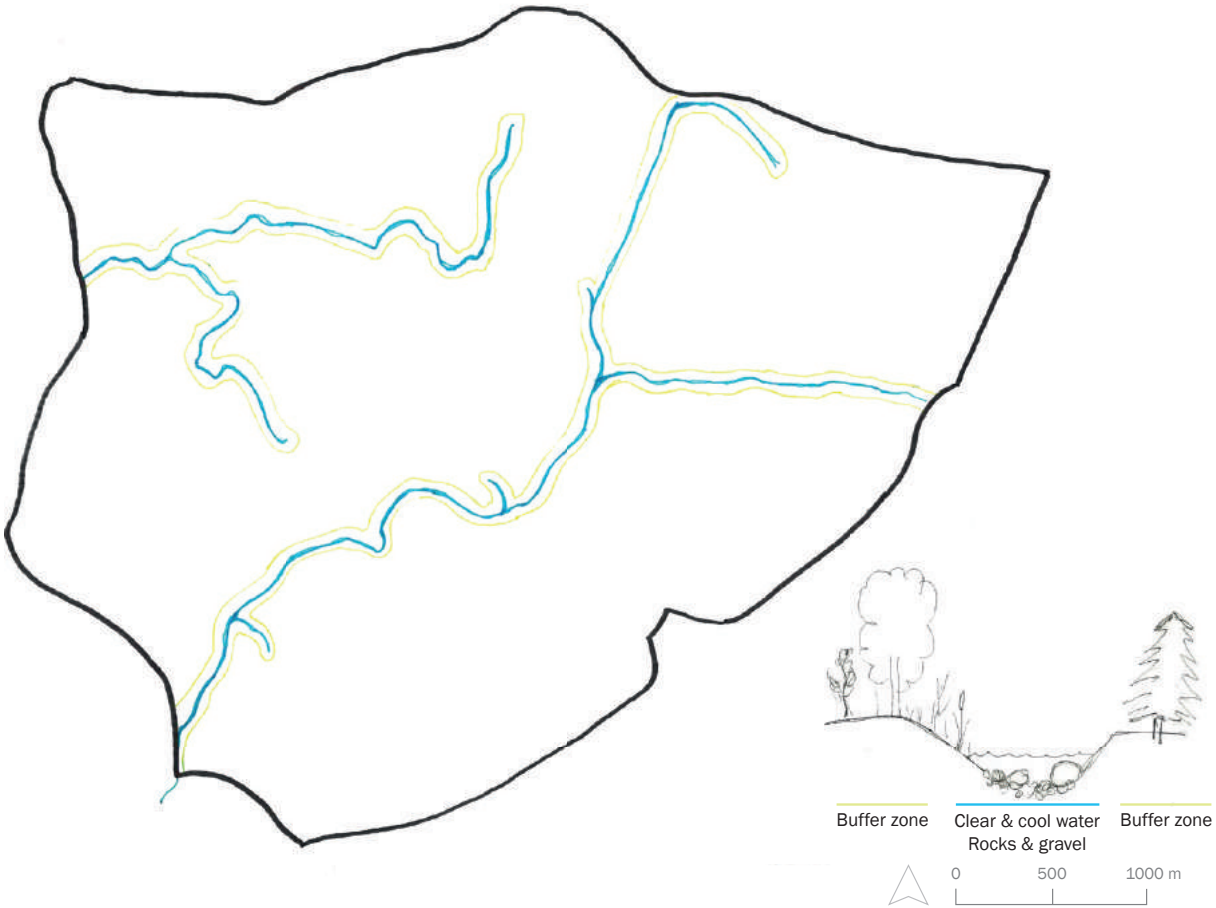
The most important aspects of protecting white-tailed bumblebees are to ensure they have enough nesting sites, with flowering plants close to those nesting sites. Bumblebees build their nests in existing ground cavities. Usually they utilize old mice or vole nests, which means that bumblebee populations are partly dependent on mice and vole populations. Optimal habitat for bumblebees therefore include small patches of forest and scrubby areas to support healthy rodent populations. Meadows, gardens and other areas rich in flowering plants for foraging should be located as close to the nesting site as possible.



OPTIMAL MALMI IV

BROWN TROUT *SALMO TRUTTA MORPHA TRUTTA*

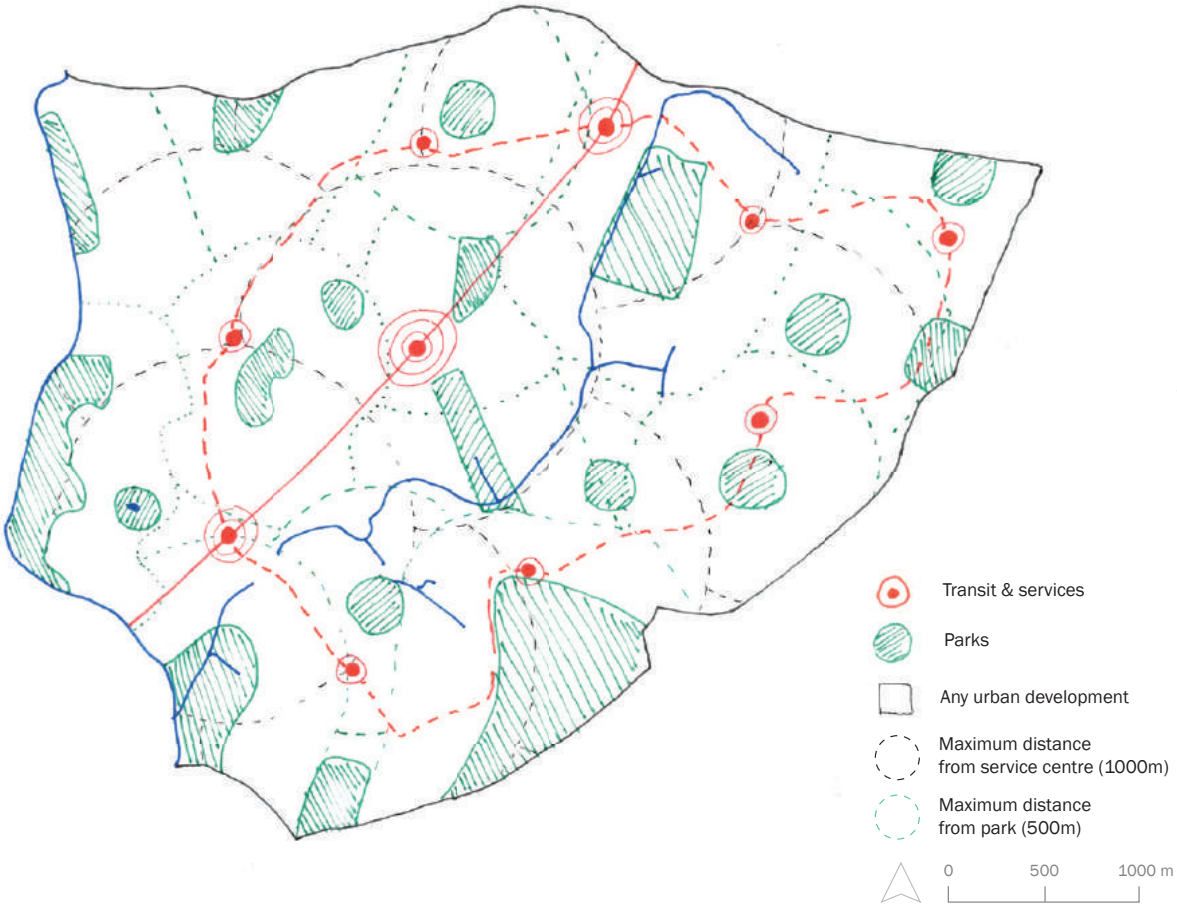
Brown trout can be found in rivers connecting to the Baltic sea (Fishingfinland.fi, 2019). In Malmi, they currently live in the Longinoja stream that connects to the river Vantaa. In Malmi, there is the possibility of creating more streams to serve as habitat for trout. Part of the Longinoja stream that is currently piped under the airport can be restored and a new stream in Ylä-Malmi can be created. Narrow vegetated buffer zones are needed around these streams to reduce nutrient leakage and provide shade for the stream.



OPTIMAL MALMI V

HUMANS *HOMO SAPIENS URBANUS*

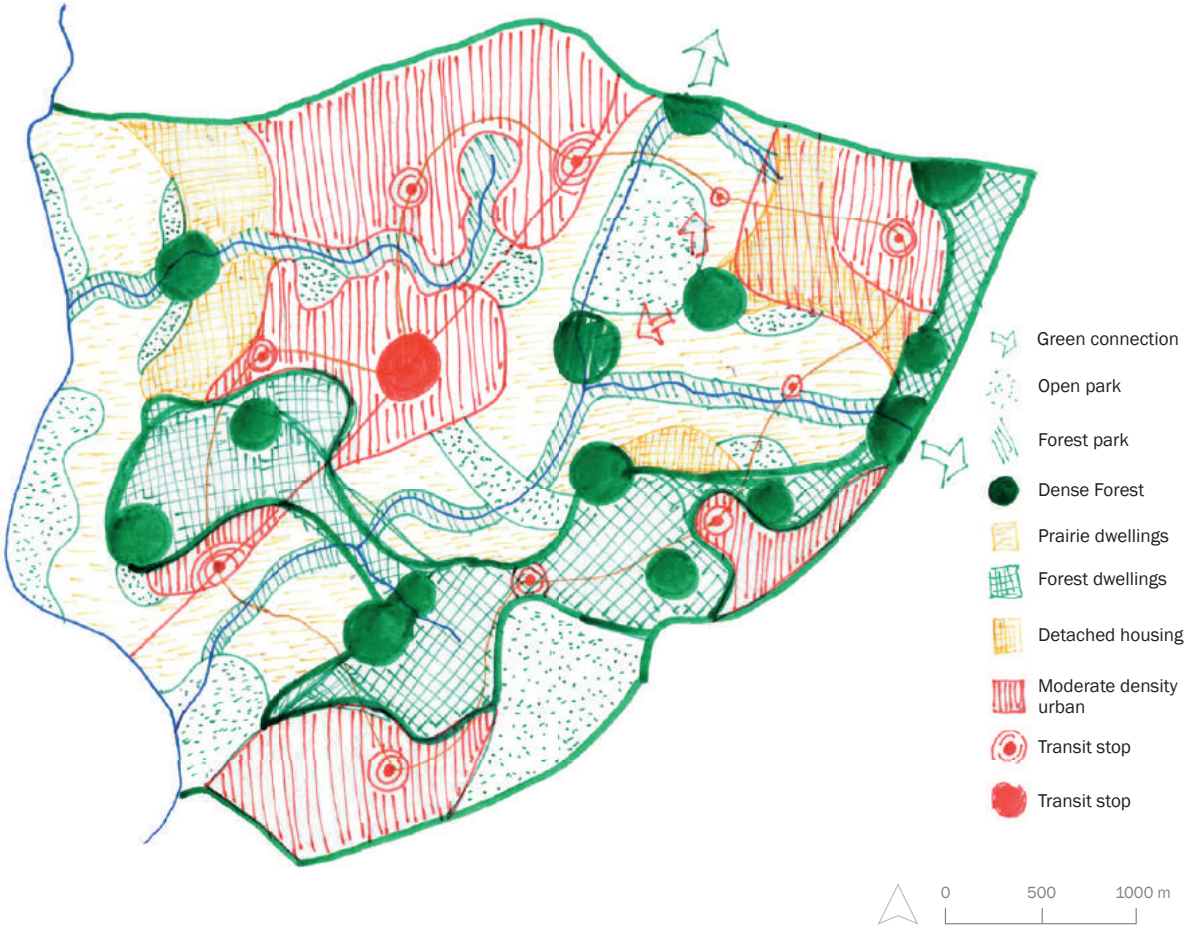
Urban humans are successful at modifying any area of land into suitable habitats. Therefore, the most important factor in an optimal human habitat is transit accessibility. The optimal urban human habitat requires a new tram system to connect all areas of Malmi. Recreational green areas, service centers and transit centers are placed so that all humans live within the maximum acceptable walking distance.



NEGOTIATED HABITAT MAP

ALL FLAGSHIP SPECIES

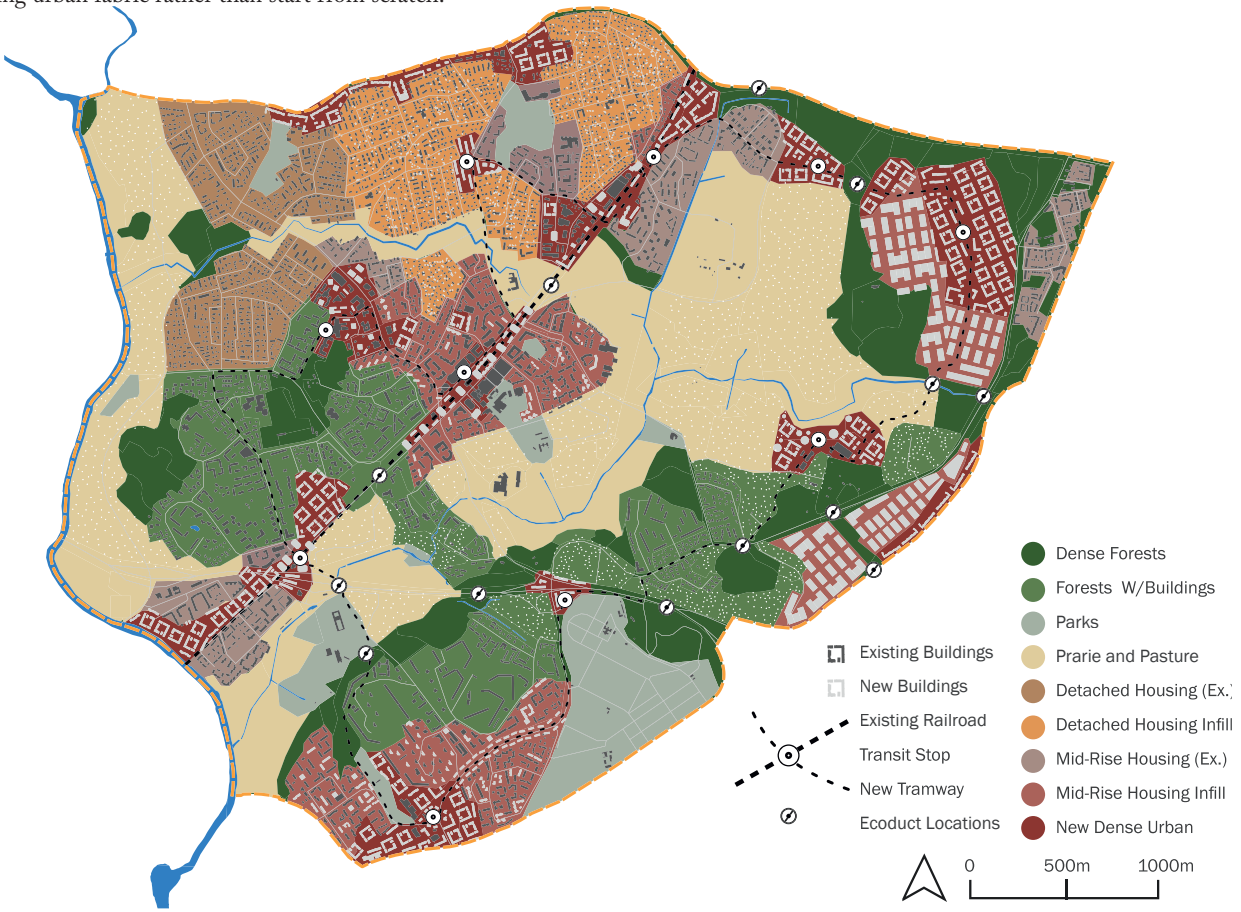
For the Siberian flying squirrel, optimal habitat is reduced such that dense, undisturbed forests patches are kept at the minimum size needed to support nest colonies. Remaining potential forest habitats are allowed to hybridize with low density urban development which will not be disruptive to foraging. Where possible, goshawks and squirrels will share nesting habitat. Goshawk hunting areas are kept where they do not disturb the needs of other species. Bumblebees will find the resulting habitat contains many forest edges meeting grassy, flowered habitats. Humans can densify all areas where it is not disruptive to the other species and live in low densities where it is suitable. New and restored streams will expand the available spawning sites of the brown trout.

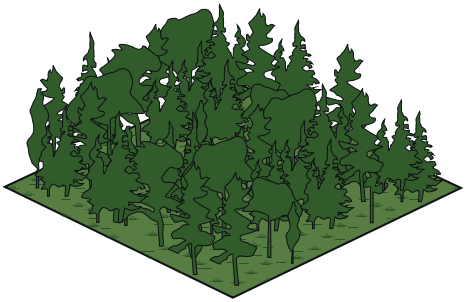


FUTURE MALMI HABITAT MAP

ALL FLAGSHIP SPECIES WITH CONSIDERATIONS OF EXISTING LAND-USE

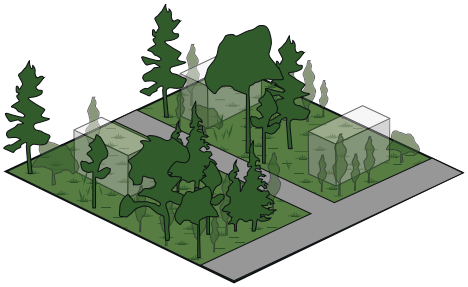
The results of the negotiated map are adjusted in order to better align with existing conditions. For example, if the location of a desired dense forest area is close to an existing dense forest, then the existing habitat will be preferred to the unnecessary creation of a new habitat. Where a desired land-use overlays on an incompatible land-use, the least disruptive action will be taken. For example, if mid-rise housing exists where there should be forest, a program of adding trees to the built area will be undertaken. In some cases, a greater disruption is needed, such as in the restoration of the Ylä-Malmi stream, which requires the removal of existing human dwellings. New urban density is situated to follow the logic of existing urban fabric rather than start from scratch.





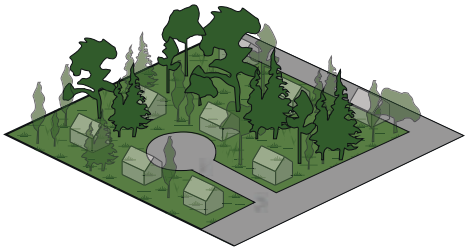
DENSE FOREST

Dense forests are areas left to follow the natural succession of coniferous dominated mixed forests found in this region. After an initial campaign of reseeding and invasive species removal funded by the City of Malmi, these forests will be relatively unmaintained. Dead and decaying wood and debris will be left to rot on the forest ground providing micro-habitats for diverse small mammal and invertebrate communities, including bumblebees. Dense forests will provide nesting sites for flying squirrels and northern goshawks. City workers will tag nest sites and recreational use of dense forests will be limited to prevent disruption to these sites.



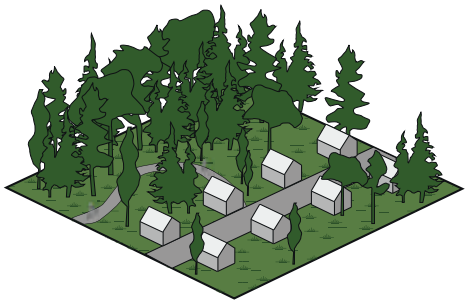
TREE PLANTING IN MID-RISE HOUSING

Multiple areas of Malmi consists of existing low density mid-rise apartment buildings. Many of these buildings are already surrounded by remnant forests fragmented by parking lots and lawns. The City of Malmi will work with the apartments' current landowners to convert some of the parking lots and lawn areas back into forest, creating a more continuous habitat structure for flying squirrels.



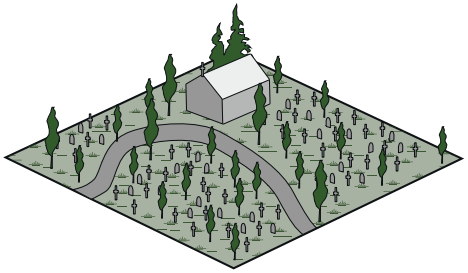
TREE PLANTING IN DETACHED HOUSING

More trees will be added to a few small detached housing areas in lower Malmi near the airport. These detached housing areas are a vital part of the connections between the dense forest patches used by the flying squirrels. City of Malmi programs will be implemented to prevent removal of old or decaying wood from these properties and encourage more forest-like domestic landscaping. Older trees will have to be actively monitored and supported to prevent damage to private dwellings.



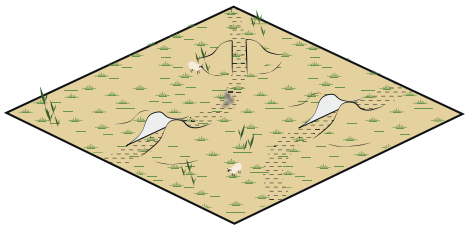
NEW FOREST DWELLINGS

New forest dwelling will be a new type of owner-built housing area consisting of alternating patches of forest and small single family housing units limited in size by zoning. Patches of forest will be at least 1ha. New forest dwellings will have a significant amount of city-planted trees to ensure flying squirrels can move throughout the area. Maximum distance between individual trees will be regulated to 20 meters. The new forest dwelling areas will serve as important green corridors connecting dense forest patches that squirrels use for nesting.



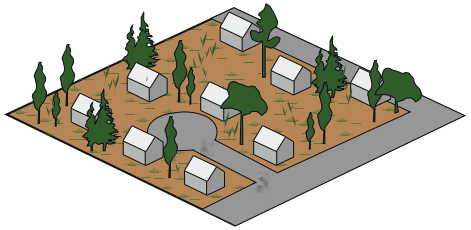
PARKS

Malmi has several public parks that will be left as they are now, because older parks are much more valuable in terms of ecosystem services than newly established ones. The biggest current park in Malmi is the Malmi cemetery which has a diverse plant community and many old trees. The City of Malmi maintenance practices of old parks will be revised to select for ornamental plant communities favorable to bumblebees as many of these parks' plantings are due for renewal.



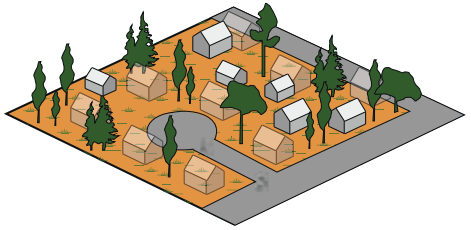
PRAIRIE RESTORATION WITH DWELLINGS

New prairie with sod dwellings will be a new type of community built detached housing area which can serve as a hunting ground for the goshawk and nectar foraging grounds for bumblebees. House design will be regulated by zoning, such that all houses are single-story earth-berm dwellings. Vegetation in this area will consist of native flowering annuals and grasses. Tall trees and dense bushes that limit visibility will be kept at a minimum. Sheep will be introduced to the area to graze, eliminating the need for mowing and retarding the natural reforestation of the area. These sheep will be managed by the Fallkulla educational farm currently active in the area.



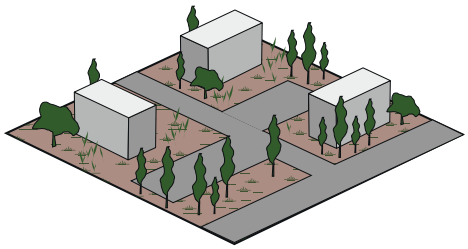
EXISTING DETACHED HOUSING

North-west Malmi has existing detached housing areas that will remain as they are, recognized for their existing diverse vegetation and mature trees. Residents in those areas will be encouraged to take part in bumblebee conservation programs which aim to make private gardens more pollinator-friendly.



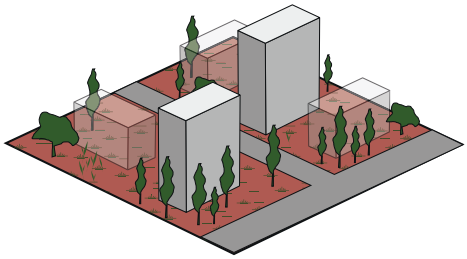
DETACHED HOUSING INFILL

Some detached housing areas will be densified to accommodate more humans where it will not detract from the habitat needs of other species. Densification will be implemented through tax incentives to encourage private home owners to build "granny flats", small self-contained housing units in their backyards, at their own expense and profit. Private home owners will also be allowed to electively subdivide and sell off portions of larger plots to allow additional private houses to be built in the area.



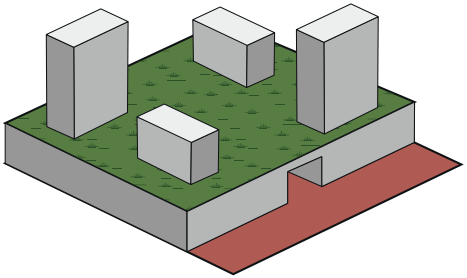
EXISTING MID-RISE HOUSING

Malmi has a few newly constructed apartment block areas that are located in areas not conflicting with the habitat requirements of any other flagship species. No significant changes will be required in these areas, but property owners will be encouraged to implement pollinator-friendly landscaping. Zoning will restrict building density to existing levels. In the future, building owners will only be allowed to renovate or replace existing buildings in-kind.



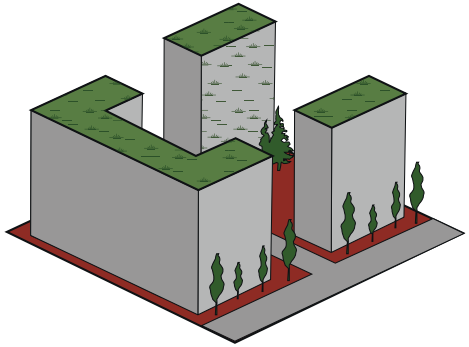
MID-RISE HOUSING INFILL

Where not in conflict with the needs of other flagship species, existing mid-rise housing areas will be densified. Existing property owners will be given tax incentives to build new units on their properties at their profit. Areas will be up-zoned to allow the building of larger and taller units when old ones are in need of replacement. If desired, existing land owners will be allowed to subdivide and sell portions of their land for new development.



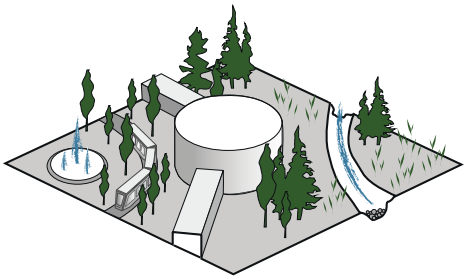
RESIDENTIAL-INDUSTRIAL HYBRID

With the City of Malmi led development projects, residential buildings will be incorporated into light industrial areas to create residential-industrial hybrids. These areas will have housing on top of light industrial buildings or residential buildings infilled among existing industrial buildings. The existing industrial usage of this area can partly be maintained in such a way that allows residential cohabitation as could be found in many trendy loft neighborhoods of post-industrial cities.



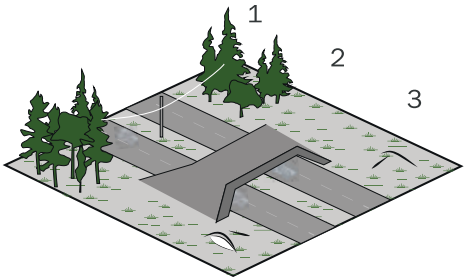
NEW DENSE URBAN

New City of Malmi led dense urban development will be constructed around new or existing transit nodes. These areas will consist of walkable high-rise buildings with shops and services on the ground floor. New dense urban areas will house a large human population attracted by the proximity to transportation, services and amenities. New urban landscaping practices will be pollinator friendly and support the foraging and movement of birds and small invertebrates serving as prey for goshawks.



MALMI AIRPORT NATURE CENTER

The airport of Malmi is an important part of Malmi's identity and the closing of the airfield evoked voices of resistance (Helsinki-Malmi Airport, n.d.). Our future plan for Malmi considers the preservation of the recognizable airport buildings and turns them into the Malmi Airport Heritage and Nature Center. The center informs residents about the former airfield and its history, as well as serving as a platform for nature education and nature community activities.



ECODUCTS

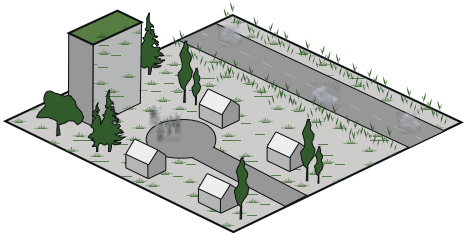
Ecoducts are any of a number of strategies to alleviate the effects of habitat fragmentation caused by roads and railways. With a limited gliding range between tree canopies, the Siberian flying squirrel is highly sensitive to fragmentation. The goshawk's prey will be more numerous if they can move and recruit mates from across major barriers.

1. Median posts are low-cost wooden poles placed on medians or roadsides. In combination with rope bridges, they can be effective ecoducts for gliding animals like the Siberian flying squirrel (Taylor & Goldingay 2009).

2. Land bridges can support the movement of most ground animals (ibid., Metzger 2014).

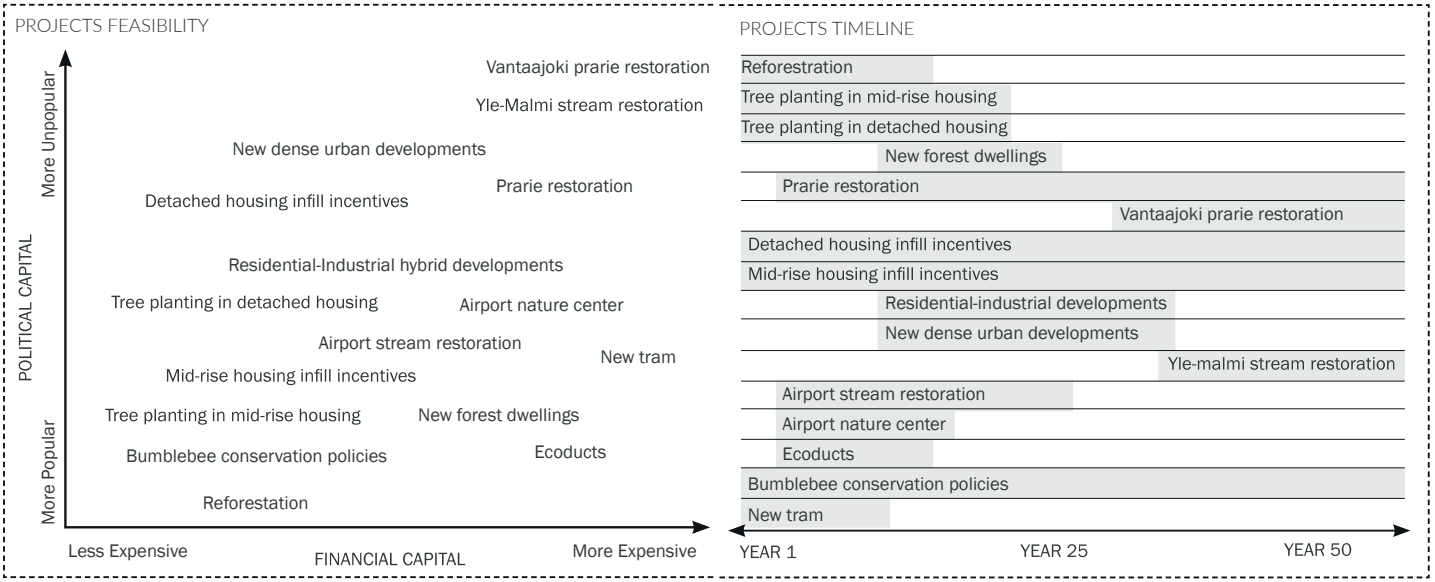
3. Wildlife tunnels provide an effective pathway for some small ground dwelling animals, especially amphibians and rodents (Dramstad, et. al. 1996).

At the beginning of the project, different ecoduct strategies should be tested and monitored to find out the preferences of the target species in this area (Taylor & Goldingay 2009).



BUMBLEBEE CONSERVATION POLICIES

In the future plans for Malmi potential foraging areas for bumblebees are found everywhere, from the city core to suburban gardens and forests. The city will institute policies which will help to make the existing and new areas even more bumblebee friendly. With small adjustments to plant selection and green area maintenance practices, the amount of quality foraging areas will increase substantially. The city will arrange education and gardening events directing residents towards planting more pollinator friendly species. Pollinator friendly plant selection and maintenance practices will be incorporated in public parks and green infrastructure. Reduced mowing of roadsides and replacing lawns with meadows will increase flower abundance in Malmi.



FEASIBILITY AND TIMELINE

Some of the projects required to implement Malmi's future habitat structure would be, admittedly, unpopular and require time to design, finance and implement. The graphs below indicate the relative amount of political and financial capital required to realize each of these projects and a proposed timeline over which these projects would be implemented. We recognize that not all of these proposals would be popular. The most conspicuously unpopular ones are those that require the demolition of existing residential areas. These projects would occur over a long time frame during which the City of Malmi could slowly purchase properties as residents voluntarily move out.

POPULATION PROJECTIONS

The result of our plan for future Malmi is an increase in the abundance of all 5 flagship species without an increase in the amount of mono-functional green areas. These projections are estimates based on extrapolating current populations to the new habitat. For the human population, we planned with the specific goal to meet or exceed the estimated population increase that would come from the redevelopment of Malmi Airport and adjacent densification (Helsinki City Planning Department, 2015). By determining the number of buildings, units and people per unit for the 12 different typologies, we were able to make an estimate of the future human population. The development of hybrid residential-greenspace and industrial typologies allowed us to achieve our human population goals as well as provide suitable habitat structures for the other flagship species.

UNCERTAINTY

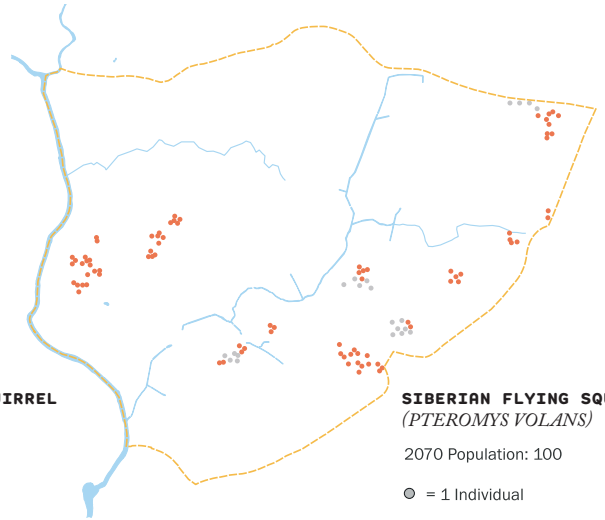
As humans, interpreting non-human wants and needs is not an easy task. We have to recognize the possibility that we can easily misinterpret these non-human voices. The knowledge we have of animal habitat preferences comes from observations and, unfortunately, most of these ob-

Population projections

SIBERIAN FLYING SQUIRREL
(PTEROMYS VOLANS)

2019 Population: 20

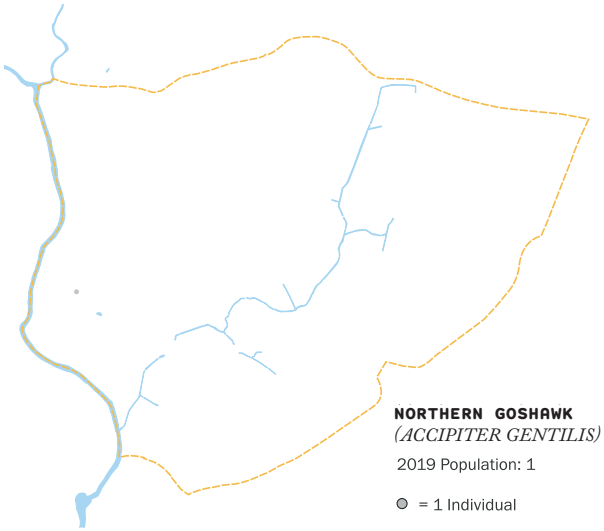
= 1 Individual



SIBERIAN FLYING SQUIRREL
(PTEROMYS VOLANS)

2070 Population: 100

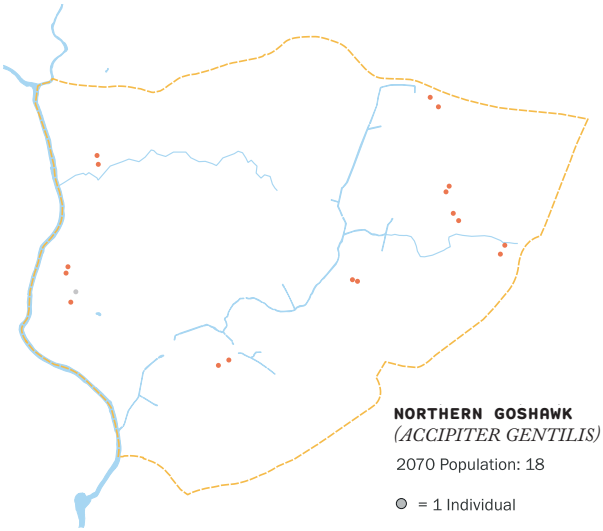
= 1 Individual



NORTHERN GOSHAWK
(ACCIPITER GENTILIS)

2019 Population: 1

= 1 Individual

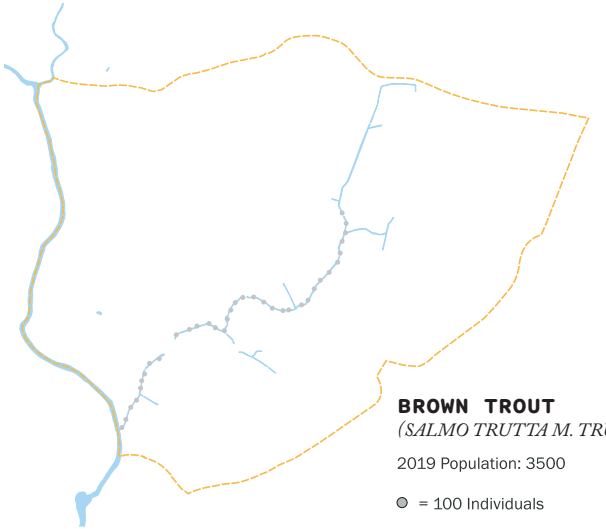


NORTHERN GOSHAWK
(ACCIPITER GENTILIS)

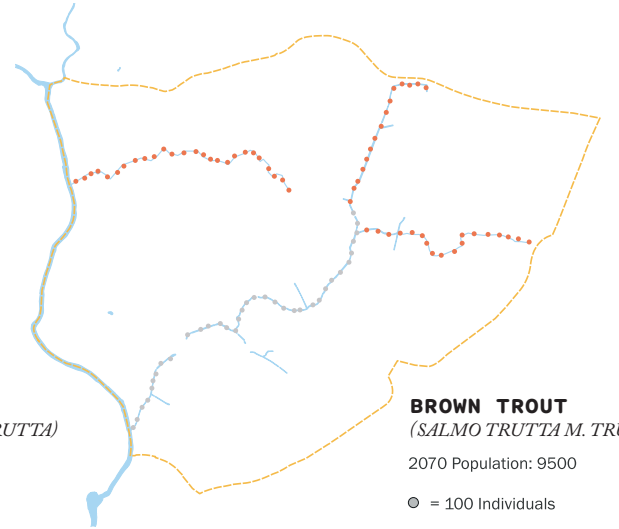
2070 Population: 18

= 1 Individual

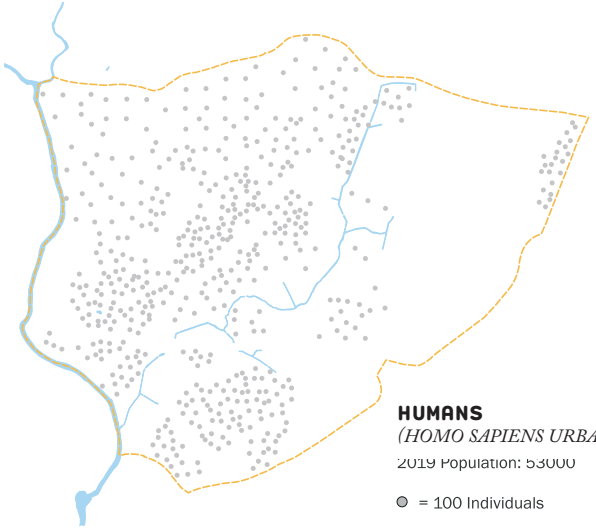
Population projections



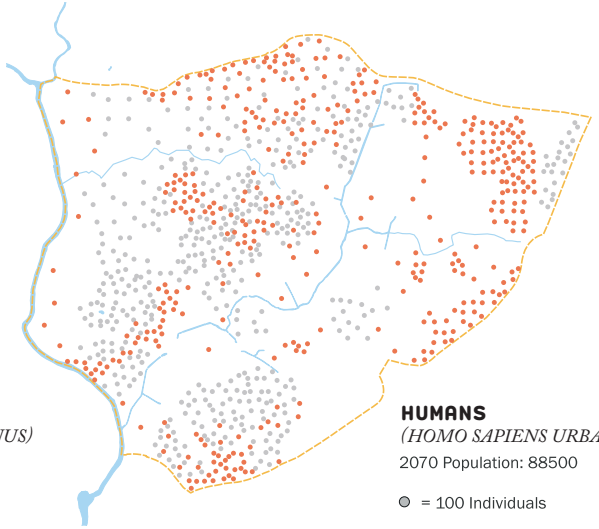
BROWN TROUT
(SALMO TRUTTA M. TRUTTA)
2019 Population: 3500
= 100 Individuals



BROWN TROUT
(SALMO TRUTTA M. TRUTTA)
2070 Population: 9500
= 100 Individuals



HUMANS
(HOMO SAPIENS URBANUS)
2019 Population: 53000
= 100 Individuals



HUMANS
(HOMO SAPIENS URBANUS)
2070 Population: 88500
= 100 Individuals

servations occur in non-urban areas. In analyzing these habitat preferences researchers look at common indicators of suitability that can be repeatedly and consistently measured. They measure the size, density, proximity and adjacency of markers like dead-wood, mature forest growth, standing or running water, and open clearings. However, there are many other confounding factors which go unmeasured and their effect on habitat suitability is often unknown. We must also acknowledge that non-human voices can change, just like human voices, and that habitat preferences that scientists have observed from past data may not reflect the future behavior of the animals in question. For example, it was long assumed the Siberian flying squirrel was intolerant of human-occupied habitats, but within the last decade they have experienced a "boom" in Helsinki and Espoo and show no signs of reversing course (Yle, 2016).

GENERALIZATION

The planning approach used in this project is applied to site specific conditions of soil, natural topography and existing species distributions. It also takes into account five flagship species which are deemed relevant to this specific place. The result is an urban plan which can not be repeated elsewhere. However, this approach could be generalized to any context and for any set of flagship species. The result in a new place and with new species would be different but would follow a similar process of identifying optimum habitat structures and overlaying them on existing conditions.

CONCLUSION

In a system that frames the choice between biodiversity and socio-economic needs as an either-or scenario, socio-economic needs have tended to win out, but not before biodiversity considerations cause headaches and delays. By imagining a planning scenario that includes animal voices from the beginning, we are seeking to create a system that utilises a both-and scenario where planning for a socio-economically functional place can also mean conserving and creating the habitat structures needed to support a variety of animals, including, though not limited to, *Homo sapiens urbanus.*

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CHAPTER 3

MALMI GREEN DISCUSSING THE QUANTITY AND QUALITY OF GREEN

Green spaces provide many benefits, functions and services that are needed for the sustainable development of cities. These involve economic, health, quality of life and ecological benefits. Therefore, we have found relevant to focus on the quality and quantity of green when it comes to analysing Malmi as we feel that the layer of green is the basis for all the other fields of development.

Kaie Kuldkepp, Emmi Turkki & Tong Sheng

1. INTRODUCTION

Green spaces provide many benefits, functions and services that are needed for the sustainable development of cities. These involve economic, health, quality of life and ecological benefits. Nevertheless, there is often a missing-link between the research findings on urban green and urban planning processes (Märit, 2014).

Therefore, we have found it relevant to focus on the quality and quantity of green spaces when it comes to analyzing Malmi as we feel that the layer of green is the basis for all the other fields of development.

Five urban green space qualities have been found to be relevant when it comes to urban planning:

- Proximity to where people live, work, commute and spend time;
- Coherence and sufficient size;
- Variations in character and type;
- Possibilities for people to be involved in green space development (e.g. gardening);
- And maintenance and upkeep (Märit, 2004).

We base our analysis of the green space on those characteristics, placing these roughly under two main categories: the quantity and the quality of the green space.

The quantity is mainly connected to the accessibility (proximity) and the size (the percentage of the land covered) of the green spaces. The accessibility to green spaces is studied by mapping private, semi-private, and public green spaces.

The quality concerns mainly the variety of green types and their provision for ecosystem services. We will also analyze the maintenance of green spaces and see what kind of an effect the current maintenance system has on the quality of green spaces.

METHODS

The methodology to assess the quantity and quality of green spaces involves a more quantitative approach through GIS analysis and a qualitative approach used to assess the performance of ecosystem services. The methodology to assess the quality of green spaces also involves qualitative interviews with local people. Twenty-one people have been interviewed and were asked a variety of open-ended questions. Interviews happened spontaneously (respondents did not have time to prepare) within public spaces of Malmi on the 12th November 2019.

All GIS data is based on the Helsinki public access database: https://kartta.hel.fi and our own mapping.

GIS analysis looks at the surface of green types, the share of private to semi-private to public green spaces, as well as maintenance levels of the green spaces. This is analysed over the scale of Malmi. Zoom in focus areas further look into the quantity of green spaces within an accessibility radius (500m). The share of different green types, as well as private to semi-private to public green space is then analysed.

After measuring the quantity of green spaces, the study focuses on the quality of green spaces through the framework of ecosystem services.

Ecosystem services provide a positive impact on the quality of life in cities. Some of the main ecosystem services provided in urban areas are the following:

- Provisioning: food supply;
- Regulating: water flow regulation and run-off mitigation, urban temperature regulation, noise reduction, air purification, waste treatment, climate regulation, pollination, and seed dispersal;
- Cultural: recreation and cognitive development, animal sighting.

Among those, regulating and cultural services have the biggest share as these play the most important role in urban contexts (Gomez-Baggethun & Barton, 2013).

We base our analysis on those named services as they also all seem relevant to the case of Malmi.

The first step in order to assess ecosystem services is to understand what is the capacity of a certain ecosystem to provide services. The second step is to value ecosystem

services in terms of ecological, economical and socio-cultural value-systems (De Groot et al., 2010).

As the current study is not in the scope of quantitative research, we focus on qualitative assessments. ESS potential performance is ranked site by site. Our rankings are estimations, yet still show the potential role of different urban green types to perform well in ESS.

2. ANALYSIS IN BIGGER SCALE

GREEN TYPES

The green types (map 1) have been categorized as functional landscapes (cemetery, allotment gardens, fields/pastures); amenity landscapes (designed parks and public spaces, sports grounds, domestic horticulture, courtyard green, roadside green) and semi-natural habitats (buffer forests, recreational forests, open green areas and meadows) (Swanwick et al, 2003). GIS analysis shows that Malmi has quite a variety of green types. To generalize, one could say that Ylä-Malmi has the majority of domestic horticulture, whereas Ala-Malmi has more semi-natural habitats (forests, fields).

PRIVATE/SEMI-PRIVATE/PUBLIC

Green spaces with different degrees of openness have different functions. A key aspect of public green is its contribution to the livability of the dwelling environment and the experience of nature. A vital feature of the private domestic garden is that it is considered as an outside extension of the casual leisure that is afforded by the dwelling. The semi-private green area provides semi-private space for residents, and it is also a public space for specific populations. These can also provide food for residents, adjust the temperature in front of the house (to some extent) and at the same time, families and children use (semi) private gardens as a place for activities (Coolen, 2012).

Therefore, when we studied different types of green, we also distinguished the distribution of private, semi-private and public green space.

As can be seen in the map of private-public green (Map 2), there are many private gardens in the detached house area, mainly distributed in Tapaninvainio and Tapaninkylä.

Semi-private green areas link to courtyards for apartment blocks or institutions. This kind of space is only open to some groups of people and therefore has a certain privacy. The semi-private greenery of Malmi is mostly distributed in the apartment house areas of Pihlajamäki, Sepänmäki, Ala-Malmi and Ylä-Malmi.

Public green spaces are abundant in Malmi, but unevenly distributed on both sides of the railway, as Ala-Malmi tends to have more and bigger areas of public green spaces than Ylä-Malmi. Thus, residents' accessibility to public green spaces is problematic on the western side of the railway tracks in Malmi.

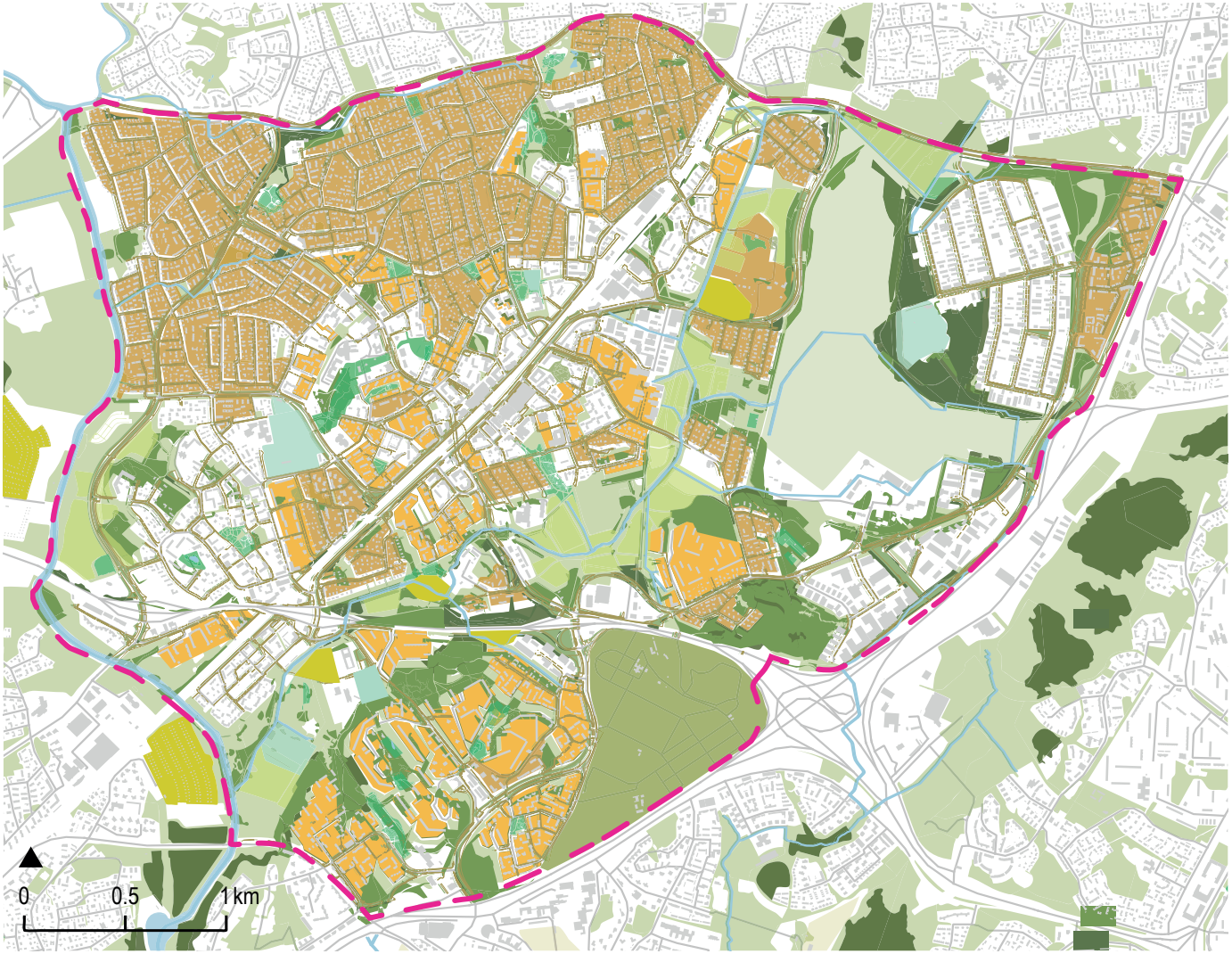
Areas with plenty of public greenery are sparse with private green space. Similarly, there is a lack of public green in private residential areas.

MAINTENANCE OF GREEN SPACES

Instead of classifying the maintenance levels in Malmi according to the national guidelines (VHT, 2014), we wanted to emphasize the intensity of management currently taking place in Malmi (Map 3). With this viewpoint, we are able to see that designed parks and roadside greenery is taking up a lot of maintenance measures, even if they are small in size.

Since a high maintenance level refers to fossil fuel-dependent maintenance practices, a higher level of maintenance can be seen as a direct disservice provided by green areas (Sämuel at Al., 2015). For example, in the city of Helsinki, lawns are mowed according to the instructed height of the grass and on the contrary, meadows are mowed 1-2 times a year or every 2 to 3 years (City of Helsinki, 2016).

Generally, local-scale management practices have a bigger influence on species diversity than landscape-scale effects. “Environmentally friendly” management practic-



functional landscapes

- *cemetary*
- *allotment gardens*
- *fields/pasture*

semi-natural habitats

- *protected forests*
- *recreational forests*
- *open green areas and meadow*

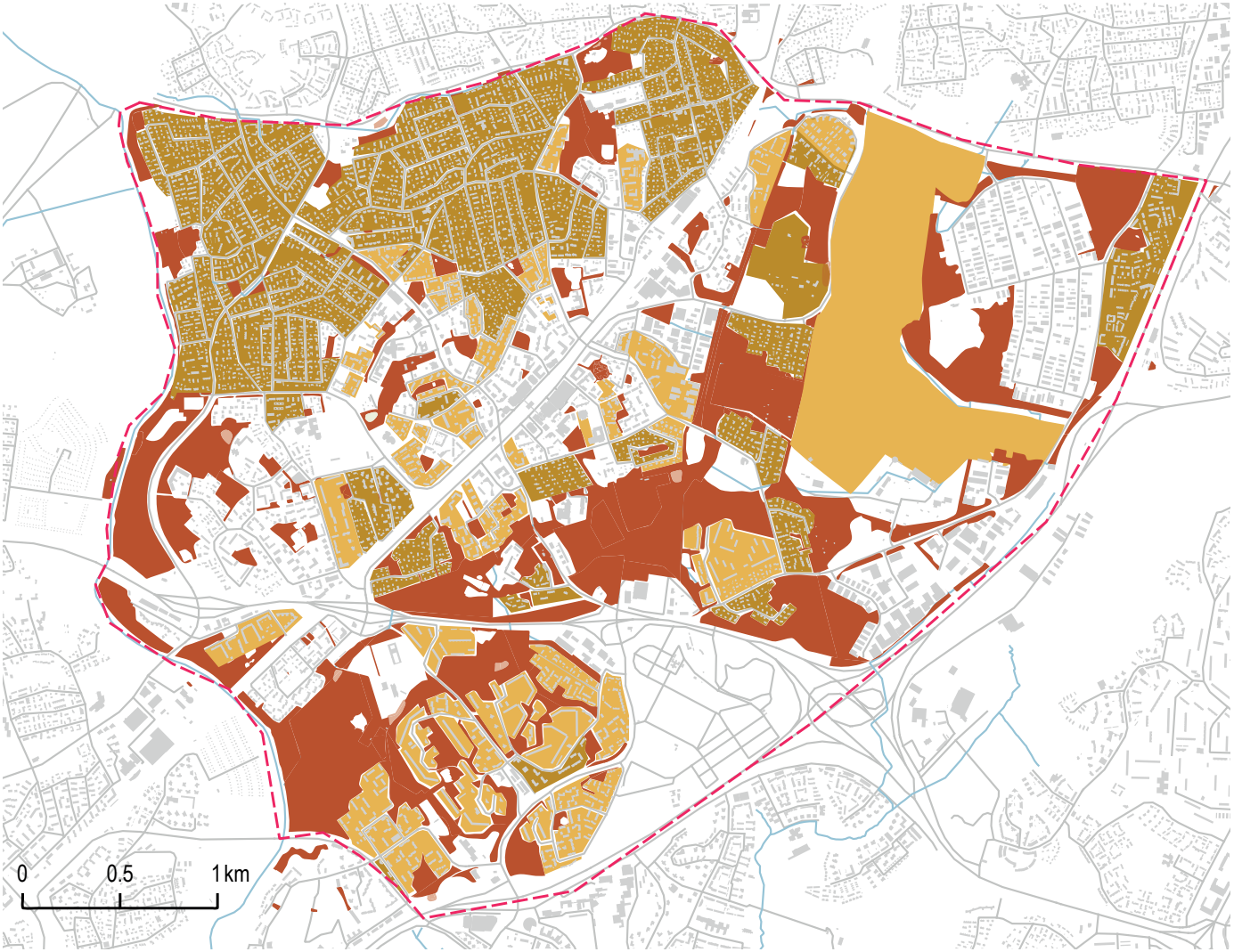
amenity landscapes

- *designed parks and public space*
- *sports grounds*
- *domestic horticulture*
- *courtyard green*
- *roadside green*

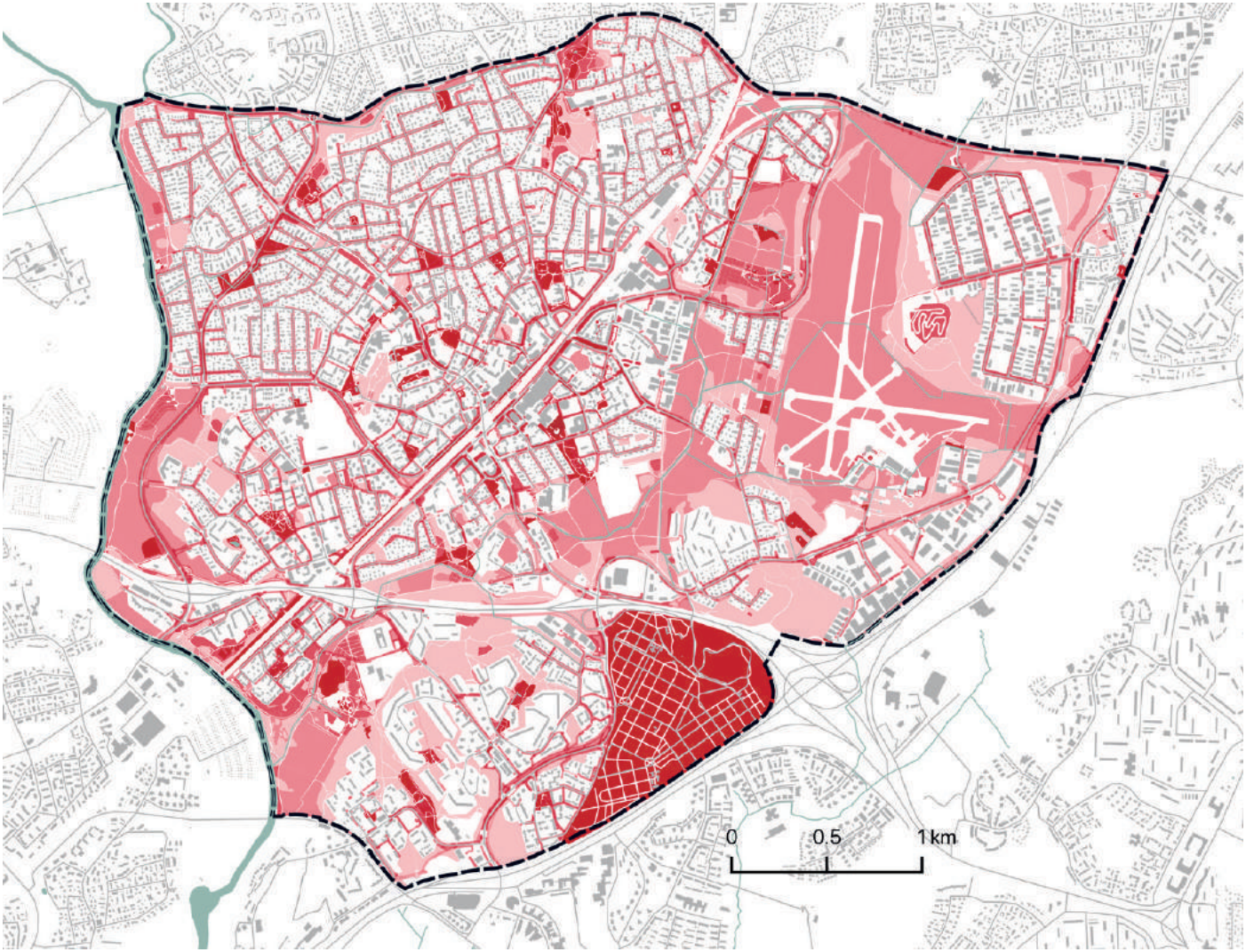
Map source: Vihreä ja merellinen Helsinki 2050, https://kartta.hel.fi, own mapping

Green types based on:
Swanwick, C., Dunnett, N. and Woolley, H., 2003. Nature, role and value of green spaces in towns and cities: an overview. Built Environment, 29(2), pp.94-106.

Map 1. Green types.



Map 2. Private to public green



Map 3. Maintenance of green.

es can contribute to an increase in biodiversity. For example, mowing height and lack of pesticides increases biodiversity. Also, the usage of natural materials, like mulch and peat, has a positive effect as well as increasing the size of green foliage. Even small patches of green spaces can host high biodiversity of flora and fauna (Swartz et al., 2012).

PERCEIVED QUALITY OF GREEN SPACES

In order to assess the quality of green spaces, we think it is important to ask what locals think themselves - how do inhabitants of Malmi perceive the green areas in the neighborhood? We conducted street interviews during a single day (12.11.2019) in an informal setting, mainly in public spaces of Malmi. The goal was to get the perceptions of the general public about the green areas in Malmi; are the green areas accessible, usable and should there be improvements done? Interviews were open ended, though the first questions were all the same - how do you use the public green areas in Malmi, which public green areas do you use the most and how should the public green areas be improved in the future?

In total, we got answers from twenty-one people varying in age, gender and national background. We gathered the answers to form an infographic (IMAGE 1) and marked the places that people mentioned into a map (MAP 4.) in order to give the answers a spatial context. The most popular green spaces that came up were Longinoja streamline, sports fields and the Ala-Malmi park behind the library. Overall, the general message from people was that there is a good amount of green spaces in Malmi, but some green areas "work better" than others.

Image 1. Most mentioned green areas within the interviews.

Image 2. Perceptions around the quality of green areas based on the interviews.

Map 4. Usage of green based on interviews.

3. ZOOM IN FOCUS AREAS

CHOOSING ZOOM-IN SITES

Analysis for the whole of Malmi's green space shows that different urban areas have different distributions of green types. Therefore, when choosing the focus areas for our further analysis we will look at building types, in combination with green types, which are 500m radius access areas (map 5).

We have roughly categorized Malmi into three residential housing types: detached housing, row housing and apartment buildings. Each building type was identified from two separate locations, so in total we got six different focus areas. The study points were distributed on both sides of the railway and close to different types of green spaces to ensure that the study covered the entire Malmi area when it comes to urban green typologies.

Good accessibility is understood as the provision of necessary facilities near in space and time (Franz S, 2007) and good accessibility is also a part of analyzing green spaces. Only if public green areas are covered on a regular basis within walking distance can potential pedestrians be convinced to walk to the green space. 500 meters (means 5-8 minutes walk) has often been assumed to be the distance that "the average citizen will walk rather than drive" (Arbeitskreis, 2007). Therefore, we have chosen 500m radius for our zoom-in focus areas.

QUANTITY ANALYSIS: SHARE OF DIFFERENT GREEN TYPES IN FOCUS AREA, SHARE OF PUBLIC GREEN

The quantitative analyses done with GIS shows us that almost all the focus areas have around 20-25 % impervious surfaces and the rest is either public, semi-private or private green areas (Image 4). The Malmi center focus area stands out with mostly impervious surfaces: roads, houses, paved areas and other sealed structures. This analysis shows us that Malmi, as a whole, has a quite good quantity of green areas and our street interview results strengthen this as well.

The next step was to analyze the quantity of different green types within public green spaces. Different green types offer different ecosystem services and not all of the green types are evenly accessible to people. The next analyses (Image 4) show that in many of our focus areas, recreational forests, open green areas and roadside green areas take the biggest share of public green space.

Often the surface of green public space is measured through ha per habitat or 1000 inhabitants (Gomez-Baggethun & Barton, 2013). We applied the m2 per 1000 inhabitants measure to see the accessibility by focus area.

QUALITY ANALYSIS: ECOSYSTEM SERVICES (ESS) ASSESSMENT

Ecosystem services provide a positive impact on quality of life in cities. Some of the main ecosystem services provided in urban areas are the following:

- Provisioning: food supply;
- Regulating: water flow regulation and runoff mitigation, urban temperature regulation, noise reduction, air purification, waste treatment, climate regulation, pollination and seed dispersal;
- Cultural: recreation and cognitive development, wildlife sighting.

Among those, regulating and cultural services have the biggest share as these play the most important role in urban contexts (Gomez-Baggethun & Barton, 2013).

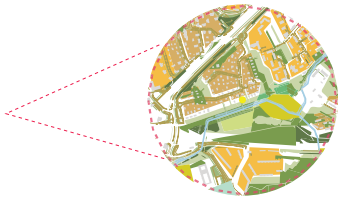
We base our analysis on those named services as they also all seem relevant to the case of Malmi.

The first step in order to assess ecosystem services is to understand what is the capacity of a certain ecosystem to provide services. The second step is to value ecosystem services in terms of ecological, economical and socio-cultural value-systems (De Groot et al., 2010).

As the current study is not in the scope of quantitative research, we focus on qualitative assessments. ESS potential performance is ranked site by site. Our rankings are estimations, yet still show the potential role of different

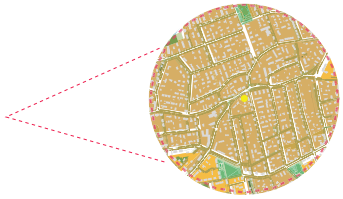
Map 5. Zoom-in focus areas.

- *DETACHED HOUSES 1 ALA-MALMI*



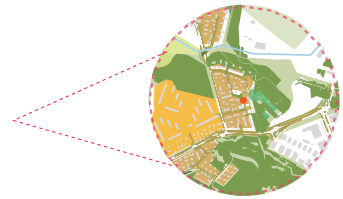
Regulating ● ● ● ○ ○
Provisioning ● ● ● ● ○
Cultural ● ● ● ● ○

- *DETACHED HOUSES 1 TAPANINKYLÄ*



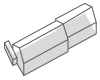
Regulating ● ● ○ ○ ○
Provisioning ● ● ● ○ ○
Cultural ● ● ○ ○ ○

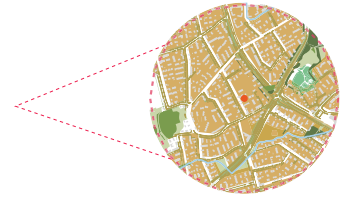
- *ROW HOUSES 1 NALLENMÄKI*



Regulating ● ● ● ● ○
Provisioning ● ● ● ○ ○
Cultural ● ● ● ● ○

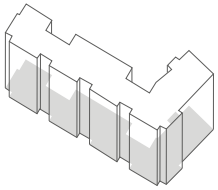
- *ROW HOUSES 2 TAPANINVAINIO*





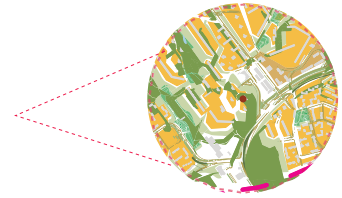
Regulating ● ● ● ○ ○
Provisioning ● ● ○ ○ ○
Cultural ● ● ○ ○ ○

- *APARTMENT BUILDINGS 1 CENTRAL MALMI*



Regulating ● ○ ○ ○ ○
Provisioning ○ ○ ○ ○ ○
Cultural ● ○ ○ ○ ○

- *APARTMENT BUILDINGS 2 PIHLAJAMÄKI*



Regulating ● ● ● ● ○
Provisioning ● ● ○ ○ ○
Cultural ● ● ● ○ ○

Image 3. Qualitative analyses of zoom-in areas.

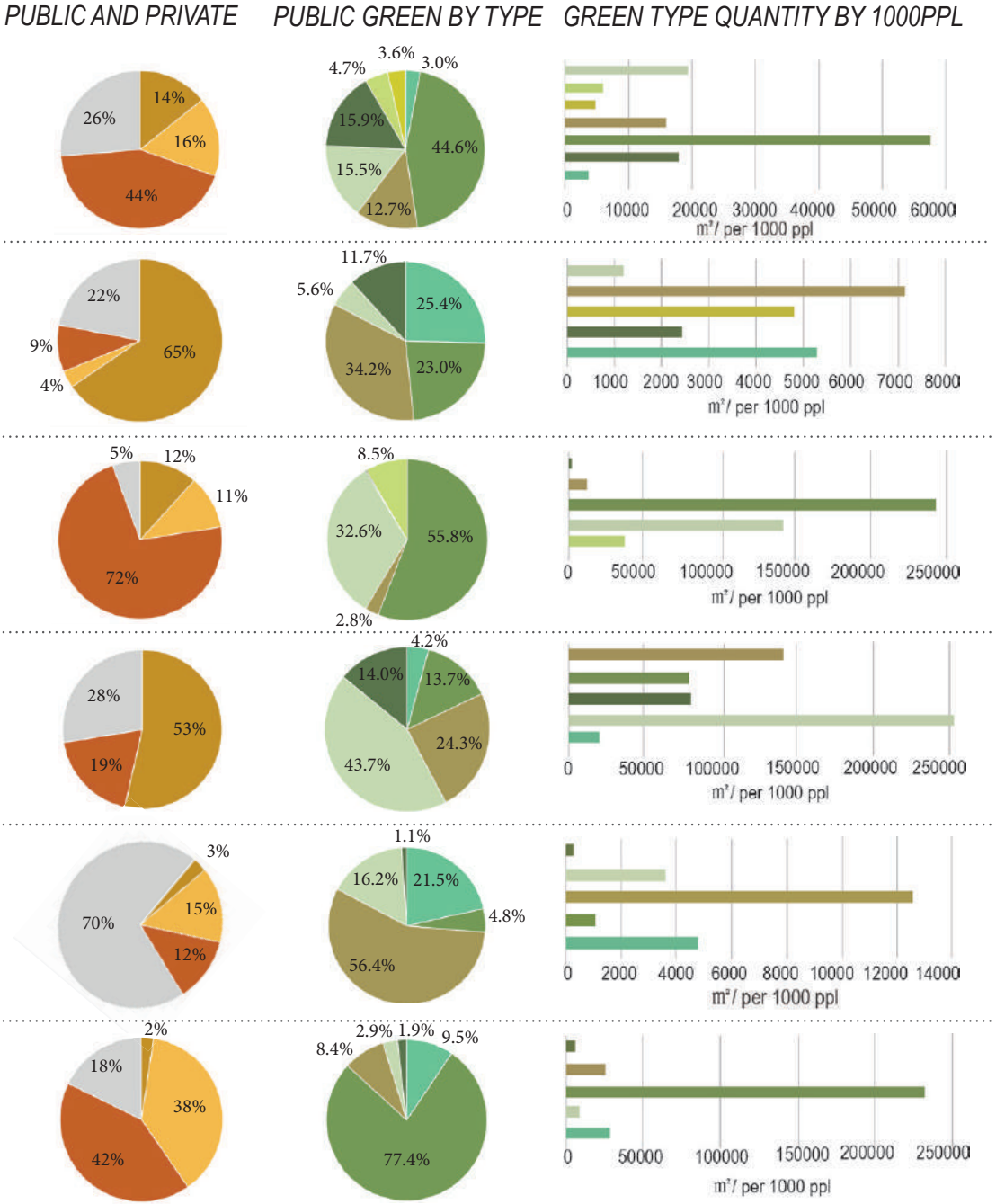


Image 4. Quantitative analyses of zoom-in areas.

urban green types to perform well in ESS.

When looking at the ecosystem services assessments (Image 3) one can conclude that the green spaces in detached housing areas tend to perform the best in providing services. These areas have the majority of domestic horticulture green types and therefore growing food is a better option here than in other housing types. The Nallenmäki row housing neighborhood also received a rather high ranking in provisioning service. That is due to its high quantity of forest green types that is also well connected forming a bigger sized patch and so it can also potentially contribute to food provision.

Regulating service was ranked highest in the Nallenmäki and Pihlajamäki neighborhoods, the first being the district where the majority of housing types are row houses and the second having apartment building blocks. Here the high ranking can be explained by the relatively high quantity of forests (buffer and recreational) that act well in climate regulation, noise reduction, water run-off regulation and run-off mitigation, air purification etc.

Cultural services got the highest rankings in Ala-Malmi detached housing district, as well as the Nallenmäki row housing district. Both of these areas have interconnected green spaces that form a linear strip of green that is potentially good for recreational activities, as well as for wildlife sighting.

When looking at all the ecosystem services together, the Ala-Malmi and Nallenmäki neighborhoods received the highest rankings. This can be explained by their bigger share of semi-natural habitat green type in overall surface coverage. Also, the green patches themselves tend to be bigger In size and are connected.

Central Malmi received the lowest ranking in the performance of ecosystem services. There is simply not a lot of green spaces. Green spaces are also cut off by the railway and roads. Public green spaces, like parks, are rather small and disconnected from each other.

IDENTIFYING KEY ISSUES IN FOCUS AREAS

When looking at the analysis of the focus sites we have identified four key issues.

GIS analysis, as well as ESS assessment, both show how central Malmi stands out from the rest of the district. It just simply lacks green areas. Since the center of Malmi is the densest populated area in Malmi, and there are a lot of public impervious areas in the center, the amount of green areas should be increased.

When looking at the Malmi central area, as well as the detached houses in Ala-Malmi, one notices that the landscape is cut by the railway and/or highway. These infrastructure lines interrupt the connectivity of green areas, as well as accessibility to these areas. It is inevitable that cities need infrastructure, but at the same time better green area connections for both humans and animals should be provided. Therefore, heavy infrastructure lines need better connections that support the overall green structure.

The third key issue is concerned with the quality of green spaces within semi-private areas as those tend to not have the benefits of private green spaces (e.g. growing food) nor of public green spaces (e.g. active recreation). ESS assessment has shown that semi-public spaces around apartment blocks tend to provide different quantities and qualities of green spaces. For example, the central Malmi area is lacking in both, whereas the Pihlajamäki residential area performs relatively well in terms of the quantity and quality of green spaces. In both cases, we feel it is important to deal with those green spaces inside dense residential areas in order to see how they could be improved and contribute to better neighborhoods.

The last key issue looks at roadside green areas. Our analyses show that a lot of the public green areas are roadside green types, but currently this type of green space does not contribute to ecosystem services as much as it potentially could. This can be especially seen in the areas that have, with respect to the whole amount of green, a lower amount of public green. These areas are Tapaninkyä, Tapaninvainio, Central and Ala-Malmi. Especially in Tapaninkylä and Tapaninvainio with their

large proportion of private and semi-private green spaces it is harder for urban planners to affect the green spaces there and therefore focusing on the roadside green as a public asset becomes relevant. When looking at the maintenance map, the maintenance levels of the roadside green are rather high. Therefore, we are interested in both how to improve the ecosystem services provision as well as lower the maintenance intensity when it comes to roadside green areas.

To conclude, from our analyses we intend to address the following themes: the improvement of green areas connections through heavy trafficked infrastructure; improving the quality of green spaces in semi-private areas; improving the quality of roadside green areas; and improving the quantity of green space in Malmi central area.

4. PROPOSALS

In order to achieve our suggested proposals (Images 5, 6, 7 & 8), we look at different elements that could contribute to the bigger system of urban green spaces. Sometimes, the additions to the current situation can be rather small, yet can lead to the improvement of the overall condition of green spaces.

We understand urban spaces (not only parks, forests and gardens, but also streetscapes, plazas etc.) as ecosystems of their own. In order to do so, stormwater management, soil conditions and green connections should be promoted (National Association of City Transportation Officials, 2017).

The urban soils have the capacity to infiltrate water, decompose and immobilize contaminants, while reducing the concentration of carbon dioxide in the atmosphere (Lehmann & Stahr, 2007). This is why we suggest that the urban run-off from the impervious surfaces is directed to planting areas.

A lot of studies considering ecosystem services and urban vegetation look at trees in a positive light, but as recent studies have shown (Viippola et Al., 2018; Buccolieri et Al., 2009) street trees also provide disservices to the local air quality due to reduced wind speed and near-surface air exchange. Thus, although it is also important to provide urban spaces with a variety of trees, it is also necessary to consider other alternatives as well when trying to improve the quality of urban vegetation.

A study made by Weber et al. (2014) found that herbaceous plants are able to immobilize locally occurring air pollutants relationally to traffic volumes and plant characteristics. Different leaf traits and plant heights contributed differently in reducing particulate matter levels. So, by promoting biodiversity in urban vegetation it is likely to improve the air quality, especially along busy streets. This is why one of our strongest proposals in all of the sites is to replace lawns and mono-cultural plantings with meadow-like vegetation.

A quantitative study made by Parker and Simpson (2018) shows consistent results that public green infrastructure (PGI – such as street trees, biofilters, rain gardens and green roofs) had a positive correlation with, among others things, to health, wellbeing and livability. The attributes found from urban space that contributed to urban livability were the presence of tree canopies and PGI, and the ease of access and walkability in public green infrastructure. Therefore, we do not propose only locally based solutions, but also better connections between green spaces.

Our proposals are made considering the analysis in a larger as well as zoom scale. Nevertheless, the proposals are not site specific but rather form a toolkit. The ideas could be applied elsewhere than Malmi where the same issues are present.

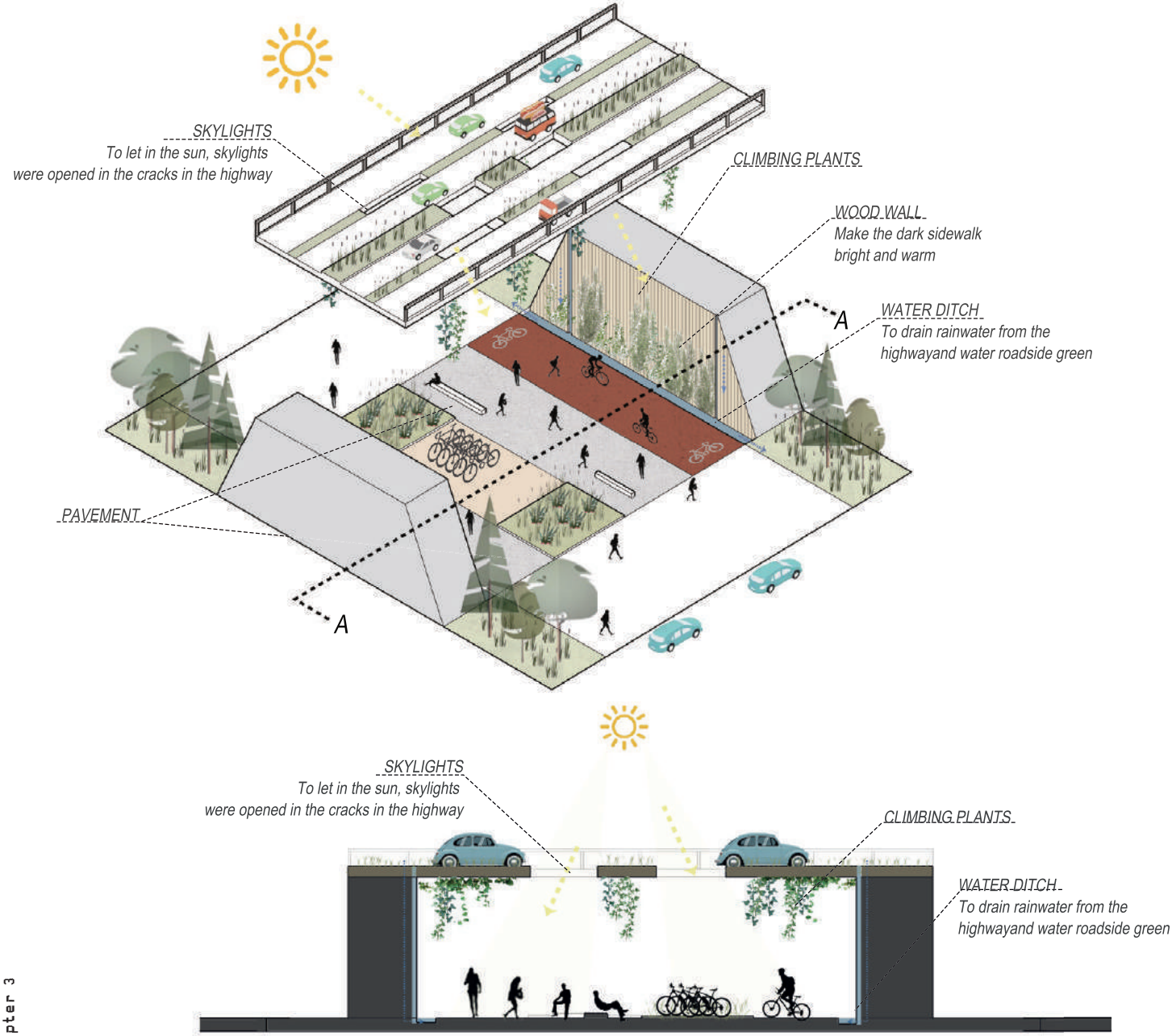


Image 5. Proposal: Improving green space connections through heavy trafficked infrastructure.

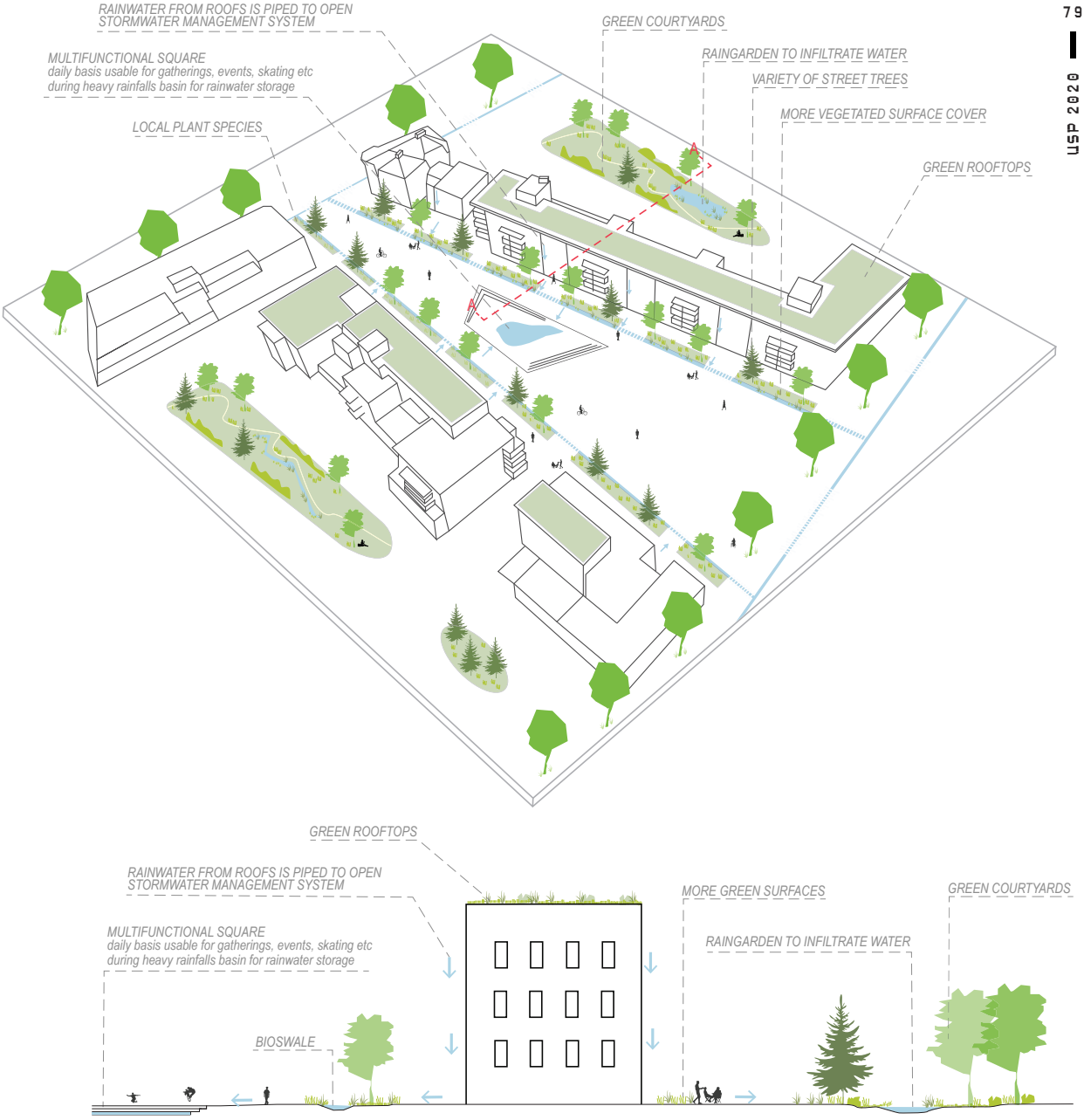


Image 6. Proposal: Improving the quantity of green spaces in the Malmi central area.

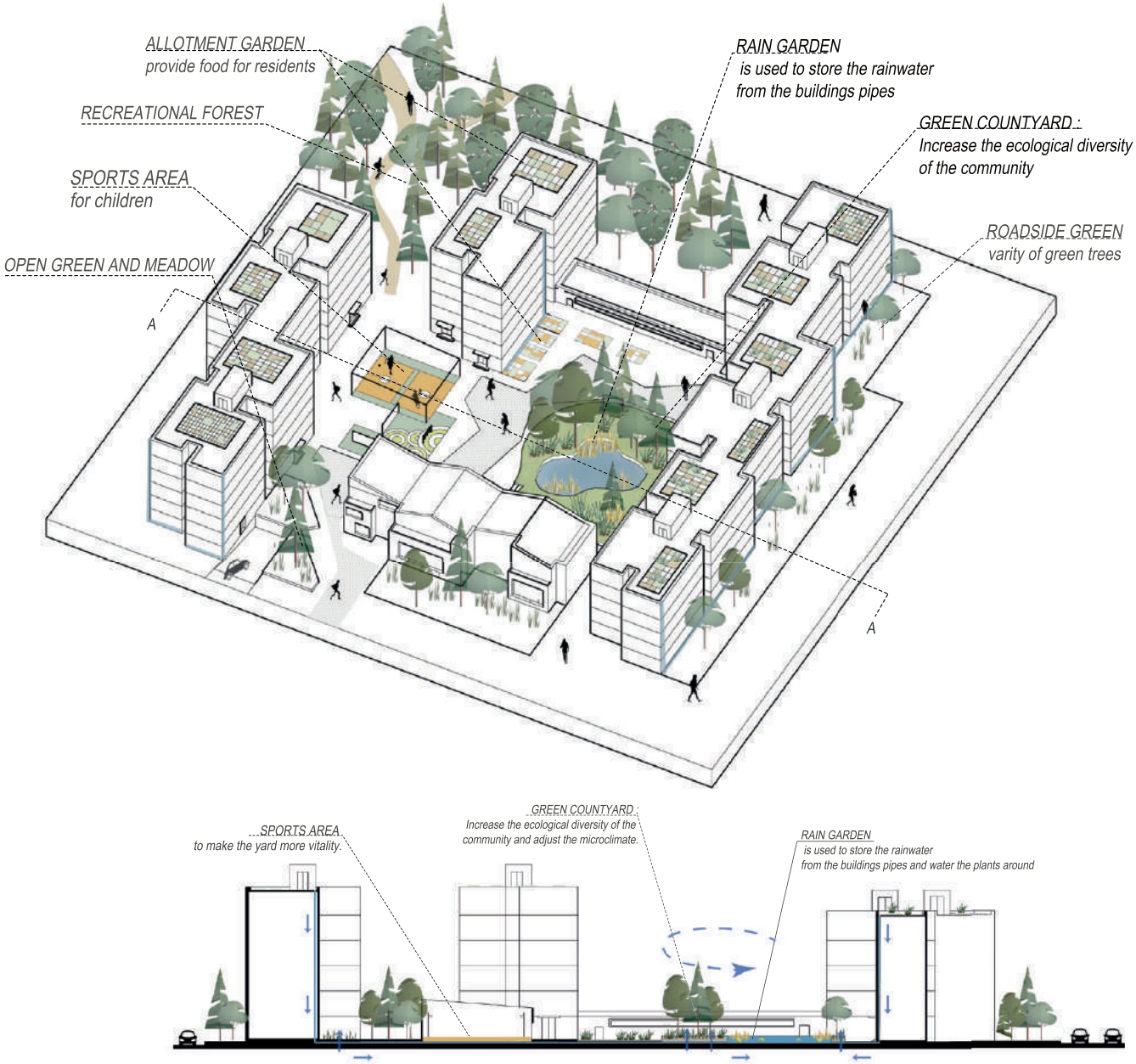


Image 7. Proposal: Improving the quality of green spaces in semi-private areas.

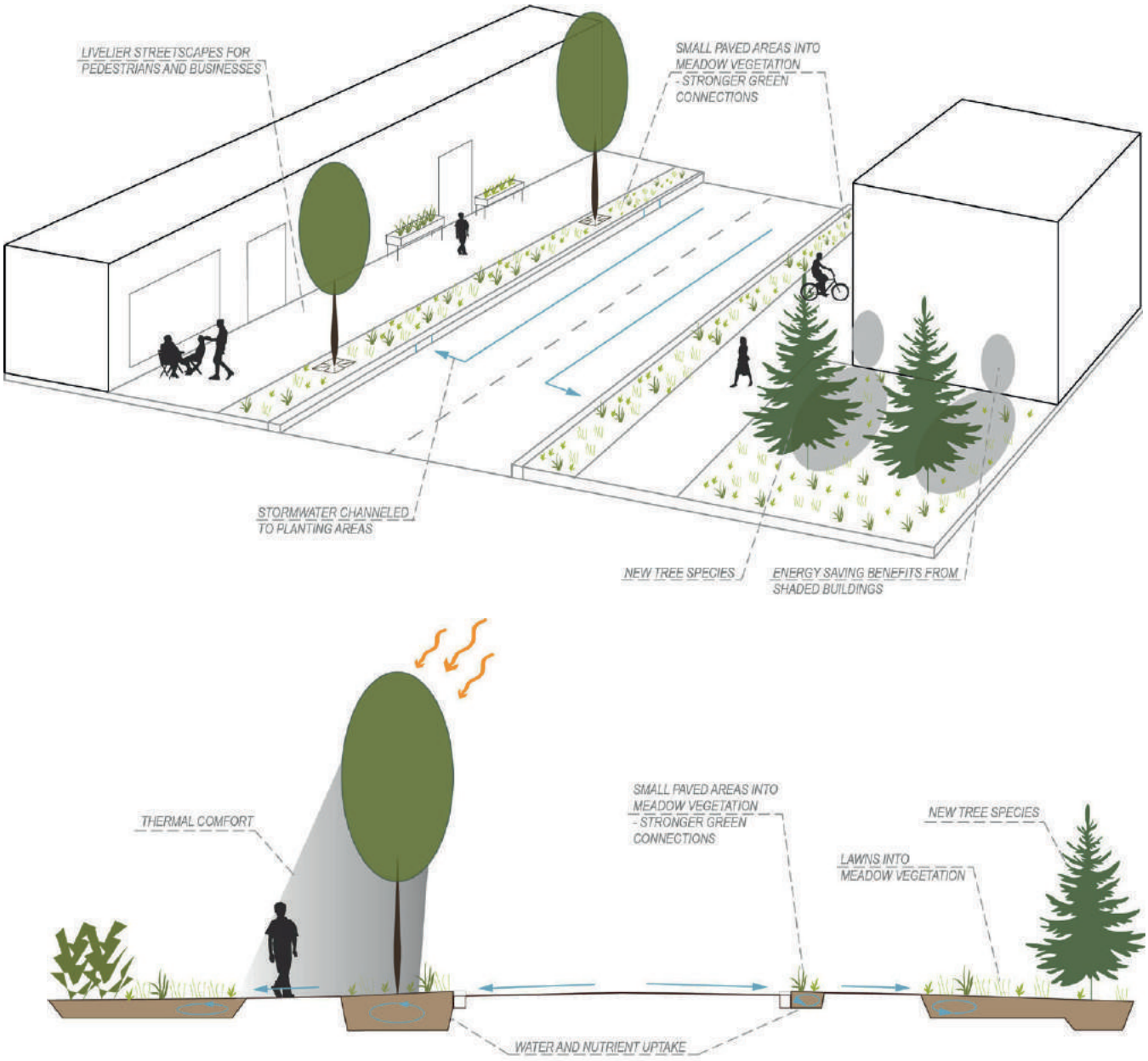


Image 8. Proposal: improving the quality of roadside green spaces.

5. DISCUSSION

Our study of the green spaces in Malmi adds to the discussion on Malmi's present, and future more specifically, as well as on urban planning in general. With the analysis of the quantity and quality of green spaces we have shown the relevance of green areas in cities when it comes to the health and well-being of all its inhabitants (including non-human species). Looking at different aspects of green areas gives important information, as well as a very relevant toolset to approach cities today and to think ahead for future developments.

One can conclude that Malmi is a relatively green area, so the quantity side is actually pretty good. What we have found shows this to be problematic as there is an unequal distribution of green spaces inside of the district. Ylä-Malmi tends to have the majority of private domestic horticulture, whereas Ala-Malmi has large and well-connected patches of public semi-natural green spaces (for instance, forests and fields). Central Malmi is lacking in both and is generally poor in providing green spaces. The unequal distribution of green spaces is relevant in terms of access to green areas as well as access to ecosystem services this green could provide.

One can conclude that the quality of green is therefore another aspect that is very relevant to discuss. Even if the district looks green, the question is how well do these green spaces function and provide ecosystem services (for example, stormwater management, recreation spaces, and regulating microclimate)?

Through our study, we have determined four main issues that could be dealt with in order to provide more equal distribution of green areas (quantity and quality) in Malmi. The proposals involve the improvement of green connections through heavily trafficked infrastructure, improving the quality of green spaces in semi-private areas, improving the quality of roadside green areas and improving the quantity of green spaces in the Malmi central area. The proposals themselves are all based on a systemic approach to green spaces, meaning that different factors that improve green spaces work well, while when added together they also contribute to a variety of ecosystem services and support a wider green network.

The study itself cannot be considered as being scientifically accurate as the mapping of the semi-private and private green areas are based on Google Maps aerial photos which lends a sense of unreliability to the figures. Also, the ecosystem services analyses are based on our own assessments. However, both the quantitative and qualitative analyses are consistent throughout the whole study and we are basing our toolkit on these findings. The aim of the study was to discuss the quantity and quality of Malmi's green spaces and in order to do so we have tested methods suitable to achieve this aim.

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CHAPTER 4

NEIGHBORHOOD CONNECTIVITY AND STREETSCAPE IN FUTURE MALMI

A theory grounded design concept for a lively street connection between the existing and new parts of Malmi. A concept for a lively and commercially and socially active street connection in a suburban center derived from theory and best practices observed from local and international examples.

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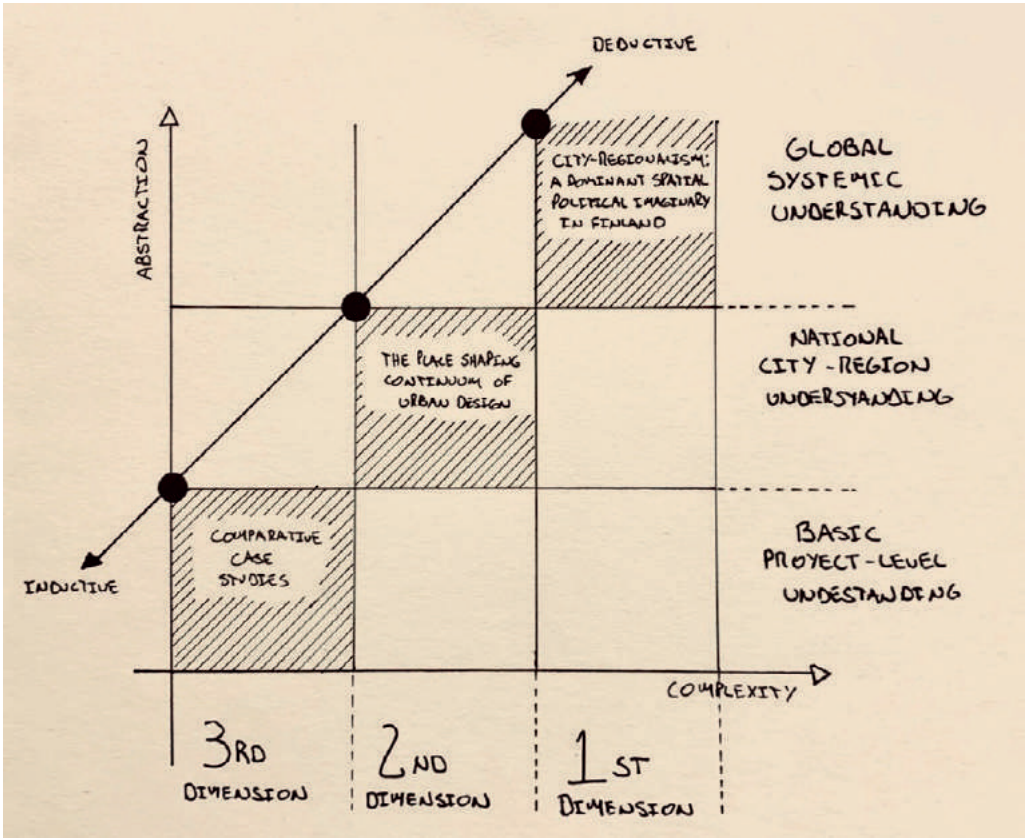

Figure 1. The Deductive-Multidimensional framework and thinking process.

1. INTRODUCTION

Our Chapter will start by making explicit the intellectual path and thinking process that have taken us to the results presented here. After that, we will review four case studies that will help us to explain why we have decided to propose a design concept for a connecting street in Malmi. We will start by a detailed exploration of the services, green infrastructure, attractions, retail and commercial spaces in Malmi and, with this outline as a baseline, we will start building our design.

As a final outcome we will deliver a design concept for the development of a Main Street connecting the existing and future parts of Malmi. In the concluding part, our design concept is explained in detail and presented.

1.1. THE DEDUCTIVE-MULTIDIMENSIONAL FRAMEWORK

What exactly are the types of spaces that we are "creating" when we erect walls and buildings from scratch?

How it is possible for a discipline — Urban Design — that has been shaped by the laws of the physical-material world, by the precision of geometrical forms, and by a long tradition of representing three-dimensional and multi-sensorial realities into two-dimensional canvases, to account for, transform and reshape our cities? Is life (when we talk about households) and public life (when we talk about cities) supposed to fit these drawings? What are the fissures and what are the traces that could help us to understand where this tradition, practice and "science" is missing the point?

These questions point to an intellectual *dérive* that took us through a wide and diverse set of academic resources and materials, ranging from psychology to politics and all the way to philosophy.

In order to support the outcomes presented in this paper we would like to note here the theoretical framework used for our analysis.

As Figure 1 depicts, our argument is made up of the following three horizontal and three vertical intertwined dimensions.. Within traditional deductive reasoning every horizontal segment represents a proportionally smaller and delimited part of the subject/phenomena/problem we want to analyze. Additionally, in the case of the vertical segments we try to denote the multi-dimensionality of our thinking process, which is that for every level of deductive reasoning we have three dimensions of understanding.

1st Dimension	Global Systemic Understanding	Discursive considerations
2nd Dimension	National, City-Region Understanding	Practices, traditions and Bureaucratic considerations
3rd Dimension	Basic Project Oriented Understanding	Design, typological, morphological, sensorial considerations

Table 1. Resources and level of analysis.

In brief, the *systemic dimension* deals with a supra-structural (in Marxist terminology) set of power arrangements on a global scale. Secondly, the *institutional dimension* is analyzed as a bureaucratic corps of norms and legislation constraining urban design process and place shaping, and finally the *practical dimension* is understood as a set of embedded practices within planning offices and planning officials regarding the way urban design and urban planning is executed.

Summarizing, during our work we have taken into consideration every single one of the dimensions described in Fig. 1, but for the purposes of this work we have chosen to focus only on the third dimension as the best fitting theoretical framework to deliver a street concept design for Malmi.

1.2. THE PRACTICAL DIMENSION: PLANNING PRACTICES WITHIN THE CITY OF HELSINKI PLANNING OFFICE

All the way from the 1950s to the late 1970s and early 1980s housing - specifically housing states - was developed in Helsinki and broadly in Finland followed a schematic decentralization town plan based on Perry's ideas (Perry, C. 1929) on neighborhood units as the primary element of the system. Nevertheless, as noted by Vaattovaara (2018), "in the Finnish case the model clearly separates the housing units from the large Urban whole" creating the scattered suburban structures across the whole Metropolitan Region that we see today. Nevertheless, during the first years of the 1970s we can clearly identify a shift towards a new design pattern that

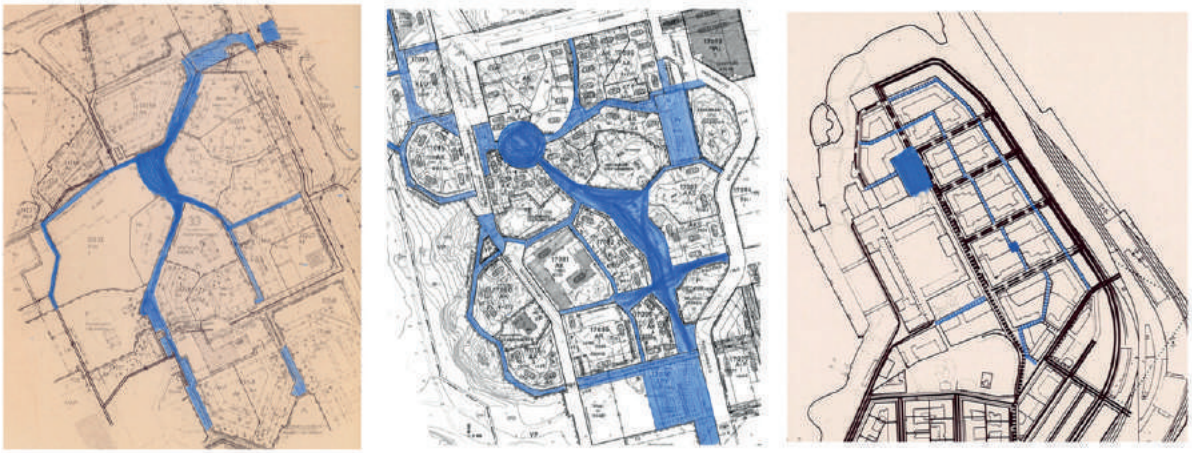

Figure 2. Plans of different areas of Helsinki, each presenting the use of pedestrian paths as urban design resources.

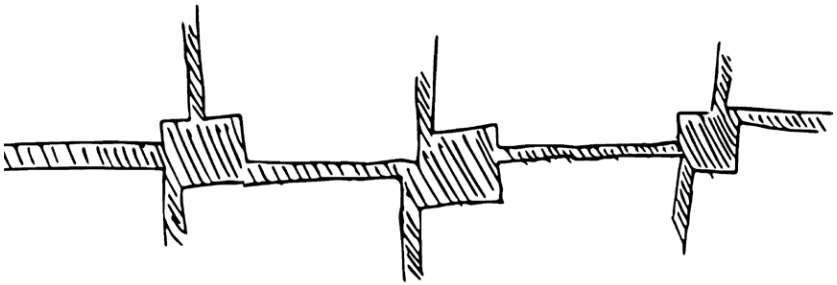

Figure 3. Parallel or longitudinal dash-delineated pedestrian paths as part of the urban design resources at the City of Helsinki Planning Office.

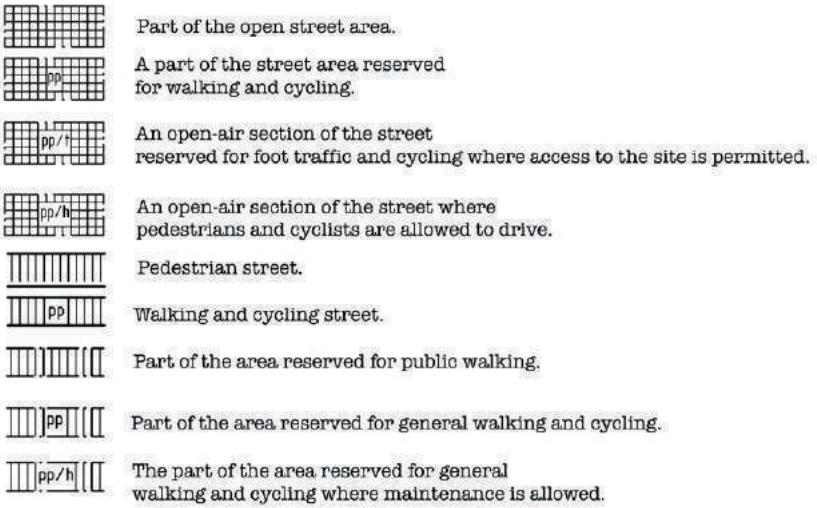

Figure 4. Labeling and Symbology.

we would like to refer to as the "pedestrian intensifying" strategy. The most singular design features of this new strategy would be a profuse network of inner pedestrian paths (*Raitti/Kuja/polku*) connected to a main, or a couple of main, central squares and in some cases (Katajanokka) connecting this new pedestrian network to the existent singular and meaningful central space (square), called "*Tori*" in the Finnish context.

As a graphic representation this network will be represented by a longitudinal dash-delineated pedestrian path. This type of path is present in all major plans during this decade (1970s) onwards until the end of the 1980s as our observations in 3 study cases have suggested.

1.3. DETAIL EXPLORATIONS

1.3.1. Malmin Kartano

During a field trip to the area we explored the section represented above in Figure 5. We crossed the whole area from north to south following the exclusive pedestrian path reaching the small triangular square in the bottom southern part. Along this path we could identify the presence of commercial and retail spaces (most of them empty), together with almost non-existent flows of pedestrians and a deteriorated quality of the buildings which presented a dull and empty streetscape.

The few examples analyzed previously are not sufficient evidence to draw any type of conclusions, as such we aim here to develop a deeper understanding of the pedestrian intensifying strategies adopted by the City of Helsinki in the late 1970s and early 1980s. The case studies analyzed here show us that the clear intention of the design was to bring people to the inner structure of the neighborhoods.

Further considerations show us that a common design feature shared among the three of the case studies has been the presence of commercial activities at a ground floor level. Nevertheless, emptiness of people and retail activity were the norm along the pedestrian networks. Additionally, during our field visits we could see evidence that the spaces generated under this strategy are equally, or even less vibrant than those present in the 1950's and 1960's housing states developments. Finally, we believe that, at least for the case studies presented here, the inner neighborhood pedestrianization strategy did not succeed in altering the negative path that the suburban fringe was suffering (and still is) regarding the low levels of public life and vibrancy at the interior of the neighborhood units.

1.3.2. A contemporary case study: Jätkäsaari

According to the 2016 Helsinki Master plan (City of Helsinki, 2016) one of the three most important development areas close to downtown is Jätkäsaari, together with Kalasatama and Hanasaari.

According to the detailed plan for the area, the orange polygons correspond to commercial/retail floor space (almost all of it at the ground floor level). What is particularly interesting is how along the denominated "pedestrian paths and street pockets" the plan has placed commercial and retail activities in every corner of the buildings within the intersection of streets in a clear attempt to balance the distribution of this type of activities across the area. Furthermore, we believe that one of the objectives of this particular design is to try to bring people, and therefore activities and public life, to the inner parts of the area. With this in mind, we went on a field-trip to get a closer look at the activities and the general experience of being there. Here we present some of the results.

At first glance, both of the paths are well equipped and evenly distributed regarding the amount of retail and commercial spaces. Nevertheless, there are some differences regarding the current composition and types of retail between them.

Firstly, the North-South Pedestrian path shows mostly homogeneous types of activities which we clustered into three categories: private use, small industry, and beauty and wellness related services. These are activities very limited in their impact on public life at the street level, with all of them having a very specific segment of potential

Figure 5. Malminkartano Left: Planning Document. Right: Satellite Image.
Figure 6. Pedestrian protected sidewalk sub-utilized, dead ends, and blind spots perceived as unsafe.

users and a limited scope of daytime activity. The only meaningful and vibrant retail space was the one within the second street pocket - the second-hand clothes store. On the other hand, the east-west pedestrian path had more possibilities to achieve interesting levels of urban life. The presence of more restaurants and bars, plus some everyday used services (laundry, groceries, etc.) gave this path a distinct character, improving users (pedestrians) urban experience.

A final observation, related precisely with some general elements observed during this work within our three cases, is that the most "vibrant" streets regarding public life and retail activities were the perimetral main streets, supporting not only commerce and retail but also serving as main transportation arteries.

Figure 7. Jätkäsaari - Commercial/ Retail spaces (City of Helsinki, 2016).

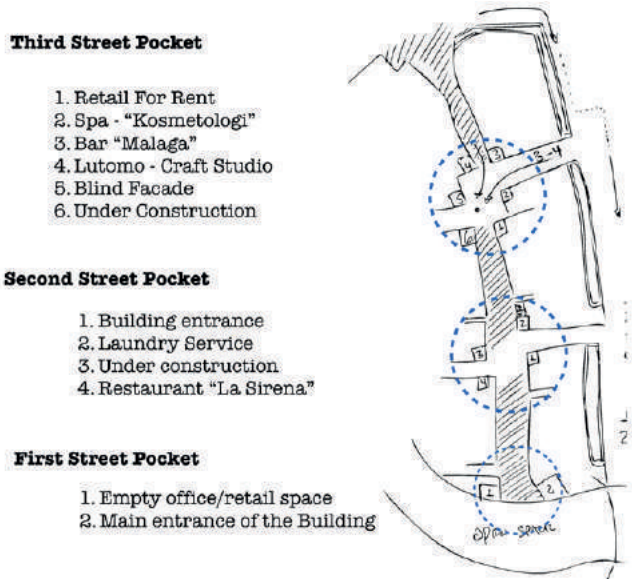

Figure 8. Activities within the East-West pedestrian path.

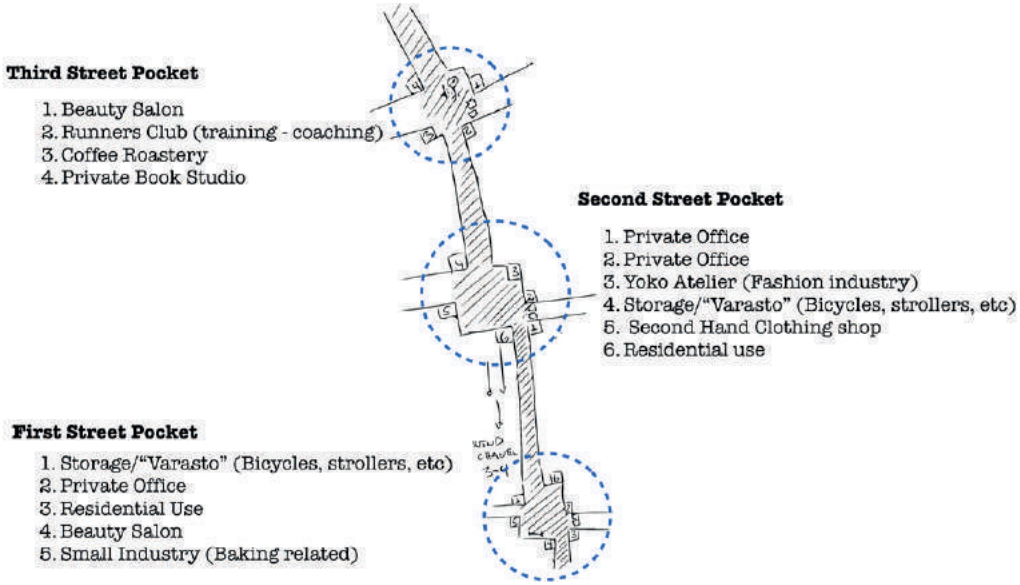

Figure 9. Activities within the North-South pedestrian path.

2. EXISTING NEIGHBORHOOD NETWORKS IN MALMI

2.1. SERVICE NETWORK AND CLUSTERS

The different service functions of the Malmi region can be divided into six categories: residential (houses and apartments), commercial (restaurants and bars, shopping, beauty, hotels), public (banking, health care, education, sports, culture), employment (agriculture, forestry, fishery and services, industry), leisure (natural green space), and transportation (bus stops, gas stations, parking lots).

2.1.1. Relation between private and public

As shown in Figure 10 & 11 the residential space in Malmi is similar in size to the public green space. The private space consists of a large number of individual houses and apartments, and residents' activities take place mainly in private gardens and streets. The public spaces include forests, park, playground and the airport area (which is at the moment fenced). The detached houses are mainly located in the Ylä-Malmi area and the apartment communities are mainly located in the Pihlajamaki area. In contrast, large areas of forest, farmland and airport space are located in the Ala-Malmi area. However, the railway separates the connection from Ylä-Malmi to Ala-Malmi, and the Kehä I highway also separates the connection between Pihlajamaki and Ala-Malmi, resulting in an increasing density of private residential space in the Ylä-Malmi area, while the public space in the Ala-Malmi area lacks vitality.

2.1.2 Commercial services

The business services in Malmi present a structure of primary and multiple secondary cores. The main commercial services are located in the central area of the Malmi railway station, while the secondary commercial services are concentrated in the middle section of the Kirkonkyläntie road, the intersection between the roads Pihlajamäentie and Rapakiventie, and the areas near the Tapanila and Pukinmäki railway stations. The development of a district cannot be separated from the development of the business district, which is its core area and has a threefold significance as a center of economy, social life, and culture. The commercial center is the most important material consumption place in the city. Commodity concentration leads to consumer concentration. The areas where commercial services are concentrated are usually also the places where social interactions take place intensively. Therefore, the areas where commercial services are concentrated are usually also the core areas of urban vitality.

2.1.3 Public services

Entertainment and public services are relatively evenly distributed in Malmi, but there are still some concentrations. The main public services are located in Tapanila in the north and the central railway station and Pihlajamaki in the south. These types of places, where public services are concentrated, are usually areas where commercial services are concentrated also. Libraries, tourist attractions and other major entertainment and public services are concentrated in the Ala-Malmi area near the railway station, while the hospital is located in the Ylä-Malmi area near the railway station. Therefore, the central area of Malmi remains the most important public activity area. Education is the most important public service in Malmi. The day-care centers and primary and secondary schools in Malmi are located in the residential areas. The connecting space between schools and residential areas may provide more possibilities for public activities.

2.2. 15-MINUTE LIVING CIRCLES

Based on the different service function distribution structures in Malmi, we propose the concept of the "15-minute life circle". Under normal circumstances, the walking endurance of the elderly is about 10-15 minutes. On the other hand, young people and middle-aged people pay more attention to efficiency, which means they are more willing to use less time to get services. So a 15-minute walk is also suitable for them. "15-minute life circles"

Figure 10. Existing residential function in Malmi.

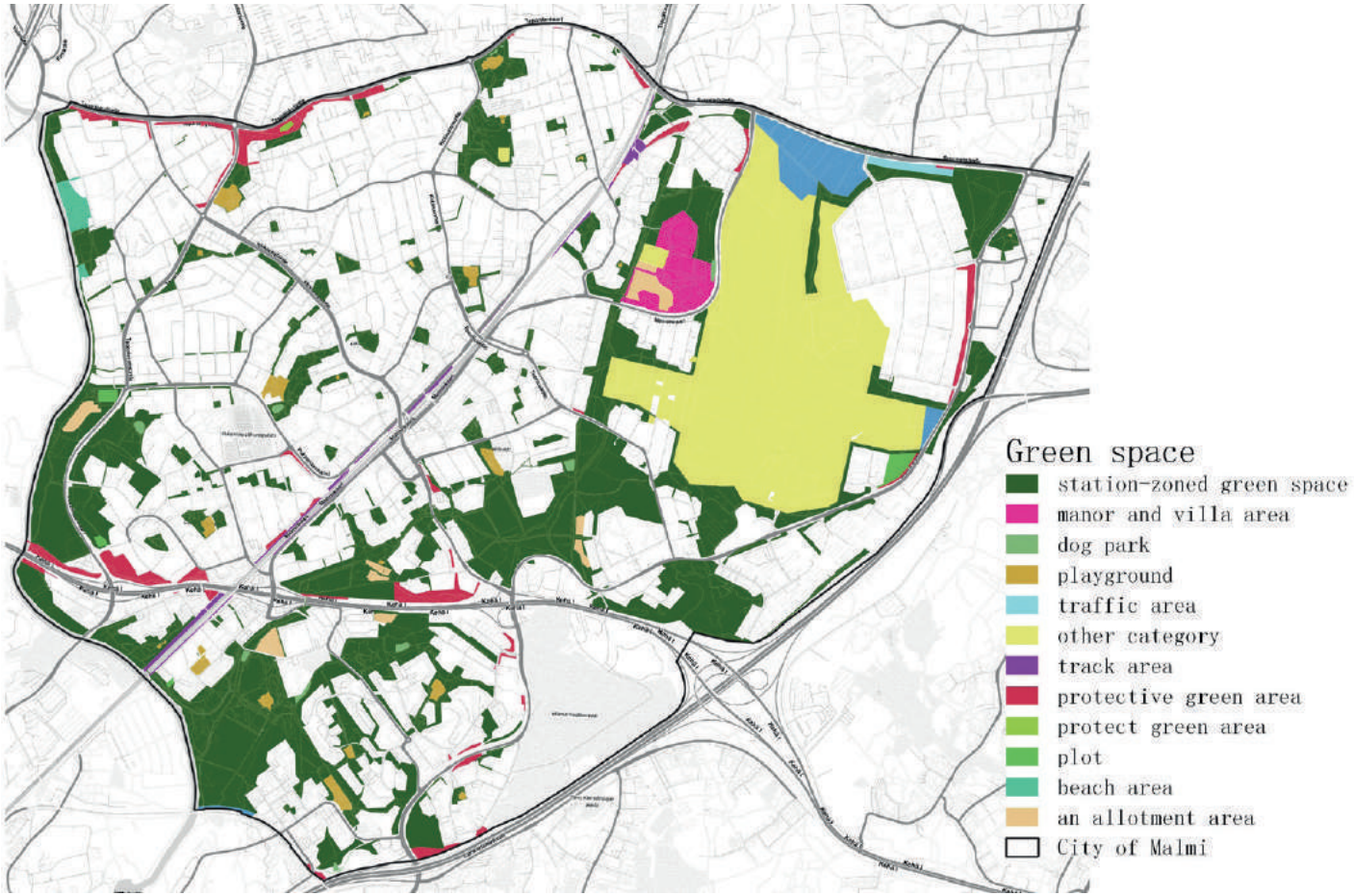

Figure 11. Existing green service in Malmi.

Figure 12. Existing commercial service in Malmi.

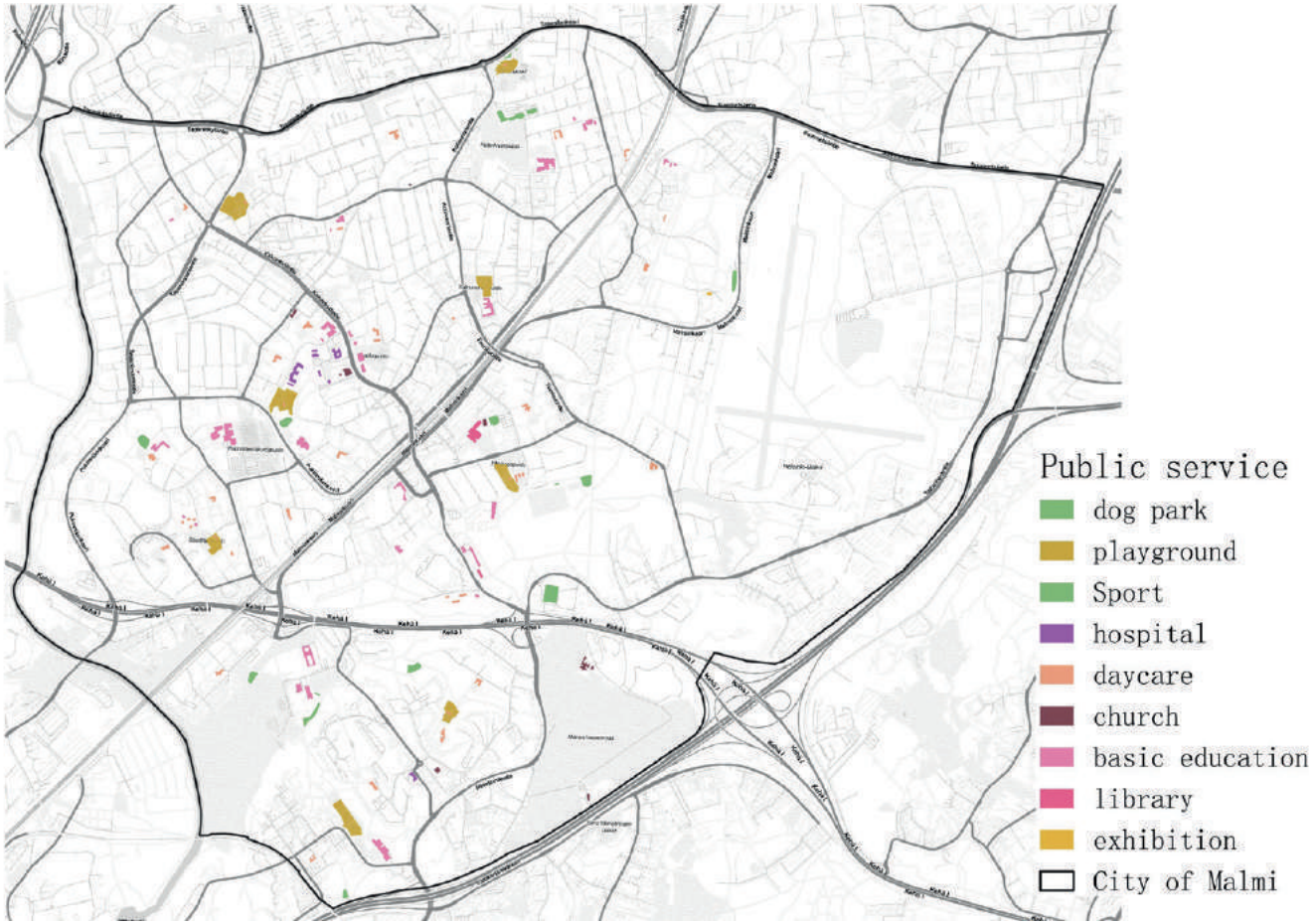

Figure 13. Existing public service in Malmi.

Figure 14. Existing employment service in Malmi.

refers to a service circle with a radius of 1 km planned around the existing service facilities. Different service circles can meet the needs of all residents in the Malmi area to get services within 15 minutes.

Malmi's living circles can be divided into three levels: the central business and culture circle, the 15-minute living circle, and the neighborhood living circle. The space construction of the living circles is mainly based on the service facilities and needs the full support and coordination of various spatial elements. The central business circle is planned with the railway station as the center and the airport area as the sub-center. The cultural circles are also centered around the railway station and the Malmi airport area. The old center and the airport area will provide a high level of commercial, arts and culture, leisure, communication and other urban services. A major central avenue is planned between the two center circles.

The 15-minute living circles are centered on the existing shopping site, such as supermarkets, to provide necessary business, administrative, medical, welfare, education and other services. The neighborhood living circles are the smallest living areas, which center each living community and gather the main services of citizens' daily life.

In order to facilitate the quick connection between the circles at all levels, and to form a comfortable environment inside each living circle, a transportation network system, consisting of railway, public transportation, bicycle and pedestrian, is planned to be established between the different circles. The central business and culture circle are connected to the downtown area of Helsinki by railway. The 15-minute living circles and the business and culture circles are connected by a public transportation system and road network. The interior of the neighborhood living circles are added with a pedestrian and bicycle system connecting the nearby commercial, cultural and green space places.

2.3. BENEFITS OF CREATING A WALKING AND CYCLING PRIORITIZED STREET NETWORK IN MALMI

The two most sustainable ways of traveling are walking and cycling. In this subchapter we explore their benefits both as a means of urban transportation in general, and in Malmi specifically. While walking is the most interactive way of moving in the urban space it has its limitations since it is slow and the walkable radius is rather limited. Cycling on the other hand allows the possibility to travel much larger distances with a greater speed but allows much less interaction with the environment while it is also sensitive to weather, with the winter season being especially tough for cycling.

Since the distances in the Malmi area are quite long it makes sense to concentrate on cycling as the main alternative to motorized travel. Investing in cycling can develop the connectivity between the neighborhoods of Malmi and can keep the balance between Ala- and Ylä-Malmi neighborhoods. New and old residential areas with multiple functions can be accessible to each other in 15-30 minutes, making cycling a suitable choice for this area.

In the Copenhagen case, the government has regulations to develop cycling. They issued a series of laws to curb the growth of car traffic and to develop cycling and public transportation. Bike lane facilities are also being continuously invested in and developed (The City of Copenhagen, 2011; Gössling, 2013).

There are many advantages offered by cycling which we have applied to the Malmi situation in our proposal. Firstly, the road space can be used efficiently, and good cycling design can improve the quality of urban public space. Then the new Malmi will have a higher residential density compared with the existing one. The spatial efficiency of public transportation and cycling could make more space for public activities or green areas. Finally, young people prefer to live where there is a good cycling environment. The new area aims at attracting young people to live there at a reasonable price, as well as by offering convenient public transportation to the city center in the 2050 plan vision.

Undoubtedly, cycling advances a sustainable low-carbon lifestyle. At present, "sustainable" and "low-carbon" are both popular words, and many believe they refer to

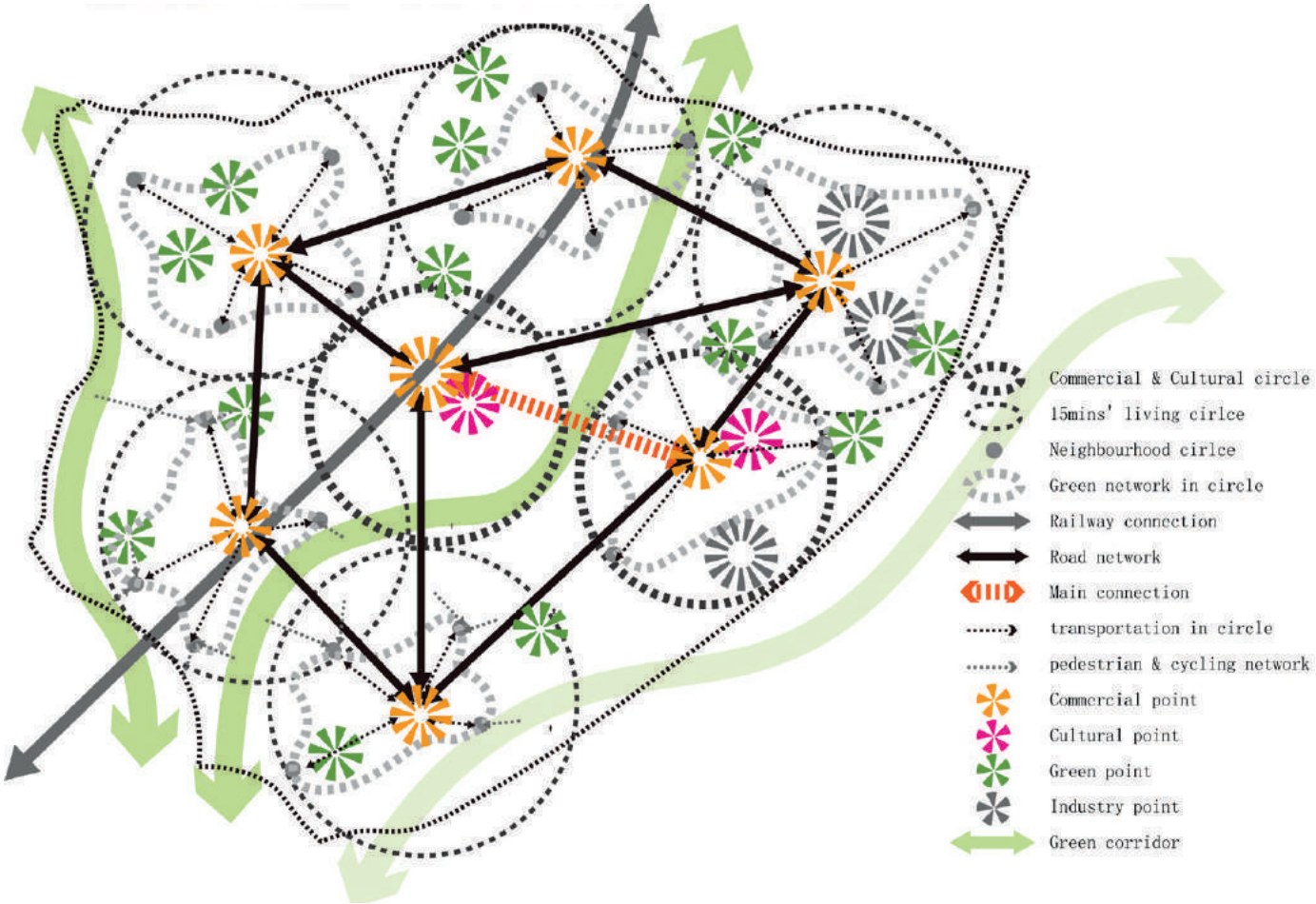

Figure 15. Malmi planning structure based on 15 minute living circle.

technologies related to energy. But the Netherlands, as a successful case in cycling, confirms that sustainability and low-carbon are not always achieved through high tech or new technology. It demonstrates a new concept of sustainability in a broader sense - a sustainable lifestyle and mindset (Gössling, 2013).

The benefits of good health is an important reason for choosing cycling but not the most important. Both in Copenhagen and the Netherlands, the main reason why people choose cycling is because it is the fastest, most comfortable, and safest way to travel. People may not cycle for health or environmental reasons merely, but because it is the easiest way to get around (Gössling, 2013).

As for the reasons why Helsinki has not become a real cycling city yet might be because of two reasons. Firstly, until now the urban planning has prioritized cars, and most of the infrastructure is just for cars and buses. Secondly, there is less government support for cycling than in the more prominent cycling cities.

Even though walking has its limitations as a method of travel in an area like Malmi, there are many reasons to develop a walkable environment, since even if pedestrian infrastructure will not solve the longer distance transportation needs of getting people walking on the streets it still has many social, economic, ecological and health benefits.

Starting from the economic factors, people strolling the streets can boost local economic activity by visiting local shops and services. In non-walkable areas, the residents are directed to drive away from local areas to shop. This also consumes the time and money of the residents. The economic benefit of the walkable environment to the local economy has been observed in a study conducted on a selection of Finnish shopping streets and it was found that when streets have been converted to pedestrian streets it has had a positive effect on the turnover of local businesses, contrary to the fears of the business owners. The pedestrian customers spend less money per visit, but they visit the street more frequently, spending overall the same or higher amount than the customers coming by car (Rantala, Luukkonen, Karhula, Vaismaa, Mäntynen & Metsäpuro, 2014, pp. 114–116).

Cars and automobile infrastructure are also costly to purchase and maintain. If a combination of walking and public transport is a competitive choice to private vehicle ownership, then there is the possibility of reducing the number of cars which can save money for both the residents and the city.

Walking provides obvious health benefits for the individual as it is a good form of daily exercise, but reducing car traffic has also health benefits for the whole community. The small particle emissions and noise pollution caused by traffic have been found to have a probable link to cardiovascular diseases (Lanki, 2011). Pollution and emissions caused by traffic are also a major environmental issue. In Finland, a fourth of the greenhouse gases are emitted by domestic traffic (Liikennejärjestelmä, 2019). At the local neighborhood level small particles are especially a problem.

Walkable areas can also be a source of local civic pride and identity. Walking is also an inclusive form of travel that is accessible to all age groups and socio-economic classes. Walkable streets also create the possibility for random encounters between the residents. Walkability has been found to correlate positively with the social capital of an area (Rogers, Gardner & Carlson, 2013). Although this might not be true for all areas, as busy retail intensive areas are subjected to a reverse development dubbed "the stranger effect" where a large enough part of people strolling in the area are visitors from outside and might hinder the development of social capital (Wood, Frank & Giles-Corti, 2010). In the case of Malmi, this would not probably be an issue since the services there would mainly serve the residents of Malmi and the immediate surroundings.

In our vision of the street network of Malmi it should prioritize good cycling connections and walkable environments, combined with wide reaching public transport. Together these would create a viable alternative to private vehicle ownership and use, enabling the creation of an urban and healthy community in Malmi.

3. AN ACTIVE MAIN STREET AS A NEIGHBORHOOD CONNECTION

The goal of our design is to create a bridging component between the existing and the new part of Malmi, as well as providing a high-quality connection and a social and commercial axis between the areas creating vibrancy and encounters in the area. Under this subchapter we discuss the possibilities of a lively main street in a suburban center and what it could offer to the residents of the area. The idea is to represent the possibilities that a main street could offer as a social and commercial hub as an alternative to private shopping malls.

In the Finnish context, streets that are active social and commercial spaces are mostly found in historical centers of cities and towns, while newer suburban developments are designed according to the modernistic design principles that aimed at separation of functions. This kind of design ideology is manifested in suburban developments constructed from the 1960's onward. While these developments provide peaceful residential areas, they lack central public spaces, apart from private shopping centers. The modernistic suburb design does not favor the ground floor commercial space since it does not form a clear streetscape since the buildings are far apart from each other. It was also not in the interest of the developer (that in these cases also acted as the planner) to build such spaces since they could not be sold as fast and easily as apartments (Bengts, 2013, pp. 23–24).

In the British and European context more broadly, suburbs have often grown around an existing town structure with its main street inherited from this existing structure with it remaining a center with a broad array of activities (Griffins 2015, 33). The Finnish suburban development, like the North-American ones, are in contrast, often built in brownfield areas without existing street structures nor historically meaningful urban spaces and places.

The planners in Helsinki are currently favoring densification and urbanisation of the city. This ideology is manifested with the plans for high density developments, densification of existing areas and the plans for city boulevards replacing the entrance roads to the city. These changes will be implemented through the general plan for Helsinki from 2016 (City Planning Department of Helsinki, 2016). The plans for development of the Malmi airport area will put the density of it around 12 500 residents per square kilometer, making it one of the densest neighbourhoods in the whole of Helsinki. But even if the density of the new Malmi will be very urban, the location of it will make it function as a sub-center of Helsinki and this means some of the aspects of urbanity found in the more central areas will not be realized here.

Although there is a longing for a more traditional urban structure and lively streets, the retail services keep on centering on new mall developments, such as the recently opened Mall of Tripla and Redi shopping centers. Although they are urban due to their location, they are still not public spaces. The change of retail practices caused by internet shopping can also prove to be more hazardous for the big malls than for main streets, since the streets can adapt to different uses and offer a fully authentic urban experience. In the United States, the public interest for shopping places that offer more authentic experiences, that cannot be substituted by internet shopping, have led to malls imitating traditional town centers. These “lifestyle centers” look somewhat similar to traditional main streets or town centers, but the commercial organization behind them is similar to malls and the space they occupy is fully private.

Currently, the success of traditional malls seems to continue in Finland. At the moment, in the Helsinki metropolitan area, there are 38 shopping centers with a combined ground floor area of 1.1 million square meters (Finnish Council of Shopping Centers, 2019). The new developments such as Redi and the Mall of Tripla include housing, but the design is a traditional large indoor complex. The objective to create experiences is clearly visible in the availability of an assortment of services in the new Mall of Tripla. The shopping center houses 60 cafes and restaurants, a beach volleyball court, activity park, indoor surfing, a museum of music and cinema (Mall of Tripla, 2019).

If public life keeps on concentrating more and more

inside these private indoor spaces, it is questionable how much of the promised urbanity can be achieved by creating dense residential developments, such as the one planned in Malmi. Key selling points of such developments are the vibrant, social, urban and walkable neighbourhoods. This renaissance of the "urban" cannot be achieved if the commercial and social activities are concentrated outside of the residential areas. For this reason, we seek to design an active main street for Malmi. It would serve both as a connecting axis between the existing and developed parts and as the social and commercial hub of the area.

There has also been a trend towards other directions from the large malls with the size of new retail stores diminishing in size and with the emergence of small pop-ups and showroom stores as a product of the growing online markets (Ilmonen & Mäenpää 2013, p. 11).

The disruptive megatrend in retail markets is influenced by the growth of online consumerism. One could think this would automatically mean the decline of physical retail space. In a recent article, it is argued that retail areas practice resilience through diversity (Rao 2019). Individual retail units might not be able to absorb the shock of change brought by the emergence of online markets, but as a whole they can adapt and reinvent themselves. The retail areas are able to provide people with certain benefits to online shopping, such as giving people the urban experience and enabling the customer to touch and feel the product before the purchase. The ways in which retail has adapted has been, for example, by downscaling the size of the inventory and the store, while giving access to a wider inventory to be ordered to either home or to the store (Ibid.)

By opting for a main street instead of a mall as a retail center we hope to make the experience and social side of shopping more prominent. Physical retail spaces cannot be expected to compete against online retail when it comes to prices and assortment of goods in the future, therefore to create a resilient retail area it should be able to offer the social and experiential aspects of urban life which one cannot receive from online marketplaces. To secure that new Malmi would become, and remain, an area with a high level of urban activity and services we need to find a form of retail space that can persevere through the changes in markets to come. When the timescope is as long at is with a development of the Malmi airport area we have been quite cautious about making assumptions about the future of retail and consumerism, but it is hard to see how the material needs of western consumers could grow in a way that would favor large retail stores instead of services without completely neglecting the society´s need to become more sustainable.

3.1 CHALLENGES AND POSSIBILITIES AND POSSIBILITIES IN DEVELOPING A MAIN STREET

A well-functioning and active main street, connecting the new and the old neighborhoods of Malmi, could benefit both neighborhoods. If it were to become the most active, interesting and urban street in the area there would be a good chance of mixing people of both neighborhoods. The main street would also be a familiar place for both residents of the neighborhoods. The street would connect the new area to the train station and this would create activity during the commuting hours and familiarize residents with its services. In the best case scenario, these commuters would stop for groceries and errands on their way back and would return during their free time and weekends instead of driving to do their shopping in power centers.

A main street of Malmi would transport people efficiently, mixing them in their everyday affairs and giving them a place for social activity and civic pride, as well as generating local employment and services. This scenario seems tempting, but what are the possible challenges in opting for a main street development?

Even though small independent main street retailers and services are wished for by many, what are their chances of emerging when retail and construction are among the most centralized sectors in the Finnish economy (Bentgs 2013, p. 15)? Large retail units are often argued to be the most feasible option by their supporters because of the economic benefits of scale. While this might be a real benefit for the retailer this is not necessarily a benefit

to the customer since centralized oligopolistic markets create monopolistic behaviour that can increase prices rather than reduce them (Ibid, 2013, pp. 16–17). Also, with a thinner network of retail locations, the consumer has additional transportation costs that are not often accounted for. This is especially true for the Finnish grocery markets where a practical duopoli operates (Ibid, 2013, pp. 20; 28).

Great places rarely form in an instant, and it would be unrealistic to expect this to happen in the Malmi main street. In what time scale can we expect the diverse commercial and social experience to appear in our street? For the main street to diversify it takes a significant time (Vaughan, 2015, p.153). How can diversification take place when there is no organic process for the street formation since it is built as a whole? A diverse selection of retail spaces could help, with a diverse selection of retail spaces. But is it reasonable to expect them to be rented out? To avoid high vacancy rates in the beginning, and to have a diverse selection of spaces, there should be a plan to give the spaces intermediate uses before they are able to be rented for fully commercial use. In this respect the chosen street has the advantage of being the main connection between many of the residents (especially the ones moving into the area first) and the Malmi railway station. This brings people to the area before it is an attraction in itself. In order to bring diversity to the area it is necessary to both mix different land uses as well as different kinds of users of the space - pedestrians strolling around and people on longer journeys (Ibid, p. 156).

One challenge to the concept of having an active main street in Malmi is the persistent wish of retailers to build large big box stores and malls in suburban areas. The plan should be argued for with strong quantifiable data as well as image marketing from early on to all stakeholders - current and potential residents of the area, developers, retailers and politicians.

4. A CONCEPT DESIGN FOR A CONNECTION BETWEEN EXISTING MALMI AND THE AIRPORT AREA

4.1. OUR VISION FOR A MAIN STREET FOR MALMI - A STREET OF FLOWS AND PLACES

In our vision of the main street is a street for everyone. To create the maximal social mixing, as well as the maximal concentration of people, it is important that everyone is welcome to enter the street via their preferred means of travel. Our goal is to bring as many people as possible to the area to make the place urban and attractive to a large selection of entrepreneurs and activities. Cars, pedestrians, cyclists, buses and trams are welcome. But since cars demand the most space per visitor and present the most safety risks and disturbance to other visitors, their presence is limited. Cars are not allowed everywhere and can only be parked in designated parking halls. Cars have their share of space but they do not dominate the street by taking the lion's share of it, but are an equal part of the traffic flow. The main volume of car traffic would be routed through other streets. Cycling and walking are given a special priority in the concept since they are ecologically the most sustainable means of travel, as well as possessing multiple social, health, economic benefits.

The buildings on our street would be mixed-use. Ground level retail and housing play the main part, but offices and parking halls would also take part of the space. This would contribute to having around the clock activity in the area and giving it the buzz that would distinguish the more residential streets of the area.

The spatial distribution of our street concept is based on the idea presented in the Dutch Fietsstad publication (De Urbanisten, 2019) which states that there are actually two types of cyclist. The first one is the fast moving and non-interactive cyclist that resembles in their behavior a motorist rather than a pedestrian. These cyclists do not need the same amount of streetscape details as the pedestrians since they are more focused on the traffic. The fast cyclist can cause dread for pedestrians if they are contesting for the same space. The other cyclist type, the slow

cyclist, resembles pedestrians in their behavior and needs. The slow cyclist is in no rush and takes their time while observing and interacting with the environment.

Since the two types of cyclists are so different, we have seen it as beneficial to segregate them into two different sides of our street concept. On the other side of the street there is a pedestrian sidewalk and a cycling highway, on the other side there's a wide pedestrian area and bicycle path which does not separate the two as sharply as the former.. This division allows the fast cyclist to travel fast and uninterrupted during their commuting trips without fear of conflicts with pedestrians or cars. On the other side of the street the pedestrians and slow cyclists can get the full urban experience of walking on a pedestrian promenade separated from the cars with a row of trees and tram-lines. Ideally, we would have the smallest units of retail and services concentrated on the pedestrian side of the street where they would offer an interesting and changing streetscape for pedestrians and receive maximum amount of customer flow through the slow-moving people.

This division would create two streets in one. The street of flows and the street of places. Co-existing and contributing to the vitality of the street but catering to different needs. Efficiency of flow and sense of place do not need to be conflicting ideals.

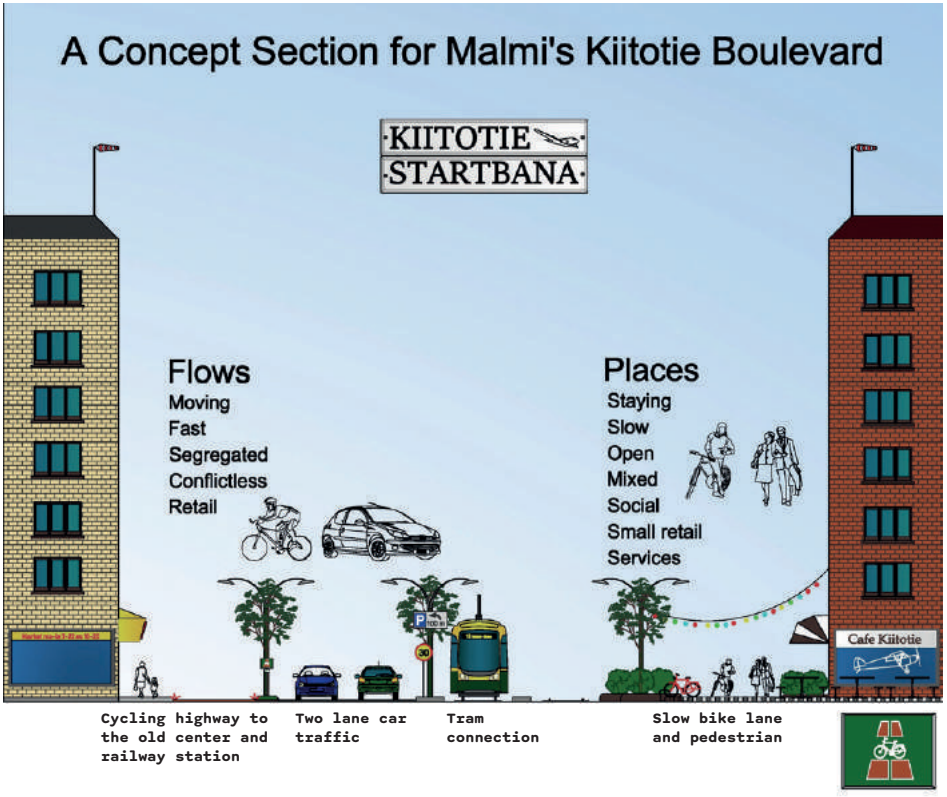

Figure 16. The Concept Section for the main street.

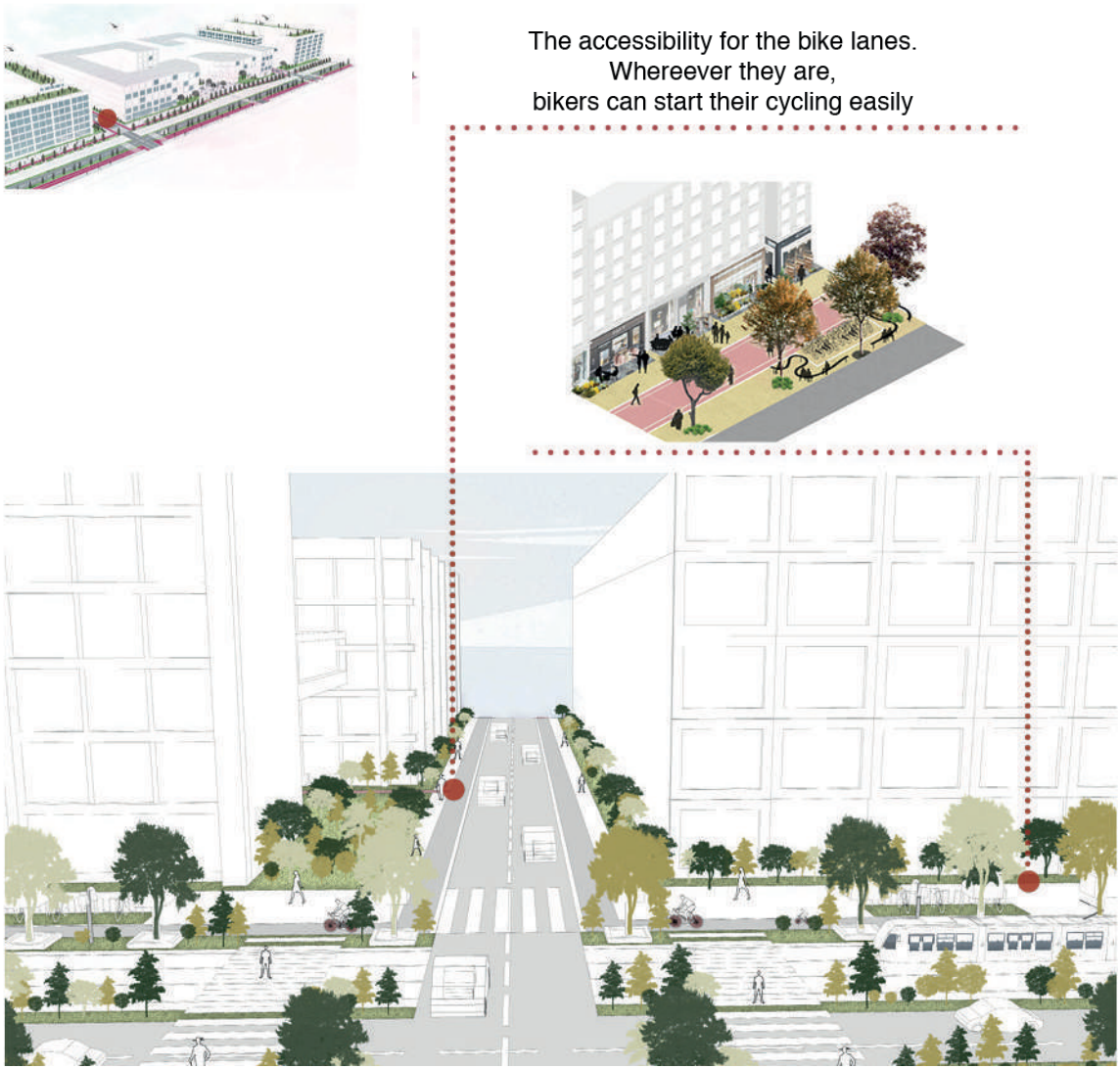

Figure 17. Street Section 1.

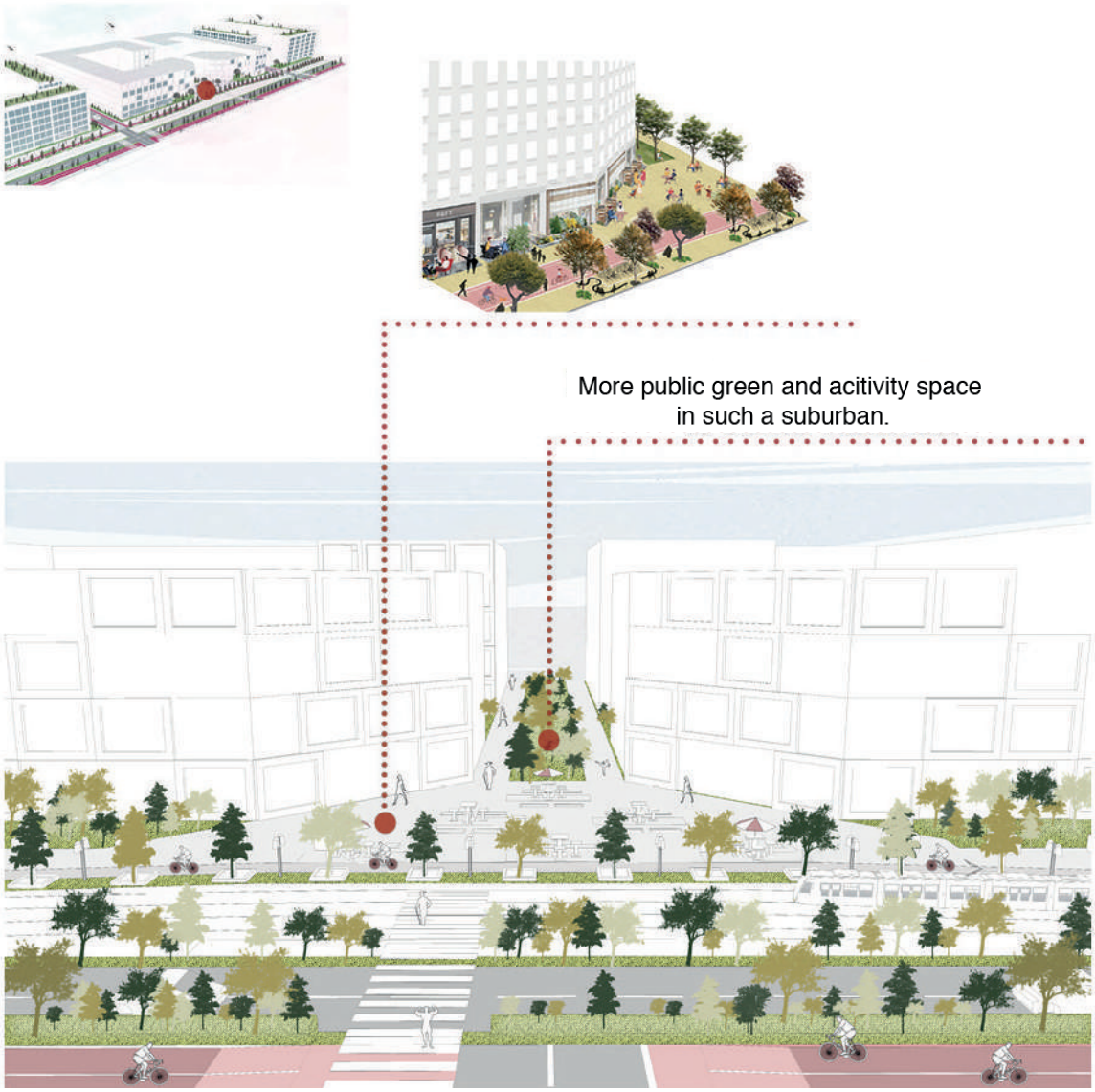

Figure 18. Street Section 2.

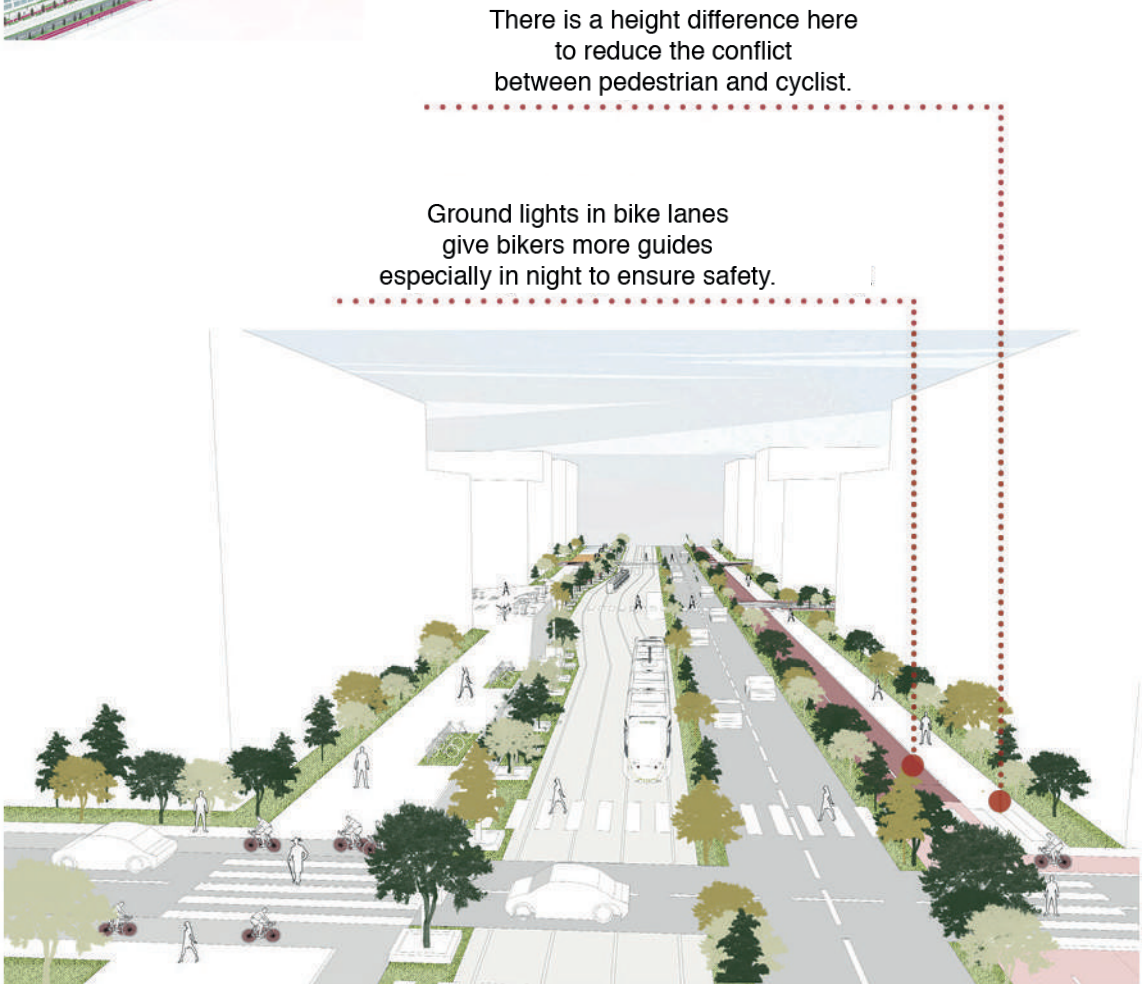

Figure 19. Street section 3.

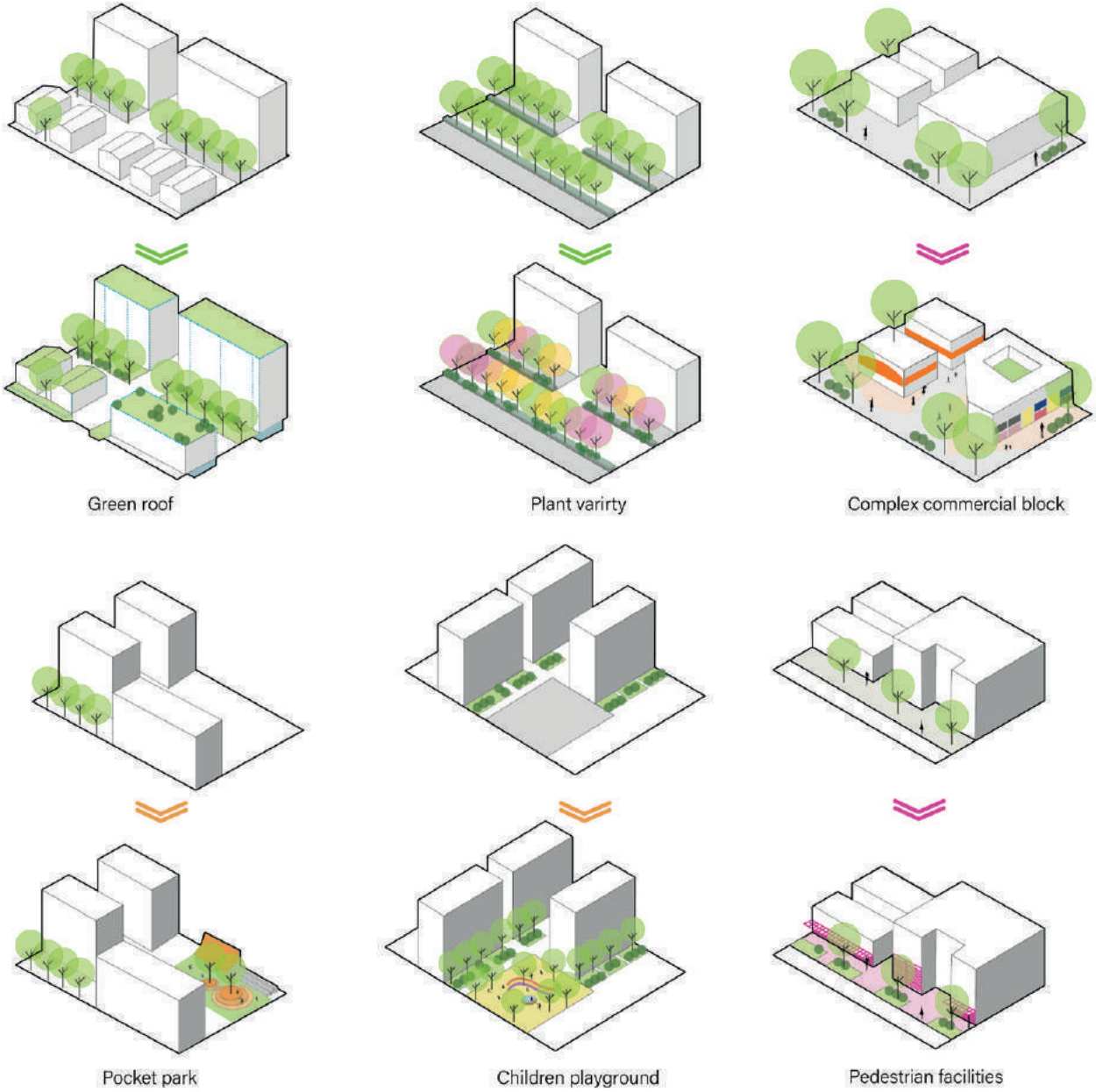

Figure 20. Street strategy.

5. CONCLUSIONS

The concept of enclosed neighborhoods with a strong inner relationship were practiced extensively during the 1970s and 1980s and continues to endure, even when we consider new and modern developments such as Jätkasääri.

We have identified that new development area plans do not connect new areas to existing ones successfully.

Starting from the previous affirmation, and as a result from our diagnosis analysis, we believe that designing a main street as a connecting axis, linking the new development with the more historically relevant Malmi, is fundamental. This central street will help to keep continuity between the existent urban structure and will ensure a natural unfolding of the social, historical and economic flows over to the new urban territories.

Finally, we also believe in the scalability of our approach. We are confident that if this model proves to be valid and efficient in producing more vibrant and lively streets it could be adopted to plan more streets and more areas within the metropolitan region.

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CHAPTER 5

RESILIENT MALMI CITY 2050

We approach Malmi from the perspective of urban resilience, which refers to the capacity of a system (a city) to deal with disturbances it faces. We apply a scenario approach to Malmi in order to understand the external factors and uncertainties that affect the district's future development. Finally, we make some planning and policy suggestions to improve Malmi’s resilience and adaptability to upcoming changes.

Anna-Lena Brede, Anna Hakala, Hanna Kuivalainen & Aliaksei Zanouski

1. INTRODUCTION

"There is no doubt humans have been successful in modifying the planet to meet the demands of a rapidly growing population. But the gains achieved by this spectacular re-engineering have come at a price."

(SRC 2019)

The ever-accelerating human development is indeed a great achievement, but at the same time the accumulating and rapid changes have made our common future more uncertain and harder to predict. Changing demographics, increasing urbanization, consequences of climate change, and political instability affect our lives greatly. One way to try to prepare for an unknown future is to increase overall resilience, in other words, to increase the capacity to deal with unexpected events.

1.1 URBAN RESILIENCE

Resilience can be defined as the capacity of a system to deal with changes and, regardless of this, continue to develop (SRC 2019). In our work we focus especially on the theme of social resilience in an urban context, and how it is affected by urban forms and functions. According to Adger (2000), social resilience is defined as an opposite to social vulnerability, which is related to the exposure of groups of people or individuals to stress as a result of the impact of disruption or forced adaptation. This means that the adaptability of a system must be seen as an essential part of urban resilience and a sustainable environment, where it is ready to face disturbance and adapt to rapid changes (Fig. 1).

In the context of Malmi, resilience may be considered on multiple levels, from social sustainability to means of

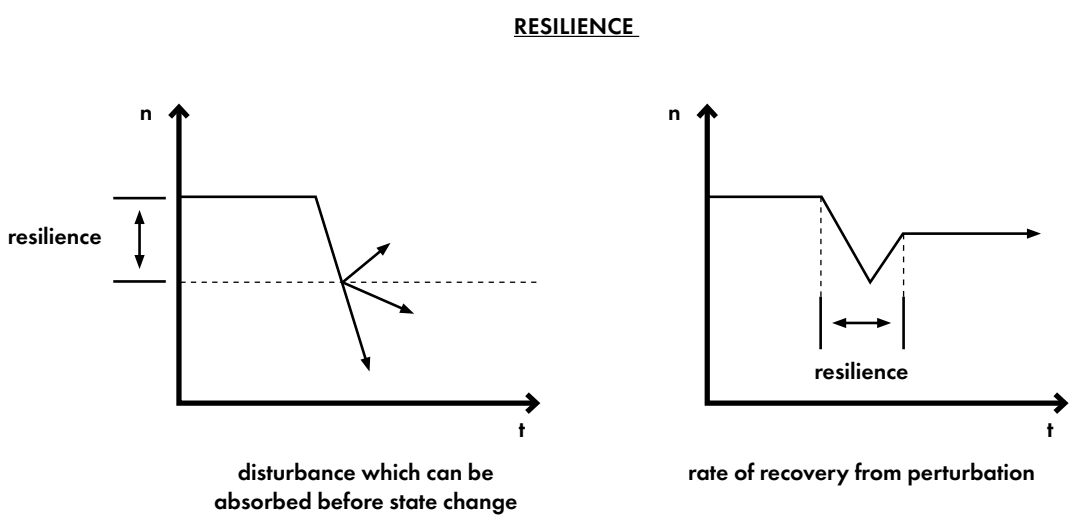

Figure 1. Two different approaches for adopting resilience (adapted from Adger, 2000).

transportation and strength of the ecological system to face disruptions. In Malmi, especially, social segregation causes a major threat to the area, which is why it seems logical to start its development with these issues. Since the future is uncertain, adoption of a resilience approach enables the design of Malmi from the perspective of all alternative futures, which are possible in this planning context. Urban planning, in this sense, may be used as a land use tool in order to distribute the risk between districts in different scales and to spatially depict the most valuable areas for resilience with spatial SWOT analysis (Comino & Ferretti, 2016). It may also be used to formulate strategies (Albrechts, 2004) around these and to develop shared visions for the future with local actors (Kunzmann, 2000).

In this paper, we describe our approach to the subject of urban resilience and the methods we used in the context of Malmi City. At first we used scenario methods to lay out the alternative futures Malmi needs to adapt to, and then conducted a SWOT analysis of the area in order to map the various hotspots we would want to concentrate on. After that, we present five pillars of resilience and the pathway for Malmi to achieve desired futures, consisting of planning interventions and policy suggestions. The paper is concluded with a chapter on critique, conclusions and further discussion.

All visualisations in the paper are composed by the authors, unless otherwise mentioned.

2. MALMI TODAY

2.1. STRENGTHS, WEAKNESSES, THREATS AND OPPORTUNITIES OF MALMI

The current strengths of Malmi (Fig. 2) are composed of a diversity in building and land use functions in certain scales, culturally significant territories and a great amount of green spaces easily accessible for citizens. Malmi district is located within an intersection of both the railway and a major bus route, 560, thus connecting it to the centre of Helsinki, Helsinki-Vantaa airport and other centres in eastern and western Helsinki.

The major weakness of Malmi (Fig. 3) is its twisted socio-demographic structure: detached housing areas in the north-eastern part of the district are inhabited by educated families with better income, whereas areas near the railway, together with Pihlajamäki, suffer from social segregation. This may be caused by the inefficient use of the space and bad quality and quantity of public spaces, which has an effect on the wellbeing of its residents and to the image of the neighbourhood. This has an influence on feelings of safety, economic supply and learning outcomes in schools. Also, these areas have a higher than average share of low-income families, as indicated in the map.

The strengths of the district also offer some opportunities for development (Fig. 4), for example, the new construction at the airport offers a possibility to improve transportation connections within the whole area. Also, green infrastructure of the area may be considered as a possibility for the wellbeing of the residents, if decent quality and quantity of it is considered during the planning process. Current industrial land use units showcase an opportunity to be either improved as industrial sector clusters or taken into some other usage. The concluded potential of Malmi includes improved historical narratives, multiculturalism as a basis for economic prosperity and the concentration of facilities in Pukinmäki intersection.

The threats for the development of Malmi (Fig. 5) are caused by the stagnant progress of socio-demographic factors. In the worst case, if these themes are not taken into account, neighbourhoods will remain isolated which will cause even more homogenic territories. If Malmi is not considered attractive in the eyes of companies or wealthier families it is possible that they will leave the area. Since the construction of the airport area will cause major changes to the whole area, it may also significantly decrease both biodiversity and the amount of greenery within the district. Solutions for these threats are introduced in chapter five.

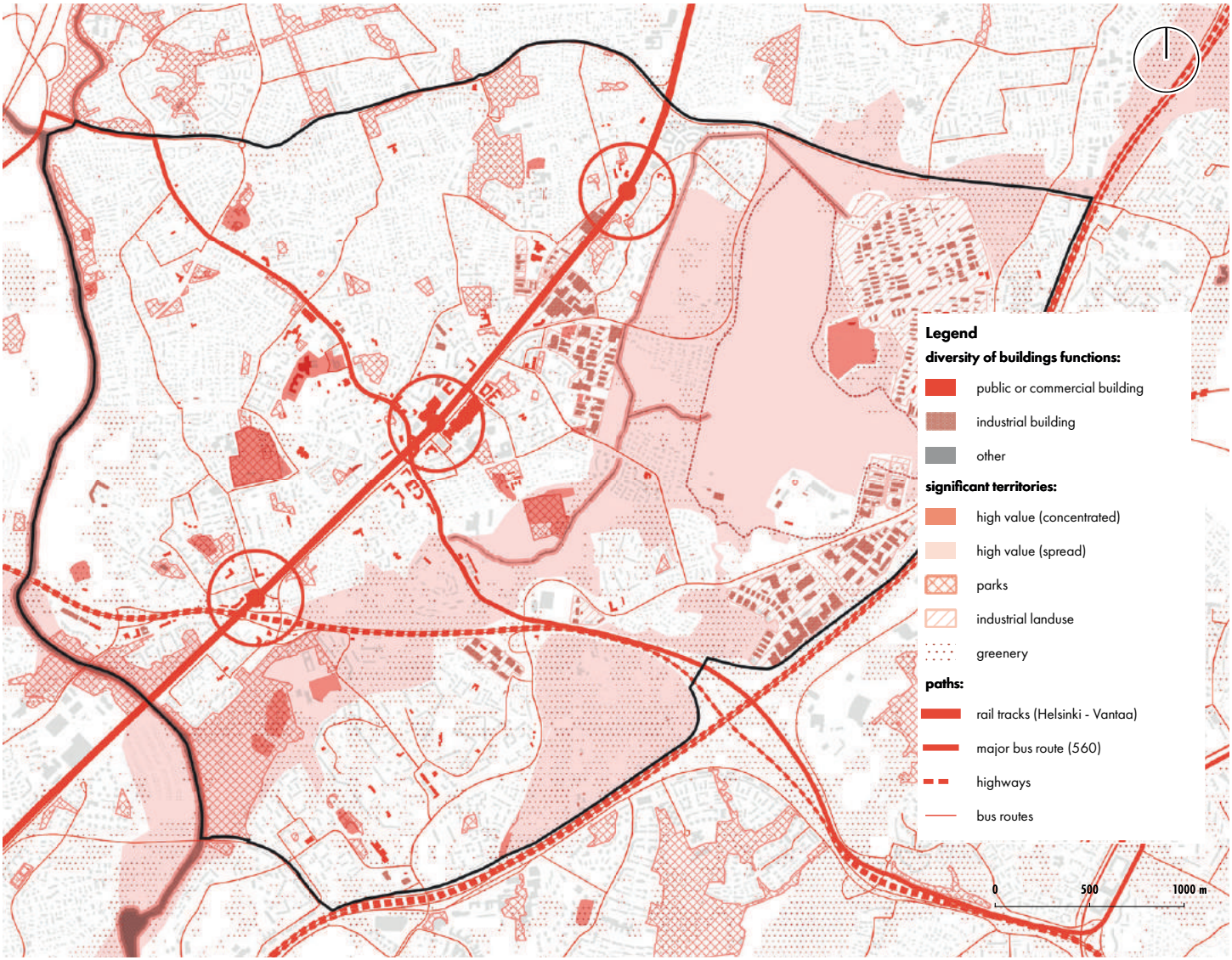

Figure 2. Strengths of Malmi.

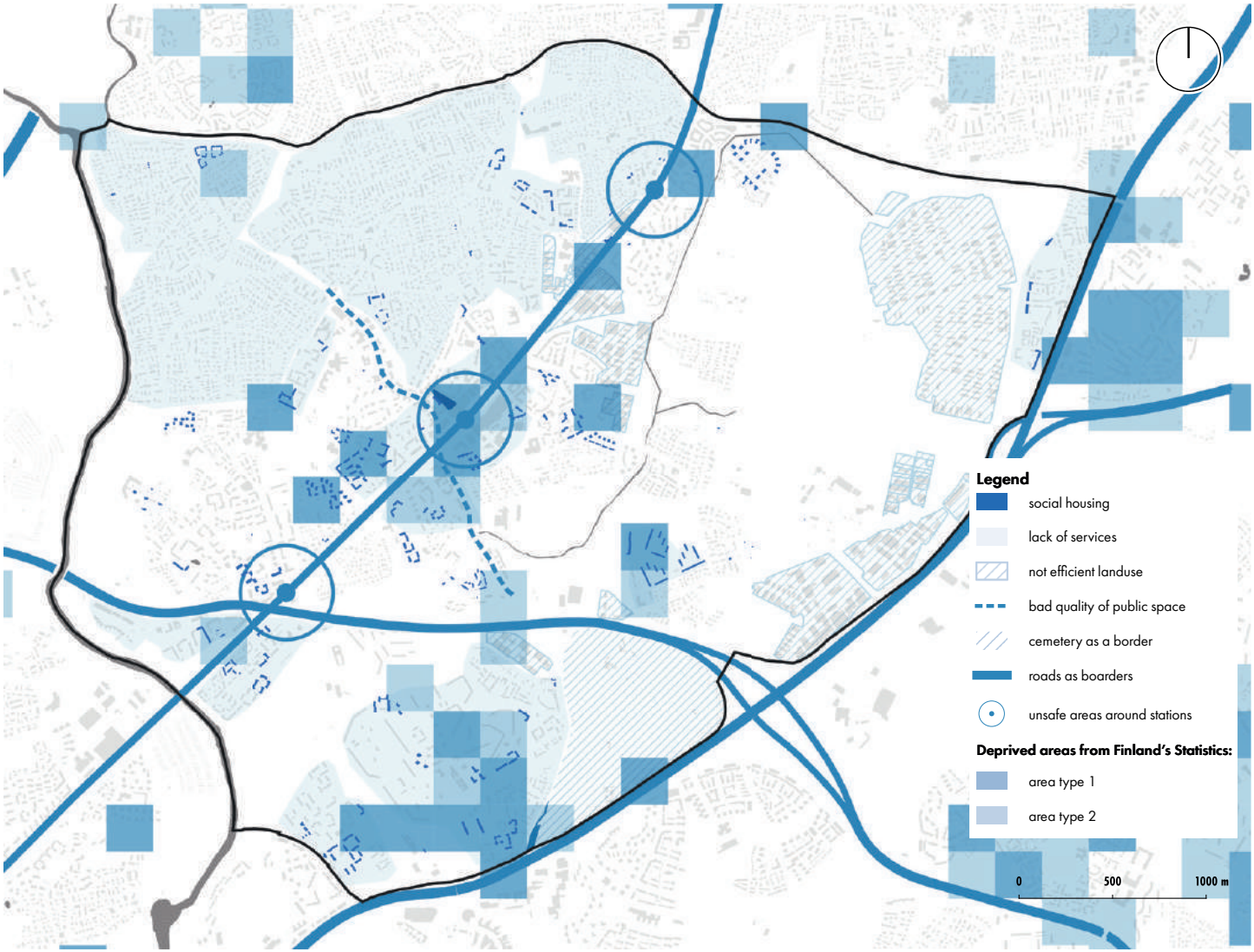

Figure 3. Weaknesses of Malmi.

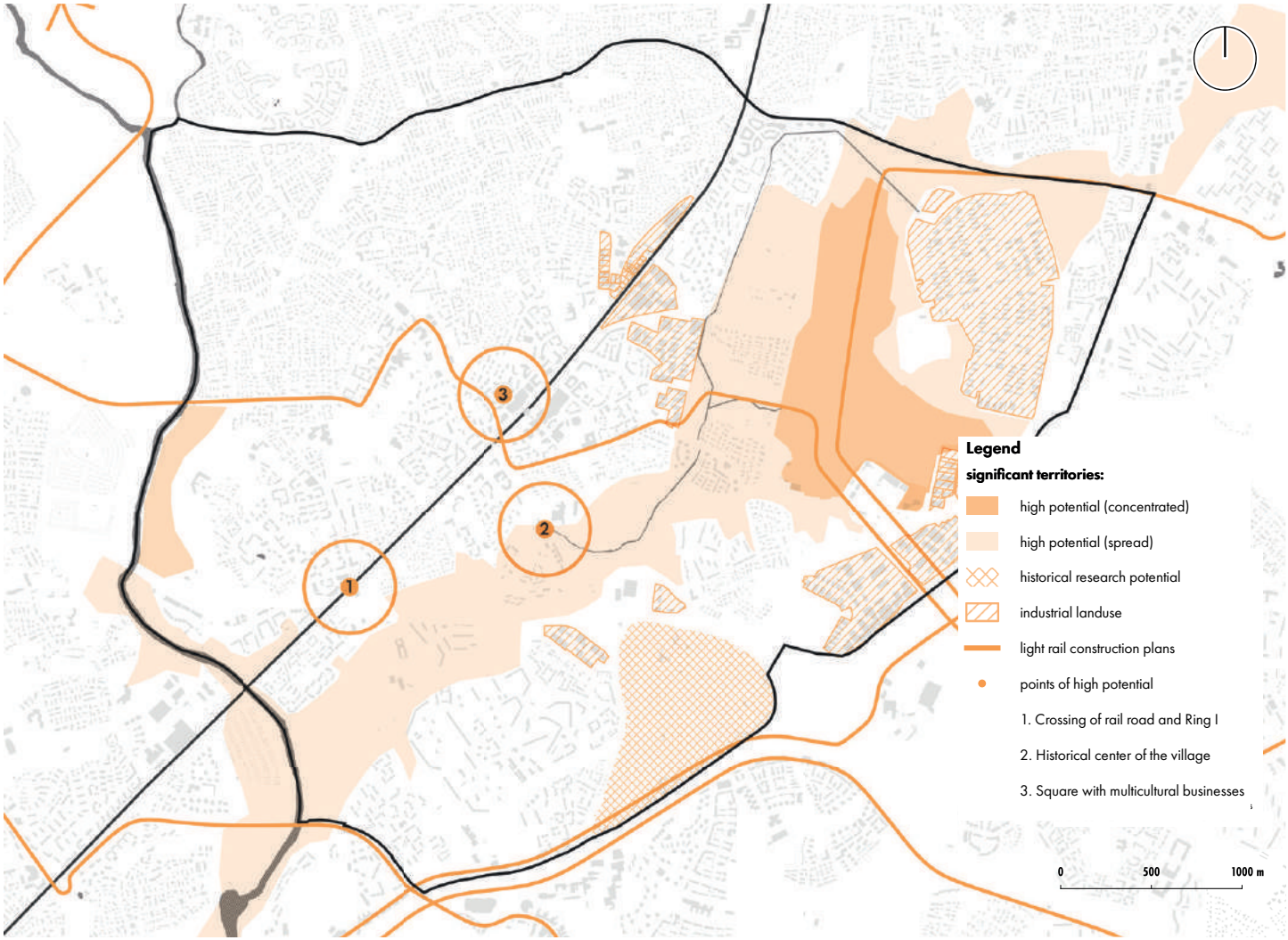

Figure 4. Opportunities of Malmi.

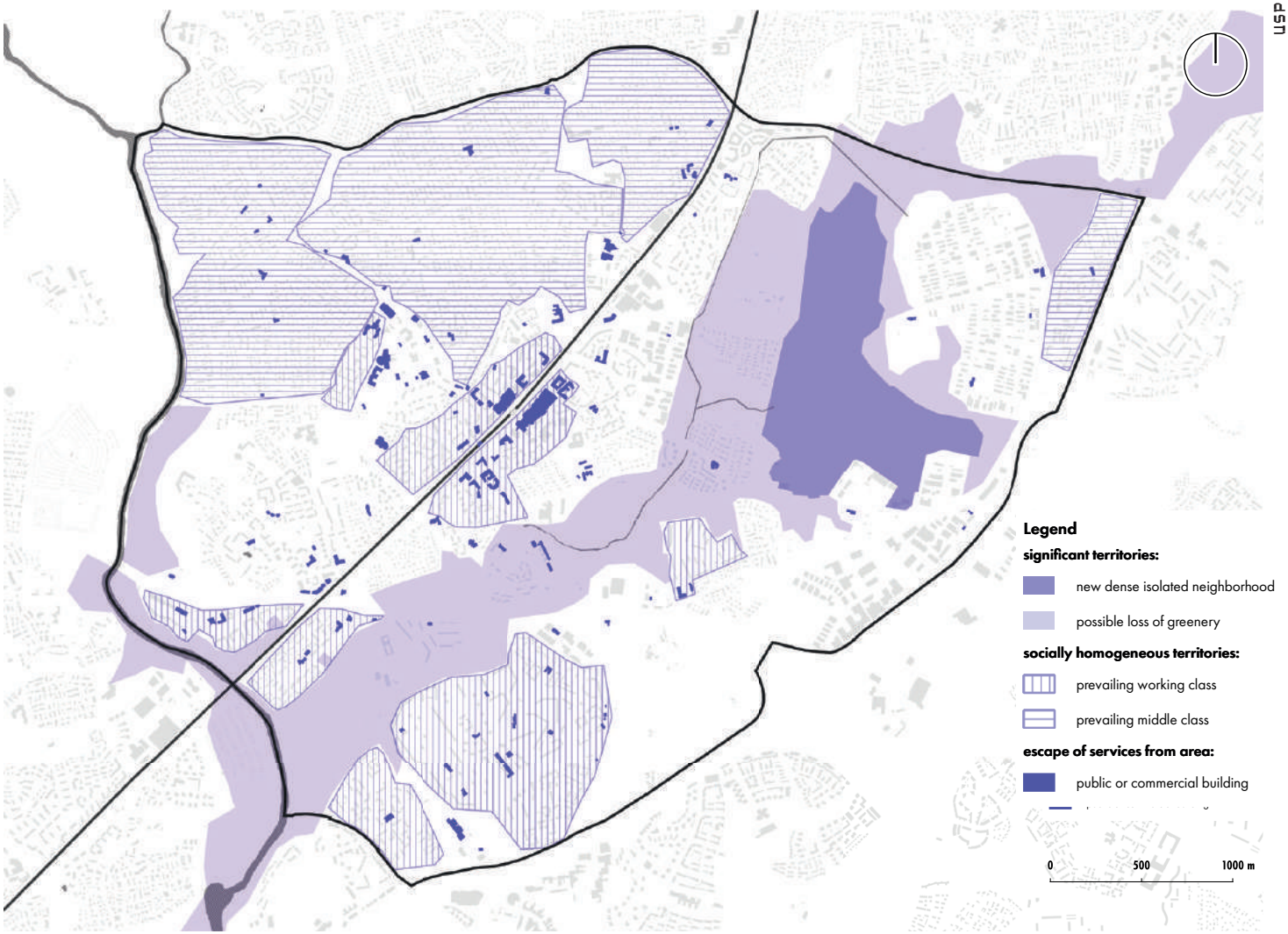

Figure 5. Threats against Malmi.

Strengths	Weaknesses
• transport connectivity in between Helsinki and Vantaa hospital • amenities around Malmi station • green areas (animals, Longinoja) • diversity of building typologies • cheap rent • jobs for people with low qualifications • attractive for migrants • Malmi airfield • diverse lifestyle • connection to global markets (Vantaa airport) • peacefulness • public spaces: sports facilities, gardens	• roads as borders • isolated social housing • faceless territories • starting segregation • boring area • graveyard as a barrier • sense of insecurity around railway stations • sense of insecurity in parks • lack of jobs • not efficient land use (junkyards in Tattarisuo) • housing quality • isolated territory of airfield • land use of the green corridors • lack of public space as places for social encounters: squares, streets
Opportunities	**Threats**
• hidden heritage, historical narratives • densification around railroad and the railway • area of the airfield • use of green infrastructure • attraction of people with different cultural and ethnic background • hospital and job distribution development • land owned by municipality: construction, communal spaces, improvement in quality • Jokeri light railroad • intersection of two traffic flows • utilization of multicultural demography of population	• development of the airport area: causes to the residents in the rest of Malmi, loss of greenery • increased gentrification and segregation (near railroad) • lost of green area connectivity • escape of services and job opportunities to Helsinki • housing prices increase • NIMBY (north-west) part • decrease of infrastructure inner competition and segregation

Table 1. Main themes of SWOT analysis in the context of Malmi.

2.2. SOCIAL STRUCTURE OF MALMI

To better understand the changes and the factors that affect Malmi, the area may not be considered as a whole entity, since it has both various sets of subdivisions and residents. The profiles described in Table 1 are drawn based on housing typologies, size of families and the demography of the residents. The districts and profiles must be considered as guidelines for thinking, thus borders between different profiles are not stagnant (Fig. 6).

As stated by the Council of Europe (2008), the concentration and segregation of the disadvantaged groups in poor neighbourhoods has been viewed as one of the challenges of social housing policies. The concentration and segregation of vulnerable or low-income households in the same area generates additional problems of social deprivation and weakened social cohesion, whereas mixing the tenure structure can help to achieve a stable neighbourhood. Therefore, we define socially vulnerable residents as those with a lack of integration within society.

Generally speaking, Malmi centre and Pihlajamäki have the highest concentration of low-income families, with Malmi containing both families living in single-family houses and socially subsidized apartments. They are all affected in their own way by the uncertain future.

3. SCENARIO WORK

3.1 SCENARIOS AS A METHOD

Scenarios are powerful tools in conveying complex information through the simple and easily grasped medium of narrative. They also make visible the possible paths of development that might otherwise be left unconsidered (Alexander & Maiden, 2004, pp. 3-6).

In order to assess and demonstrate the different ways to achieve urban resilience we made use of scenario methods. The target year of our scenarios is around the year of 2050, which is 30 years away from our book's publication in 2020. This is suitable for our scenarios, since 30 years is a long enough time span for the consequences of most of the important societal and ecological trends to manifest themselves, and yet a short enough time span in order for the public to still be able to relate, react, and affect them.

The future of Malmi City is inseparably connected to the development of Malmi airport, as such, our target year has been decided taking this into consideration.. According to the current plans of the City of Helsinki (2019), the construction of the Malmi airport area should be completed by the year 2045. This means the area should be functioning in full-swing with its different characteristics clearly visible by 2050.

When interpreting the final scenarios, it is important to acknowledge that they are the products of multiple decisions made by their authors in the different stages of the process. Different choices would have resulted in different outcomes. The used method concentrates mainly on identifying the unpredictable, but significant, changes that may possibly happen in the future – changes that might result in very unstable needs in future. Scenarios are not predictions, as they do not take a stance on how probable the created alternative worlds are. Nor do they claim to be a holistic or comprehensive take on the subject, but approach it from a chosen framed view-point. Finally, a scenario does not aim to be the accurate and precise depiction of the future but tries to highlight important phenomena and aims at visualizing certain causal effects.

3.2. EXTERNAL FACTORS AND SCENARIO FRAMEWORK

There exists multiple scenario methods. The one used for this project is a technique usually called "alternative world scenarios". This method is the most suitable when designing a system that has to operate properly, even if there is a change in the external circumstances. The method aims at identifying the most significant changes possibly happening in the future, and to facilitate beneficial responses to these changes before it is potentially too late. The method in question is the most appropriate in situations where the system is sensitive to external

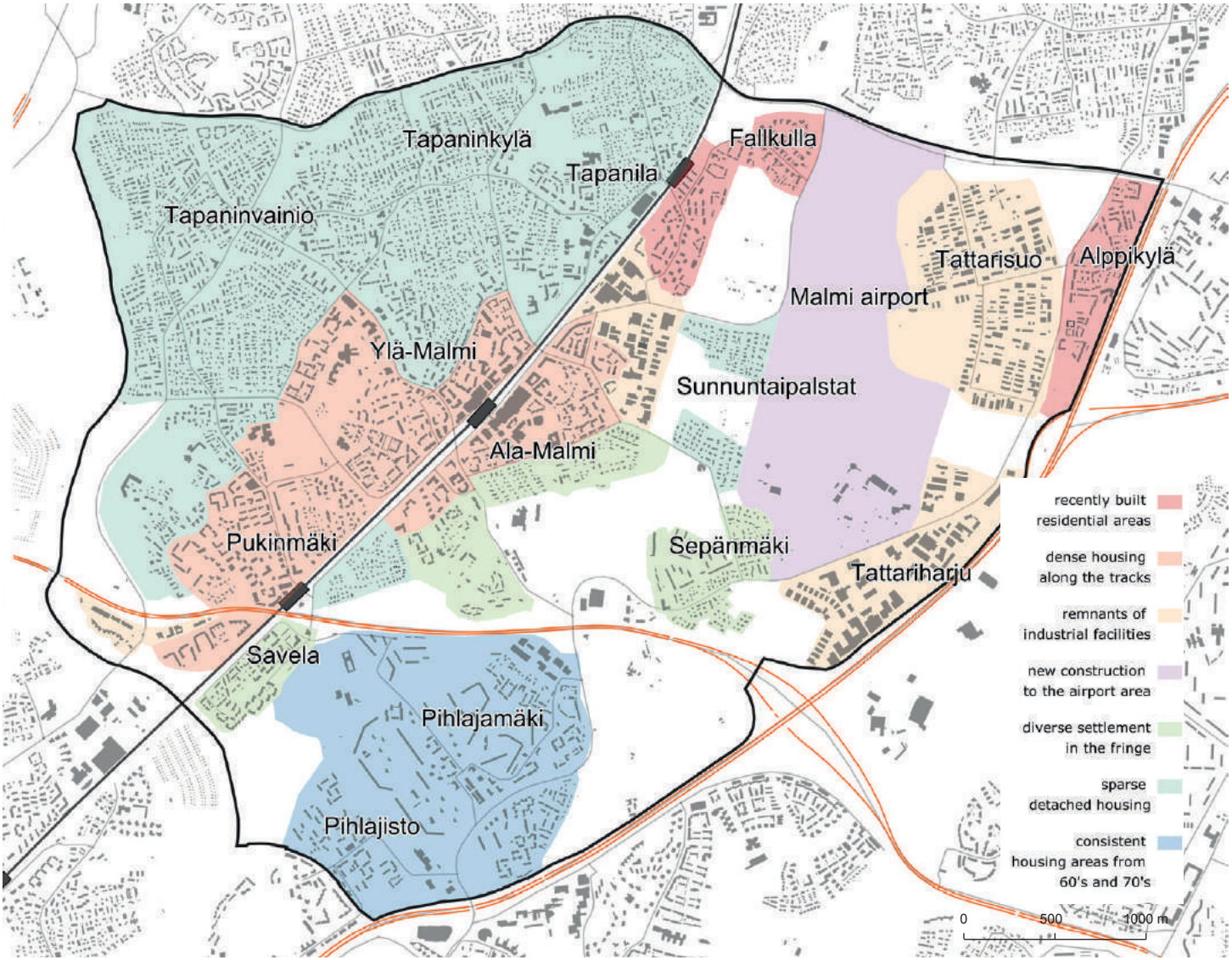

Figure 6. Social profiles for Malmi suburbs.

Fallkulla I Alppikylä *recently built residential areas* Areas are built based on modern AM programme, therefore giving them a diverse set of both residents and different housing typologies, from row houses to apartment blocks. They reside both smaller families and families with kids.	**Ylä-Malmi I Ala-Malmi I Pukinmäki** *dense housing along the tracks* Areas are defined by their near location to good transportation facilities. Housing is relatively homogenous apartment blocks with a notable selection of both public and commercial services nearby. Some newer construction is made according new diversity guidelines. Apartments are relatively small and low-valued, since settled by also disadvantaged residents.
Tattarisuo I Tattariharju **Pukinmäki I Ala-Malmi** *remnants of industrial facilities* Together with residents in Malmi there is located also some light industrial facilities, storages and commercial spaces in need of a lot of space. These may be found from locations near the main transportation highways. Their future of them is uncertain due to increasing population within the district.	**Malmi airport** *new construction to the airport area* In next 30 years Malmi airport will be constructed for residential purposes together with crucial commercial and public services for the residents. Housing typology and population are designed based on the up-to-date principles of social mixing and urban theories. This development will also have remarkable effects to its surroundings.
Ala-Malmi I Sepänmäki I Savela *diverse settlement in the fringe* Areas built in different stages and phases, thus filling the urban structure with their relatively sparse and indefinite row houses and apartment blocks, the latter mostly in Sepänmäki, forerunner for the airport. Areas are considered pleasant to live by the residents, most of them middle-classed house-owners with children.	**Tapanila I Tapaninvainio** **Tapaninkylä I Sunnuntaipalstat** *sparse detached housing* Northern parts of Malmi district are occupied by sparse detached houses, which are settled by the wealthiest residents of the whole area, mostly families and older residents who, after their children have moved away, stay in the area with good and calm reputation. Necessary facilities are mostly offered outside these relatively homogenous areas
Pihlajanmäki I Pihlajisto *consistent housing areas from 60's and 70's* Southern suburbs of the district are built according to the post-war urban theories. Major part of the buildings are high apartment blocks made of concrete elements. To the area is located quite a lot of social housing, and due to low-value and ageing housing stock also owner-occupied reside inhabitants with income less than average. The population demography is ageing, and relatively little degree of new residents are moving in.	

Table 2. Social profiles for Malmi suburbs based on personal impressions, demographic data and reference literature.

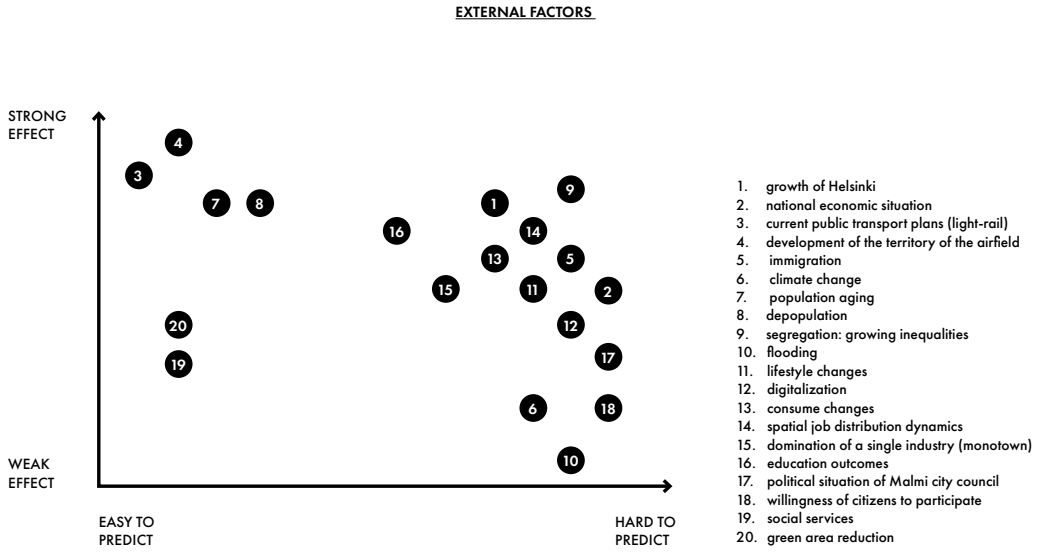

Figure 7. External factors having their impact on the development of Malmi, indicating first and second stages of the scenario building process.

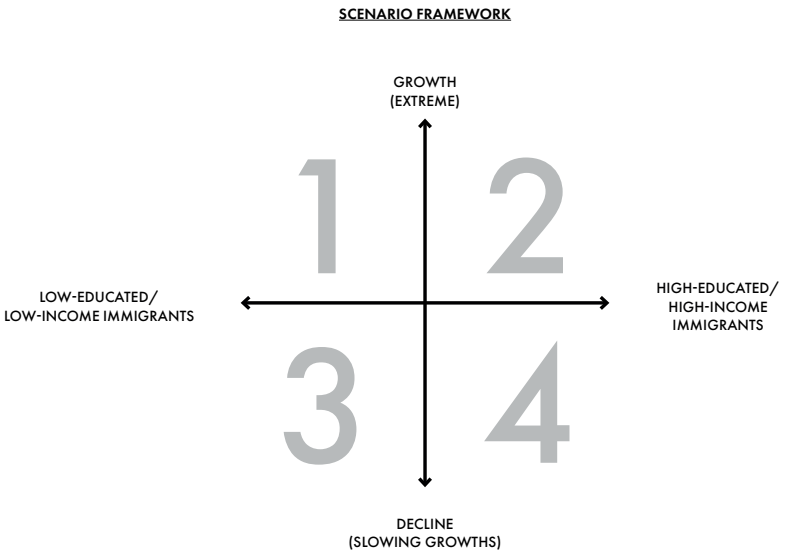

Figure 8. Scenario framework that forms the basis of our scenario building process as a result from phases 3 and 4.

changes, complex in nature, and has a long time span. It is also applicable when structural modifications are done in a later stage and are resource-consuming, or might even threaten the functioning of the whole system. The idea is to view the possible changes of the whole life-cycle of a system, not only to analyse present risks (Alexander & Maiden, 2004, pp. 103-105).

The scenario process is divided into four different stages, adapted from Alexander & Maiden (2004):

1. Different external factors that could affect Malmi's future listed (Fig. 7).
2. These factors are assessed according to their levels of unpredictability and impact on Malmi's future.
3. Choosing the two factors that are both at the same time most unpredictable and have the greatest impact on Malmi's future (Fig. 8).
4. Four alternative worlds that are defined by the opposite development directions of two chosen factors are created.

The stages 1 and 2 were conducted according to the previous knowledge the authors had acquired in their studies, a review into the literature on the subjects, and the contents of the lectures of the USP programme's first semester.

3.3. FUTURE OF MALMI: OUR SCENARIO NARRATIVES

"MALMI SANCTUARY"

Extreme growth of the vulnerable population

In the early 2030s' Europe saw an unprecedented flow of climate refugees due to the failure of the global community to tackle climate change. Finland received its share of this flow. After an initial phase of chaos and disorganization, a national climate refugee housing programme was established. Malmi was indicated as one of the important placement areas, due to its big infill potential and an existing immigrant community.

Due to this development, Malmi may become Finland's most vibrant and ethnically diverse city. Resources have been guided towards tackling the huge challenges concerning integration of immigrants and the strong concentration of social housing with positive outcomes.

If this remarkable growth in the migrant population cannot be tackled Malmi faces remarkable challenges, together with the rest of Finland, in terms of integrating this population to the society. Malmi may seem to be quite undesirable in the eyes of native Finns due to its disorder and neighbourhood effects. Because of this, housing prices will decrease, which will attract a population with lower incomes. This will strengthen segregation and makes it more difficult for the new immigrants to integrate into the society.

If Malmi faces an extreme growth in the vulnerable population, for example due to climate change, new housing stock is needed to fulfill this demand. This new housing could be offered as infill projects along the existing structures or as changing the division of social housing in the new Malmi airport area. Also, new housing areas could be located along the existing green areas, thus endangering their existence. It could be possible to locate new housing, for instance in Pukinmäki, along Ring Road I and along the railway tracks in between Malmi and Tapanila towards current industrial areas. In all these cases this new housing stock would be relatively separated from wealthier residents, which would promote segregation in Malmi. The overall reputation of Malmi would decrease, which also affects real estate value. Wealthier residents on the fringes of the area could start to despise the centre of Malmi and to use other everyday facilities further away whenever possible.

"ATTRACTIVE MALMI"

Extreme growth of the advantaged population

The positive development of Malmi was spurred by the state-level investment into transforming the Malmi hospital area into a tech and medicine campus of national

Figure 9. Scenario based on extreme growth of the vulnerable population, called Malmi sanctuary.
Figure 10. Scenario based on extreme growth of the advantaged population, called Attractive Malmi.

Figure 11. Scenario based on no-growth of the vulnerable population, called Malmi Hoods.
Figure 12. Scenario based on no-growth of the advantaged population, called Senior Malmi.

importance. This together with systematic high-quality infill housing projects in the 2030s and Malmi's good connection to the Helsinki-Vantaa airport made it an attractive place to live for highly educated foreigners and locals alike. Today's Malmi is lucrative, though the original Malmi natives complain about being pushed to areas further away due to the continual rising living costs - one of the many symptoms of Malmi's gentrification. The area has managed to overcome its previous bad reputation, but different areas remain divided between the less advantaged Malmi natives and the better-off newcomers.

Due to strategic concentration to improve the urban quality in public spaces, high-quality infill projects and a rapidly growing wealthy population in new housing areas, Malmi manages to overcome its current reputation. The construction of Malmi airport adds land value and puts pressure on the industrial areas in its surrounding, possibly changing their land use to something supporting the residential areas better. Without question Fallkulla, Alppikylä and Sepänmäki will benefit from the construction, since they are better tied to the overall urban structure. Infill projects along the main transportation lines, such as the railway and light rail may have a positive impact on, for example, the quality and attractiveness of Pukinmäki, Ala-Malmi and Ylä-Malmi, thus having a positive impact also on the existing population of the areas. Despite that, if these areas are not taken into account in the current development they may also fall behind and become isolated and their demographic transition will stagnate.

"MALMI HOODS"

No-growth of the vulnerable population

In 2018, Statistics Finland published an estimate according to which Finland's population will start decreasing in the 2030s (Statistics Finland, 2018). In this scenario, this prediction is realized, more strongly than was initially expected. The Metropolitan area still remains attractive on a national level, but even its population stopped growing in the 2040s. Malmi was no exception in this development. The population has stayed somewhat stagnant for the past years, and there has been minimal shifts in inhabitants. For this reason, Malmi's development has been almost non-existent. On the other hand, with a high share of inhabitants being Malmi natives, people claim ownership of their neighbourhoods, and the city boasts today a strong identity that relies on the diversity of its inhabitants and the city's history. Nevertheless, Malmi remains relatively untidy and unsafe in the eyes of its residents, and the future generations of vulnerable residents occupy the neighbourhood.

The development of the district fades when population growth, also to the Metropolitan area, slows down. This causes challenges to the city's economy, which leads to a reduction in budgeting and possible development programmes to Malmi. When the population gets older and some residents move to retirement homes, the situation in the suburbs stays as it is and slowly gets worse, since today's challenges have not been able to be altered. It is possible that the districts of, for instance, Malmi, Pukinmäki and Pihlajamäki suffer from bad reputations or have claimed ownership and identity over the neighbourhoods. Due to stagnated population development, it is also possible that some parts in the development of the Malmi airport are never finished.

"SENIOR MALMI"

No-growth of the advantaged population

The share of the elderly population in Finland has kept increasing, following the trend in other western countries. Thanks to the then prevailing economic upswing, in the 2030s, multiple high-quality senior homes and serviced apartment buildings were established in Malmi due to the district's good connections, accessibility to greenery, and the proximity of the hospital. Today, Malmi is safe and clean - though one might call it "sleepy" - even if it attracts a small share of higher-income families from other neighbourhoods. On the other hand this quiet place offers possibilities to enjoy an almost countryside-like atmosphere inside a city.

If the demographics in western countries continue to age, Malmi will also get its share of elderly people, pointing out some challenges in the service sector, for in-

stance, in sparsely populated detached housing areas in the northern parts of the district. Apartments with good accessibility close to good transportation connections and services are highly appreciated among the ageing population. Some new senior homes may occur in both suburbs and in conjunction with the existing hospital. As the development stagnates, new disadvantaged generations stay on their locations, making urban development more difficult.

4. FRAMEWORK FOR RESILIENCE

4.1. THE FIVE PILLARS OF RESILIENCE

Our framework for resilience (Fig. 13) is composed of five pillars - smart governance and learning cycles, place-making, socio-economic self-sufficiency, multifunctionality, and connectivity and mobility. Important aspects of resilience are considered in the toolbox of this framework, conducted from connectivity, adaptability and flexibility. The framework is adapted from the work of several expert networks and studies (see Stockholm Resilience Centre 2019; 100 Resilient Cities Network 2019; Koste et al 2019). As Ahern (2011) highlights, natural and cultural systems are inherently variable, uncertain, and subject to unexpected change, which is why the system needs to be safe-to-fail rather than fail-safe in order to adapt to rapid and unexpected changes and patterns. Building resilience capacity through urban planning requires that stakeholders identify the processes and disturbances that a particular district or city is likely to face and draws a holistic strategy to prepare the landscape against them. According to Ahern, this is achieved through strategies such as redundant functions providing backups to each other, modularised functions spreading the risk to fail, diversity of both biological systems and society, and adaptive planning and design processes, among others. These aspects are also included in the pillars described below.

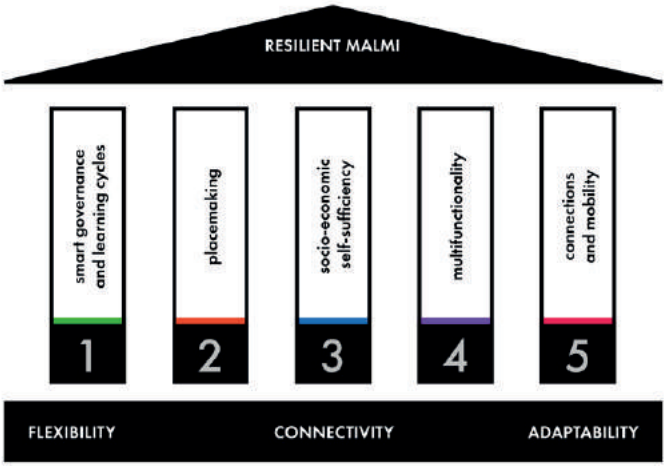

Figure 13. Framework for our approach to resilience.

Smart governance and learning cycles include aspects such as polycentric governance, expanded participation and enabled learning, and experimental culture of the society. This pillar focuses on the procedures of the city and seeks to improve the inclusivity of its processes. For example, according to the Stockholm Resilience Centre (2019), to apply resilience-thinking to the urban land use context, more broadened participation and polycentric governance is needed to achieve the goals we are aiming at. In the context of Malmi, these are achieved on the municipal level, when systems thinking is changed according to these more flexible and transparent guidelines. In addition, all strategies should have a self-learning mechanism that creates a degree of intelligent flexibility. This can be accomplished by setting mid-term evaluation criteria and feedback loops (Boyer, Cook & Steinberg, 2011).

Place-making is a two-sided aspect of the cultural heritage and self-consciousness of the citizens to take actions. Closely tied together, they support each other, when people create an identity for the place by simultaneously achieving a sense of belonging. For instance, Malmitalo is described as a necessity for Malmi in terms of cultural activities since it increases the profile of the whole area (Silvanto et al, 2008). Skot-Hansen's framework for cultural rationales and policies - utilized by Silvanto et al - is an adaptable framework for the cultural policy of the whole area, since it defines the importance of culturally significant facilities in terms of belonging and formation of a place. The four characteristics or functions of a place are enlightenment, empowerment, economic impact, and entertainment (Skot-Hansen 2005). This means, in our context, a place is composed around themes such as learning, enjoyment, and gathering.

Socio-economic self-sufficiency includes aspects of economic prosperity and local work opportunities, resource and material efficiency in terms of circular economy, service distribution and accessibility to them, affordable housing, and social equity and wellbeing of the residents. For example, schools can be perceived as windows to the socio-economic profile and prosperity of the area, closely intertwined with themes of identity and reputation. Kosunen et al (2016), among others, state that vulnerable lives are passed down from parents to children, especially in areas where a lot of residents with low socio-economic status have concentrated. Therefore, a resilient city is a mixed city: when especially children, sensitive in terms of their future possibilities, meet a diversity of people in their daily life, they are also given the possibility to achieve their best no matter of neighbourhood effects. Even if the quality of schools is relatively high throughout the city, the residential choices of families who are able to move feed into the self-perpetuating cycles of segregation, since the most disadvantaged areas are avoided and privileged areas favoured (Bernelius & Vilkama, 2019).

Resource efficiency and urban metabolism, referring to a city as an ecosystem, is a necessity for the future of society and is closely intertwined with themes of social equity and economic prosperity concerning current circumstances in need of environmental awareness. In our time, where natural resources are running out and the society needs to make a transformation to more sustainable uses of these materials and resources, our urban environment also needs to offer answers to these challenges. According to Broto et al (2012), this may be tackled by putting an emphasis on efficient material and energy flows in a city, the material basis of the economy, in other words, circularity of materials as a basis for economic prosperity, alternative visions on making policy innovations (design-thinking), and systemic change in citizens' everyday practices. These all are made visible in our interventions in Malmi.

Multifunctionality is an aspect which concentrates on the self-sufficiency and functionality of the districts. The main features of self-sufficient districts are redundant and diverse functions in both the social, cultural, economic and ecological sense. Therefore, this pillar also includes ecological prosperity as one aspect of functionality. In the theoretical framework introduced by Brandt and Vejre (2003), spatial multifunctionality is applied at multiple scales, with 1) spatial combination of separate land units with different functions, 2) different functions devoted to the same land unit but separated in time, and 3) integra-

tion of different functions on the same unit of land at the same time. This may be seen as a good standpoint concerning our case in Malmi from two perspectives: land in the urban context is a scarce and valuable resource in need of efficient use which, in the best situation, benefits the whole community, and because a good and resilient urban environment is a consequence of a relatively dense, mixed and diverse urban landscape, adaptable against disturbances it confronts. For Brandt et al (2013), natural conservation and economic prosperity are not considered opponents. Therefore, conservation is increasingly seen as a way to strengthen the cultural capability to ensure a continued sustainable economic use of landscapes, when these are done with respect to the aims of the other stakeholders.

Connections and mobility are composed of aspects, such as, hierarchical centrality and connectivity of different functions, sustainable means of transportation, and green infrastructure as part of the city as a whole. This theme is assessed through terms such as centrality, hierarchy, and networks. Centrality, in this sense, represents the value assigned to each node and point of interest (Patarova et al, 2017). Therefore, we analyse the interaction between places, closeness of interest points, and fluent connectivity.

Figure 14. Capstone project examples (picture references in the appendix).

Capstone example	Description
Paris, France ***OASIS Schoolyards: Battling Heat and Building Resilience*** Key themes: climate change, education and social infrastructure, nature-based infrastructure	Major challenges in resilience of Paris are challenges of heatwaves, flooding, declining social cohesion, and limited green space. The Paris Resilience Strategy, adopted in September of 2017, envisions the renovation of the city's network of 761 schools into green islands, or "oases," of cooler temperatures and community solidarity, including the most vulnerable neighborhood residents. Aim of open schools initiative is to identify optimal ways of treating the schoolyard as a public social infrastructure that may be available to the neighborhood outside of school hours.
Dakar, Senegal **#MadeInDakar** Key themes: economic development, social equity, circular economy, holistic approach	Applying resilience lens to two seemingly unrelated challenges – unemployment and inadequate solid waste management – led Dakar to a new solution by boosting the manufacture and consumption of locally produced goods, particularly recycled or recyclable ones. The city's #MadeinDakar initiative therefore creates markets for and fosters consumption of these products, with the double objective of reducing pollution and creating inclusive, equitable economic opportunity for the city's young, informal, and often forgotten economic actors.
Athens, Greece ***Lycabettus Hill and Athens' Urban Forest*** Key themes: heritage and culture, nature-based infrastructure, social equity	Athens have identified Lycabettus Hill as a key green space with significant heritage value, but in need of redevelopment of its urban forests and augmentation of tourism. The four priority projects entail the repairment of pedestrian pathways to improve accessibility, water management interventions to address issues of erosion, bioclimatic improvements to the main road, and a deep cleaning of vegetation. Main goals are linked to protect endangered species and to promote sustainable mobility.
Porto Alegre, Brazil ***Transforming the Fourth District*** Key themes: resilient districts, economic development, housing	As a former cluster for industrial activities the Fourth District has suffered from economic activity that has shifted to new locations. By the 21st century, the historic buildings and warehouses constructed during the district's heyday had fallen largely into disrepair. The city envisions transforming the Fourth District as a top resilience priority into an innovative ecosystem of private companies, educational institutions, public entities, and the local community, grounded in advanced ICT capacities.
Barcelona, Spain ***Etapas de la Vida concept*** Key themes: social equity, economic development, housing, holistic approach	Barcelona used a "Stages of Life" lens in order to explore the different needs of Barcelona's citizens throughout the full cycle of their lives and qualitatively analyse the city's responses to their various needs. The concept considers the distinct needs of vulnerable residents, such as children, young people, and the elderly in design programs that will create a safe, accessible, and equitable city and guarantee the well-being of residents throughout all life stages. The city used it as an entry point for understanding other priority resilience-building areas such as housing, public space, social and economic prosperity, and migration.

Table 3. Capstone examples on actual implementations of resilience in cities (adapted from 100 Resilient Cities Network, 2019).

4.2. CAPSTONE PROJECTS: HOW IS THE RESILIENCE APPROACH IMPLEMENTED ELSEWHERE?

As defined in the introduction, urban resilience refers to a city's adaptability to upcoming disturbances, externalities and inputs. According to the 100 Resilient Cities Network (2019), it may be approached from such perspectives as climate change adaptability, economic development, social equity, heritage and culture, water and sanitation, or post-disaster resilience, among others. Table 2 introduces some concrete implementations the network has been dealing with all over the world (Fig. 14). The examples are chosen with our case study area, Malmi, in mind and on the varying extent some characteristics from these examples may be applicable also to our context.

In addition, from Finland we found multiple good examples on community engagement, share of knowledge, and circulating resources, among others. For instance, the City of Helsinki established five communal houses in Viikki in the beginning of the 2000s as part of the European Union's trial to ensure local community activities in suburban areas (Viikin asukastalot, 2019). In the local neighbourhood near Malmi, these five existing houses host different activities and facilities, such as private meetings, equipment for doing crafts, maintenance of personal vehicles, and performing arts, dance and sporting activities. These houses arrange programmes mainly for families and elderly people in the neighbourhood.

5. PATHWAY TO THE FUTURE: IMPROVED RESILIENCE OF MALMI

The scenario analysis, resilience approach and current status of Malmi sets a framework within which we formulate development strategies for the City of Malmi. Chapter 5 will describe how Malmi could be planned to be more resilient, efficient, just, and adaptable against upcoming changes.

5.1. KEY DEVELOPMENT DIRECTIONS

Figure 15 indicates our interventions to improve the overall resilience of Malmi City. Since smart governance and learning cycles are merely a matter of good policies and governance, they are not visible in this map. In Malmi it may be supported by enabling tactical urbanism, participation and distributed polycentric governance.

Place-making in Malmi is achieved through building an identity and through nurturing the realisation of the district's rich history, preventing it from falling into obscurity. In Malmi, there are multiple historical layers, from which we suggest to prioritise highlighting the agricultural past already visible in such places as Fallkulla and Tuomarinkylä. This could be highlighted, for example, in the form of a Historical Path between these two former agricultural manors. The historical path would start from the west at the farm and go along the King's Road to Malmi train station and further to Fallkulla manor. The areas marked on the map are prioritized for investment, research, and activities enhancing local identity and local history. The recognition of this historical attraction may enable the increased use of these agricultural facilities, possibly in the form of, for instance, workshops and communal gardening. Various new and improved public spaces would be introduced in Malmi's different sub-centres. They would facilitate interaction between people and provide a vibrant public life.

Socio-economic self-sufficiency is one of the key aspects of resilient districts. We suggest to continue its polycentric development with Malmi as the core centre with local sub-centres that offer local facilities.

In terms of socio-economic features, there are different kinds of centres in Malmi: a hub for health and well-being, sub-centres for public services and commercial facilities, business and multi-use clusters, as well as areas of development. The Malmi train station itself is a significant socio-economic sub-centre, as well as the other two train stations, Pukinmäki and Tapanila. There are even more of these kinds of centres in the whole of Malmi. The health and wellbeing centre is located at the hospital of Malmi and the business and multi-use cluster

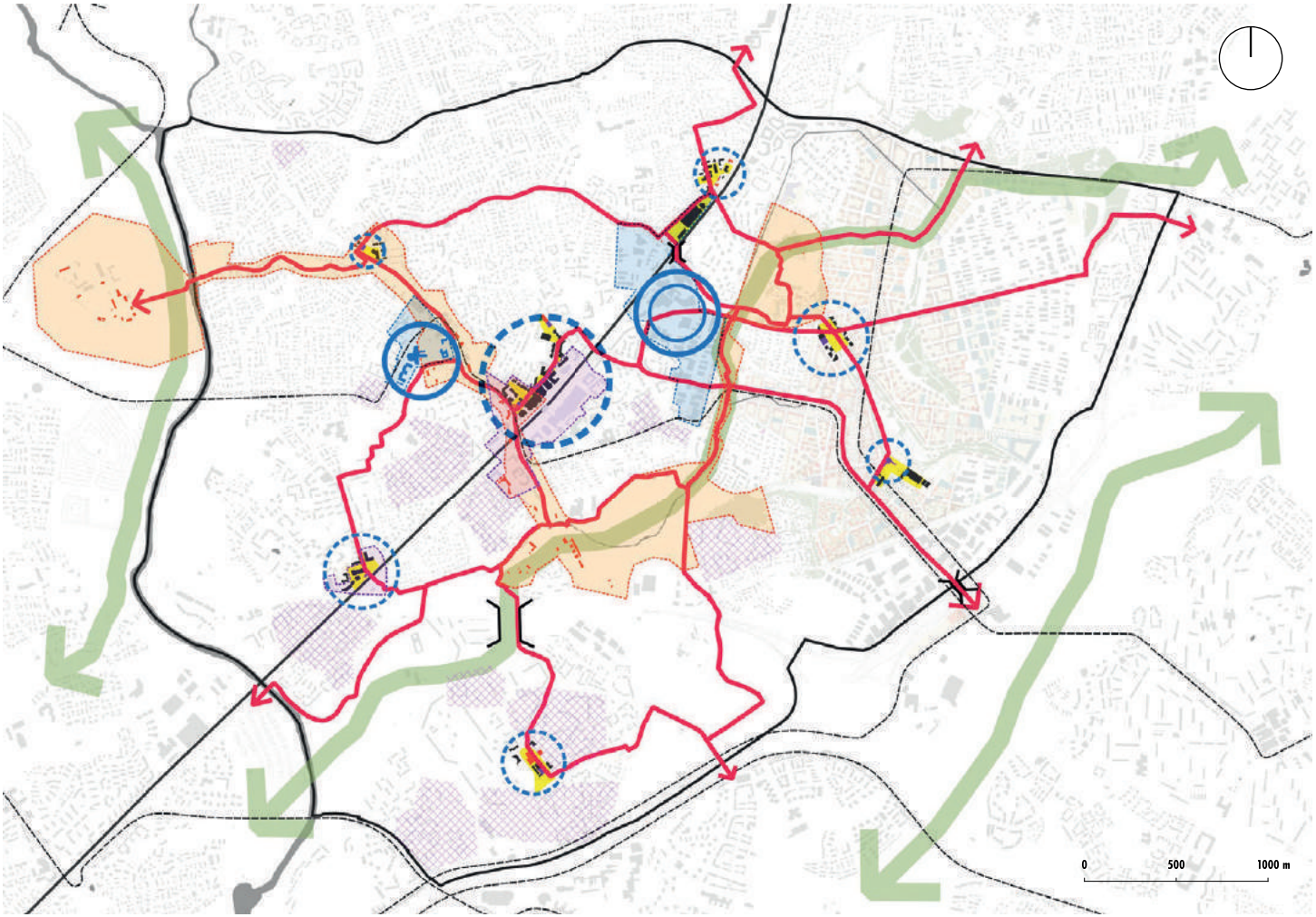

Figure 15. Interventions on how to improve overall resilience of Malmi in terms of the resilience framework described in chapter 4.

is located in Tattarisuo, where the old industry area forms a place for new innovations.

Multifunctionality does not relate only to economic and social functions of a space, but also, for example, to its aesthetic values. In a good living environment these functions are diverse and are achieved across multiple levels from individual buildings to the functionality of a city. In our interventions we have concentrated mostly on various functions of different local districts. Around the Malmi train station, we will continue the densification of its urban centre. The same development occurs at Pukinmäki train station. Between these two train stations, and in Pihlajamäki, there are places for offering multiple housing typologies and different types of tenures, which will diversify the social profiles of the areas.

Connectivity and mobility refers to the socio-ecological system of a city, including aspects such as sustainability in the means of transportation, hierarchical centrality and green infrastructure. In the map we show the system of prioritized pedestrian paths, creating a network of livable public streets. To improve the connections between Pukinmäki and Malmi we suggest a new pedestrian bridge, which would also act as a green corridor over Ring Road I. The green infrastructure is connected to the walkable city through both urban forests and new areas for agricultural activities. Main connections from south to north are thus formed near the Fallkulla and Tuomarinkylä historical centres, connecting Malmi City to a bigger network of greenery. Another important aspect is to improve connections between sub-centres and from them to Malmi centre. This is achieved, for instance, by shortening some of the planned connections in the new Malmi airport area.

5.2. STRATEGY FOR IMPLEMENTATION

The interventions introduced in the previous chapter have different influences on the alternative futures of Malmi. Figure 16 shows how big the influence of each intervention is on different scenarios. As the figure indicates, interventions of place-making and multifunctionality seem to have the most remarkable effects of all the scenarios, since its individual improvements include general themes such as public squares, culture, communal spaces, and the densification of the centre. Improving these would have a positive effect on the overall wellbeing of citizens. This graph indicates the influence, even if not the necessarily importance, of different proposals. Therefore, for instance, the improvement of connections influences the overall structure of the urban environment, which may have indirect effects on its development, even if it has no major impacts on different scenarios. Besides this, diversified housing typologies in the areas have a great positive impact on scenarios with a high risk of increased poverty. Therefore, quality of life is improved, especially among these residents as a consequence of more diverse neighbourhoods. This factor, on the other hand, is not of importance for wealthier families before a certain threshold in the quantity of low-income or migrant families is achieved.

Trends in the economy are considered important for educated people in order to attract wealthy taxpayers to the district, whereas young and internationally oriented professionals are not the most active or keen on local activities and decision-making, especially if the themes in question are not in their interests. Locality, on the other hand, is a primary interest in Malmi hoods and Senior Malmi, where the citizens may have a strong sense of belonging to the area and to issues concerning it.

When considering the connection of our proposals and scenarios (Fig. 16), different scenarios benefit from interventions in different ways - for example, it is unlikely that the health and wellbeing hub would be implemented in Malmi without professional expertise in an attractive area, but the factor is also important for the ageing population of the area. Information that is shared in communal spaces may consist of either immigration matters, job-hunting skills, support to entrepreneurs and start-ups, leisure time activities of the elderly, or something else, depending on the people in question. In this sense, flexibility of both services and spaces is needed in order to answer the demands of these alternative causes.

Some of these interventions are relatively light and im-

	Action	Malmi sanctuary	Attractive Malmi	Malmi hoods	Senior Malmi
SMART GOVERNANCE AND LEARNING CYCLES	Communal spaces that share information about the development and activities of the area				
	Post-evaluation of realised projects				
	District Council of Malmi to engage the people and contribute to its development				
PLACEMAKING	Historical path and activities in between Fallkulla and Tuomarinkylä maison				
	Increased use of historical buildings as spaces for cultural activities				
	For every subcentre created a public square with good urban quality				
MULTIFUNCTIONALITY	Community spaces to the neighbourhoods				
	Densified urban centre of Malmi and Pukinmäki subcentre with multi-use buildings				
	Diversified social profiles in certain areas				
SOCIO-ECONOMIC SELF-SUFFICIENCY	Activated subcentres around the squares and creation of a new subcentre to Ylä-Malmi				
	Hospital area as a new heatlh and wellbeing hub for economy and science				
	Altered land use in the industrial part of Ala-Malmi for residential and multi-use, companies emigrated to Tattarisuo industrial hub				
CONNECTIVITY AND MOBILITY	Straightened connection between Tattarisuo and Malmi				
	New bridge over the railway to the southern side of Tapanila				
	New bridge over Ring Road I in between Pihlajamäki and Malmi				

Figure 16. Influence of different interventions to the scenarios. Light blue indicates low impact, medium blue average impact and the darkest one the most remarkable impact that the intervention has to the scenario in question.

plemented with low resources, while some are long-lasting improvements for the area as a whole. Therefore, all of them need not be implemented simultaneously (Fig. 17). Within long processes of urban planning, diversified social profiles are already implemented in new construction sites, together with visionary and strategic work with the densification of Malmi centre and the soon to be altered land use in the industrial area. More extensive projects, such as distribution of governance to District Council and historical enlivening, take multiple years to work properly, which is why projects like this should be started at an early stage.

Stakeholders responsible for these alterations include mainly municipal organisations. In addition, companies, investors and private developers have their role to play in this development, since they implement the regulations and plans which are made by the city. Municipal institutions enable and encourage the establishment of urban activist groups and communal decision-makers in the form of the District Council.

6. DISCUSSION AND CONCLUSION

As stated in the introduction, resilience is becoming an increasingly important factor to consider in urban planning as our global society and ecosystems are experiencing rapid changes whose consequences seem to be harder to predict than before. To flourish and provide for a good living environment, cities need to be able to quickly recover and adapt to these changes.

The aim of our work was to assemble a framework that would help cities to adapt to changes, in other words, to increase their overall resilience. An important aspect of our aim was that we wanted the framework to be able to lead to a concrete action plan and planning interventions - to bridge the gap between theory and practice. As a pilot project, we implemented this framework to Malmi, with the final results of an actual action plan for the area.

Planning is a very context-specific and practical action where the context can never be ignored. Our aim was to assemble a framework that could be applied to any urban entity that would want to enhance its social resilience. We piloted the process in Malmi, though it is of a universal nature and thus it can be applied elsewhere.

Our framework's pillars and values are based on the literature on the subject and adapted from different sources working with themes of urban resilience, such as the Stockholm Resilience Centre and the 100 Resilient Cities Network. Defining the different pillars of our own social urban resilience framework proved to be quite a hard task. One of the reasons for this was that the term resilience is quite broad, and one could even argue that any aspect that contributes to the citizens' well-being also contributes to their community's resilience.

Our work gives an idea about the possible interventions for Malmi with given time and resources. Further research could have included multiple stakeholder workshops and expert interviews, which were omitted in our process and replaced with literature research and the scenario approaches. In order to steward the future planning process, monitoring and evaluation criteria could be developed to better assess if the different strategies and planning interventions have been successful or had the expected outcome.

As a conclusion, we can say that the different scenario narratives, together with their common action plans, help us to envision a future for Malmi from a different perspective. The strength of the scenarios lie in their ability to uncover visions that would have otherwise been ignored; however, it needs to be acknowledged that scenarios are not predictions. Similarly, our framework does not automatically result into a detailed plan, but it lays out a process that can be implemented in different scales of planning, thus giving the city an opportunity to better face different alternative futures.

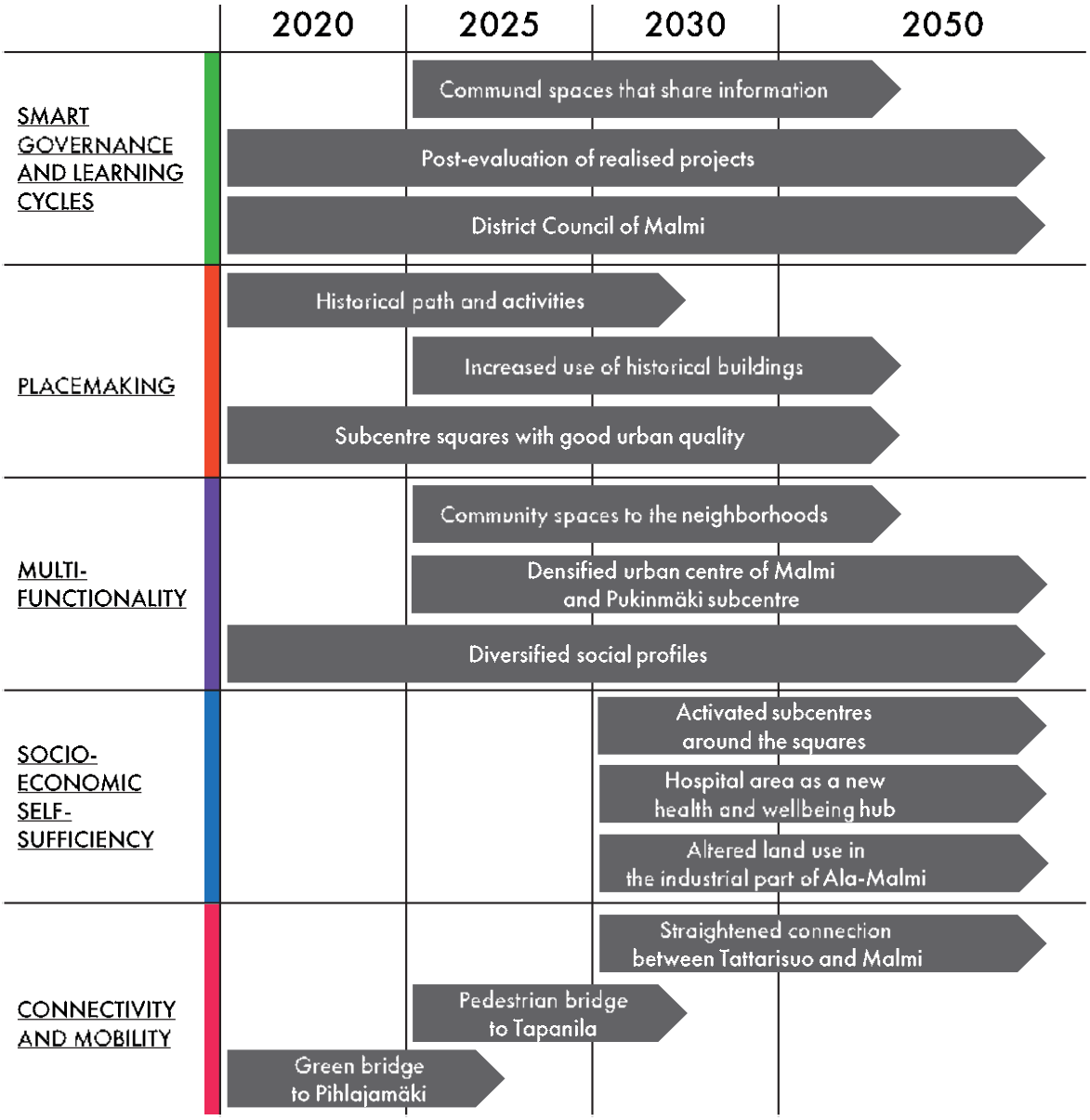

Figure 17. Suggested distribution of interventions in time.

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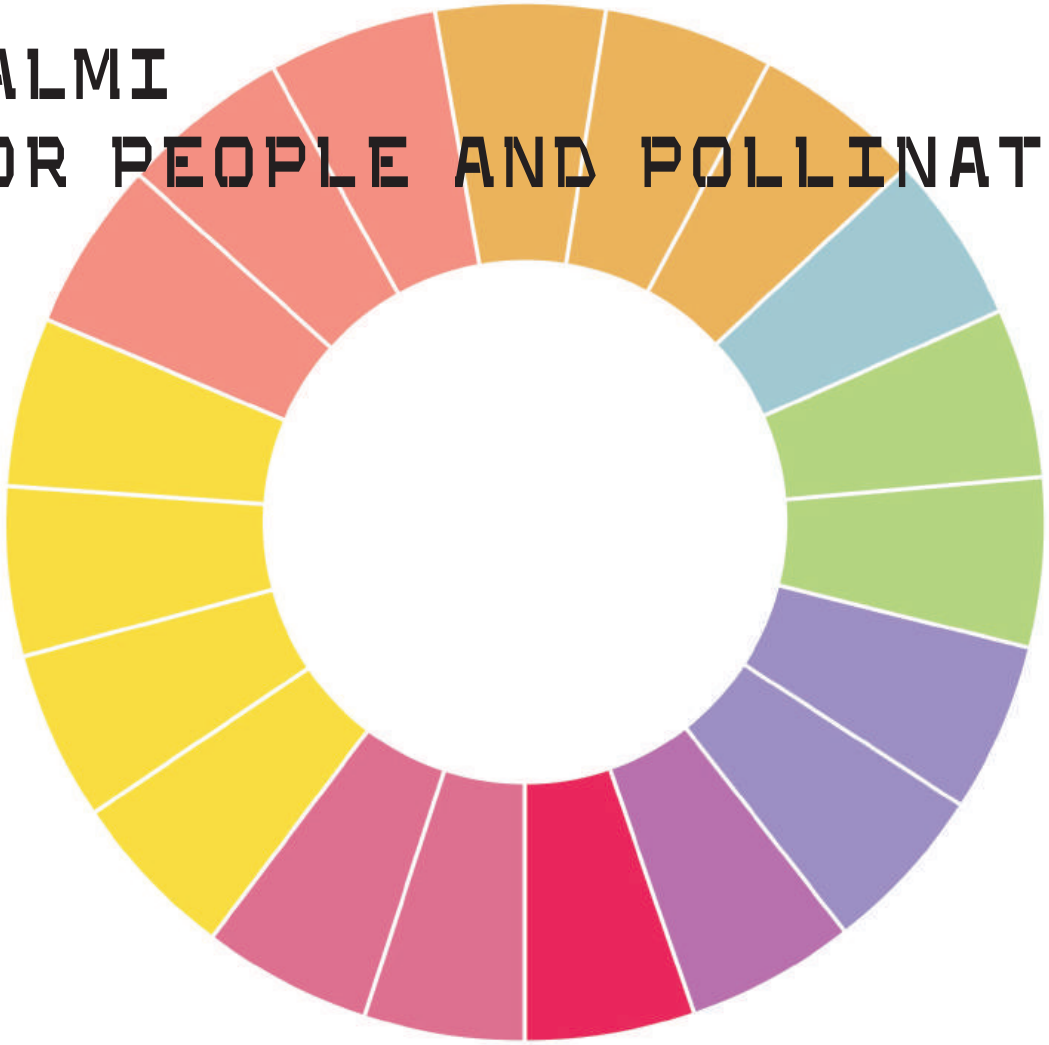
CHAPTER 6

MALMI
FOR PEOPLE AND POLLINATORS



- GUIDING CRITERIA

The current planning system is not meeting the criteria for a sustainable development of our cities therefore we will challenge this through introducing a new plot allocation system with fixed land prices. In defining set criteria and a point system for creative, playful and sustainable (economic, social and ecological) projects, we hope to create a green liveable, affordable and connected new subcentre for Malmi.

Daisy Charlesworth,
Ekku Keurulainen,
Jessica Nielsen
& Mike Tomassen

1. INTRODUCTION

As urban planners, we believe that we have an obligation to address global-local sustainability challenges through considering the intertwined links between economic, social and ecological components (McCormick et al, 2013). However, we do not believe that many of these challenges can be appropriately understood, nor can transformative (or even radical) alternatives be generated, if we are working within the current corporatized planning system. Thus, we take as our starting point the current state of planning in Finland, particularly in Helsinki, and we provide an alternative approach. This approach re-defines the notion of 'value' through basing plot allocation on certain sustainable criteria/values rather than just the exchange value of the land on the speculative real estate market. We intend to show that the current way that things are is not the way that they need to be.

Malmi airport has been a hot topic in Finnish urban planning for the past few years. The airfield is currently used for light airplanes while the surrounding area is used for recreational purposes by local residents. Urbanization creates a lot of pressure in Helsinki to build more housing for its increasing population. Malmi airport is one of the areas that the city of Helsinki wants to develop to help the housing shortage.

Malmi airport is located in north-eastern Helsinki about 10 kilometers away from the city centre. It was built in the 1930's to the outskirts of the city to serve as the Helsinki main airport (Finnish Heritage Agency, 2009). Since then, Helsinki has grown three-fold, and the city structure has become denser around the airport area. There is great interest from the city to use the airport area for a new housing development for up to 25 000 residents, but the project has faced a lot of resistance (City of Helsinki, 2019a) which has led to pressure to increase the housing density within Helsinki. The airport terminal building is protected and the airfield area is a cultural heritage site (City of Helsinki, 2019b). Flight traffic will cease in Malmi at the end of 2019 but part of the local residents' wish is for Malmi airfield to stay as an unbuilt area to be used for recreational purposes (Malmi Airport, 2019; Tuomisto, J., 2019). Furthermore, Malmi is one of the areas in Helsinki which contains the least green spaces for common use and recreation (Vierikko et al., 2014).

We started with a research-based planning approach and looked into policies in Helsinki and how they have changed over the past decades. These include making public transport a more viable option for people through public space design and land use while securing the economic prospects of transportation, demonstrating how ecological knowledge can be used to plan for ecosystem services and connectivity on a landscape level. We wanted to see if it would be possible to combine the three pillars of sustainability (social, environmental and economic)

Figure 1. Process in creating a sustainable Malmi.

in the same planning process. We used the current plan for the Malmi airport as a baseline, and created our own proposals for a traffic plan and a pollination plan. We then created a point based plot allocation system, taking inspiration from projects in Vallastaden and Vauban, to provide an alternative to the current way of planning and to combine all the subjects of our research into one plan.

We hope that the reader will find inspiration in the alternative to the current planning method and plot allocation method we propose, and that it may lead to imagining a possible sustainable future for Malmi.

2. HISTORY AND CURRENT STATE OF PLANNING - AND WHY WE ARE CHALLENGING IT

Through our investigations into Finnish, and particularly Helsinki municipality's urban policies and planning, we have found numerous controversial urban political-economic trends that require challenging in our own Malmi redevelopment project. Our investigations are mainly founded on the work of Anne Haila and her research team in the Faculty of Social Research at the University of Helsinki (Haila, 2008; 2018, Haila et al., 2016; Hyötyläinen & Haila, 2018). We believe that all urban (re) development programs require an intense and critical questioning of what, how and why a development is taking place - and who benefits from it. Hyötyläinen (2019), in his PhD thesis on socio-spatial inequality in Finland, further writes in terms of segregations that we should be concerned with the 'why' rather than the 'where'. He links structural questions on neoliberal urban planning policy changes, in the form of marketized land rents and public-private contracts, to rising levels of inequality in Finnish cities (Hyötyläinen, 2019). In this section we will discuss three of these troubling trends in urban planning and policy which have informed the foundations of our critical Malmi studio project.

Following on from Haila & Hyötyläinen's (2018) paper 'Entrepreneurial Public Real Estate Policy' (hereafter EPREP) we discuss the history, justifications and outcomes of Helsinki city's corporatized impetus to sell off its municipally owned lands to the highest bidder or charge market rents for their use – following neoliberal logic. According to Haila, this business model approach to urban planning can be traced back to policy reform and ideological shifts in the 1990s. Following the economic crisis, in 1993 a new state urban policy of 'economic redistribution' was introduced (EPREP). This process was based on a reduction in state public spending and the shifting of the burden of providing funding for public services from the state to municipalities (Hyötyläinen & Haila, 2018). Also, in 1995 the state founded the real estate companies (Kapiteeli, Senaatti and Sponda) which sought to maximize land rents – often putting them in conflict with cities (Haila, 2018). These state real estate companies are designed for profit, which essentially makes them just another player in the developer market (Hyötyläinen & Haila, 2018). Often, when selling urban assets to the cities, these SREC's demand the developed price for the land rather than the raw undeveloped land price, therefore this often conflicts with the city's prior rights to receive any value increase of the land. This state-led corporatization of real estate companies was also combined with the introduction of the Premises Centre in 2006, which valued and managed its public real estate assets like a business, again intending to make maximum profit. The argument for these changes is that this profit which was made can be used to support welfare services for society. There is also the argument that this corporatization means that state assets are used efficiently and effectively - in capitalist economic terms (ibid). However, a combination of these factors has meant that municipalities are under increased pressure to fund themselves in a corporatized business model manner – pushing them to sell off public lands, charging market rates for land (even for public services like libraries and health care centres) and engage in increasing and larger public-private partnerships. Currently, Helsinki city owns approximately 60% of its land area (ibid) however, under this corporatized urban policy, economically 'efficient' use of public assets may see this number decrease in the future – see the cases of Kamppi (Haila, 2008) and

Eiranranta (Hyötyläinen et al, 2018). As we understand it, the current plan for Malmi is to maintain municipal ownership of the land. We support this decision.

We also wish to discuss the trend towards increasing, larger public-private partnerships in urban planning projects. The proliferation of these contracts can be traced back to the year 2000 when the Land Use and Building Act (MRL) was ratified – specifically legalizing land use contracts for public-private partnerships. Haila (2008, p. 813) writes about the dangers of these public-private contracts (PPP) in terms of 'the issue of rights — property rights, development rights and use rights' in redevelopment projects, particularly regarding the case of Kamppi redevelopment in 2005. Hyötyläinen (2019, p48) writes:

> *With a land use contract, previously inalienable development rights are now surrendered to negotiation and private companies now have a stronger say in urban development.*

Drawing on ideas from the 'Rights to the City' movements (Lefebvre, 2003; Harvey, 2012) we intend to use our project to challenge the necessity of these contracts. Helsinki is regarded as having a 'planning monopoly', however we argue that an increasing reliance on these PPP's causes municipalities to lose more control over how their cities are designed, operated and managed. We may not be seeing the worst ramifications yet as these things take time, but we must stop and think about what kinds of futures these contracts are leading us towards before it is too late. To borrow an expression from the title of Brenner, Marcuse & Mayer's (2010) book, we need to start now and build 'cities for people, not for profit'. Thus, we do not believe that the privatization of formerly public space or decisions on them (through such contracts) is the best way for a sustainable and socio-ecologically just future in Malmi. Thus, our project questions the role of speculative land rent prices and how they can influence what type of developers and projects are able to build and where - and thus what kinds of urban scapes are produced.

3. INSPIRATIONAL PROJECTS

As our project concerns a challenge to the current planning system, we have tried to find inspiration in two oth-

Figure 2. Vallastaden, Linköping, Sweden (Gyulai, 2018).
Figure 3. Vauban, Freiburg, Germany (Ellen MacArthur Foundation, 2010).

er projects, Vallastaden and Vauban. These projects were chosen based on their relatability to our Malmi project. Our focus in analyzing these neighborhoods was not solely on the way these neighborhoods are built up (for instance socially, architecturally, or economically), but also on the planning background in creating the areas.

3.1 VALLASTADEN

Vallastaden is a new residential district in Linköping, Sweden. The urban planning process was led by Okidoki Architects and completed in 2017. The neighbourhood has around 1000 houses with mixed tenure types created by over 40 different, small to large scale, developers. Vallastaden has received a lot of international attention due to its diversity in subsequent housing developments architecturally, but also in terms of the social, ecological and economic aspects of urban sustainability. At the larger scale, they made decisions such as making it a car free zone, with specific designating parking zones outside, and innovative underground service tunnel solutions. This project also challenged the traditional monetary 'exchange value' drivers of profit, standardization and uniformity that often dictate the outcome of urban developments. Instead of generating a master plan with large plots and then opening them up for auction to the highest bidder, Okidoki Architects decided to try something different. They split the land up into smaller plots and set a base price for all lots. They then created a point-based system for plot allocation – meaning that plots were allocated based on the 'true' social, ecological and communal economic value of their project. It also meant that small scale developers were not consistently outcompeted by large scale developers, as is often the case in Finland and many other places around the world. They created nineteen criteria, including things like commercial ground floor spaces, timber construction and winter gardens. As one resident says in an interview (Vallastaden 2017, 2017):

> *I think Vallastaden is a really important contribution to the debate, not just in terms of what you can see and the beautiful architecture that's here, but also what you can't*

Figure 4. From the traditional plot allocation system to the 'Malmi Criteria'.

see, the innovation in speaking about procurement, land and cost and all of those things.

For our project we took inspiration from Vallastaden's daring approach of shifting focus on how we define 'value' in urban planning - away from monetary profit drivers and more towards social, environmental and shared wealth generation.

3.2 VAUBAN

Vauban is an award winning, ecologically minded intentional community in Freiburg, Germany. We were particularly interested in this project due to its holistic approach to the three pillars of sustainability. Vauban is a multi-functional district with community public spaces, commercial spaces and a range of residential community developments coordinated by a range of different baugruppen collectives. It is built on the site of a former military base – utilizing the renovation of many of the existing barracks in its ecologically minded designs (Coates, 2013). Vauban is a unique case as it had the input from a number of sustainability minded individuals and expert groups, such as the Ecology Institute, the Fraunhofer Institute for Solar Energy Systems, the European Secretariat of the International Council for Local Environmental Initiatives ICLEI, and the headquarters of the International Solar Energy Society (Fernández, Moran & Ramos 2007). It is a particularly interesting example because it began via a group of squatters taking on developers who were trying to profit from their homes (Coates, 2013). They stood up for their rights to the city and through grassroots activism created the group Vauban Forum – members of which participated in all aspects of the subsequent urban planning decisions and designs.

4. INTRODUCTION TO CRITERIA FOR PLOT ALLOCATION

Following our historical analysis on the state of planning in Finland, and the success of the Vallastaden criteria based 'municipal toolbox' planning approach, we decided to create our own Malmi specific plot allocation toolbox. This toolbox is based on the idea that all plots will have the same set land rental price and projects will 'compete' based on use/social/ecological/architectural/equitable value-criteria rather than exchange value, as can be seen in the figure below.

There are some general rules on the criteria toolbox:

- There are a total number of 60 points available to each project.
- Proposals must reach a minimum of 45 points to be considered.
- Proposals must address at least one sub-criteria from each 'theme' (e.g. theme 2. architecture) that has more than or equal to two sub-criteria listed (e.g. 2.1, 2.2, 2.3 etc.) In other words proposals cannot just ignore entire 'themes'

The full list of criteria themes, sub-criteria, descriptions and respective points can be found at the end of this paper (Appendix).

Figure 5. The various categories of the toolbox (references for the icons: Architecture by mynamepong from the Noun Project; Construction by Hopkins from the Noun Project; Energy by Rudez Studio from the Noun Project; Water by Guilherme Furtado from the Noun Project; Ecology by Nithinan Tatah from the Noun Project; Tenure by Maxim Kulov from the Noun Project; Participation by IOHK Design Department from the Noun Project).

Criteria theme	Description
1. Developer **Total of 6 points**	Current planning processes are dominated too strongly by the desires and actions of large-scale, monopolized and profit driven developers. Through limiting the size of the plots and the number of projects that one developer can create per block, we hope to create space for smaller developers and groups to participate. We also see that giving points for equal partnerships between large and smaller firms can contribute to this same outcome. We also hope such measures will create rich diversity in designs and thus a more vibrant and interesting urban environment.
2. Architecture **Total of 17 points**	Through giving points for different architectural and spatial characteristics we promote the importance of multi-functional and flexible spaces with interesting and different ecologically and socially sensitive focuses. These criterion points will generate projects that blur and challenge traditional dichotomies between public and private spaces.
3. Construction **Total of 8 points**	In our current anthropocentric epoch we need to strongly and honestly address the impacts that the construction industry is having on the planet. This means understanding the globally unequal exchange of labour and resources occuring due to current unsustainable procurement and construction processes. It means reframing each decision in terms of global ecological and social justice. This can range from things like including Life-Cycle Analyses (or cradle to grave studies), adopting circular economy principles or procuring renewable, locally sourced materials - among many other things. These criteria will make developers think more about their role in the larger interconnected socio-ecological challenges we are facing.
4. Energy **Total of 9 points**	This criterion is particularly important for ecological sustainability. The Malmi that we design now will be present for decades to come, therefore we need to reward projects that prioritize low carbon and ecologically sensitive designs.
5. Water **Total of 2 points**	Water is a precious resource and conventional building solutions are unnecessarily ignorant and wasteful of it. We have included this point because we believe that such solutions should not just be for 'eco-homes', they should be a future standard for all projects.
6. Ecology **Total of 6 points**	We have created an overarching pollination plan, which it is compulsory to adhere to. However, we will be granting additional points for projects which exceed these minimums requirements, or approach them in creative and unique ways.
7. Tenure **Total of 7 points**	The current forms of tenure, based on versions of private ownership, private, rental or subsidised housing are inadequate when viewed in terms of economic sustainability. We believe they do not truly address questions on housing as a basic human right as many are based on treating housing as a commodity or asset/investment, or in the case of social housing, as a physical manifestation of class struggles and wealth inequality. We hope through allocating a large number of points for projects that challenge these questions on tenure type, accessibility and affordability that a more socially just Malmi will ensue.
8. Participation **Total of 3 points**	We believe that active participation by the community in the design process is paramount. We want to promote user-centred design practice for each individual development project. We believe that this will give residents a greater connection and sense of ownership over Malmi.
9. Labour **Total of 2 points**	Through our previous studies on Malmi demographics, we found that there is a high proportion of unemployment. We believe that urban development projects have a wider role and mandate in promoting projects that actively address this socio-economic situation.

5. THE LARGE SCALE ASPECTS OF THE PLAN

Besides the plot allocation criteria, our research focused on two large overarching themes: the traffic system and biodiversity (the ecosystem service of pollination and the connectivity of the meadow network). Of these two themes, we created plans and designed some new concepts to integrate into the larger plan for Malmi airport.

5.1 BACKGROUND TO THE TRAFFIC PLAN

Traffic planning is essential due to the multi-use nature of streets. Streets are primarily viewed as a space for the transportation of vehicles, but also for the movement of people as well as a place for 'hanging out' (Baarman et al., 2004). Streets enable transportation in urban environments, which is a vital part of any functioning society and enables the social and economic activities in the urban context (Migdalas, 1995). Public space design can have a great impact on which means of transport people choose, if there are multiple options available. Land use and public space design are essential when creating a more sustainable and livable urban environment. It has been shown (Handy, 2004) that car dependency is not sustainable in the long run, but there has to be other viable options to change the situation. In order to reduce the number of cars, we have to design public space to be more pedestrian and cyclist friendly. If destinations are easily accessible without driving, people will opt for other means of transportation.

Previous studies have shown that increased urban density also affects which means of transport people tend to opt for, with the use of private cars plummeting when urban density exceeds thirty persons per hectare (Zhang, 2006). Low density urban sprawl has been seen as one of the main reasons for car dependency. Car dependency has raised concerns on multiple levels, from personal to global. With the globally rising levels of obesity and increasing costs in health care, car dependency is a major factor in reducing the level of physical activity of people (Stein, 2004). On a global scale, cars are contributing to a number of environmental hazards, such as global warming and air quality degradation (Zhang, 2006). In urban environments, parked cars take a lot of public space from other types of use. A large number of cars in an urban area also leads to road congestion, especially during rush-hour.

To create a more sustainable new neighbourhood in Malmi, we have to focus on land use and public space design. These are the key elements in the process of making alternative means of transport more viable for people moving to the new area. Instead of relying on private cars, Malmi airfield should be planned in such a way that most of the area could function without people having to drive. There is a need for dynamic solutions, including trams or light railways, cyclists and pedestrians. If private cars are not evaluated to be the most efficient means of transportation, considering time and monetary cost, people tend to choose other options (Braess, 2005).

As mentioned above, transportation is a key element for a modern functioning society that allows economical and social interaction between people. In the case of the new development in Malmi, we should pursue new and bold traffic solutions in order to reduce the climate impact, as well as making the area more enjoyable and accessible for everyone. There is no existing public infrastructure in the airport area, which allows planners to start from a clean slate and make technologically developed, sustainable and forward-looking plans and designs.

The urban area of Helsinki has grown all around the airfield over the years since it was first built up. This means that the neighbourhood that will be built on the airfield should fit in between the surrounding areas like a piece in a puzzle, connecting these areas and making the mobility in north-eastern Helsinki more seamless. Malmi has great opportunities in terms of connectivity and the existing public infrastructure. The new neighbourhood would be surrounded towards the centre by Lahdenväylä and train tracks and by Ring I (Kehä I) in an east-west direction. This existing public infrastructure offers a great potential for connecting the airfield neighbourhood easily to surrounding areas and to improve these connections.

The public transport plan is to connect the Malmi area to its surrounding areas by light rail transit. These connections would integrate Malmi even further in means of public transport, both towards the centre as well as in the east-west direction, reducing the demand for bus routes in the area. It is still a fact that Finland has one of the highest amounts of privately owned cars in Europe (Tilastokeskus, 2018) since distances are long and people need their cars for different reasons. Hopefully, we can change this in the future by smart design solutions, but for now we have to ensure the smooth movement and accessibility of private cars and other automobile transportation. There will be a new intersection connecting Tattariharju to Lahdenväylä which will decrease travel times to Malmi airfield by car but which will also have light rail tracks. We are aiming to have public space for people, which means we have to come up with an idea for parking spaces. Due to geological challenges in Malmi, underground parking is not an option. We see that one option could be centralized parking storages for the area, that will free the street space for other types of transport.

We can have an effect on the types of transportation modes used through careful urban design and planning. To ensure a safe and livable environment in a small scale area we have to look at new ways of urban design. The commercial and cultural centre of Malmi airfield needs to be easily accessible without the use of private cars. This means that we need to reserve public space for pedestrians, cyclists and public transport. New traffic solutions have to be policy and design based. For example, we can create blocks of collector streets where cars are obligated to give way to pedestrians and cyclists. Separating pedestrians in urban environments from cyclists does not only increase safety but is also a smart use of space. How the space is used in the new housing area of Malmi airport determines if it will be successful in fulfilling the demand for a new urban and sustainable neighbourhood. With bold traffic solutions developed with the help of previous literature on the topic means there is true potential in making a Malmi airfield neighbourhood of the future which has great mobility.

5.2 BACKGROUND TO THE POLLINATION PLAN

The Malmi airport area has been identified as an area with a lot of potential for multi-functional green spaces providing ecosystem services. It has been suggested that the planning of the Malmi airport area could work as a pilot project for finding new ways of planning to secure and develop ecosystem services (Vierikko et al., 2014). Our plan is partly answering this suggestion. Using ecological knowledge is key when aiming for more sustainable urban planning. For this project of developing Malmi we decided to focus on planning for the ecosystem service of pollination and the connectivity of the meadow network. The reasons for our choice are as follows:

1. Bees, bumblebees and butterflies are among the most endangered terrestrial insects. One reason for their decrease is considered to be a lack of suitable habitats (Sánchez-Bayo & Wyckhuys, 2019). Pollinators, or insects in general, do not thrive on our intensively cultivated fields, our concrete and asphalt-dominated cities or our heavily managed economic forests.

2. Cities have been identified as the second most important landscape type for threatened bees in Sweden (Borgström et al., 2018). When the decline of pollinators develops further in agricultural lands the role of cities in providing suitable habitats could increase (Hall et al., 2017).

3. Many pollinators are meadow species. The Longinoja area has been pinpointed to be a substantial link in the meadow network of Helsinki (Anttola, 2017). Malmi airport area has been identified as having a lot of potential when it comes to increasing biodiversity through planning (Vierikko et al., 2014).

4. The development in the Malmi airport area will change the current meadow character of the place significantly. To honor the past urban layer, we want to embed some of the current vegetation structure into our plan and save as much as possible of the natural character.

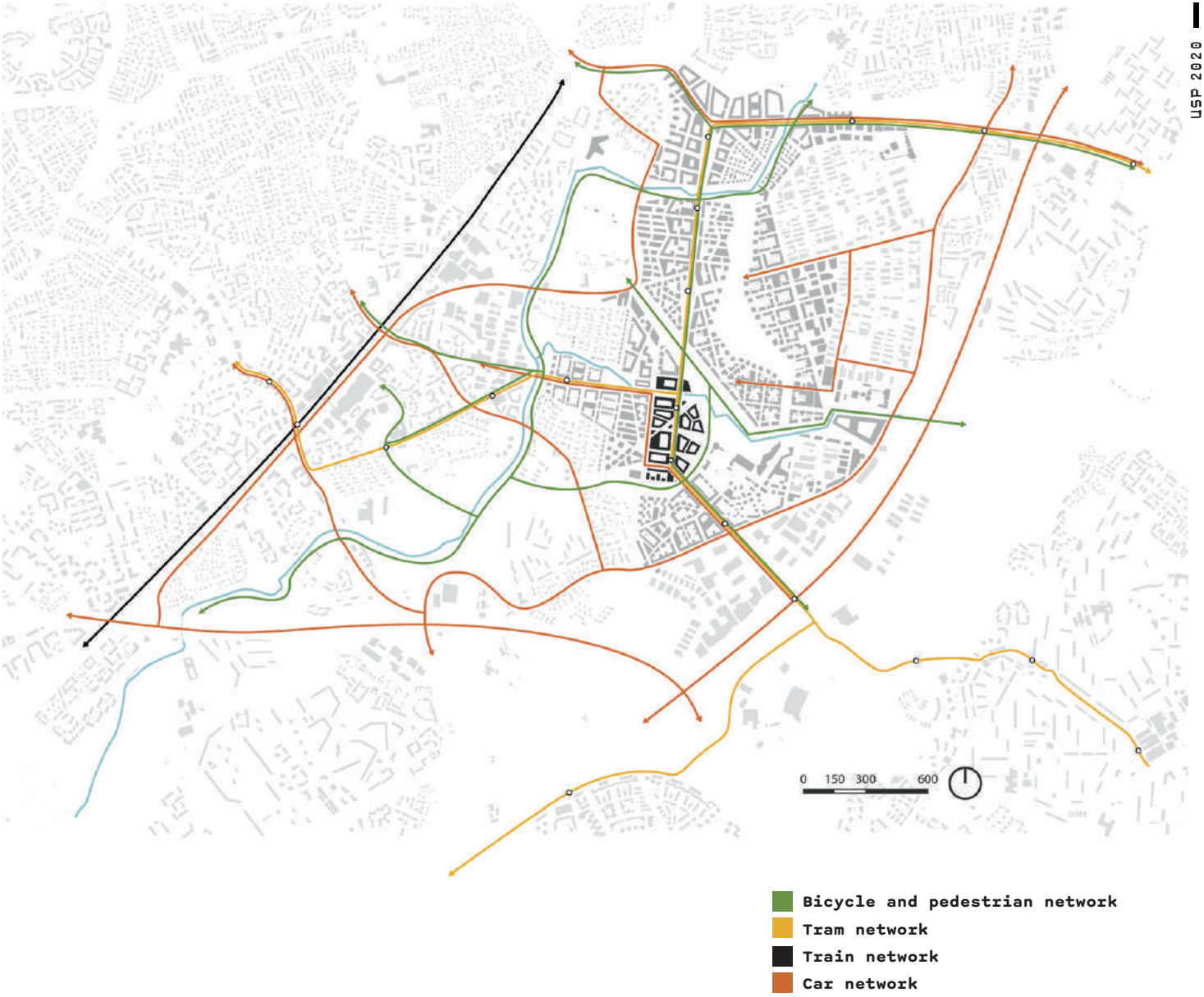


Figure 6. The large scale traffic plan for the Malmi airport area.

5.2.1 The current situation in Malmi

The airport area is not, in its current state, an area hosting exceptionally high nature values (Vierikko et al., 2014; Nupponen, 2019). In this regard, it differs from other small airport areas, where biodiversity is often exceptionally high due to a rare, dry meadow character (Rassi et al., 2010). The difference is probably due to the clay soil, which supports more humid, nutrient rich meadows of less diverse flora and fauna than the more sandy and nutrient poor soils usually found on smaller airports. In addition, the area has not been managed in a way that would support a more dry and diverse meadow vegetation, and large areas have been left to become overgrown (Vierikko et al., 2014; Nupponen, 2019). On the other hand, the area has been identified to have a lot of potential for increased biodiversity through planning (Vierikko et al., 2014).

The more humid meadow vegetation along Longinoja is clearly part of a larger network (Anttola, 2017). Humid meadows near water sources host diverse flora and can function as nutrient filters for stormwater runoff from surrounding areas to rivers and streams (Vierikko et al., 2014). This could be an advantage when planning the area around Longinoja and smaller streams in the Malmi airport area.

Currently, there are some small areas with dry meadow character in Malmi, and this amount could be enhanced with good planning. Dry meadows could be made part of the park and other public space vegetation, and vegetated roofs could be installed to support this type of greenery. By building an ecoduct over Lahdenväylä the dry meadow areas could be linked to a larger network in Kivikko. With these measures, we can create more nature values than there currently are in Malmi, or at least make up for lost values (Vierikko et al., 2014; Anttola, 2017).

5.2.2 Planning for connectivity

When planning for connectivity, we need to know about the ecology of the organisms that we want to be able to move through the landscape. The maximum distance between habitats has been identified as 200 meters for meadow species to ensure that they can move from one habitat patch to another (Anttola, 2017). The minimum habitat size for meadow species has been identified to be 1 ha (Anttola, 2017). Considering this, we recommend that larger areas (> 1 ha) of both dry and humid meadows are planned within the green infrastructure of Malmi airport. In addition, smaller areas should be used to connect these habitats with larger networks on the landscape level. The distances between habitat patches should not exceed 200 meters. Planters in residential areas and public spaces can be used to support the overall habitat of pollinators and other meadow species, but they should not be used to replace actual meadows. The same is true for vegetated roofs. To support these species in the best way possible, the vegetation in green spaces should be designed according to the following rules: 50% native species, 80% species rich in nectar, 20% host species for pollinators (Arnström et al., 2019).

Figure 7. Movement of meadow species through the landscape, using smaller habitat patches to move between larger habitats.

Figure 8. Examples of meadow habitats in the urban context.

5.2.3 Permeable surfaces and alternatives to lawns

A higher amount of urban green and other permeable surfaces enhance the quality of the water escaping the urban catchment and reduces problems due to flooding (Setälä, 2019). Lawns are permeable surfaces, but have been estimated to be one of the biotopes with the lowest biodiversity values in Helsinki. At the same time, meadows, especially dry meadows typically hosting high biodiversity, are becoming increasingly rare (Vierikko et al., 2014). Lawns have their place in the urban greenery, providing recreational uses, but there are solutions available combining the recreational possibilities of low vegetation with biodiversity and aesthetic values of higher meadow vegetation. One of these solutions is a design method called "cues to care". This entails cutting some of the vegetation low to be used for recreational purposes, and leaving some of the vegetation uncut. The point is keeping the border between cut and uncut very clear, so that people understand that it is intentional and not due to neglection from the green space management, i.e. cues to care (Ignatieva, 2017). Another solution is using ridgid vegetation that benefits from tear, combined with a permeable substrate, on areas used for walking and other recreations. There are currently research groups studying experimental alternatives to lawns in Sweden (Ignatieva, 2017). Yet another solution is having meadows on areas that are not actively walked on, but only meant to be admired, and keeping traditional lawns on areas for recreation. To increase the level of biodiversity we recommend that a combination of all these methods be used for green infrastructure planning on the Malmi airport area.

5.2.4 Vegetated roofs

Vegetated roofs can function as complementary habitats to meadow species, but should not be seen as replacements for actual meadows (Vierikko et al., 2014). When considering the possibility to create some of the meadow habitats on vegetated roofs, we need to consider the sustainability of the maintenance and the used materials, the conditions on the roof, what species might survive there and the height of the roof, so that it is still accessible for pollinators and meadow species (Maclvor, 2016; Wang et al., 2017; Gabrych et al., 2016; Liao, 2017). When installing vegetated roofs it is important to make sure that they do not spread invasive species. This is best done by using locally sourced materials and native vegetation (Vierikko et al., 2014).

Dry meadow vegetation has been shown to be able to survive on vegetated roofs, and using different substrates of different depths has been shown to increase biodiversity (Gabrych et al., 2016; Liao, 2017). When it comes to the height of the building, increasing building heights have been shown to result in decreasing numbers of pollinators (Maclvor, 2016; Wang et al., 2017). The dispersal of insects onto roofs under Finnish conditions

has not yet been studied, but experts have estimated that insects should be able to access roofs in Finland, since the building heights are low (Liao, 2017). Though, with the current trend of building towers, height should be taken into consideration when planning vegetated roofs in the planning of Malmi. The biodiversity roofs in Kalasatama could be used as models for this, though there is not yet scientific studies addressing this (Mesimäki, 2017).

5.2.5 General requirements

- The humid meadow vegetation should remain connected to the larger network along Longinoja.
- Dry meadows should be connected throughout the landscape and further through an ecoduct over Lahdenväylä to the larger network in Kivikko.
- Larger habitats (> 1 ha) of both dry and humid meadows should be planned within the green infrastructure of Malmi. Smaller habitats should be used to connect all habitat patches with larger networks on a landscape level.
- The distances between habitat patches should not exceed 200 meters.
- The species used in the green space designs should be 50% native species, 80% species rich in nectar, 20% host species for pollinators.
- No more than 10 % of the non-built plot area may be hardscaped (Urban Ecosystem Restorations, 2018).
- Solutions combining the recreational possibilities of low vegetation with biodiversity and aesthetic values of higher meadow vegetation should be used to increase the level of biodiversity.
- For plots pinpointed in the pollination plan, at least 60 % of the non-built area needs to consist of meadow vegetation

5.2.6 The pollination plan

In plans on plots marked with orange, an area equal to at least 60 % of the non-built area has to consist of meadow vegetation, either as vegetated roofs, vegetated walls or as part of the green space on the ground level.

6. FRAMEWORK FOR THE CENTRE

The previous paragraphs discussed the new plot allocation method with its criteria and the large scale networks. In this chapter, we will take a more detailed look at a new framework created for the centre of the area, which will be called home for approximately 1500 inhabitants.

As stated before, our plans have so far been based on the current general plan for the Malmi airport created by the City of Helsinki. We see the 'centre' of the area as one of

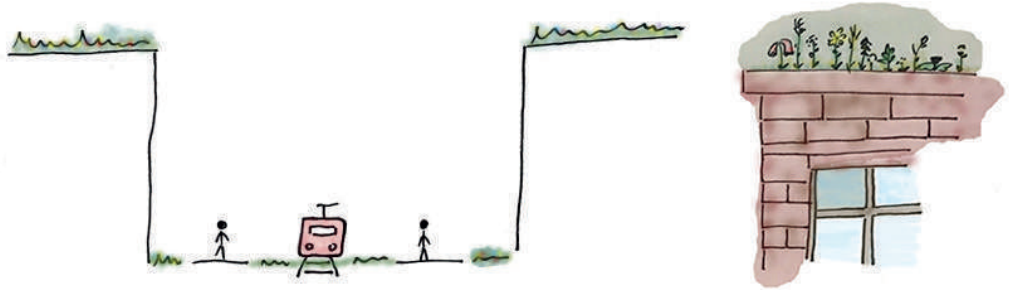


Figure 9. Examples of meadow habitats in the urban context.

Figure 10. The large scale pollination plan for the Malmi airport area.

the most interesting places in the complete airport area for several reasons. Firstly, based on the current plans and our understanding, most of the services will be located within this area. Secondly, the area is directly situated next to the old terminal building and the new meadow park. Finally, the centre will probably concern one of the most dense neighbourhoods of the area, making it a challenge to incorporate ideas on economic, social and environmental sustainability.

Thinking about what type of centre we would like to see being developed, we can take a look at various centre typologies. First, there is the shopping mall or centre. Although the shopping centre is not the preferred type of centre area according to the city plan of Helsinki anymore (City Planning Department of Helsinki, 2013), we can still see these developments going on, for example, with the construction of Redi in Kalasatama. Second, there is the typical Finnish suburban shopping centre, often characterized by a square or other type of public space in the middle surrounded by stores. A recently re-developed example can be found in Myllypuro. Although we do agree that this centre typology does offer a more viable option for the airport, we still think it is too introverted and is not an ideal fit within the currently proposed plans. The pedestrian centre is the third category we have defined. This category can often be found in historical city centres in the Finnish context. Outside of Finland, however, we can find this typology also in more recent developments, like in Ypenburg (The Hague, Netherlands) and Leidsche Rijn (Utrecht, Netherlands). The modern version of this centre type is characterized by relatively narrow pedestrian streets, resembling a more historic centre, and the high amount of ground floor services. The fourth, and last category, we have defined is the shopping street. The shopping street is often characterized by the concentration of services along a linear line and its connections to either a tram or boulevard. Although this typology is often not used in modern suburban development, it does offer an interesting alternative to the pedestrian centre for the case of Malmi airport, as the design of the area is mainly characterized by long straight lines. This, together with the fact that the tram rides through the area, has led to our decision to create a pedestrian shopping street, which mainly consists of 'shared space'.

6.1 SMALL SCALE PLOTS

The design of the framework is characterized by the large amount of small scale plots, 176 in total. These include one existing building, currently in use as a technical space for airplanes and offices, two large parking garages, three restaurant/kiosk spaces, and two 16 floor towers. Most of the plots are a lot smaller than the average plot in a development area giving special groups of people and smaller project developers a chance to enter the monotonous Finnish development market. Furthermore, we ex-

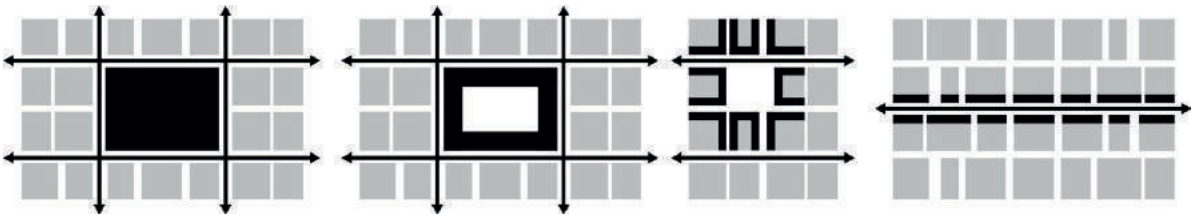


Figure 11. Various centre typologies. From left to right: Shopping centre, Finnish suburban shopping centre, pedestrian centre, and shopping street.

pect that the smaller plots will result in an architecturally more diverse and interesting neighbourhood.

6.2 VARIATION IN BUILDING HEIGHTS

The general building height in the new centre will be between 4 and 6 floors high, creating a nice human scale. There will be several tall buildings along the axis that will guide the view over the old runway. These taller buildings, respectively 12 and 16 floors, will also be visible from the surrounding neighbourhoods. The axis on the old runway is completed with a 16 floor building.

6.3 CONNECTING MEADOWS

As the centre is situated on a vital location in the pollinator plan, meadows play a big role in the public space of the plan. The three openings connect the central axis with the meadow park and the patches of meadow along the tram. These meadows form a visual and functional

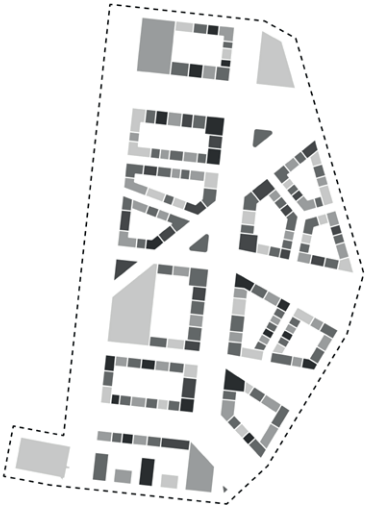


Figure 12. Small-scale plots.

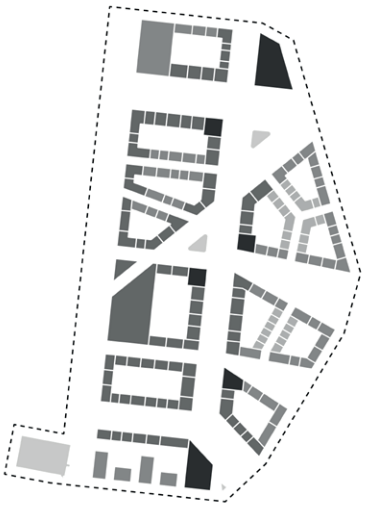


Figure 13. Variation in building heights.

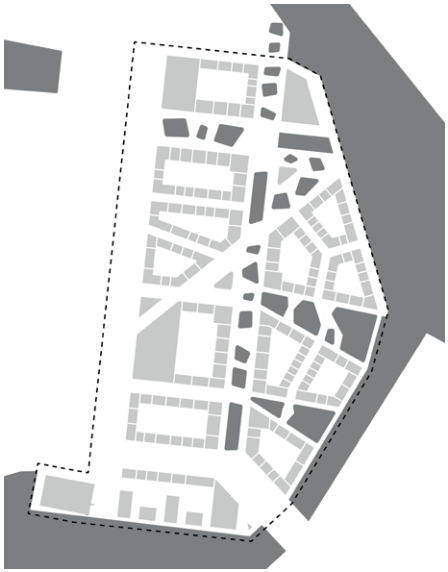


Figure 14. Connecting meadows.

connection on the larger scale, making sure the maximum distance between the meadow patches is not exceeded. The meadows also serve as a way to create awareness about the importance of the airport for the pollinators in the Helsinki Metropolitan Region.

6.4 CONCENTRATION OF SERVICES

As discussed earlier, the services in the new centre will be located along the shopping street on the location of the old runway. The Malmi airport centre concerns a sub-centre of a sub-centre (the current centre of Malmi) in the Helsinki region and is characterized by the small scale of the plots. These are two of the reasons why we expect no giant franchises will have interest settling in the area, but rather smaller interesting and innovative businesses. Located in the tower in the north eastern part of the centre there will be the 'centre for people and pollinators'. This will include a specialised research lab on the pollinators and an educational institute for children and adults related to this subject. The old hangar will be used for indoor sports.

6.5 WALKABLE AND BIKEABLE CENTRE

The main focus of the centre will be on the pedestrian and cycling connections. The small streets provide interesting spaces for both pedestrians and cyclists, and form unattractive streets for cars. The straight lines create fast connections on the larger scale.

6.6 ACCESSIBILITY BY CAR AND TRAM

In contrast to the current general plan, the car and tram flows will be separated within the centre area. Parking garages are connected to the main road and provide easy access by car to the centre. In our vision, however, we expect the tram to bring in most people from outside the area due to the fact that the tram has two stops on the central axis in the centre area. This is in line with our ideas on sustainability.

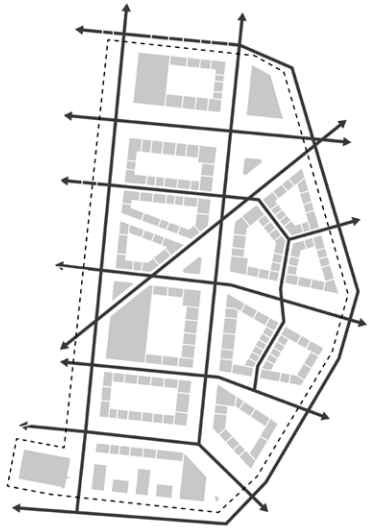


Figure 16. Walkable and bikable centre.

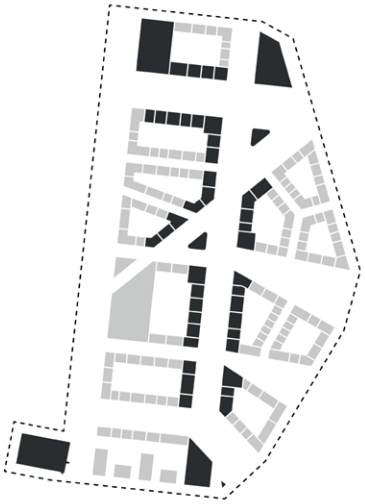


Figure 15. Concentration of services.

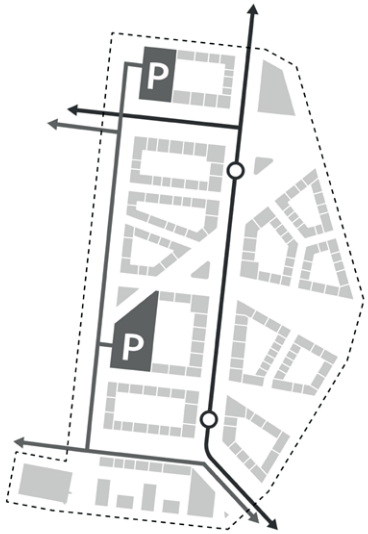


Figure 17. Accessibility by car and tram.

Figure 18. Framework for the center of Malmi airport.

7. PLAYING OUT THE CRITERIA BASED PLOT ALLOCATION SCENARIOS

Here we introduce three possible projects, done from different points of view, to try out how our point based plot allocation system could work in real life planning.

7.1 VILLAGE CO-LIVING CO-OPERATIVE HOUSING PROJECT

We are Village Co-Living, a co-operative (asunto osuuskunta) housing network that is currently being established in Finland with the financial support of ARA (The Housing Finance and Development Centre of Finland). As we (Village, 2019) said in a recent pitch given to the City of Helsinki:

> *Village Co-Living solves the problem of expensive and lonely living by developing socially, ecologically, economically and architecturally sustainable co-living locations…Our role in the housing market is to grow the market share of holistically sustainable co-living.*

Our co-operative was founded by a group of enthusiastic design and construction professionals who are in partnership with the first European-wide housing cooperative LiM (Living in Metropolises). This partnership has been a great help in establishing an international network of support and knowledge sharing to promote the co-operative housing model here in Finland. We already have one project underway in Viikki, another under negotiation with Helsinki city and discussions with resident's groups on establishing a further property in Espoo. As Malmi will be establishing itself as a new northern city centre, we thought that this was a perfect opportunity to establish another village co-living project here. As our process is resident led, we first began by finding a group of people (particularly those with lower income who would benefit most from a combination of communal living and affordable rents) who would be interested in collectively owning and sharing a property as part of the village co-op network. This was not very difficult as many people are very keen on this housing model. These people then, with the architects, designed the building with us – for example the type and amount of common spaces that they need as well as their own private spaces – ensuring flexibility for the future if their circumstances or needs change. We also strongly believe in environmentally sustainable design, therefore meeting these criteria was of utmost importance to us. We actually have our own criteria system, adapted from the City of Vienna's 4 pillar holistic sustainability model – which, interestingly, also uses a point system to judge the performance of a project (socially, ecologically, economically and architecturally). Thus, achieving these points was not difficult for us. We found this criteria driven urban planning approach incredibly rewarding as we felt that it really gave smaller, boundary pushing projects, such as ours, the opportunity to establish properties on sites that would have otherwise been taken by bigger and more profit driven developers. From our perspective, we hope that more councils will use these types of approaches in the future.

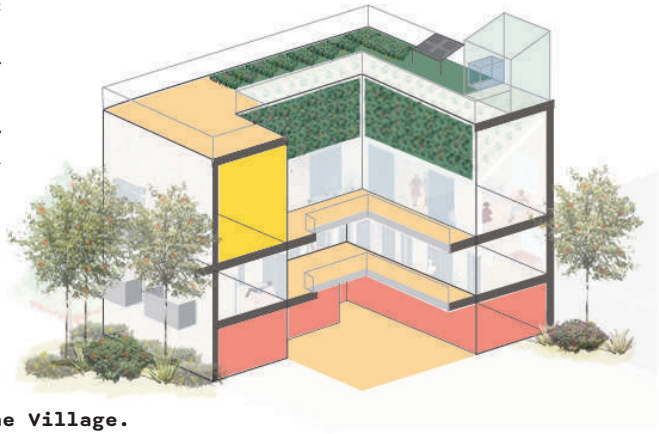


Figure 19. The concept for the building of the Village.

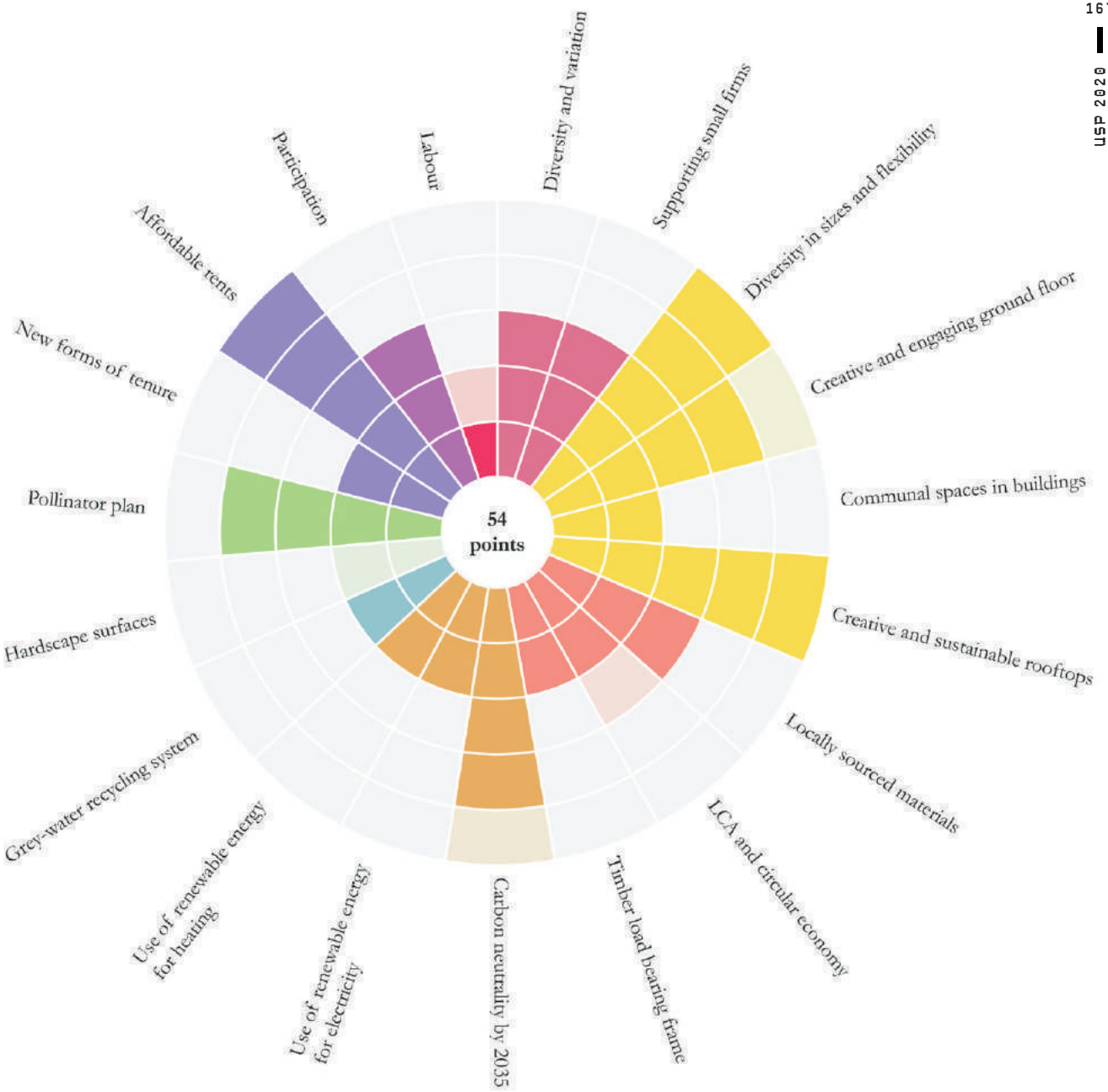


Figure 20. Total score of 54 points for the Village.

7.2 WIT DEVELOPER LED

WIT is a multi-national corporation that acts on all the continents around the globe. We create winning solutions together with our customers. We are world leaders in offering flexible and diverse real estate solutions that meet even the most challenging needs. Our goal is to offer a variety of flexible housing and business solutions from studio apartments to family-apartments and business premises. We want to be part of building socially and economically sustainable communities by using our expertise in land use, planning, design and development.

In order to fit the criteria, we had to rethink our company policies and construction processes. We think that the plot allocation criteria helped us to come together with like-minded companies, to come up with new innovations and solutions, and to create a neighbourhood of the future. Our staff consists of the finest of designers and planners that value long-term solutions in diverse projects. We recognize different housing demands and value the versatility of apartment options. In our vision, physical buildings are part of a larger ecological system, providing an environment for nature in an urban setting.

To ensure good accessibility of the services and the functionality of the area, we are determined to build a dense and vibrant neighbourhood with a range of cafes and businesses thriving on the ground floor. Large display windows in the most central locations will capture the eyes of the potential customers allowing your business to fly. Our rooftop solutions allow the community to come together to enjoy the common space in a form of a garden or a dinner area.

In our projects, we use locally sourced timber, latest technology and recycled materials for our development projects to increase sustainability. WIT is constantly trying to come up with new ways to minimize waste by recycling materials used in construction projects and reducing the climate impact of our production, operation and maintenance. Smart energy solutions are in our best interests, and to decrease emissions not only in our projects but throughout the industry. We are the innovators and vanguards of green construction.

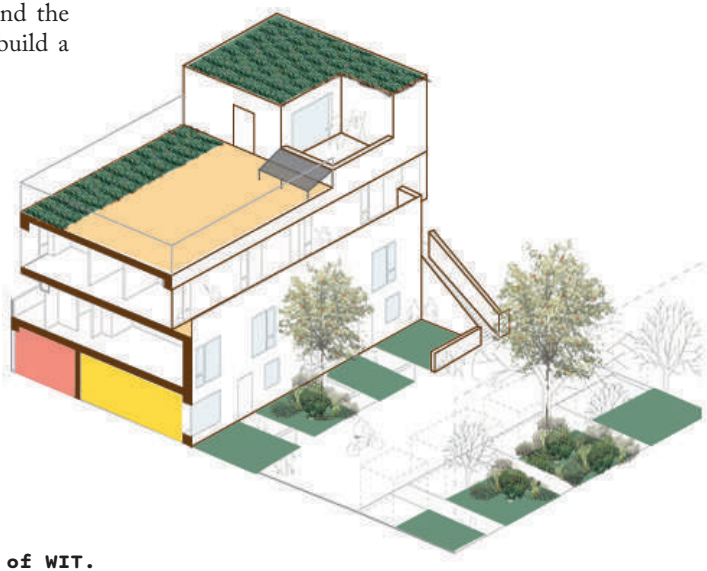


Figure 21. The concept for the building of WIT.

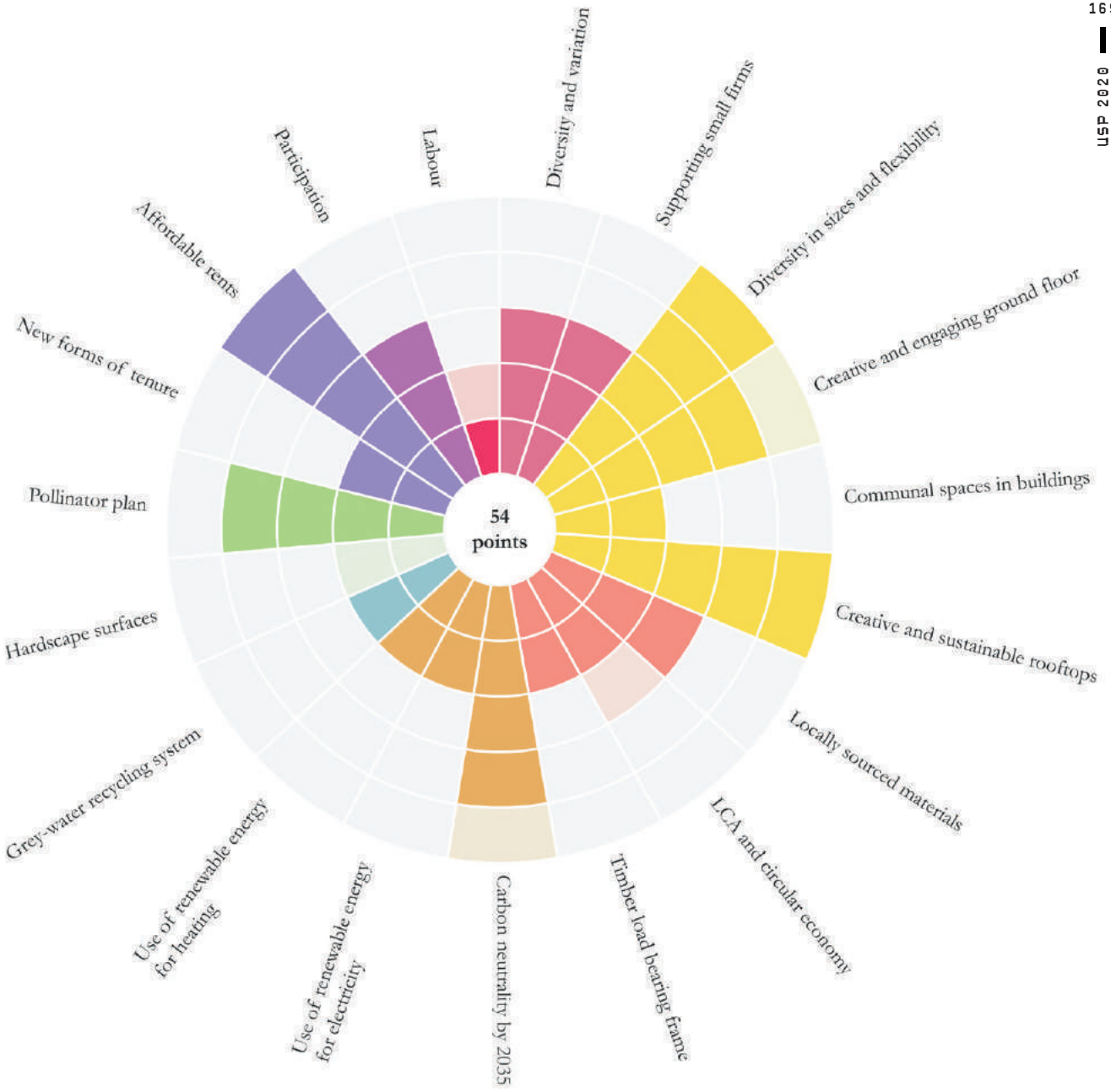


Figure 22. Total score of 45 points for WIT.

7.3. ECODEV

We at Eco-Development (EcoDev) value environmentally sustainable development above all else. Our goal is to make comfortable, affordable and functional homes and at the same time add nature values to the area we are building in and keep the CO2 emissions at a minimum, both during the building process and during the lifetime of the building. That is why we chose to use recycled materials in our design as much as possible, use Finnish timber, use the newest building technology to build a passive house and design the communal green spaces using native and pollinator friendly vegetation. We are working together with other developers in the area to ensure that our waste materials are used elsewhere. Long lasting use of our building is an important goal to us, and that is why we have designed family sized apartments, which can easily be divided into smaller apartments. Because we want our design to appeal to people in different life situations, we are planning to build apartments of different sizes into the same building (1x 4 bedrooms on the top floor, can be divided into 3 bedrooms + studio, 4 x 3 bedrooms, can be divided into 2 bedrooms + studio, 4 x 2 bedrooms and 4 x studio apartment). The ground floor of our apartment building consists partly of communal space, partly of rented out workshops space and a small retail unit designed to be used as a coffee shop run by, for instance, an environmental organization. The cafe can sell and use produce from the rooftop garden. The roof is a multi-functional rooftop garden and communal space, where the outer sides of the roof are dedicated to a combination of dry meadow vegetation with different substrates to ensure high biodiversity and solar panels. The rest of the roof area is used as a communal garden and an urban living room. A part of the roof consists of a rooftop sauna and a small glass covered terrace, so that some of the space can be used during the winter.

8. CONCLUSIONS

Our aim in this report was to examine alternative procedures for spatial and urban development and to see how the three pillars of sustainability (social, environmental and economic) could be taken into account within one plan or framework. To fight trends of corporatization and money driven development that threaten the concept of planning a city for people, not for investors or profit, we have developed a new plot allocation system for the Malmi area. In this plot allocation plan, not the amount of euros a developer brings matters, but the adaption to the criteria, which we view as the most valuable in creating a sustainable Malmi. We were inspired by the plot allocation criteria that were used in a similar project in Vallastaden, Sweden. This list was tweaked and modified to

Figure 23. The concept for the building of EcoDev.

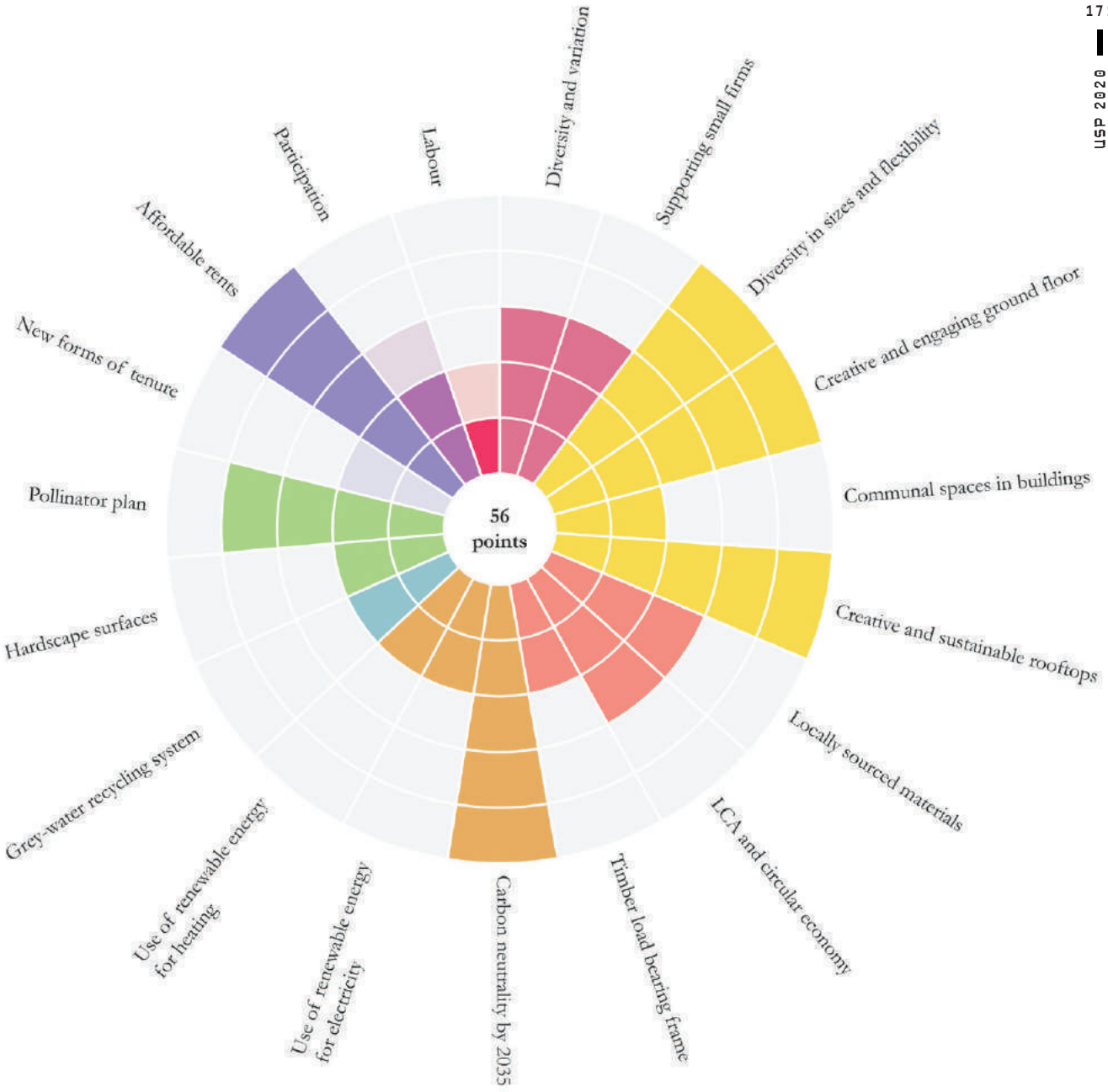


Figure 24. Total score of 56 points for EcoDev.

fit the context of Malmi. The final list of criteria consists of 9 themes with sub-criteria, and the points add up to 60 points in total. In order for a project to be considered, the proposed design must reach a minimum of 45 points.

Furthermore, we explored some other topics that we considered to be vital for the development of the new neighbourhood in the Malmi airport area. We focused on two large overarching themes: the transport system and biodiversity (the ecosystem service of pollination and the connectivity of the meadow network). Of these two themes, we created plans and designed some new concepts to integrate into the larger plan for Malmi airport.

Our traffic solutions concentrated on sustainable and forward-looking public transport as well as the preference of pedestrian and cycling routes over the more traditional car routes in the suburbs. To ensure secure and sustainable traffic solutions to the central area of Malmi, we propose rerouting private cars around the main centre structure and arrange centralized parking away from the public space.

To make sure that the meadow network stays connected throughout the landscape of Malmi, and to create suitable conditions for the ecosystem service of pollination, we created a pollination plan and general guidelines for green infrastructure planning.

We see that the point-based criteria for plot allocation could be a viable tool in future urban development. It helps to keep the competition in the field of construction equal, as there are other factors that come to play besides capital. The criteria system forces developers to take sustainability and climate impacts into consideration and allows smaller businesses to stand a chance against big competitors. It allows future residents to have their say in the development process. We see that using this kind of point based plot allocation systems in planning could create diverse, forward-looking, winning solutions that are achieved by co-operation between the developers and the residents of the area.

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APPENDIX

Criteria	Description
1. Developer	
1.1 Diversity and variation Total of 3 points	• Apartment buildings: One architect firm is allowed to design max 3 buildings in the same block and the properties are not allowed to be next to each other. • Single family houses: One firm is allowed to design max one group of terraced houses or semi-detached houses. All singular houses need to be designed by a different architect firm.
1.2 Supporting small firms Total of 3 points	• Having small scale firm (e.g. start up) as equal partner.
2. Architecture	
2.1 Diversity in sizes and flexibility Total of (4+1) 5 points	• In an apartment building with more than 3 apartments, the apartments need to be of at least 2 different sizes. • Projects with apartments of at least 4 different sizes within one building. • + 1 extra point for bringing flexibility for changes in future into design (e.g. modular).
2.2 Creative and engaging ground floor Total of 5 points	• Presents an open character to the sidewalk. • Multi-function uses. • Inclusion of non-consumer based public shared spaces e.g. repair cafe, workshops. • Lively and interesting public/private thresholds - blurring boundaries between public and private. • Minimum 3.5m ceiling heights (mandatory).
2.3 Communal/shared spaces in building Total of 2 points	• Communal/shared spaces designed for residential buildings to promote social interaction and communality.
2.4 Creative and sustainable roof tops Total of 5 points	• Green Roofs (if your plot is on a prescribed green roof zone then this is a mandatory design feature). • Common space (e.g. bbq area, sauna). • Communal urban food garden. • Solar panels
3. Construction	
3.1 Locally sourced materials Total of 3 points	• Key structural materials are sourced locally (within Finland). • Key structural materials are sourced from a small/medium business provider.
3.2 Life Cycle assessment (LCA) and circular economy Total of 3 points	• Life Cycle (or cradle-grave) assessment provided for the project. • Circular Economy Principles included in LCA (e.g. using recycled materials in construction or having a plan for waste materials to be re-used elsewhere).
3.3 Use of timber load bearing frame Total of 2 points	• Building structural load bearing frame from timber.

4. Energy	
4.1 Carbon neutrality by 2035 Total of (4+1) 5 points	• Projects with passive houses (= energy use max 50 kWh/m2 Attempt and heat loss max 15 W/m2 Attempt). • Projects that renovate existing buildings to passive house standards. • +1 extra points for projects with plusenergy (passive houses that also produce more energy than they use).
4.2 Use of renewable energy for electricity Total of 2 points	• Projects with solar panels, wind or other form of renewable energy source for electricity.
4.3 Use of renewable energy for heating Total of 2 points	• Projects with renewable heat source (e.g. geothermal) or heat capture systems that re-use heat generated on site or another site.
5. Water	
5.1 Grey-water recycling system Total of 2 points	• System for the on-site capture, cleaning and re-use of grey water.
6. Ecological	
6.1 Hardscape area Total of 2 points	• Projects that plan for less than 10% of hardscape on the non-built plot area.
6.2 Pollinator plan Total of 4 points	• Interesting and creative adherence to pollinator plan (e.g. green roofs, green walls, meadow gardens etc.).
7. Tenure	
7.1 New forms of tenure Total of 2 points	• Include new forms of tenure beyond regular owned and rent e.g. co-operative (asunto osuuskunta).
7.2 Affordable rents Total of 5 points	• At the start of the renting, 3 room apartment of 77 m2 standard rent must not be above ARA determined affordable housing rates. • After this, these rents are not allowed to rise more than the average in the municipality. • These rules apply for 15 years. • **affordable housing usually has 85% of people who have income < 2500euros/month*
8. Participation	
8.1 Participation of future residents Total of 3 points	• Participation of future residents in concept design and ongoing process of project.
9. Labour	
9.1 Employment of workers Total of 2 points	• Projects that employ people with special difficulties to get back into the labour market e.g. age, rehabilitation, immigration. This includes both the project development stage and in the function of the building thereafter. There needs to be strong evidence of ethical consideration.

Figure Appendix. Total possible score of 60 points.

CHAPTER 7

CONNECTING MALMI PEOPLE

This chapter presents a proposition of a masterplan for the new neighbourhood in Malmi offering a mixture of housing, services, space for offices and businesses etc. The main goal of our plan is to create a new urban neighbourhood to Malmi and connect it to the wider Malmi region. This plan includes changes to public transportation infrastructure, green areas and functions of areas in the whole Malmi region. This masterplan should connect different parts of Malmi together and create connectivity between people by the mixed use of the new centre.

Jingyi Mao, Jure Pučnik, Erkko Kukkonen & Ilmari Talvitie

1. INTRODUCTION TO WORK

In a report by the City of Helsinki (2018) the growth options for the population estimates regarding the future of the metropolitan area: slow, steady, and fast. A tendency in previous estimations has been that the predictions usually have underestimated the true growth. In other words, growth has been greater than expected. Thus, we decided to attempt to respond to the fast population growth estimation. This fast population growth would entail the metropolitan area needing to accommodate approximately 500 000 new inhabitants by the year 2050. In our project, based on the report above, we address a possible reality for 25 000 new inhabitants to the Malmi region.

To begin with, an assumption was made that the current airfield area is suitable to build on. Thus, we proceeded to calculate how much space is required to accommodate 25 000 people, and more importantly, how many buildings are needed. This would give as an indication how dense the area would be. Furthermore, it would give us further indications as to how feasible such a project would be.

Next, we proceeded to analyze how accessible an area Malmi is via walking and public transportation for current residents. Our analyses indicated that north to west connections were good, however, there was an absence of east to south connections. This was mostly due to a void created by the current airfield area. Additionally, we noticed that the territory was subject to other geographical constraints: westbound of the area, Malmi is separated by a river, while eastbound, a highway divides Malmi from Jakomäki and Kontula, and finally, a highway southeast divides Malmi from Pihlajamäki and Pihlajisto (Map 0). In this analysis we concentrated on the connections within Malmi and towards the east.

Finally, after analyzing the territory and the current needs of the city, we came up with a design proposal for the current Malmi airfield region. Emphasis was set on connecting Malmi to other areas while simultaneously connecting other areas to Malmi. Throughout this approach additional emphasis was set on creating an attractive region for people to experience. In other words, not just another sleeping suburb (finnish: Nukkumalähiö).

2. IMPROVEMENT PROPOSALS

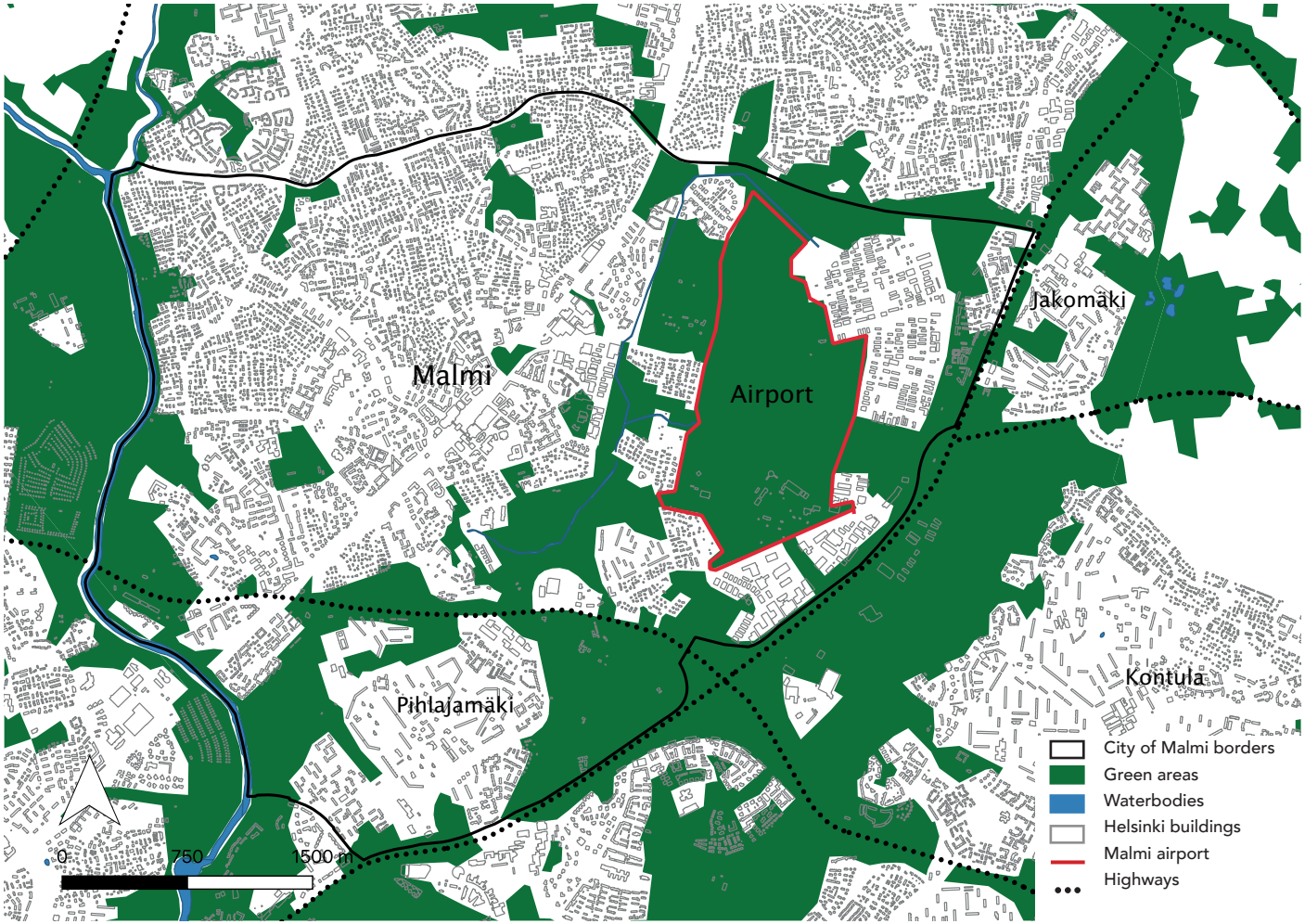
2.1. HOUSING AND ECONOMIC ACTIVITY

To address the sleeping suburb stereotype of a Finnish suburban area, we tried to answer the following questions - how to make people stay in Malmi and how to make people commute to Malmi? Creating a healthy area to experience was a key point of emphasis, however, to address this we required an understanding on how dense the area would be. In other words, how many buildings would be needed and in what section of land. To calculate these we primarily used economic models to simulate what happens when the population increases in an area.

According to Di Pascual & Wheaton (1992), population growth indicates an increase in demand for land, which leads to an increase in both housing rental and price levels. For a developer, an increase in housing prices boosts the investment attractiveness. A higher return rate for an investment increases construction activity and results in an increase in an area's housing stock (Figure 1).

Furthermore, if we were to consider Malmi as a monocentric city (Geltner et al., 2007), that is, a city with one center and all jobs located in the center, we can better analyze the effects of population growth. The monocentric city assumes that the city center has higher land value than the edge of the city. This implies that land value decreases gradually from the center to the borders. Additionally, due to higher land value the building heights in the center would be taller. Thus, if we consider population growth in Helsinki, and specifically Malmi, land values will increase all around the city when the population grows (Figure 2). However, these assumptions are not applicable to real life scenarios. They simply showcase the effects of what happens when the population grows in an area.

When we consider the population growth's effect on



Map 0. Malmi and its geographical constraints.

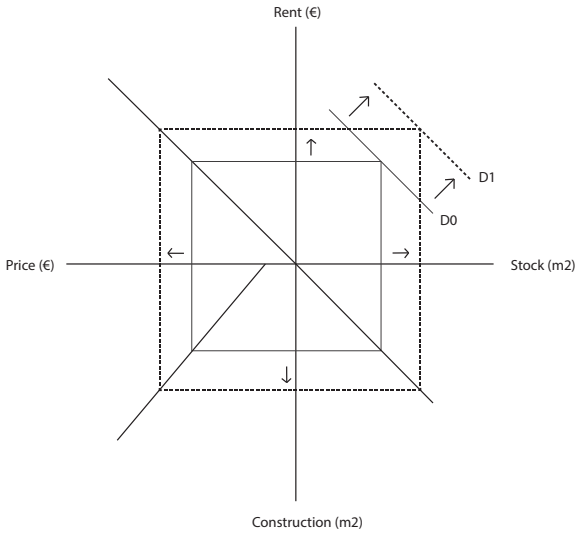


Figure 1. 4Q - model illustrating population growth.

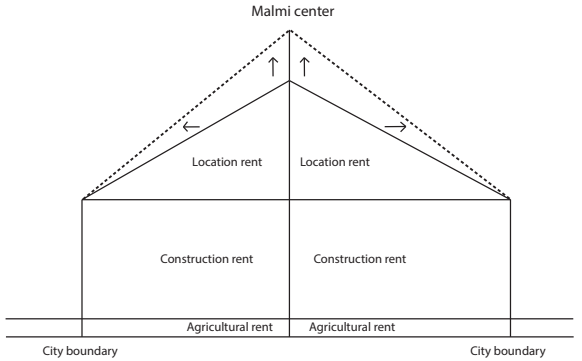


Figure 2. Monocentric city - model illustrating population growth with area constant.

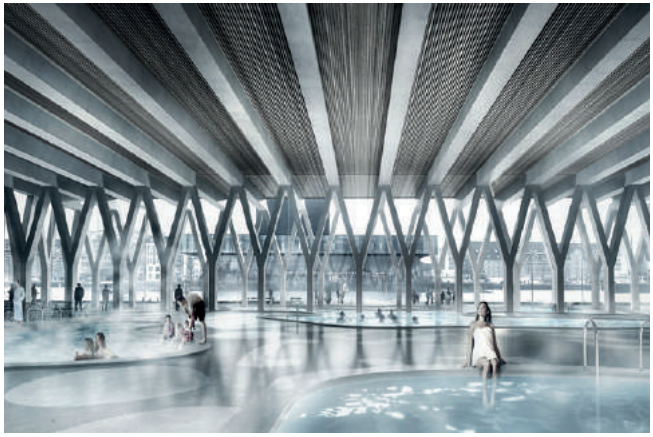
housing price levels we must consider local income levels in Malmi as well. Therefore, a necessity to create business opportunities in the region was taken into high consideration. Additionally, creating business opportunities provides steps to solve the sleeping suburb problem.

A population growth estimate of 25 000 people to the Malmi region would, in all probability, lead to all the features mentioned above. To accommodate the new increase in demand, a rough estimate of 300 new buildings, with an average height of 6 stories, would be required. This was determined with an estimation of 45 square meters per person in a dwelling. Combining this with our monocentric city assumption, buildings in the new area would be taller in the middle and decrease towards the edge.

Having the estimates of how much housing is required, we proceeded to further analyze the area. What are the existing structures like and how could these co-exist with the new implementations?

For instance, areas such as Tattarinharju (East of Malmi) and Tattarinsuo (East of Malmi) are districts of light industry. These light industry areas create a void of liveability between Malmi and areas such as Alppikylä and Jakomäki in the east. A good example of this is the lack of connectivity between regions. We analyzed different possibilities for the area and came to multiple conclusions. However, in a nutshell, our primary conclusion was that the area of Tattarisuo would undergo urban redesign from light industry to housing and commercial buildings. The area would, through this proposal, have good continuity with neighboring areas. Additionally, providing commercial possibilities in the area would generate a reason to visit it.

Tattariharju, on the other hand, has good existing infrastructure. However, the district is to be completely cut-off from the surrounding region. To address this issue we created improved transportation possibilities and infrastructure to make it more accessible. Nevertheless, the problem that came to light was how to use the existing infrastructure to highlight the attractiveness of the entire area of Malmi. Currently, Tattariharju mainly accommo-



Picture 1. Paper island warehouse before.
Picture 2. Paper island warehouse before, Copenhagen (pictures and renders by Cobe Architecture Denmark, 2016).
Picture 3. Render of Paper island swimming hall.
Picture 4. Render of Paper island street food, Copenhagen (Pictures and renders by Cobe Architecture Denmark, 2016).

dates light industrial facilities. We focused on changing this into an area of recreation and culture to promote active usage of the neighborhood. We used Paper Island, Copenhagen (Pictures 1-4) as our source of inspiration on the new look of Tattariharju.

By incorporating this example, an urban redesigned Tattariharju could attract people from all around the metropolitan area of Helsinki, as well as visiting tourists. However, Tattariharju is a large district and this could only be one of many possible options, such as indoor sporting facilities for tennis, football, ice hockey courts, or alternatively climbing gyms. An example of the latter took place in the City of Espoo in 2016 when a climbing company, Boulderkeskus, redesigned a warehouse facility into a large climbing gym (Pictures 5 & 6). Along these proposals, Tattariharju could still use the possibility to accommodate light industry businesses along with all other activities, for instance the area could keep some of its existing activities. Depending on the kind of industrial activity, this would create an environment of good mixed use facilities.

These proposals to Tattarisuo and Tattariharju (East of Malmi) work as examples on what kind of tools can be used in order to attract people to the area. Therefore, we intend to create a well-rounded environment which can include residential, leisure, and business uses.

In our planning proposal (Plan 1.2.) we have located most amenities along both major roads and major junctions. In other words, at places of best accessibility.

When it comes to the hangar of the old airfield, we have designed it to work as a symbol of Malmi's cultural heritage. A symbol of what used to be and what could be. However, it would be a shame if this structure would not be of any active use. We compared the hangar to similar historically and culturally meaningful buildings in Helsinki that have undergone redesign. Maria 01 in Töölö stood out (Picture 7). Maria 01 was one of the first regional hospitals in Finland and represented a form of philanthropy during its time (Loci Maisema-arkkitehdit, 2012). The hospital closed its doors in 2014 and in 2016 the area was redesigned as a startup campus (Maria 01, 2019). A similar change could happen in the Hangar of Malmi. Malmi could thus promote entrepreneurship and obtain a progressive and experimental identity.

2.2. TRAFFIC CONNECTIONS

2.2.1. Current accessibility of Malmi M 1

Malmi is trapped inside an area which is surrounded by several highways and a large airport. It makes the accessibility of Malmi quite poor by walking (maps 1 & 2), cycling or public transports (Map 3). These physical obstacles constrain the accessibility of Malmi mostly from the east and south, which are also the largest development areas. We propose several solutions to improve the accessibility of these areas in a sustainable manner.

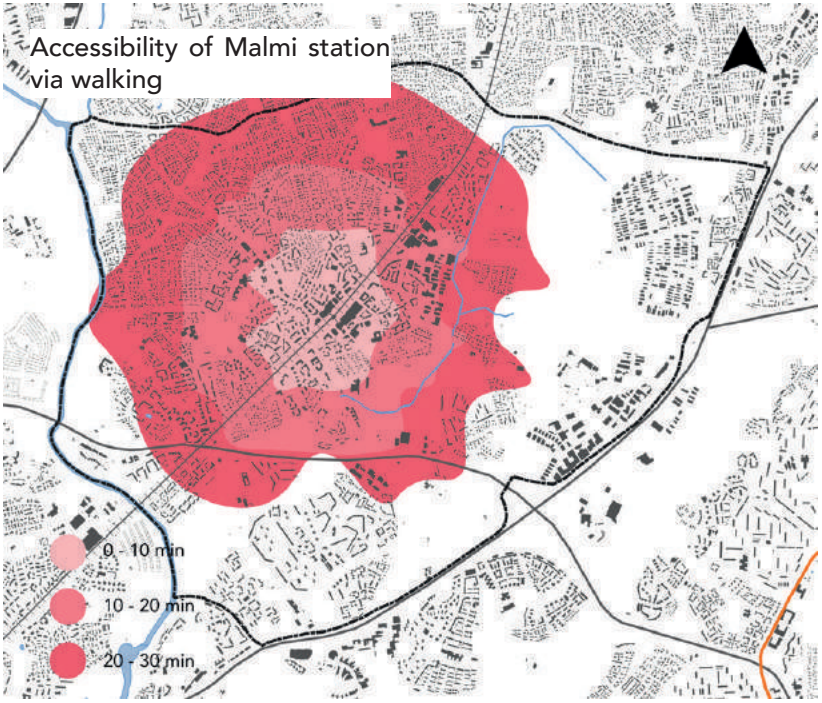
To improve the connections between both sides of Lahdenväylä, we propose two new bridges over it. They could remarkably improve walkability of the area (Map 4). Simultaneously, bridges over Lahdenväylä would improve the accessibility of local traffic (Map 5) and play an important role in our tram network plan. The road connections out from the Malmi region are good because of the main road and highway connections.

2.2.2. Tram network and its connections

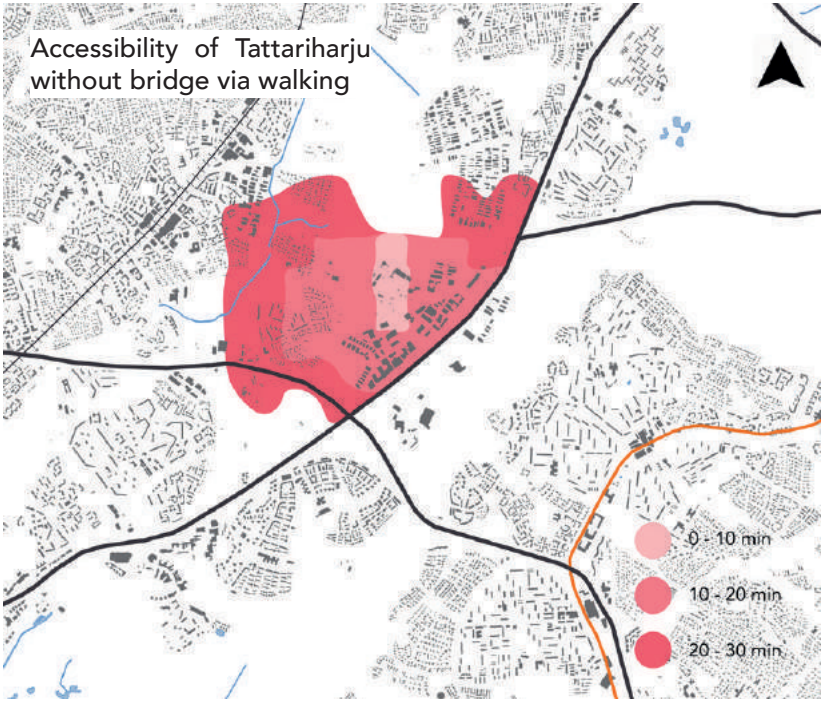
The tram network included in the masterplan, together with the existing and upcoming railroads, metro lines and Raidejokeri 1 & 2, create a widely connected network of rail traffic (Map 6). This creates functional connections inside the Malmi region while connecting the region to its surroundings.

The two-way tram route (8-Tram) that circles around an 8 shape connects different residential neighbourhoods to each other and to the centre. It is also the main public transportation solution for the new central area with its car-free zone. The tramline has connections to the train stations of Pukinmäki, Malmi and Tapanila, which increases connectivity to Helsinki in the south and Vantaa to the north.

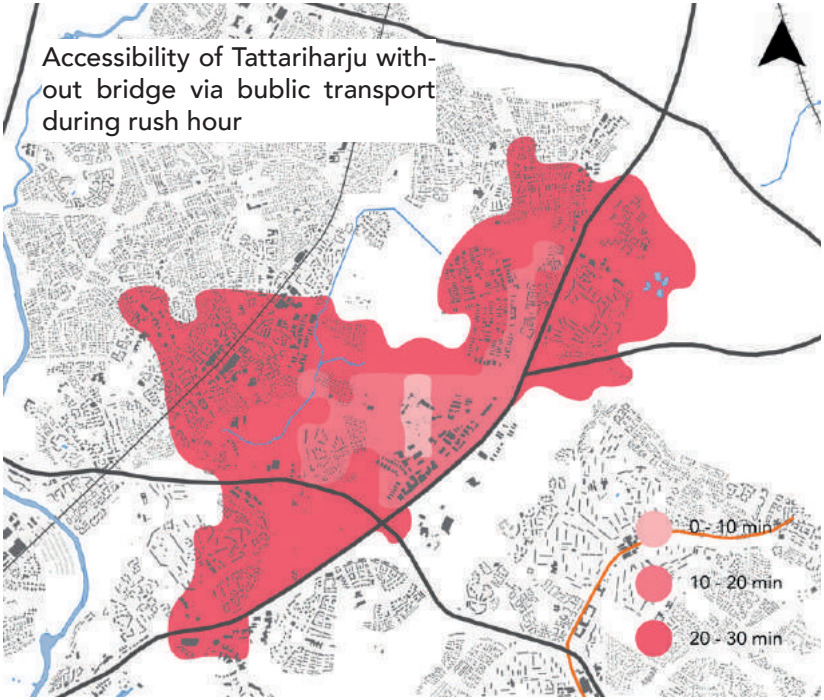
Picture 5. Boulderkeskus, Espoo: Facade of Boulderkeskus warehouse (Google maps, 2019).
Picture 6. Indoor picture of Boulderkeskus, Espoo (Shotaro T., 2018).
Picture 7. Maria 01 located in Töölö, Helsinki.



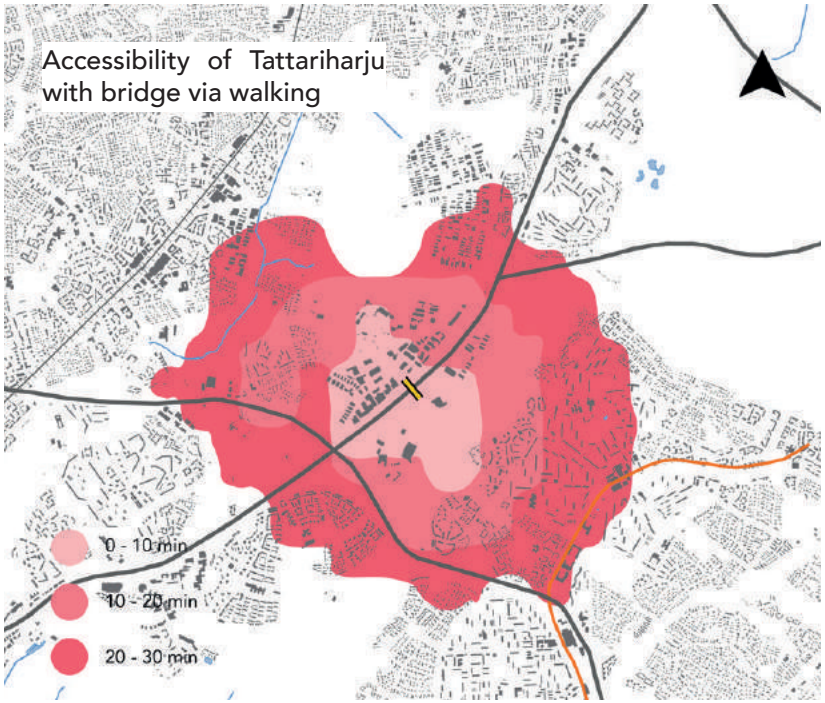
Map 1. Malmi Station accessibility by walking map.



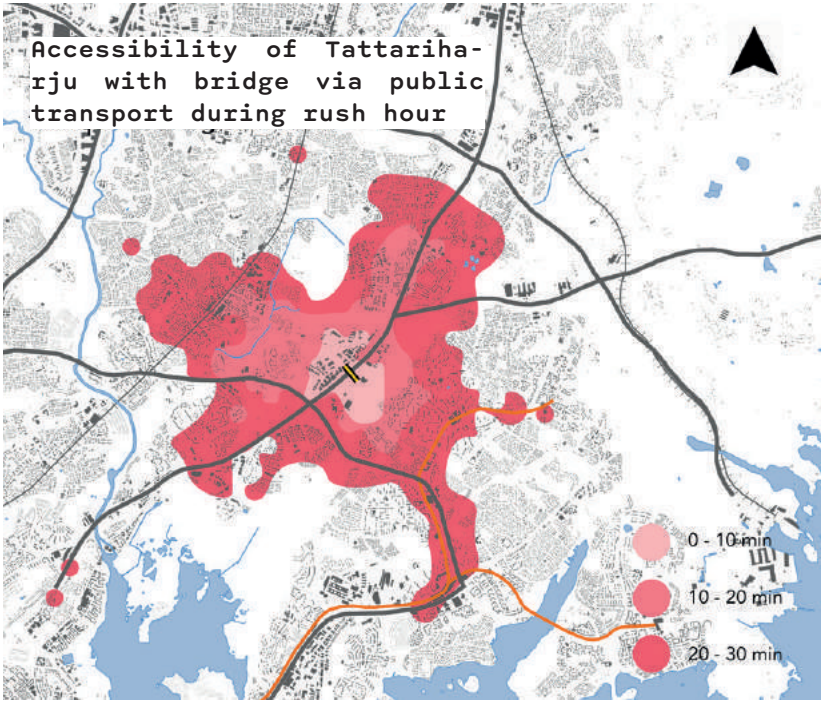
Map 2 Tattariharju accessibility by walking without bridge connection to Kontula.



Map 3. Tattariharju accessibility by public transportation during rush hour without bridge connection to Kontula.



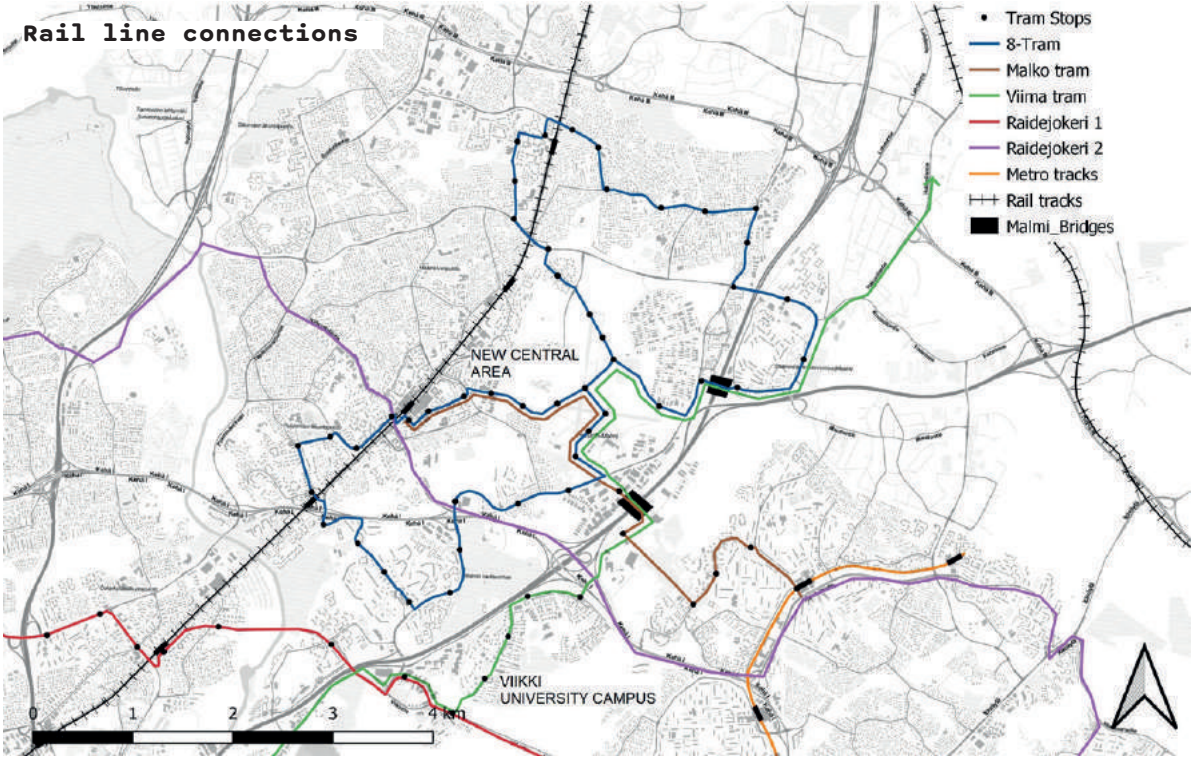
Map 4. Tattariharju accessibility by walking with new bridge connection.



Map 5. Tattariharju accessibility by public transportation during rush hour with new bridge connection.

There are two tramlines heading out of Malmi: Viima is a tram route through Viikki towards the centre of Helsinki, and Malko is a route towards Kontula. Viima is an adaptation of the planned Viikin-Malmin Ratikka (Viima)-tramline (Kuokkanen & Silvo 2017: 15-18) that connects Malmi to the university campus of Viikki and to both of the Raidejokeri tram routes. This route increases the connectivity of Malmi to the capital region with its perpendicular traffic routes. The Malko route towards Kontula connects Malmi to metro lines and increases the connectivity to eastern Helsinki.

Along the lines, the furthest point of each new tramline is approximately 5km from the new central area. With the average speed of the tram being 15-20km/h and tram stops located approximately 450m away from each other, the travel time for 5km would be 15-20min. In comparison, the tram of Vihdintie is supposed to have an average speed of 21km/h with 550m between stops, and the tram of Tuusulanväylä is supposed to have an average speed of 18km/h with 500m distance between stops. Both of these tram routes would operate in a dense downtown area as well as on the new boulevards (HSL 2018).



Map 6. All new rail line connections in Malmi general area.

2.2.3. Local trams connecting separated islands

Most of the population in Malmi live in dense but separated neighbourhoods. These dense neighbourhoods typically consist of apartment houses while there are large areas of detached residential neighbourhoods. Typical for the area is that large roads, intersections and railroads separate these areas from each other.

The important neighbourhoods that we want to connect to the new tram network were identified by analysing the population structure and accessibility of different neighbourhoods. We focused on the amount of residents and their socio-economic position. The analysis is based on geographical grid data about population structures by Statistics Finland (2016) and HSY (2017).

In our analysis, we were interested if there is spatial aggregation of, for example, disadvantaged or well-off people. To analyse possible socio-economic aggregation of certain groups we used two factors which indicated socio-economic position - income and education (Tammaru et al. 2016).

Segregation and social inequality has increased in European capitals, which can be also seen as segregation of spaces. Solving the problem of increasing segregation is an important goal of many national and European policy agendas because of its benefits for people, but also for preventing social unrest (Musterd et al. 2015).

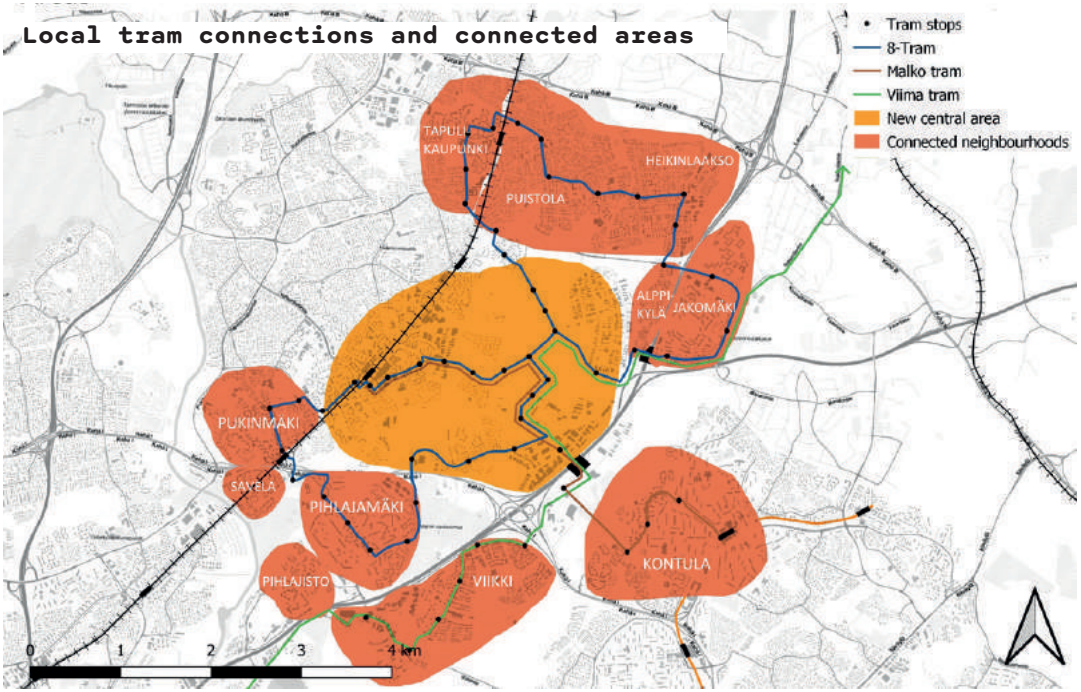
The disconnected neighbourhoods (Map 7) and the amount of population that the tramlines would connect to both each other and to the new central area are Tapulikaupunki (7 000), Puistola & Heikinlaakso (9 000), Alppikylä (1 750), Jakomäki (5 500), Viikki (11 000), Pihlajamäki & Pihlajisto (11 000), Savela (2 250), and Pukinmäki (6 500). The tram network would also reach the population of the central area with its current 11 000 and 25 000 new residents. The Malko tram, connecting a nearby neighbourhood of Kontula, would reach 20 000 of its residents. The total population coverage of the tram infrastructure would be more than 100 000 people.

There are various benefits that the tram network would offer to Malmi. These include stability, social mixing, economic value, urban character, efficient public transport infrastructure, and lower carbon emissions.

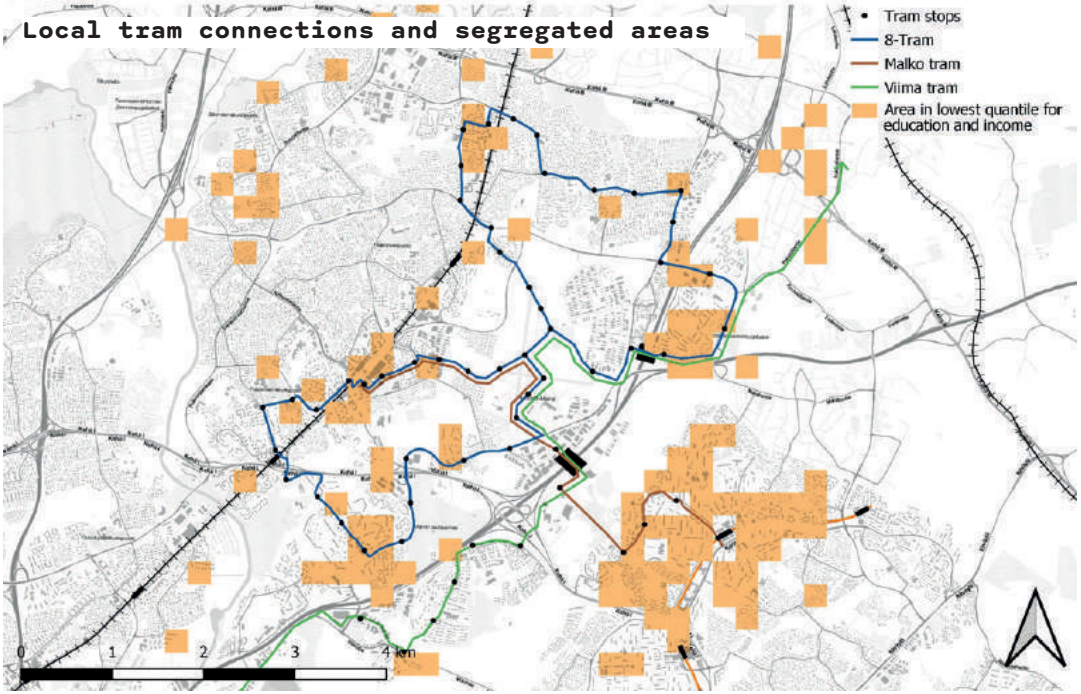
Based on our analysis of the education and income data (Statistics Finland 2016) of the residents of Malmi there are a significant number of socio-economically disadvantaged people in the apartment house neighbourhoods. These disadvantaged people live, especially, in Pihlajamäki, Jakomäki, Kontula and nearby the railroad in central Malmi (Map 8). A tramline to these areas would connect not only most of the population but also the disadvantaged people to the central area. The tram network would offer efficient, fast, stable, and urban transportation infrastructure to these areas and thus increase the well-being of disadvantaged people.

The proposed tram network creates possibilities for the mixing of different social groups and could help to solve the problem of spatial segregation. Our tram routes go through apartment house neighbourhoods and detached house neighbourhoods with different kinds of socio-economic structuring of the population (map 8). This invites people from different socio-economic positions to use the same means of transportation. The Viima route connects Viikki to Malmi and it supports the development of a university town and invites university students to use the services within Malmi center.

Malmi has numerous comprehensive schools and the tram lines connecting different neighbourhoods would make the schools more accessible. The segregation of neighbourhoods and schools are tied together and it appears that the segregation is increasing. Some families move to different parts of the town so their children would get a place within a better local school. This increases the segregation of neighbourhoods because the middle-class moves away from the already disadvantaged neighbourhoods (Bernelius & Vaattovaara 2016). Whether the better accessibility of schools would decrease or increase the segregation of neighbourhoods and schools is unclear. The downside is that some families might be more interested in applying for a place within some other school other than their local one when they are more accessible. On the other hand, the school catchment areas could be changed to catch pupils from different, maybe wider,



Map 7. Areas connected by new transportation lines.



Map 8. Areas of low socio-economic status in Malmi general area.

areas than before, including, for example, parts of apartment house neighbourhoods and nearby detached house neighbourhoods.

The tram network increases the feeling of urbanity and creates stability because it is a permanent solution which encourages such entities as developers, companies, services to start their businesses and develop the area. A tram network also attracts people to use it. Living in an apartment nearby a tramline that leads to an urban centre is more attractive than living in a housing neighbourhood with a bus connection to a nearby train station. The routes also invite people from the centre of Malmi to its surroundings and would boost the status of the existing housing neighbourhoods.

The connectivity between different housing areas and their amenities would increase with the type of tram network in the plan. The 8-Tram operates in both directions and it offers both fast connections from each neighbourhood to the centre and sideway connection to other neighbourhoods. Sideway traffic increases the accessibility of sport fields, schools, nature areas and other amenities typical for suburban areas. The accessibility of these amenities would also invite people from the centre to outer areas of Malmi.

2.3. GREEN CONNECTIONS

The United Nations has stated that it is important to improve the quality of life in cities while reducing their ecological footprint and adapting cities to face the changes caused by climate change. To achieve these goals, policy makers have adopted different kinds of solutions that are based on integration of nature and urban structure. Urban sprawl threatens not only ecological biodiversity but also ourselves as the connection between nature and built environment is lost (Pauleit et al. 2017). In our plan for Malmi we have adopted the idea of integrating green infrastructure to the new built area.

Green infrastructure is a strategically planned network of high quality natural and semi-natural areas with multi-functional features. Biodiversity is strengthened or maintained by creating different kinds of environments and connections between natural and semi-natural areas while these areas have other functions that benefit humans, such as water management (European Commission 2013).

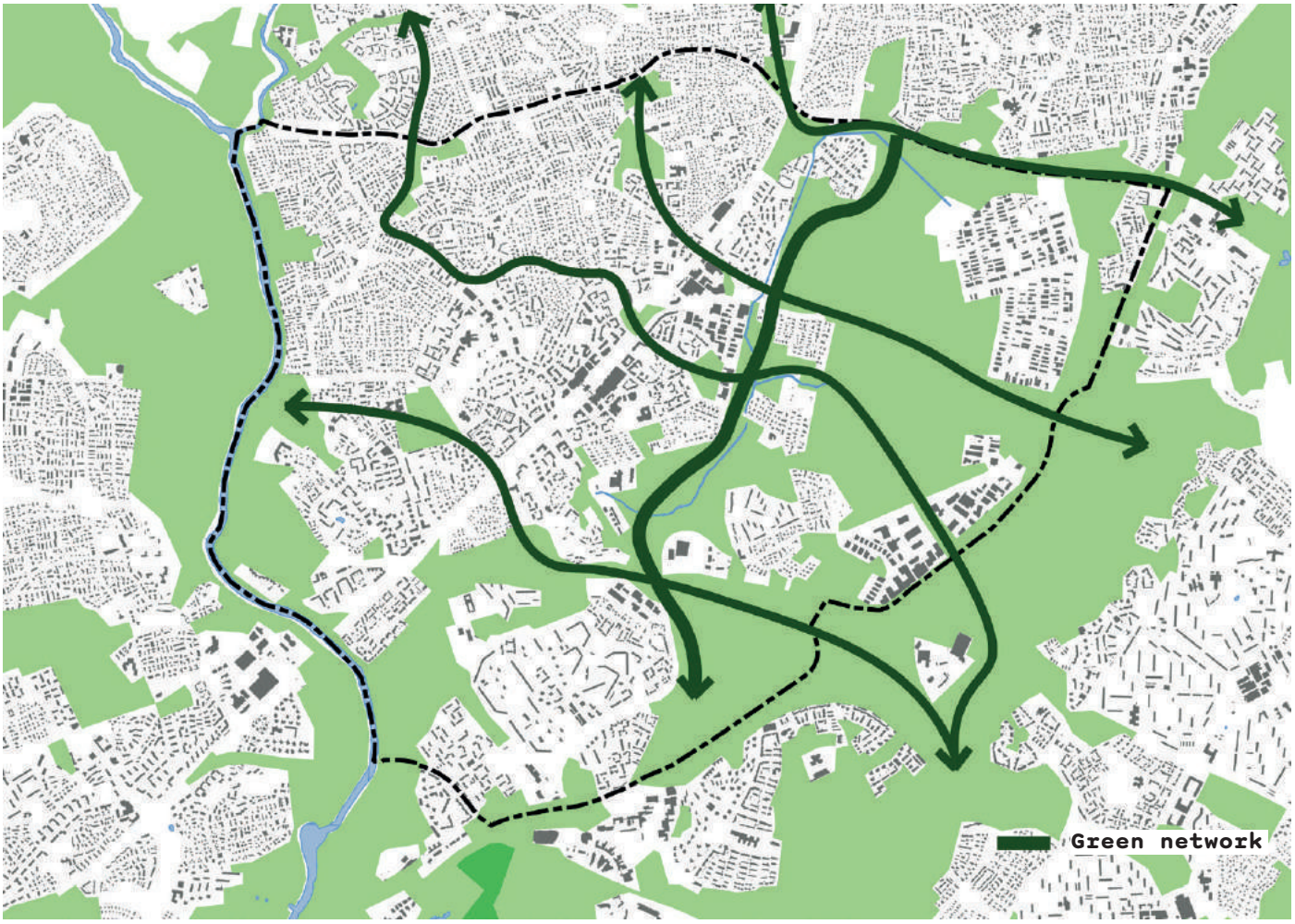
Green infrastructure is not just any kind of green area. Green infrastructure is planned and its different parts have certain functions, all which requires careful planning. The analysis of the natural environment to see where ecologically important areas are located, and which areas are good for green infrastructure development, is needed, to ensure that existing green infrastructure serves its purpose (Pauleit et al. 2017).

In our plan, we have made analysis of the existing natural and semi-natural areas. Malmi and its surroundings have many forests, meadows, green housing areas with quite good connections between these (map 9). Our plan is to preserve these connections and overall greenness of the area. We have included green routes as city parks in our masterplan that connect the existing green areas to the urban structure (plan 1.1).

Parks and green inner yards of housing plots in our master plan help to maintain the overall greenness of the area. This creates continuity in the development of the area as the greenness has been present in the detached house areas of Malmi while also being present in the apartment house areas of Pihlajamäki and Kontula, for example.

The green infrastructure offers many benefits and ecosystem services because of its multi-functional nature. The benefits of green infrastructure included in our plan are various when evaluating them in relation to the goals and challenges that the United Nations have presented.

The first goal was to improve the quality of life in cities. Green infrastructure in our plan increases the possibilities for a healthier environment because the large amount of vegetation removes pollution from the air and water making the environment healthier. Green cities are also more attractive which improves the well-being of people but also increases the property values (European Commission 2013). Green areas offer possibilities for various



Map 9. Green infrastructure of Malmi general area.

recreational uses and we even included some small-scale buildings in the city parks for cafés, restaurants and other services to integrate the parks to the urban form. The buildings, together with the integrated walking, cycling and tram routes to the city parks, help to solve the land use competition between different uses and makes transportation and daily life more pleasant.

The second goal was to decrease the ecological footprint caused in cities. Our plan, with its wide green areas, includes a lot of trees and vegetation which also functions as a carbon storage (European Commission 2013). The integrated transportation solution with the green areas are also inviting for walking, cycling and the use of public transports.

The third goal was to adapt cities to face the challenges of climate change. The large city parks and green inner yards have both soil that is permeable to water and many trees that absorb water. This serves as an efficient ecosystem service for rainwater retention and flood alleviation. The vegetation also prevents the formation of heat islands that make the living conditions worse and are typical for urban areas (European Commission 2013).

2.4. SOCIAL CONNECTIONS AND URBAN CHARACTER IN CENTRAL MALMI

Currently, Malmi is a fragmented city district that is divided into different kinds of housing neighbourhoods, small industry areas, its centre, and an airport. These parts have separated functions which leads to the non-urban character of the area. The sleeping suburbs and a slightly lifeless centre represents the role of Malmi as a commuting district. The pressure of population growth in Helsinki encourages the idea of transforming Malmi into a new regional centre that would offer services, jobs, homes and urban culture. A new regional centre can only prosper if it has an active urban centre with its social connections.

Our aim is to create a master plan for Malmi that supports the formation of social connections, urban culture and a vibrant city. We applied some planning guiding principles from Jan Gehl (2011) that he has proposed and argued for in his book *Life Between Buildings.*

A liveable city is defined by its varying activities, culture and sociality. These are the outcome of the behaviour of people. In an urban context, people tend to make contact with each other, inspire others, get stimulated by the behaviour of others and create new culture, sociality and businesses. Gehl claims that the main attraction of a city is its people rather than the built environment or other physical aspects.

Gehl stresses the importance of passive contacts within the urban context. Passive contacts include being present and observing others, including seeing and listening to what they are doing. The reason why Gehl sees passive contacts as so important is that it is the precondition for all the other activities that lead to urban culture, but also because it is an easy way to gain knowledge of new phenomena and how people live. Passive contacts in cities blur the distinction of being alone or together with others. In a liveable city, people are in contact when they are out in public, but in a lifeless city, people spend their time in private spaces and only socialize in their work, school, home or at appointed meetings (Gehl, 2011).

The amount of social contacts can be increased by careful planning. Gehl describes how adding more streets and lanes increases car traffic and how similarly increasing the amount of pedestrian streets increases the amount of walking. Gehl defines three types of outdoor activities that are related to the amount and quality of social contacts. He also offers means to support their existence.

The first is necessary outdoor activities, such as traveling to work, school, grocery stores and other services. These are necessary activities that have to be done in any kind of city, thus it is not necessary to think how to increase them, but how to direct them in a way that supports a liveable city. This can be done, for example, by creating public transportation networks and hubs that lead people to certain places and planning multi-functional neighbourhoods where people live, work and go for necessary services (Gehl, 2011). To promote the agglomeration of people through our plan, we planned a dense urban neighbourhood that mixes different functions of areas and buildings which

supports the active use of them throughout the day.

The second type of outdoor activities is the optional activities that take place when external circumstances support them. Attractive areas invite people to come there or stay there longer while traveling through them, for instance, when they are commuting home. Liveable, diverse, green and human scale streets invite commuters to stay around rather than loud four-lane roads (Gehl, 2011). In our plan, we have tried to promote the active use of areas by planning attractive multi-functional streets and places. The plan includes, for example, a pedestrian area in the centre and good connections to green infrastructure with its urban parks.

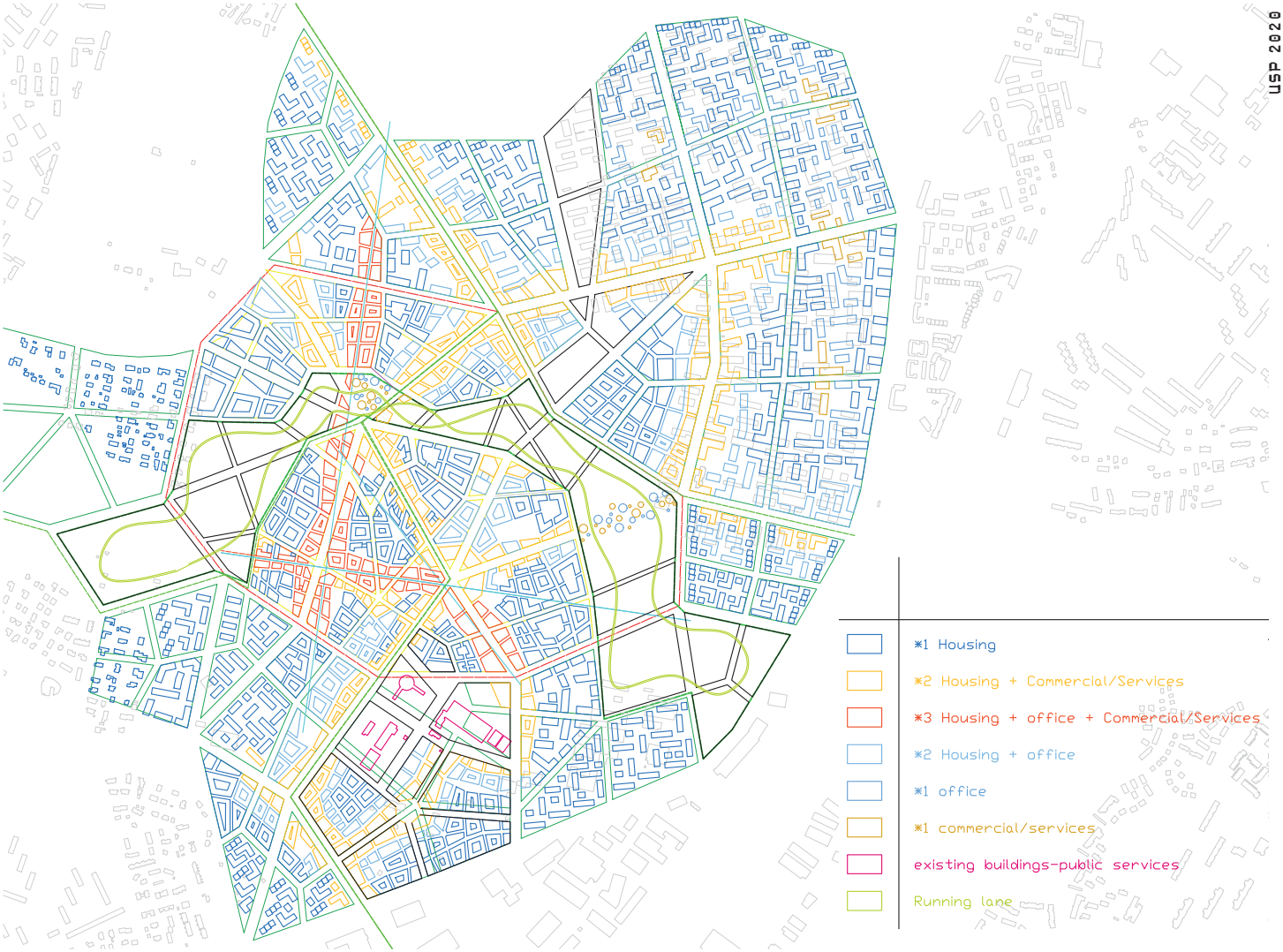
The third type of outdoor activities is social activities, such as active and passive social contacts. The amount and quality of these are bound with the former types of activities. When people agglomerate in certain places that offer a reason to stop, stay for a café, set up some social event or explore the area, it offers settings for active meetings and passive observation (Gehl, 2011).

Gehl proposes some planning ideas for a liveable city. Planning that assembles and integrates people and creates open and inviting places can be supported by many decisions. Assembling people can be technical, such as planning physical structures that aggregates people in certain places. Narrower streets, closed blocks and dense city structures aggregate people. Multi-functional neighbourhoods integrate people more than mono-functional ones because people from different backgrounds work, study, live and come for services, if the area offers these possibilities to them. Spaces that open up blur the distinction between being outside or inside, public or private. When libraries, hair salons and shops open outside with big windows, it creates attractions for people. One can see what is happening in the city (Legates & Stout, 2016). Our plan for the new central neighbourhood applies these principles, among others, with its dense, multi-functional and attractive elements.

3. CONCLUDING REMARKS AND MASTER PLAN PROPOSAL

All in all, our proposals are conducted with practical judgment (Davoudi, 2015) and based on literature reviews, as well as data analysis. We conclude our work with a master plan proposal for the Malmi airport area. This plan will connect the current center to the regions in the east. Additionally, the proposed rail lines will run through the region (Plan 1.1). Plan 1.2 represents the functions of the buildings and how they will be situated. Finally, Plan 1.3 showcases the topology of the new development and how it coexists with the surrounding regions.

Plan 1.1. New master plan of airfield.



Plan 1.2. New master plan with functions.

Plan 2. Render of Malmi 2050.

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AFTERWORD

THE NEGLECTED URBAN LAND QUESTION AND ITS AUSPICIOUS COMEBACK

Jani Vuolteenaho

When I was earning my degrees, the concept of land was not in the mainstream of Human Geography. The varying meanings of the concept were only tangentially discussed in introductory courses, typically when taking theoretical distance to abstract land use models characteristic of past phases of the research tradition. I was left with an impression that research and debates around the land concept had little significance for actual research conducted in my discipline. Rather, the concepts of place, space, landscape, and symbolic boundaries were at the core of the "new" Human Geography of the 1990s. In my phD on urban unemployment (Vuolteenaho 2001), I was also complicit in neglecting the links between the ongoing transformations in the city and the concept of land.

After completing my PhD at the University of Oulu, I relocated to the University of Helsinki. I ended up joining an urban research seminar series headed by Anne Haila (1953–2019). Gradually, urban land issues, the concept of land rent, and related theorizations began to open up to me in a new light: as a viable research tradition capable of producing sharp-witted insights into the processes that are shaping today's cities and urban worlds. In Haila's seminars, I partook in debates in which land value differentiation (the concept of land rent in its wider theoretical sense) as social relations was not ignored, but the heart of the matter. I realized that "land" had a profound impact on urban development through economic, institutional and political practices, and concrete effects in the social worlds of everyday struggles and rights as well.

Let me recite some theoretical horizons that opened up to me: the ownership, tenure and use of land (also including informally inherited or acquired rights) maintain power relationships and create partial structural coherence and permanence across the urban fabric; at the same time, access rights to land parcels and legitimate acts on them undergo changes through legislation, bylaws, contracts and negotiations; land is a key instrument of neoliberalized urban governance and policy-making as an investment magnet and a source of revenue for local governments; the financialization of land and real estate holdings and associated debts into financial instruments is engendering speculative urban development; and so-

cially open urban public space can be understood as the "commons", struggled for by activists, progressive policy-makers or legislators, and other groups who bear the torch of democracy. These perspectives have an explanatory value in understanding urban processes, whether the fast-growing cities in Asia or renewals of urban waterfronts in European cities are in the analytic spotlight. As Haila (1988) noted at the outset of her career, land differentiation plays a coordinating role in the capitalist urban development, both through mediating between structural processes and concrete everyday activities, and as a battleground between inclusion and exclusion.

Very lately, and for very timely reasons, analytic and theoretical openings into land-related processes and conflicts have been on the rise in various academic fields. After a few decades' relative silence, the land question's significance is being increasingly acknowledged. Land issues are no longer explicitly discussed only by economists and engineers, or by a relatively small number of critical land theorists and scholars in development studies. Is the land issue rising back into the limelight of urban and regional research? At least I am far from the only scholar who has relatively recently recognized the empirical and theoretical relevance of the concept.

One apt example is Saskia Sassen's (2014) book *Expulsions: Brutality and Complexity in the Global Economy* (see also the Finnish translation: Sassen 2018). Sassen, a renowned urban sociologist, assesses the links between the new complex financial instruments and speculative profit expectations steering today's globally operating financial markets, accelerated transnational investment in land (boosted above all by its material qualities expected to safeguard economic value), a tidal wave of land re-apportionments, particularly in the Global South, and expulsions met by poor populations in different parts of the world.

In September 2019, Sassen keynoted at the University of Helsinki, developing further the book's themes and presenting astonishing facts about multi-scalar accumulation processes taking place in the contemporary world, affecting the fates of cities and those who inhabit them. Particularly, as the outcome of explosive growth in the derivative market, the total volume of the financial economy today dwarfs the global annual GDP as a measure of the real economy. In terms of real estate investment, the 100 largest cities are home to 10 percent of the world's population, but harbour more than three quarters of all real estate investment. In the discussion that followed the lecture, some listeners' astoundment, or even disbelief in Sassen's portrayals, was palpable. In today's versions of "structural speculation" (Logan & Molotch 2008), as shown by her, brand new properties owned by financial giants can stand vacant for years in thriving metropolises like London. The seemingly irrational phenomenon is explained by the "securitization" of land and real estate assets. Packaged into ingredients in impenetrable algorithmic financial instruments, the direct sales and rentals of properties may be today subordinate to the indirect value of real estate portfolios as collateral for additional loan financing. In globalized finance capitalism, land and real estate assets have been repurposed as the tools of speculative value creation, turning a deaf ear to their negative local effects, such as, housing shortage, rising rents, foreclosures, and evictions. The phenomenon is generating immense fortunes for some and hardships for the rest, as engagingly narrated in Leilani Farha's documentary PUSH, featuring also Sassen (http://www.pushthefilm.com).

In present-day England, up to 70% of the sale price of residential properties currently consists of land value (Christophers 2018a, 7). By contrast, in declining areas in Finland, for instance, many properties have altogether lost their sale value (as distinct from apartments' use value), even as collateral for renovation loans. The effects of economic growth, wealth accumulation, and inequality accelerated by the global finance economy and neoliberal policy programmes vary strikingly between and within regions and localities, in part mirroring applied (de)regulation policies by local and central governments. Also, from an ethical standpoint, there is an urgent need for inquiries into the consequences of financialization and neoliberalized policies of land in cities and regions of varying economic clout.

Another elucidating book on these matters is the eco-

nomic geographer Brett Christophers' (2018a) *The New Enclosure: The Appropriation of the Public Land in Neoliberal Britain*. The author opens up a rarely-studied window into a colossal transfer of wealth that has taken place in British society since the Thatcher-era: the sale of innumerable parcels of publicly-owned land to the private sector. Since 1979, two million hectares of land (circa 10% of the entire British land mass) have been privatized in tens of thousands of land deals, totalling in the region of 400 billion pounds. Christophers details aspects in this, by far the largest neoliberal privatization operation in the United Kingdom, and its legitimating by fiscal austerity policies by local governments, and above all by the axiomatic, problematically monocausal economistic assumption of the "inefficiency" of public land ownership (see also Haila 2016). Surprisingly, however, the massive land privatization is not widely known to British citizens (Christophers 2018b). In comparison, the aggregate sales value of the 1.5 million council houses sold under the Right to Buy policy programme (1980–) represents only a fraction of the monetary volume of land privatization documented by Christophers (2018a, 1–2). However, the Right to Buy scheme and its social consequences have generated a sizable research literature and much commentary in the British media. Why the curious ignorance and silence around land sales? According to Christophers (2018a, 329), one key reason is that research on land issues, which was still vigorous in the 1970s (see Massey & Catalano 1978), disappeared from Britain largely "without trace". Over the last decades, British social, spatial and urban scholarship has spawned an array of globalized academic trends from locality research to the cultural turn, the so-called non-representational theory, and so forth. A less flattering fact is that it has largely failed to investigate the dramatic change in land ownership on its own soil until very recently.

The British case graphically shows that Anne Haila was a theoretician of urban land at a time when the land question was not a particularly fashionable topic in the social sciences, neither in Finland or Britain, nor elsewhere in the Global North (exceptions though existed: see e.g. Harvey 1982; Mitchell 1996; Blomley 2004; Jäger 2009; Scott 2013). Interestingly, Franklin Obeng-Odoom (2019; 2020) has advocated a view that Haila's keenness on the land question and its far-reaching social repercussions was heavily drawing from the ideas of Henry George (1839–1897), an out-of-the-mainstream late 19th-century American political economist who argued that the root cause of inequality under the circumstances of technological advancement and unprecedented wealth accumulation was private land ownership (George 1935 [orig. 1879]; see also George 1906). Undeniably, Haila's emphasis on urban land as a fundamentally social phenomenon that not only concerns the access to land, but also the inequality-exacerbating effects of land speculation, echoes George's concerns. Likewise, in Haila's (2016) foremost book *Urban Land Rent: Singapore as a Property*, the choice of Singapore (a city state without private land ownership) as the lodestar for a book-length inquiry in urban theory implies a strong Georgist undercurrent in Haila's thinking. However, while land ownership, tenure, and use were crucial for Haila's urban theorizations, it would be a grave oversimplification to maintain that Haila's main message was to posit the de-privatization of land as a panacea to urban ills. The complex urbanized world was for Haila the "next level" of land-related social relations, in which there also are other dimensions of, and paths to, social justice and injustice. In contemporary market-socialist China, for instance, where no de jure private land ownership exists, speculative economy based on land development rights and extreme forms of social exclusion are running amok (Haila 2007; Wu 2016; Sa & Vuolteenaho, submitted). Given the urbanized world in which most people are now living, there were good reasons why Haila (2016, 49) dubbed George's ideas on land taxation as "commonsense arguments" or offering a too "simple solution." To read Haila's elaborate urban thinking too mono-causally would hamper its contributions to the understanding of the very complexity of cities.

As Anne Haila (2016: 44) argued, "the land question is not only an economic question but also a moral, social and political question." Perhaps more emphatically than any other internationally renowned researcher in the field, she emphasized the special characteristics of urban land, and its crucial importance as a commodity and research object (Haila 1991; 2016; Christophers 2018a,

20). Now, a year after Haila's passing, it is easy to see her suddenly and-all-too-early-finished career as an apotheosis of the importance of the independence of academic research. Truly ground-breaking research openings, with long-haul and lasting impact, do not emerge if science is steered only by narrowly-understood instrumentalism, or by one-eyed following of citation indexes and academic trends.

The great urban scholar is gone, but she is not forgotten. Anne Haila's legacy lives on the pages of her publications that continue to inspire scholars from all around the world, reaping citations and yielding research ideas towards the critical understanding of how our urbanized world works, a tradition that we at the Helsinki School of Critical Urban Studies seek to continue and develop. For USP students willing to learn more, the University of Helsinki syllabus offers two courses, "The Land Question and Sustainable Urban Development" and "Cities in the Global South", that open windows into seeing the urbanized world in ways that Anne Haila did.

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THE POVERTY OF ECONOMICISM

Kimmo Lapintie

Interdisciplinarity is often promoted as an indispensable part of our attempts to develop cities and regions. It is hard to imagine a field of research that is *not* relevant to urban studies and planning, and thus none of our disciplines can with justification claim mastery of the area. Cooperation is thus necessary, but this does not simply mean a division of tasks. Experts in various disciplines do not just define a confined area for their expertise, they tend to map the world – the whole world – with their own conceptual framework. Thus, the challenge of interdisciplinarity is to deal with attempts at 'colonisation' and defensive strategies.

In this paper, I will study in-depth one of such 'campaigns', which is very common in the international debates between planning theory and architecture, on the one hand, and neoliberal economics on the other. In very simple terms, planners tend to see regulation of land-use necessary, or at least useful, in urban development, whereas neoliberal economists and politicians see it as harmful, diminishing the welfare that the free market economy could otherwise produce. But this is not only a matter of different political views, it is also a matter of theory, particularly the theory of values.

Debates between planning experts and neo-liberal economists are often frustrating. The economic argument – as we know – is that in addition to the building costs of public buildings we should make clear to decision-makers also their alternative costs, the money lost when the land is not sold to the highest bidder. Some would go even further, stating that we should compare these costs with the costs of other (publicly accepted) investments, such as schools or elderly care. This argument is particularly used by populist politicians who are against any kind of cultural building that they see as 'elitist'.

The argument from the planning perspective, on the other hand, is that in order to make informed decisions, the decision-makers should also understand the values that are generated or lost by urban development. As an example, we can consider one of the recent modern buildings in Helsinki, the new central public library Oodi, which has been praised for its architecture and as a new type

of public space for the citizens. It has also been internationally recognised as a symbol of the Finnish institution of public libraries. Clearly, in addition to the building and alternative costs, also these positive impacts should be made visible. But this is not easy, since even many of the economic costs and benefits are indirect and have no geographical borders. Public libraries are an important part of the Finnish educational system, which includes free public schools, free vocational education and free universities. These will produce an educated workforce, innovations and entrepreneurship in the long run, which are necessary for foreign investment and a thriving economy. The international recognition of the country as a successful welfare state with well-educated people and interesting architecture can also promote tourism and other industries.

But this is just the economy. Even if one could calculate the long-term economic benefits of the library, works of architecture are not simply factories to produce a workforce or advertisements to promote tourism. They have a value of their own. We clearly have values in research, in literature, in music, in the fine arts, in social relations – and in architecture and urban design. These are not determined by the copies sold, the number of people attending concerts, or the price of the paintings. If we want to know the value of a work of art or research, we need to ask the experts. We have no alternative. And they will not give us a monetary value that could be part of a cost-benefit analysis.

It seems, however, that economists do not even have such a concept of value, which means that no discussion is possible and results in a dead end. It reminds me of Wittgenstein's famous observation that one cannot see the limits of one's own world and language, since one would have to be able to 'measure' it from the outside, and this is exactly what cannot be done while being inside. Later, if we get more education and experience, we are able to see the limits of our former self. But not before.

In the economists' world, money is the measure of all things. Their conceptual framework consists of costs and benefits, consumer preferences, investment, returns, cost-effectiveness, and it does not include a plurality of values, which is so typical in cultural disciplines. And there is absolutely nothing wrong with that. All disciplines are limited, either in their scope or in their perspective. A geologist has nothing to say of human psychology or sociology. The problems arise only when experts of one field fail to see the limits of their discipline, trying to colonise the whole world within their conceptual cage. In other words, the problem is not with economics, which is a perfectly respectable social science within its limits, but with *economicism*. This term refers to the attempts of managing the whole world with the conceptual framework and methods of economics. Or in our case, trying to understand and reform urban planning and architecture with something like cost-benefit analysis.

Before discussing this concept in more detail, I need to admit right away that economics is not the only discipline with this tendency of colonisation. My own discipline, architecture and urban planning, is equally guilty of such grandiosity. Master planners and 'starchitects' tend to see the world in terms of aesthetics; structural rationality or functionality do not alone qualify for great architecture, and although economic considerations are necessary, they do not determine the quality of architecture or urban design. Again, this is a problem only if one tries to neglect the input of other disciplines, such as ecology, sociology, history, geography or – indeed – economics. This attitude has a similar name: *aestheticism*.

But let us return to economicism. One of the most famous representatives of the current neoliberal economics is Edward Glaeser. He could even be called a 'starconomist' or 'celebrity urbanologist' as Jamie Peck suggests (Peck 2016). For our purposes he is an ideal case, since his father was an architectural historian and curator of the Museum of Modern Art, and thus he can be assumed to have some understanding of architecture. In addition, he has attempted to draw the line between architecture and economics in his address to the American Association of Architects, which was published in the Architectural Review in 2011. This short text deserves some close reading (for those who do not know, this is a detailed method used in literary criticism and philosophy).

This is how he writes about his father: "My father was an

architectural historian, who through my childhood was a curator at the Museum of Modern Art. I never inherited one-twentieth of his aesthetic gifts, but I continue to have a healthy admiration for them and for the genius of great architects."

In this statement he admits that there are qualitative differences between people's abilities to make aesthetic judgments, and that his skill is more than twenty times inferior to his father's; they are not simply two equal tastes or opinions. Whether it is a gift from God or developed through education and experience is not evident, but it is also not relevant here. He further says that he has "healthy admiration" for these gifts, as a civilised person should: admitting to be inferior in certain skills and knowledge, but also admitting that they are real. In matters of the quality of architecture, thus, one should rather consult his father or any other equally talented and educated person. Let us keep this in mind.

Before this personal judgement, however, he tries to distinguish the architectural expertise from economics with the following words:

This perspective may help to explain the different approach that economists and architects take towards building a new skyscraper on Manhattan's Madison Avenue. The architect may ask whether the building will be beautiful, on its own or in its neighbourhood; he may ask whether the structure's form is true to its function, or whether it will inspire or depress.

None of these questions – or any like them – will occur naturally to the economist. Indeed, the economist will ask not whether the skyscraper should be built, but, rather, whether the government should allow the skyscraper to be built. Economists have no business judging the aesthetics of the proposed structure, any more than it is our business to ask whether people should buy long or short skirts, or read Proust instead of Joyce.

At first this sounds clear: architects are asking and trying to answer questions that economists do not even ask, because it is not their business. The last sentence is curious, however: he compares the questions of aesthetics to consumer preferences, long or short skirts and Proust vs. Joyce. Does he mean to say that aesthetic qualities are just like any consumer preferences? This interpretation would hardly represent "healthy admiration". It is also curious that he first gives an example of 'lowbrow' consumption (long and short skirts) but then another example of 'highbrow' cultural products, Proust and Joyce, two of the most important, but also difficult authors. If he had used Dan Brown instead of Joyce, would the economist still have no business in judging between them? Maybe so. A cultural critic or a scholar in literature, however, would have no difficulty in saying that they are not even in the same territory. They would not say that people *should* read Proust instead of Dan Brown, rather to the contrary: if you are not motivated or do not have the necessary background knowledge, you *should not even try*. But if you have, it makes sense to read Proust instead of Dan Brown, if you want to get something out of your reading.

It seems that we are approaching the key issue. Glaeser continues: "Skyscrapers may also impose costs on third parties. Some views may be blocked. City streets may become congested. An older building, which brings delight to millions, may be destroyed by new development. One approach to these costs, which are not naturally paid by the building's developer, is to impose impact fees, as in some places in California. Typically, regulation has been used to achieve the same ends, because it is simpler and easier to enforce."

Thus, developing the city creates negative "externalities" in the economist's vocabulary, but they can be compensated with "impact fees". However, cities are rather using regulation, because it is "simpler and easier to enforce". For architects and urban planners, however, "regulation" of urban development is simply urban planning, and the objective of this activity is to create a good, functional, sustainable and beautiful city. If the city fails in this endeavour and ends up a bad, non-functional, unsustainable and ugly city, no impact fee will make it good, functional, sustainable or beautiful again. These qualities are simply lost, no matter how much money you pay to those who suffer.

This is the plurality of values mentioned earlier, which seems to be one of the main differences between economics and the cultural disciplines. If the economist,

however, has a "healthy admiration" of other fields, he cannot simply impose his vocabulary on them. How can we judge, then, whether the skyscraper should be built, how many stories it should have, and whether the existing old building should be demolished? Here we find a much less humble Glaeser:

"Economists don't typically think that the government should be forcing people to embrace more beautiful building, in part because we don't trust the tastes of our elected policy-makers. Some kings and emperors have been patrons of genius, but others have not. Does the track record of public architecture in the US really suggest that our policy leaders are preternaturally gifted judges of great building? Even when respected architects get to make decisions, the results can often be distinguished buildings that are despised by locals, such as Kallman, McKinnell & Knowles' Boston City Hall. That outcome is hardly ideal."

Thus, according to Glaeser and his fellow economists, elected policy-makers cannot be trusted in matters of beauty, but neither can respected architects. Who is to make this judgment, then? The economists? But as he already admitted, this is not the business of economists. The general public? Is aesthetics just a matter of consumer preferences? Farewell to Proust (and Joyce), enter Dan Brown?

The picture is now becoming clearer. Glaeser sees that he needs to be able to say something about beauty or historical value in order to argue against regulations that would not allow the imaginary skyscraper or demolition of the old building. But because he is not willing to ask someone like his father (which would be interdisciplinarity, not colonialism), he has only poor alternatives. He has to claim that there is no such thing as informed expert opinion of aesthetic or historical value, only consumer preferences. Or he has to claim that, unlike economists, the experts of the other fields cannot be trusted. "I believe that many cities regulate too much, by restricting land use or by preserving historic areas that aren't all that historic or all that beautiful." But in that case he has to give the power of judgement to himself, the one with less than twenty times the understanding of someone like his father. Or he has to redefine the concepts of aesthetic and historical value by using the conceptual framework of economists. In other words, he has to claim that experts in architecture and history do not actually know their field, only pretend to know it. Because they are not economists.

Since somebody would certainly take this text to be against economists, let us return to my own profession, architecture and urban planning. When I started studying architecture forty years ago, I had already graduated in philosophy, economics, and the history and theory of art from the University of Turku. Thus it was a little bit easier for me to 'measure' the limits of architectural thinking from the outside. Architects often believe that certain solutions in the built environment – such as forcing people to meet each other in staircases or creating nice meeting places and urban squares – would by themselves promote community development. Although some celebrity authors (such as Jan Gehl) would suggest otherwise, these beliefs are not based on any research in the social sciences. Colonial tendencies – refusing to listen to those who know – simply leads to poor understanding, not to any kind of 'democratic' epistemology.

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