

How can socioducts contribute to urban social sustainability?

- A case study of the two eco/socioducts in Hammarby Sjöstad



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Master's thesis in Geography with major in human geography

Spring semester 2020

Student essay: 30 hec
Course: GEO230
Level: Master
Semester/Year: Spring 2020
Supervisor: Kristina Nilsson Lindström
Examinator: Jerry Olsson
Key words: Socioducts, urban social sustainability, social cohesion, sense of place, accessibility, physical barriers

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Abstract

Since traditional methods of bridging physical barriers, such as roads and railways, have not fully solved the problem of creating safe and attractive environments, new solutions have emerged. Socioducts aims to bridge barriers, provide safe and inviting environments for pedestrians and cyclists, create social cohesion and connectivity. The construction is mentioned in several comprehensive- and detailed development plans around Sweden, but there are few completed examples that can be compared to its planned design. This study aims to investigate how socioducts can contribute to urban social sustainability, which is analyzed through qualitative interviews. The study seeks answers to which needs are guiding the planning of the construction and how users perceive socioducts. In order to understand how urban residents perceive socioducts, a case study has been conducted in Hammarby Sjöstad where two combined eco/socioducts have been built. Through qualitative interviews, users were asked questions related to the social aspects of the passages in order to understand what values of urban social sustainability the users perceives in socioducts. The findings show that the purpose of socioducts in creating social cohesion, providing an inviting environment and increasing accessibility, can be related to urban social sustainability in regard to several factors. From a planning perspective the need to create accessibility for vulnerable groups is highlighted where the socioduct may fulfill an important function. The studied cases can be attributed to aspects of urban social sustainability, as it appears that users of the passages in Hammarby Sjöstad perceive the constructions as safe, accessible and inviting, which in addition can be interpreted to have created cohesion and connectivity. It also becomes apparent that there is a need to separate the socioduct from its relation and banding to ecoducts in order to optimize its social effects.

Keywords: Socioducts, urban social sustainability, social cohesion, sense of place, accessibility, physical barriers

Acknowledgements

My knowledge of socioducts was non-existent at the beginning of this course. It was through contact with the Swedish Transport Administration, which the thesis is written in collaboration with, socioducts were first introduced to me. It has been exciting to work with a new field and contribute to the knowledge formation of socioducts.

There are many people who have supported me during the process. First of all I would like to express my gratitude to my supervisor Kristina Nilsson Lindström for valuable feedback and support. I would also like to thank Lisa Örberg, my contact from the Swedish Transport Administration who, with her commitment aroused my interest in writing about socioducts. My family, friends and boyfriend have also been an important support for me during the process. I would also like to thank you for reading and all your input. Last but not least, I would like to express my gratitude to all participants who made this thesis possible. Thank you all!

May 2020

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1.Introduction

1:1 Background

Socioducts are a modern concept found in comprehensive- and detailed development plans around Sweden. Its construction can be understood as a wider crossing of physical barriers and relates to urban social sustainability as the purpose is to bridge social aspects of barrier effects. However, whether socioducts are effective in creating a socially sustainable urban form is not determined to any great extent (Göteborgs Stad, 2018; Samhällsbyggnadsförvaltningen, 2015; Trafikkontoret & Miljöförvaltningen, 2017).

Urban social sustainability is found in the global sustainable development goals, where objective 11 strives to “make cities and human settlements, safe, resilient and sustainable” (United Nations, n.d). The goal is formulated on both physical and non-physical factors where e.g. objective 11.2 concern accessibility and pays special attention to “those in vulnerable situations, women, children and persons with disabilities” (United Nations, n.d). The social dimension of the threefold understanding of sustainable development (economic, ecological and social) has been debated as there is no accepted definition, and the concept unlike the ecological and economical dimension, is difficult to measure (Larimian & Sadeghi, 2019; Dempsey, Bramley, Power & Brown, 2011). In Sweden, the concept of sustainable development is regulated by law in the Planning and Building act (2010:900) and the social dimension has come to be accepted as an important factor.

Prognosis of vital statistics in Sweden indicate that the population will continue to grow by one million until 2029 (Statistiska centralbyrån, 2019). This place demands on expanded infrastructure and urban sustainable development as a majority of the population is expected to live in cities (Boverket, nd). Urban planning determines the environment in which people live their everyday life and can be defined as a means of creating socially sustainable cities (Dempsey et al., 2011; Göteborgs Stad, 2011). In the literature, social cohesion and connectivity are found as components of urban social sustainability. The built environment and social cohesion are explained to influence the opportunities for interaction and to create social networks (Dempsey et al., 2011). However, many cities in Sweden are organized with infrastructure that socially separates areas, affecting social cohesion and connectivity (Boverket, 2010).

Tunnels and bridges have historically functioned as geographical connectors with the primary purpose of facilitating transport. But in many places tunnels and bridges have been perceived as unsafe and thus remained unused and empty (Anciaes, Jones & Mindell, 2016). As social aspects have been devoted more focus in urban planning, the perspective of seeing bridges and tunnels as potential social connectors has become more central (Ranum, Heyerdahl & Gjøvsund, 2018). This perspective forms the basis for the relatively new concept of socioducts which aims to bridge physical barriers, create social cohesion and provide an inviting environment for pedestrians and cyclists. In practice, socioducts have only been built as combined bridges such as eco/socioducts or fauna/pedestrian bridges. But in theory, socioducts are planned out as an independent component (Ekologigruppen AB, 2017). However, the promise of socioducts in comprehensive- and detailed development plans to reduce barriers and create social cohesion has not been investigated to any great extent.

1:2 Problem definition

Highways, railroads and rivers are common features in urban environments. However, these elements have been identified to constitute physical, social and mental barriers that separate areas and in turn reduce accessibility, generate residential sorting and segregation. Barriers are also argued to affect the wellbeing of people due to “detours, delays, effort required to use bridges and underpasses, perceived danger, exposure to noise and air pollution, visual intrusion and loss of sense of place” (Anciaes et al., 2016:296). These reactions, arising from barriers, are called community severance or barrier effects. Community severance can be explained by its physical dimension in terms of restrictions in accessibility and mobility as well as the social dimension which constitutes the “wider social impacts arising from physical severance” (Anciaes et al., 2016:294; Roberto & Hwang, 2015). In order to create socially sustainable cities, bridging of physical barriers is a prerequisite according to Boverket (2010). However, negative consequences created by physical barriers can persist even though there are crossing facilities provided. Grisolia, López & de Dios Ortúzar (2015:300) believes that community severance is a complex problem, as facilities that enable crossings and accessibility do not necessarily reduce the barrier effects. Bridging structures that remain unused as they are perceived as unsafe or inaccessible risk creating ‘secondary severance’; “Transport infrastructure and road traffic may be physical barriers even when crossing facilities are provided. Poorly designed or maintained facilities may create

‘secondary severance’, if some people cannot access them, or perceive them as being dangerous or unpleasant” (Anciaes et al. 2016:295). Such secondary effects are also called ‘felt aversion’ and have been identified to affect vulnerable groups such as women, low-incomes and children to a greater extent (Anciaes et al., 2016). Safety, the presence of others as well as the attractiveness of walking conditions are explained as important aspects to mitigate severance by Grisolia et al. (2015).

The growing population and accelerating urbanization requires structured and socially sustainable planning. Since physical barriers have been shown to cause social consequences and affect accessibility negatively, there is a need to create crossing facilities for urban residents. Traditional bridging structures have in places where they have been perceived as unsafe, remained empty and unused. This has aroused the need to find new solutions that are perceived and experienced as safe to avoid the occurrence of secondary severance.

Socioducts are referred to as a construction to create social cohesion, mitigate barriers and provide safe and attractive environments for pedestrians and cyclists in a number of comprehensive- and detailed development plans. Its planned design can be related to urban social sustainability, however, whether the construction is effective in that sense has not been evaluated. This raises the question, to what extent can socioducts contribute to urban social sustainability? Studying socioducts based on criterias of urban social sustainability, such as accessibility, sense of place, safety and security, see chapter 2:3 *Urban social sustainability*, can thus help fill a gap of knowledge.

1:3 Aim & Research questions

The problem definition above raises the question of whether socioducts can serve as a sustainable solution to avoid occurrence of secondary severance and to prevent areas from being separated. The aim of this study is thus to investigate how socioducts could contribute to urban social sustainability. This will be answered with the following research questions:

- What are the motives for socioducts identified from a planning perspective?
- How do users perceive socioducts?

1:4 Announcement

The thesis is written in collaboration with the Swedish Transport Administration, which is central to the transportation planning in Sweden. Socioducts have been identified by the authority as a potential solution to reduce barrier effects and thus approach a socially sustainable urban environment. The Swedish Transport Administration has identified that the authority's preventive measures against segregation, barrier effects and limited accessibility are inadequate, which in turn has led to accelerating costs in retrospect. The authority is thus examining whether rising costs and negative outcomes for urban environments created by new infrastructure, can be counteracted if the social dimension of sustainability is taken into account already at the planning stage. The authority is thus seeking an investigation into whether socioducts can function as a socially sustainable solution to justify the future planning of socioducts (L.Örberg, personal communication, February 21, 2020).

1:5 Limitations

To investigate how users perceive socioducts, a case study has been conducted in Hammarby Sjöstad where there are two combined passages, see further contextual explanation in *1:7 Place of context: Hammarby Sjöstad*. The studied cases are named eco/socioducts by the City of Stockholm, which is the reason for the passages being referred to as eco/socioducts in the thesis (Ekologigruppen AB, 2017). However, the focus in this study are the social aspects, as the knowledge of socioducts can be interpreted as inadequate.

Since the concept of socioducts is relatively new and there are few completed examples in urban environments, the possibility to make a strategic selection becomes limited. The passages thus constitute the examples that best coincides with the definition of socioduct adopted in this study. This is further motivated in section *1:6 Contextual explanations*, where distinctions between ecoducts and socioducts are presented to understand what separates their purpose and design. The effects and experiences of the two eco/socioducts are difficult to study separately as they are located 140 meters apart. The study will thus focus on both passages as their function in this case complements each other and together form a complete and uniform picture. Despite the clear demarcation of the location and objects, a national perspective is adopted, meaning that the socioduct becomes applicable to the work of the Swedish Transport Administration as a potential solution in bridging physical, social and mental barriers regardless of location.

1:6 Conceptual explanations

As the studied cases are referred to as eco/socioducts, this section provides a conceptual explanation of socioducts and ecoducts to understand what differentiates their construction and purpose. Since the theorizing of socioducts is limited, the adopted definition of socioduct is explained in section 1:6:3. To finally give a motivation as to why the eco/socioducts in Hammarby Sjöstad are analyzed with regard to the social aspects.

1:6:1 Socioduct

The socioduct as a phenomenon has not yet been conceptualized or theorized to any great extent. However, the term has been mentioned in a few reports, essays, comprehensive- and detailed development plans. In a report by master students from Stockholm University, a socioduct is defined as “a broader bridge that is built to reduce social barriers between areas and create social connectivity” (Cheng, Ekholm, Ekström, Hämäläinen, Gustafsson & Klerby Blomqvist, 2017). This interpretation of the term is similar to the one used in the detailed development plan for the municipality of Vallentuna in Stockholm where it is stated that the purpose of a socioduct is to create social cohesion and a cohesive landscape between two areas (Samhällsbyggnadsförvaltningen, 2015).

In the comprehensive plan for the city of Gothenburg, a socioduct is defined as a broad passage for pedestrians/cyclists with green elements. The construction should not only enable passage across roads, railways and other barriers but also be inviting to the users. The term inviting is what separates the socioduct from pedestrian and bicycle bridges in the comprehensive plan (Göteborgs Stad, 2018). Furthermore, the purpose of socioducts is defined in a report authored by the Traffic and Public Transport Authority and the Environmental Administration in the City of Stockholm as twofold. The design is explained to both increase accessibility for people but also to create a green coherent infrastructure. Socioducts are planned around Stockholm to mitigate barrier effects, with its twofold purpose, the design is planned to consist of walking/cycle paths but also vegetation and noise damping measures (Trafikkontoret & Miljöförvaltningen, 2017).

1:6:2 Ecoduct

Ecoducts are primarily aimed towards countering physical barriers in rural and natural environments. The construction is closely related to socioducts as the design and purpose of bridging barriers are similar. However, ecoducts intend to bridge physical barriers by managing ecosystems across roads and railways. The main purpose is to create transitions for wildlife and fauna and the design is characterized by wide passages where the construction forms an extension of the landscape. In an investigation by the City of Stockholm it is stated that ecoducts have been proven to be effective in eliminating barrier effects for animals and vegetation. The most successful examples are designed with a flat surface, vegetation of different density and height as well as screens to dim light and noise from traffic (Ekologigruppen AB, 2017). However, combined pedestrian and wildlife passages are argued by the Swedish Transport Administration to be less effective, as the presence of humans has proven to scare wildlife (Trafikverket, 2011). This is also emphasized in the investigation by the City of Stockholm, where combined bridges like eco/socioducts are declared to be less effective as the ecological connections become weakened due to the presence of humans. Denmark has introduced recommendations stating that people should avoid ecoducts for this reason. In order for animals not to be intimidated, it is stated in the report that lanes for pedestrians should be positioned on the side along the passage to allow space for wildlife. In addition, traffic lights are recommended to be weak or extinguished early to create safe and inviting environments for animals. In the report the eco/socioducts in Hammarby Sjöstad are mentioned as examples of combined bridges, where it is stated that these are mainly used by humans as there are limited habitats for wildlife in Hammarby Sjöstad (Ekologigruppen AB, 2017).

1:6:3 The adopted definition

With limitations in conceptualization and theorizing of socioducts, the study adopts a compound definition based on the interpretations above, where its purpose is to create a green and inviting environment for pedestrians and cyclists that mitigate barriers, create social cohesion, increase accessibility and social connectivity (Göteborgs stad, 2018; Samhällsbyggnadsförvaltningen, 2015; Trafikkontoret & Miljöförvaltningen, 2017; Cheng et al., 2017).

Socioducts can be interpreted as being related to ecoducts, not only by reference to the name, but also in the core of its design with wide transitions that aims to bridge barriers. The main difference is that ecoducts are primarily intended for wildlife and socioducts for humans. Previous knowledge of ecoducts is relatively extensive and its construction is often seen to stand on its own, while socioducts are often seen in relation to ecoducts such as eco/socioducts or fauna/pedestrian bridges. In comprehensive- and detailed development plans, socioducts are planned as an independent component. However, the knowledge of socioducts can be seen as somewhat inadequate. The study thus focuses on the social aspects of the studied cases to build knowledge as to whether socioducts are a socially sustainable solution in counteracting barriers. Since combined bridges have proven to be ineffective in bridging barriers to wildlife, the study seeks answers about how socioducts could stand on its own and be interpreted as an independent component.

1:7 Place of context: Hammarby Sjöstad

The studied eco/socioducts are located in Hammarby Sjöstad, in southeast Stockholm, Sweden, where there are two combined passages crossing the highway Södra länken, see figure 1. The district Södra Hammarbyhamnen, referred to as Hammarby Sjöstad, was formerly an industrial area and harbor. The area began to develop in the 1990s and has come to be internationally known due to its vision and design. Initially, the interest to hold the Olympic games in 2004 was central to the development of Hammarby Sjöstad as the area was proposed as venue for the event. An environmental program was established by public organizations in connection with the application for the Olympic games. The competitions were held in another place, but the program came to be seen as innovative within urban planning due to its holistic perspective and focus on sustainable development (Mahzouni, 2015; Iverot & Brandt, 2011). According to latest statistics, there are 18 902 inhabitants in Hammarby Sjöstad with a gender distribution of 9 516 women and 9 386 men. The average income was 468 400 sek /year at the 2017 statistics and 67.5% of the population had a post-secondary education. The socio-economic status can thus be valued as high since Stockholm in general has an average income of 374 400 sek/year and 59,2% of the population have a post-secondary education (Stockholms stad, n.d).

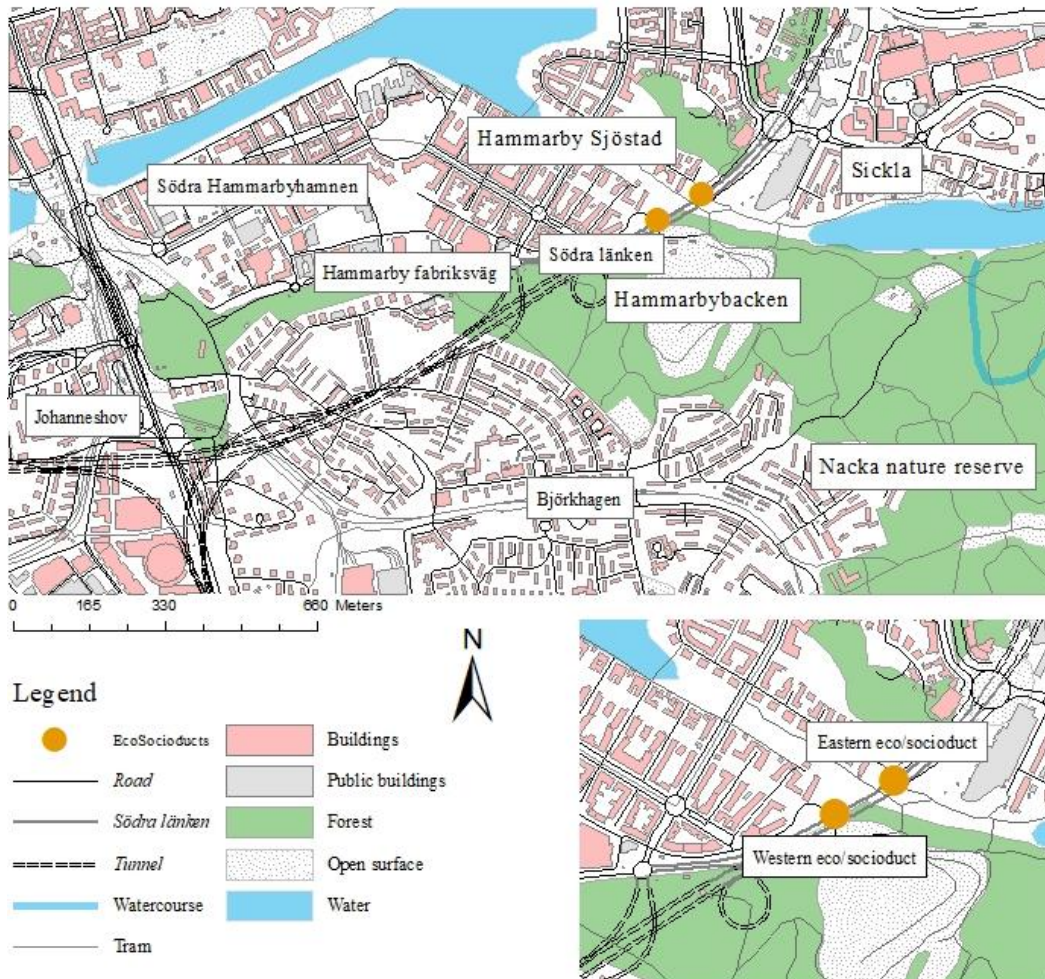


Figure 1: Map showing the study area, cartographer: Lisa Ekberg, 2020-04-29. (The map is visualized with vector format in ArcGIS. Layers were retrieved from SLU's database).

The two passages, connecting Hammarby Sjöstad with Sickla and Hammarbybacken, crosses Södra länken which is a 6 kilometer long highway, above and below ground (Vägverket, n.d.). The eco/socioduct in west, *see figure 2*, connects the residential area Hammarby Sjöstad with Hammarbybacken which is a recreation area and ski resort. The passage is 45 meters wide, 55 meters long and consists of a pavement and road for car traffic. The eastern passage, *see figure 3*, is an extension of the promenade along Sickla Kanal and is designed for pedestrians and cyclists. The eco/socioduct is 25 meters wide and 50 meters long and connects the residential area Hammarby Sjöstad and Sickla consisting of a shopping center and a minor residential area. The passages which were completed in 2000, are provided with vegetation and walls to lower the noise of Södra Länken where about 100 000 vehicles pass every day (Ekologigruppen AB, 2017; Observation 16/3-2020). The eco/socioducts also link Hammarby Sjöstad with the 829 hectare nature reserve, Nackareservatet.



Figure 2. The western eco/socioduct from above (Photographer: Lisa Ekberg).



Figure 3. The eastern eco/socioduct from above (Photographer: Lisa Ekberg).

1:8 Relevance in human geography

The human geographic orientation is a major discipline in geography. The study of the eco/socioducts in Hammarby Sjöstad can be related to human geography as their construction can be seen as a component of the spatial and urban organization. In addition, the study can be argued to derive from the human geographic orientation as the eco/socioducts can be explained to affect people's relationship and activity to the place. This interpretation is based on the explanation provided by Knox & Marston (2013:15) stating the human geography as; “the study of the spatial organization of human activity and people’s relationships with their environment”. With its studies of processes, structures and the urban environment the

discipline has been central to the development of methods and theories for urban planning (Dodson & Gleeson, 2009). Central are the concepts of place, space, scale, mobility, landscape and nature. Rogers, Castree & Kitchin (2013) emphasize that “these concepts foreground the notion that the world operates spatially and temporally, and that social relations do not operate independently of place and environment, but are thoroughly grounded in and through them”. Urban space can thus be explained as active in the formation of people’s activities and interaction (Leng, He, Li, Wang, Qian, Xue & Liu, 2017; Rogers et al., 2013).

1:9 Disposition

With the background and problem definition stated above, follows the theoretical framework focusing on humanistic geography, new urbanism, urban social sustainability and alternative solutions for bridging barriers in urban environments. The section is an overview of previous research and the scientific basis of the study. Thereafter, the chosen method, qualitative interviews are presented. The section presents the interview process for the planners and users of the studied constructions. A shorter text analysis has also been carried out to confirm the material from one of the urban planners. Chapter 5 presents the results, which is a compilation of the interviews. The result is presented in two parts, where the two interviewed urban planners begin to be followed by users’ perceptions and experiences towards the eco/socioducts in Hammarby Sjöstad. The responses of the users were coded based on the following themes; sense of place/attitude of respondents towards the eco/socioducts, safety and security, accessibility and improvements/respondents ‘thoughts about the design as a solution to reduce segregation between different groups of users. Then follows a discussion where the results are related to the literature review and theory to finally be summarized in conclusion.

2. Theoretical framework

The following chapter presents the scientific basis for this study and intends to outline previous research within the field. The two introductory sections present the scientific approach of the study. The humanistic geography, with its focus on the individual and human consciousness in the formation of knowledge is first introduced to be followed by new urbanism which has influenced the planning of urban environments around the world. In order to unpack and account for the core of the study, a chapter on urban social sustainability follows. The section describes definitions and interpretations as well as previous research in which urban social sustainability has been studied more closely. As the concept of socioducts is relatively new, previous studies of the concept are limited. The last chapter thus presents previous attempts to overcome physical barriers focusing on social aspects.

2:1 Scientific approach; Humanistic geography

Historically, various theories and concepts have dominated the field of geography. The humanistic approach emerged in the 1970s, focusing on the re-centralization of the individual and human consciousness (Cresswell, 2013; Åquist 1994). The theory has gained inspiration from various orientations, including phenomenology and existentialism and is questioning the perspective of one singular, quantifiable truth (Rogers et al., 2013; Cresswell, 2013). Central to humanistic geography is the concept of life-world which can be explained as the world in which individuals live and create. It is within the life-world needs are founded and meaning is created. The concept is therefore closely linked to the notion of ‘sense of place’ (Åquist, 1994). ‘Sense of place’ is described by Castree (2009:115) as “the subjective feelings people have about places, including the role of place in their individual and group identity”. The experience of a place can thus affect the individual’s sense of inclusion/exclusion (Knox & Marston, 2014).

The humanistic approach has come to be relevant in urban planning through its central concept of insider/outsider and Edward Relph’s understanding of placelessness developed in 1976 (Couper, 2015; Åquist, 1994). The perspective has been used to explain controversies within urban planning, as planners (as holders of an outsider perspective) project areas e.g. residential areas, where people usually have a sense of place (Åquist, 1994). Since experiences of places and people are central to humanistic geography, qualitative methods are

central. Observations, interviews and qualitative fieldwork are common methods and have been used by humanistic geographers to create an understanding of people and their interpretation of the environment (Cresswell, 2013).

2:2 New Urbanism and its emergence

New urbanism (also known as traditional urban design and neo-traditional town planning) emerged during the 1980s as a criticism of the modernist planning which, according to the theory, created anonymity and urban sprawl (Fainstein, 2000; Grant, 2006). Within the theory, cities are considered complex and an understanding that goes beyond modernist rationality is sought (Kelbaugh 1997). The theory, developed in an American context, focuses on urban design and the planning of walkable, mixed-use, cohesive and inclusive neighbourhoods. The theory is thus related to normative theory which aims to connect form to values (Grant, 2006; Kim & Larsen, 2017).

The distinctive features of the theory are partly based on the analyzes of Léon Krier, Jane Jacobs and the growing trend of sustainable development (Grant, 2006, Grant, 2009). Jane Jacobs's criticism of the prevailing planning ideal in America during the 1950s has inspired cities and urban planning around the world as well as laid the foundation for new theory formations, among other new urbanism (Jacobs & Hjukström, 2005). Central to her analysis is the public life that takes place in urban environments. According to her, security is based on interaction where the built environment plays a major role in encouraging people to interact. She criticized urban infrastructure where vehicular traffic was dominant and favored in the planning process. In one of her most important contributions from 1961, *The Death and Life of Great American Cities*, she explains how highways and roads cause areas and districts to become separated and in turn risk breaking down the streets of cities (Jacobs & Hjukström, 2005). According to her, the design of sidewalks assists with an active role in the creation of safe and interactive streets (Fleming, 1998). Among other things, this perspective has formed the basis for new urbanism, which highlights the importance of walkable streets and coherent urban areas. The theory focuses on urban design and the planning of urban space to address challenges related to sprawl, placelessness and infrastructure designed for cars (Kelbaugh, 1997). Inspiration is drawn from successful cities where the concept of walkable neighbourhoods and compact urban design has been tested (Grant, 2006).

New urbanism emphasizes the importance of coherent neighbourhoods to create a network accessible to pedestrians, cyclists and public transport. Ecological as well as social aspects are emphasized, where the purpose is to create “a spatially coherent and cohesive sense of place, of neighbourhood and of community that builds on what is locally and regionally unique, and where it is argued that enduring must replace the monoculture, anonymity and placelessness of sprawl“ (Kelbaugh, 1997:43). Grant (2006:15) identifies three themes that are central to new urbanism, “community, organic analogies and built form”. The built form refers to architecture, that in new urbanism seeks a mix of building types. The term community encompasses the social dimension of the built environment and refers to the opportunities created for social interaction. The design of urban space is central and improvements of existing areas is advocated instead of the formation of new ones, which coincides with the concept of organic analogies referring to ecological theory (ibid.).

New urbanism has been used among planners and designers as a tool to achieve sustainable growth as the theory is considered to address issues related to, among other things, sustainability of community and social equity (Kim & Larsen, 2017). However, the theory has been criticised with opposition for its simplicity and not addressing fundamental and underlying problems of e.g. inequality and power relations. Some critics argue that the model and renewal of the suburbs only would lead to a new form of urban sprawl (Grant, 2006). The mixing of building types that are sought and aimed at creating social mixing is also criticized with the argument that a variation does not guarantee equality and risks disadvantaging a lower income group (Kim & Larsen, 2017).

2:3 Urban social sustainability

The social dimension of sustainable development is explained among the literature to be the least prioritized within urban planning (Kohon, 2018; Ström, Molnar & Isemo, 2017; Yiftachel & Hedgecock, 1993). As the concept of urban social sustainability is disputed, there is ambiguity about what is included. The concept is described by Dempsey et al. (2011) as dynamic and multidimensional where its foundations derive from social justice.

The accelerating urbanisation worldwide has centralized cities in the concept of sustainable development. The design and planning of urban space is thus highly relevant within urban social sustainability (Dempsey et al., 2011). Among the literature, accessibility, social

cohesion and sense of belonging are generally identified as key terms. Dempsey et al. (2011) highlights the importance of social interaction between residents and points out two terms explaining the main features of urban social sustainability; social equity and sustainability of community. Social equity in the built environment is argued to affect the inclusion/exclusion of community members and is explained to involve accessibility to e.g. recreational areas, (social) infrastructure and green spaces. This understanding is related to what the authors entitle sustainability of community which involves values such as inclusion and social cohesion. The built environment is explained in the article to affect the ability of people to create social networks (ibid.).

In a more recent study, a socially sustainable neighbourhood is defined as “one that provides residents with equitable access to facilities, services, and affordable housing; creates a viable and safe environment for interaction and participation in community activities; and promotes sense of satisfaction and pride in the neighbourhood in a way that people would like to live there now and in the future” (Larimian & Sadeghi, 2019:4). The concept of urban social sustainability has undergone a transformation in recent years to involve ‘soft’ values to a greater extent according to Larimian & Sadeghi (2019). The authors aim to develop a method for measuring urban sustainability involving seven aspects; “social interaction, safety and security, social equity, social participation, neighbourhood satisfaction, sense of place and housing satisfaction”, which they consider to be the foundation of social sustainability (2019:7). Similar to the perspective emphasized by Dempsey et. al (2011) about the built environment and its relation to social equity, participation and cohesion are described by Larimian & Sadeghi (2019) as fundamental in the creation of urban social sustainability. In the article, the use of recreational areas and the participation within social networks are highlighted as they help community members to feel safe and integrated (ibid.).

Shirazi & Keivani (2019) discuss the multidimensional nature of social sustainability. The authors emphasize that the concept involves both hard/soft values, objective/subjective as well as physical and non-physical dimensions and argues that the concept provides a useful framework for planners and decision-makers to identify problems and plan for improvements in an urban environment. In the article by Shirazi & Keivani (2019), three pillars are identified explaining the foundations of social sustainability; neighbourhood, neighboring and neighbors. The neighboring perspective is characterized by soft and subjective values

involving “social networking and interaction, safety and security, sense of attachment, participation, quality of neighbourhood and quality of home” (Shirazi & Keivani, 2019:461).

A study on social sustainability that takes off in five British cities stresses how security in urban environments leads to sense of place. Bramley, Dempsey, Power, Brown & Watkins (2009) emphasize how safety and security creates trust between the inhabitants and thus creates a sense of place and becomes identity creating. The authors believe that knowledge about what constitutes a socially sustainable urban form should be substantiated by residents’ perspectives; “In our view the principal source of evidence concerning the social acceptability of different urban forms should be people themselves, particularly those living in the areas in question” (Bramley et al., 2009:2129). The study mainly focuses on attributes of urban social sustainability related to densely populated areas versus areas with lower density. Safety and sense of place are highlighted in the study to be stronger in areas of lower density where the use of local services are explained as a contributing factor in creating interaction between inhabitants (ibid.). Similarly, in an article from the US, individual experiences are mentioned as an important source of knowledge (Boschmann & Kwan, 2008). The article describes aspects of social sustainability in urban transportation and highlights mainly three factors related to vehicular traffic, all relevant in the analysis of social sustainability; quality of life, social exclusion and social equity. The authors argue that social interaction is supported by an urban environment that do not require car use. In addition, if the built environment encourages social interaction, the preconditions for social cohesion increases according to the authors. Such an urban form is emphasized to increase the quality of life as the residents’ sense of security and safety is positively affected. The authors argue that transportation planning, in order to be socially sustainable, should focus specifically on accessibility for socio-economically vulnerable groups as these groups tend to suffer from social exclusion and inaccessibility to a greater extent (ibid.).

Sense of place which is mentioned by several authors as an important aspect of urban social sustainability can be explained by its physical and psychological dimension. Healey (2010:34) defines sense of place as follows; “A sense of place and of place quality can be understood as some kind of coming together of physical experiences (using, bumping into, looking at, hearing, breathing) and imaginative constructions (giving meanings and values) produced through individual activity and socially formed appreciations”. In an article by Ujang (2012), the importance of understanding the experiences and perceptions of people is

emphasized in order to create a sense of place in urban environments. The study is based on interviews and questionnaires from shopping streets in Kuala Lumpur in Malaysia. In the article it is highlighted how physical attributes and characteristics play an important role in the experiences and perceptions of the place. The presence of people also affected the feeling of security where openness was explained as an important dimension (Ujang, 2012). Another study that examines sense of place in areas of urban revitalizations through qualitative methods, emphasizes that strategic planning can improve the conditions for sense of place. The study presents an example where new developments were placed in an old city center. This negatively affected the residents' sense of place, as it created a barrier within the area. The author believes that subjective explanations of what instills a sense of place are essential for analyzing the concept in urban environments (Billig, 2005).

The following section addresses previous attempts and measures to bridge physical barriers, which is explained as a prerequisite for creating socially sustainable cities (Boverket, 2010). This can help to further understand what measures have been taken and what is needed to create social sustainability in urban environments.

2:4 Social bridging structures

Bridges and tunnels have traditionally served as constructions for bridging barriers such as roads, railways and rivers. However, Roberto & Hwang (2015) emphasizes how poorly lit and desolate bridges and tunnels separates spaces instead of creating coherent environments. This is also highlighted in a report by Ranum et al. (2018) where it is stated that bridges and tunnels traditionally have been geographical connectors, but that many of the structures instead remain empty and unused due to dark and unwelcoming environments. In a study of Finchley road in north London, it was determined that users of the existing tunnel in conjunction with the road felt unsafe and sensed fear of crime (Mindell, Anciaes, Dhanani, Stockton, Jones, Haklay & Vaughan, 2017). The study shows that the road created a negative impact on accessibility and mobility as there were few crossings for pedestrians and the quality and safety of these were poor. Similarly, Grisolia et al. (2015) discusses how tunnels, bridges and pedestrian crossings traditionally have worked as means to reduce community severance. The authors believe that even though such structures constitute a visual impact, the barriers are rarely reduced completely. In the article, the authors investigate how costs of mitigating community severance can be compared to the costs of burying highways. The

authors emphasize how the presence of others as well as “having long-distance visibility” affect the perceived sense of security to the positive (Grisolía et al. 2015:300).

Ranum et al. (2018:5) emphasizes that urban areas are at risk of being weakened due to unused constructions; “Un-optimised infrastructure and urban spaces can weaken - and in worst case, destroy - urban networks and hamper cities further development”. The authors argue that bridges and tunnels should be seen as social connectors as well as geographical and presents several examples where bridges have been designed to meet the need of safe environments in order to reduce physical, social and mental barriers. Ranum et al. (2018) highlights a number of successful examples, where the common denominator is the focus on the creation of safe environments where residents are involved, either through activity-based environments or through citizen participation in the planning. Luchtsingel in Rotterdam is illustrated as a successful example. The bridge connects the center and the North and is designed for pedestrians. Hopfelin, an area connected to the bridge, used to be an attractive neighbourhood but came to be neglected and empty. The bridge is a crowdfunded construction and was built to revitalize Hopfelin and create a cohesive city. With its citizen participation and engagement, the project has been highlighted as a successful example (Luchtsingel, nd; Ranum et al., 2018).

In an article by Räsänen, Lajunen, Alticafarbay & Aydin (2007), factors that determine the use of crossing facilities are examined. The study is based on observations and surveys in Ankara, Turkey, where it is found that the use rate of pedestrian overpasses is not necessarily higher where crossing facilities are provided, as many chose to cross the road instead. The authors identify a problem related to time, as respondents’ mentioned that they avoid overpasses due to time consumption. It is concluded that in order for the use of overpasses to increase, the construction should provide a safe environment where the time required for usage is not significantly affected (Räsänen et al., 2007). Similarly, Hasan & Napiah (2014) discuss factors that determine the use of pedestrian crossing facilities. The authors emphasize the importance of planning overpasses in harmony with the surrounding environment to increase comfort and safety. The design is also of great importance; “the structural design of the footbridge has a great effect on the usage of it”, where it is stated that; “the small width of the footbridge may result in uncomfortable movement” (Hasan & Napiah, 2014:57).

Another method of bridging barriers to create cohesive cities is over-decking. The construction is motivated mainly by the advantages for urban development and is characterized by extensive surfaces across roads and railways. Over-decking has proven to be effective in reducing barriers, increasing accessibility and densifying cities. However, the method is expensive as large surfaces are constructed (Länsstyrelsen, 2012). Boverket (2010) points out that barriers often are reduced by bridges, tunnels or over-decking, but that additional strategies are needed. In an overview of social sustainability, the authority highlights the importance of creating attractive focal points & environments in areas that are segregated or considered less attractive in order to reduce and eliminate barriers.

2:5 Summary

The concept of sense of place which is central to humanistic geography, new urbanism and urban social sustainability is relevant in the study as the users' perceptions of socioducts are studied. The humanistic approach, which centers human consciousness in the formation of knowledge and rejects the perspective of one single truth, coincides with the qualitative methodology of the study which is based on the gathering of perspectives and realities from several people. The new urbanist ideal that connects built form to values can also be seen at the center of the study to understand what values users identify in socioducts. The ideal of walkable neighbourhoods, safe and interactive streets within new urbanism provides a model that can be interpreted against aspects of urban social sustainability.

Urban social sustainability forms the basis of the study to understand whether socioducts can be considered safe, accessible and inviting to its users. The accelerating urbanisation is explained to require structured and socially sustainable planning. However, the effects of physical barriers in urban environments can be considered as obstacles to social sustainability as these have been shown to separate areas, reduce accessibility and generate residential sorting. Methods for bridging barriers are ambiguous and have been handled differently around the world. Since traditional methods have not fully solved the problem of creating safe and attractive environments, there is a need to find new solutions. Socioducts focuses on the social aspects of barrier effects and aims to reduce the negative impact of roads and railways separating areas. However, the knowledge of whether socioducts are effective in this sense can be seen as somewhat inadequate.

3. Methodology

The following chapter presents the method of the study. As a humanistic approach has been adopted, the aim and research questions have been answered with qualitative interviews. The study is considered a case study where residents in Hammarby Sjöstad expressed their feelings and perceptions towards the eco/socioducts through semi-structured interviews.

Initially, the abductive approach is presented, followed by case study as method. The qualitative method is then presented in section 4:3 where two types of interview processes have been adopted, to subsequently describe the process of sampling. The interview guide, which has been central in linking the questions posed to aspects of urban social sustainability is presented followed by the processing of the material. Strategies and approaches to the chosen method are discussed throughout the chapter and in the last section, in more detail.

3:1 The abductive approach

The study assumes an abductive approach which can be explained as a combination of induction and deduction, thus the research is based on both existing theory and empirics. The deductive approach is grounded in theory in which hypotheses are formulated. These hypotheses are then examined through empirical investigations (Bryman, 2016). The study can be explained as deductive in the sense that the mention of socioducts as constructions to mitigate barriers, create social cohesion, increase accessibility and social connectivity, leads to the hypothesis of whether socioducts can contribute to urban social sustainability. The hypothesis are then analyzed through empirics, which in this study consists of qualitative interviews. The inductive approach, which is common in qualitative research, is based on theorizing of observations and empirics (ibid.). The study is inductive in the sense that it aims to be knowledge-building, as the collection of material in the form of qualitative interviews and observation further builds knowledge about whether the socioduct can be considered a socially sustainable construct.

3:2 Case study

A case study is based on a specific phenomenon. An individual object or case that has the characteristics of clear boundaries is distinctive in case studies. The use of qualitative methods is also central. The study of the eco/socioducts in Hammarby Sjöstad can thus be

regarded as a case study as the objects of study constitute a clear demarcation. The model seeks transferable answers rather than generalizable, where the information is intended to be transferred into similar contexts. The case study approach is well suited in this context as transferable answers are more desirable to be able to apply the result to similar cases and locations. Case studies are intended to seek in-depth answers rather than breadth and the object of study should be something that exists even outside the study (Denscombe, 2009; Bloomberg, 2018).

3:3 The qualitative method

Qualitative research differs from quantitative with its focus on words rather than numbers. The method assumes an epistemological position meaning that “the stress is on the understanding of the social world through an examination of the interpretation of that world by its participants” (Bryman, 2016a:375). The subjective experience thus plays an important role in qualitative research where interpretations and analyses of spatial relations, space and place are central (Dyck, 2001). Qualitative research provides different methods, where interviews, observations and analyzes of documents and texts are common (Bryman, 2016a). The main method of the study has been qualitative interviews, but observations and documentation have also been made on site to gain insight into how and by whom the eco/socioducts are used. During the observation, notes and photographs were taken, I also returned to the site several times to collect material and to understand the references of the respondents. A minor text analysis has also been conducted to compare statements with regulations written by the authority which the interviewee represents.

3:3:1 Qualitative interviews

In the study, two types of interviews were conducted, partly with urban planners which can be seen as expert interviews, or informant interviews. But also with respondents representing users of the eco/socioducts, see chapter *4:3:2 Respondent interviews*.

Two interviews were conducted with urban planners, one with Lisa Örberg from Swedish Transport Administration to gain insight into the authority’s work on social sustainability and socioducts and one with Malin Olsson Thompson who previously worked at the Urban Planning Department in Stockholm at the time the passages were planned and built. As the planners possess authority of the urban planning, such a perspective becomes relevant in the

study. The future planning and construction of socioducts is thus largely guided by such a perspective. The interviews with Lisa Örberg and Malin Olsson Thompson can be related to what Esaiasson, Gilljam, Oscarsson & Wängnerud (2012) title informant interviews. Informant interviews are advantageously used when seeking objective answers about e.g. the function of an authority or organization. Centrality is the main principle in the selection of informants, where the interviewee preferably has specific knowledge within the field (Esaiasson et al., 2012). Regarding the sampling of the interviews, the purpose of the interview with Malin Olsson Thompson was to gain insight on what values and needs governed the planning of the eco/socioducts. The search for a central source and reaching additional people was difficult as the eco/socioducts were completed 20 years ago. The Swedish Transport Administration was selected, as the authority is the most central in transportation planning in Sweden. The national perspective of the Swedish Transport Administration can be considered as important in the study because of the authority's influence in transportation planning and thus future planning of socioducts. However, a larger sampling would have contributed with additional perspectives and arguments that could be seen as important for answering the research questions and drawing conclusions. The planners are presented by name in the study after approval.

In order to gain knowledge about the concept of socioducts and urban social sustainability within the Swedish Transport Administration, an interview with Lisa Örberg was conducted. She works with social issues within the transportation planning at the Swedish Transport Administration and can thus be considered a “central source”. The interview was conducted face to face 2020-02-21. To gain insight into how the eco/socioducts in Hammarby Sjöstad was planned, an interview with Malin Olsson Thompson was conducted over the phone 2020-03-26. Initially, the Environmental Department was contacted as they were involved in the construction of the eco/socioducts. They forwarded me to Malin Olsson Thompson who previously worked at the Urban Planning Department in Stockholm and was involved in the planning of the district Hammarby Sjöstad and the eco/socioducts. She contributed with a perspective on the planning process which was valuable but could not answer questions regarding e.g. conceptual interpretations within the Urban Planning Department as she nowadays works in the private sector.

3:3:2 Text analysis

In order to strengthen the credibility (see evaluation criterias of the method in chapter 4:6, *Method discussion*), the interview with Lisa Örberg was supplemented with studies of policy documents. Dittmer (2010) points out two aspects that govern text analysis. The first is about why such a method is relevant. In this study, the textual analysis is primarily intended to supplement the main method and compare the statements with written regulations within the Swedish Transport Administration. The second aspect is about what to analyze, “The texts must be linked to your research objectives” (Dittmer, 2010:10). As the textual analysis was used for comparison, documents that directly describe what emerged in the interview were studied, i.e. aspects of urban social sustainability. The documents can thus be explained to be directly linked to the objectives of the study.

The documents studied in detail are the following; *Ett inkluderande samhälle - PM till Nationell plan för transportsystemet 2018-2029* (Winter & PLkva, 2017) and *Tillgänglighet i ett hållbart samhälle - Målbild 2030* (Hunhammar, Krafft, Wildt-Persson & Wenner, 2019). The documents presents the definition of social sustainability within the Swedish Transport Administration and the aspects that govern the authority’s work on social sustainability.

3:3:3 Respondent interviews

To gain knowledge about the experiences and perceptions of the eco/socioducts in Hammarby Sjöstad, respondent interviews were conducted. The method is widely used by human geographers and the most common in qualitative research (McDowell, 2010). The search for in-depth answers rather than breadth is characteristic, which corresponds to the case study approach. Respondent interviews are advantageously used when the researcher seeks a subjective perspective about e.g. “why people feel or act in the ways they do” (McDowell, 2010:158; Esaiasson et al., 2012), the method is thus relevant in the study of the experiences and perceptions related to the eco/socioducts in Hammarby Sjöstad.

The interviews in this study were by nature semi-structured where the interview process can be described as interactive and flexible (Esaiasson et al., 2012). A semi-structured model allows the respondent to develop the answer as the questions are open (Denscombe, 2009). To be able to draw conclusions, the questions posed were the same but with space and opportunity to go beyond the template. The respondents ‘participation are anonymous, which

was communicated to the respondents before the interview. A clarification that I cannot guarantee total anonymity, but that I will do what I can to preserve it was also announced. Clarification on the voluntary participation was made before the interviews. The interviews were then recorded after approval to be able to return to the material. The recordings allowed me as a researcher to pay attention to respondents' body language, be present and listen to the answers in order to ask follow-up questions. The location of the interviews was chosen by the respondents to create a sense of comfort and security (Esaiasson et al., 2012). Due to prevailing circumstances, given Covid-19, the interviews were not able to continue face to face after a certain date. Some of the interviews were thus conducted over the phone, which were recorded upon request for easier handling of the material. In such an interview process, interpretations of e.g. body language and nuances are at risk of being lost (Bryman, 2016). Telephone interviews were therefore avoided to the extent possible.

A total of twelve respondent interviews were conducted between the dates 17/3-2020 and 6/4-2020. The number of interviews was not predetermined but continued until a saturation in the responses had been achieved. The material was estimated to have met a saturation when no new insights emerged. The length of each interview varied but was determined to have met a saturation when the respondents repeated the responses and returned to the same statement over and over.

3:3:4 The sampling process for the respondent interviews

In the sampling and during the interview process, a number of ethical issues and attitudes have been governing where interviews with people under the age of 18 have been excluded. Similarly, interviews with vulnerable groups in terms of the very elderly, ill or confused have been excluded in line with the ethical codes illustrated by McDowell (2010). However, variation in age, gender, ethnicity and physical ability has been sought in order to generalize the result to a wider population. Despite the search for variation, the sample can be explained as random which is described by Esaiasson et al. (2012) as suitable when descriptive research questions are to be addressed.

Facebook as a forum, helped me connect with the first respondents. Initially, people were asked in the Facebook groups *Hammarby Sjöstad* and *Hammarby Sjöstad 1* where I posted a request for interviews. In the request, the aim of the study and the arrangement for the interviews were explained. The sampling was then made through a snowball sampling where

participants helped establish contact with future participants (Bryman, 2016). The respondents have varied in status, gender, age and physical ability. However, the snowball sampling resulted in an uneven gender distribution with a majority of women. This may have affected the result, as there is a likelihood that women share similar experiences and perceptions. Such a perspective is thus not representative of all users. A continued sampling procedure was affected by the prevailing circumstances regarding Covid-19, which made the process difficult. However, with respondents' repeated answers, a saturation can be considered to be fulfilled. In addition, the sampling with a majority of women can be defended with the fact that secondary severance affects women to a greater extent, which thus makes such a perspective central and relevant in this case. The respondents are presented in the table below with fictitious names but with age and gender that are true after approval. The table also shows the frequency in use of the eco/socioducts in Hammarby Sjöstad.

Table 1: List of respondents

Name:	Gender:	Age:	Date:	Frequency in use:
Alyssa	woman	27	2020-03-18	2 times a week
Hannah	woman	40	2020-03-24	1-2 times a week
Nina	woman	42	2020-03-19	4 times a week
Nancy	woman	46	2020-03-26	4 times a week
Joanna	woman	56	2020-04-06	2 times a week
Brit	woman	66	2020-03-18	3 times a week
Malin	woman	67	2020-03-19	On a daily basis
Olivia	woman	71	2020-03-17	2 times a week
Erica	woman	78	2020-03-19	2 times a week
Albin	man	37	2020-03-19	4 times a week
Johan	man	41	2020-03-17	Summer: 6 times a week Winter: 0 times a week
Alexander	man	55	2020-03-23	10-15 times a week

3:4 Interview guide

The questions posed to the urban planners revolved around the need and purpose of socioducts. In the interview with Lisa Örberg, questions were asked related to what problems the Swedish Transport Administration has identified, which socioducts are expected to solve and how the authority defines urban social sustainability. The questions in the interview with Malin Olsson Thompson were related to the planning process of the eco/socioducts in Hammarby Sjöstad.

The interview guide for the respondents, *see Appendix 1 and 2*, was formulated on the scientific basis for this study. The questions posed were partly general about Hammarby Sjöstad and how participants define different concepts, but also more specific to understand how the objects of study are perceived, used and experienced. The interview guide was structured with both reality-based and hypothetical questions. The questions of hypothetical nature were asked to read whether the respondents believe that the construction could serve as a solution to counter segregation. Questions that can be answered with yes or no were excluded as much as possible in order to get more in-depth answers.

Factors that are identified as urban social sustainability in previous research, *see chapter 2:1*, but are irrelevant to the study have been excluded e.g. quality of home or housing satisfaction. The questions were formulated within the following themes; sense of place/neighbourhood satisfaction, safety/security and accessibility. The template also involved questions related to social interaction and more open questions about e.g. improvements of the eco/socioducts. The concept of sense of place is central to the humanistic geography as well as new urbanism and can be considered relevant in the study of the eco/socioducts in order to understand how people relate to Hammarby Sjöstad and the passages (Kelbaugh, 1997; Åquist, 1994). Safety and security as well as social equity (accessibility) are components of urban social sustainability identified by the authors Larimian & Sadeghi (2019), Dempsey et al. (2011) and Shirazi & Keivani (2019), *see 2:3 Urban social sustainability*. These aspects constitute the themes for the interview guide to interpret how socioducts relate to urban social sustainability and to examine how residents in Hammarby Sjöstad experience and perceive the passages.

3:5 Processing

After the material was collected, the interviews were transcribed and then coded. The coding was based on aspects of urban social sustainability which also formed the basis for the questions posed. The coding resulted in four categories, which are mentioned as follows in the result; sense of place/attitude of respondents towards the eco/socioducts, safety and security, accessibility and improvements/respondents 'thoughts about the design as a solution to reduce segregation between different groups of users. All interviews were read several times to understand the respondents' perspectives and to collect information for each coding. Since the interviews were conducted in Swedish, the quotes are translated. The quotes have been endeavored to be reproduced as similarly as possible to the original statements of the respondents. All quotations have in the ending a number that corresponds to a figure in Appendix 3, where the quote is stated in the original language.

3:6 Method discussion

Qualitative research demands a critical approach as the researcher possesses a central role in the creation of the reality represented (McDowell, 2010). Representation, positionality, power relations and language should thus be reflected upon during the collection, processing and presentation of the material.

Positionality can be interpreted in relation to power. McDowell (2010) emphasizes that power manifests differently depending on context. Power relations manifested in the interviews can thus be assessed as dynamic as my position has varied depending on the person interviewed. In the interviews with Lisa Örberg and Malin Olsson Thompson, they arguably hold a position of power as they participate in the position of information holders and possess knowledge which I do not possess. In the respondent interviews, power relations may be interpreted as dynamic to a greater extent as age, language, knowledge and status have varied depending on the position of the respondent. To the extent I have been able to influence, I have tried to produce a more equal interview process by adapting my language, explaining the study and offering the respondent to choose a place to create a sense of security. The adaptation in responses that occurs as a result of unbalanced power relations is called interviewer effect by Desencome (2009).

Reflections on representation are of greater importance when the representation risks causing consequences for those involved (McDowell, 2010). In this case, the respondents are anonymous, nor do the interviewees represent any specific group, which makes the question of representation uncontroversial. However, Esaiasson et al. (2012) emphasize that the material can be considered less credible when anonymity is promised. The planners are presented by name but the respondents are anonymous as they represent “users” of the eco/socioducts and an announcement would not fulfill any purpose. Representation can also be understood as the position of the researcher to choose what is to be included and excluded in the text. The subjective opinions of the researcher thus risk affecting how the interviews are presented. In order to avoid a representation that mirrors my subjective opinions or which coincides with my political values, I have strived to obtain a neutral approach.

In the evaluation of the method, a number of criterias have been governing. Validity is a central concept in research, which can be interpreted as the quality and replicability of the study and whether general conclusions can be drawn from the result. These factors are summarized in the concepts of reliability and generalizability. However reliability, meaning that replications of the study should achieve the same results, is difficult to attain in qualitative research since an identical social composition cannot be recreated (Bryman, 2016a). The study has thus adopted an alternative approach for evaluating qualitative research developed by the researchers Guba and Lincoln (Bryman, 2016a) involving two primary criterias; trustworthiness and authenticity. The trustworthiness criterion consists of four subcategories; credibility, transferability, dependability and confirmability. Credibility can be related to validity, referring to whether “you are observing, identifying or “measuring” what you say you are“ (Mason, 2018:35). This has been reflected on during the process by comparing the aim and research question with the method and results. To avoid misinterpretations, the criterion of credibility was also ensured by confirming the material by those interviewed. Since qualitative studies are characterized by depth rather than breadth, understanding the specific context is important. Therefore in order to determine whether the findings can be transferred to similar environments, a thick contextual description is required. This constitutes the second criterion called transferability, which has been sought in this study, rather than generalizability. However, whether the result is possible to transfer to similar contexts is difficult to ascertain as the place studied is unique. A similar case with similar settings, might have resulted in the same conclusions. However, since the study is based on individuals’ personal perceptions, this can therefore be argued to stand out as

subjective and also grounded in previous experiences. In conclusion, such a study becomes difficult to imitate. Whether the opinions that emerged regarding the eco/socioducts can be considered valid for future construction is also difficult to ascertain. However, the opinions that emerged could be assessed as providing guidance for future planning. The third criterion, dependability can be explained as the qualitative equivalent of reliability and refers to whether findings can be repeated, which in qualitative research requires detailed documentation of the working progress. The criterion has been processed in this study by carefully taking notes, recording the interviews, transcribing and photographing the eco/socioducts. The last criterion, confirmability, is related to neutrality and the aspiration for an objective approach. Objectivity cannot be fully achieved, but has consistently been reflected on in the study (Bryman, 2016a). Adopting a neutral approach could be argued to increase the possibility of transferring the results to similar contexts. Since I had no previous knowledge or preconceived notions about the place and socioducts as a phenomenon, a neutral approach can be argued to have been simplified. Before the interviews, I observed the place carefully which may have affected how I perceived the place and how the questions were asked. However, I have tried to maintain a neutral approach by asking neutral questions and consistently reflecting on neutrality. Authenticity is related to the political impact of the study, where the criterion fairness has been governing in the study of the eco/socioducts. The criterion refers to whether “the research fairly represents different viewpoints among members of the social setting” (Bryman, 2016a:386). To approach the fairness criterion, the material collection continued until a saturation in the responses had been achieved.

4.Results

The following chapter presents the findings of the study. The chapter is outlined in two parts where the interviews with Lisa Örberg and Malin Olsson Thompson initially are presented. The studied policy documents are presented briefly in section 5:1:2, *The definition of urban social sustainability in urban planning*. To be followed by the respondent interviews which constitutes the major part of the chapter. The responses of the respondents are presented based on the following themes; sense of place/attitude of respondents towards the eco/socioducts, safety and security, accessibility and improvements/respondents 'thoughts about the design as a solution to reduce segregation between different groups of users.

4:1 The planning perspective

The section is presented in three parts, where the need for socioducts first is introduced, to subsequently present how urban social sustainability is defined from a planning perspective. Finally, a minor section is presented where Malin Olsson Thompson discusses the eco/socioducts in Hammarby Sjöstad.

4:1:1 The motives for socioducts

Örberg explains that there is no overall definition of the term socioduct in the Swedish Transport Administration. She emphasizes that an initial step is to investigate what values exist in the design of socioducts to subsequently define and conceptualize the concept. By contrast, Olsson Thompson believes that definitions arise in the planning process and that planning itself is a phase of conceptualization. She explains that the planning of connecting Hammarby Sjöstad with the nature reserve in Nacka started as early as 1990, which resulted in the eco/socioducts crossing Södra länken. She mentions that the concept of socioduct was not discussed at the time the passages were built. The idea was to create a bridge for animals, pedestrians and cyclists with green elements to strengthen the ecological connections. The social dimension came to be discussed in recent years and has subsequently led to the passages being called eco/socioducts according to Olsson Thompson. Örberg believes that the initial motives usually change gradually in the planning process due to the surrounding conditions and circumstances. She mentions the eco/socioducts in Hammarby Sjöstad as an example where the purpose from the beginning was to link the residential area with Nacka nature reserve but that the passages resulted in something beyond its preliminary purpose.

According to Örberg, the concept of socioducts lies in the need to counteract barrier effects and create socially sustainable cities. Örberg emphasizes the responsibility of the Swedish Transport Administration to investigate needs and costs of sustainable constructions and to include preventative measures in the planning to optimize the location of future projects and avoid costs in hindsight. She emphasizes the need to create safe and inviting environments specifically for vulnerable groups, that links residential areas to become more integrated as previous constructions such as bridges and tunnels have been ineffective in that sense. According to her, a new kind of construction is needed that is not only a physical link but also a safe environment for, e.g. children to use without the company of adults. Örberg explains that the concept of socioduct is related to what the authority considers as basic accessibility, i.e. access to work, school and community service, where accessibility to recreation and leisure activities also plays an important role. She emphasizes that what contrasts the socioduct with a bridge and tunnel is its appealing and safe environment.

4:1:2 The definition of urban social sustainability in urban planning

At the time the eco/socioducts in Hammarby Sjöstad were planned, the focus was on the ecological dimension of sustainable development. Malin Olsson Thompson explains that the social dimension was not discussed to the same extent but came to attention afterwards. She further emphasizes that social sustainability is often related to socioducts but that she cannot account specifically in what way.

Urban social sustainability is defined within the Swedish Transport administration, which Örberg believes is fundamental to working with social aspects. Örberg explain that the definition of social sustainability within the Swedish Transport Administration is largely related to accessibility for vulnerable groups, for which the socioduct as a construction would constitute an important function:

We see that children and the elderly, women, people with disabilities or people who do not own a car, [...] these are the groups for which a socioduct would play an important function, those groups with a need for short distances. Easy access for walking and cycling as a way of traveling, or being able to use the passage with a wheelchair, in combination with a safe and appealing environment (Örberg, L, ¹).

This is also confirmed in studied policy documents stating that the work on social sustainability within the Swedish Transport Administration aims to provide a transportation system inclusive for vulnerable groups and people with special needs. This is concretized in the document with two goals set for 2030, one specifically targeted at gender, age and socio-economically vulnerable groups and one concerning disability. The goals are explained to focus on safety, equality and social sustainability to a greater extent than previous work (Hunhammar, Krafft, Wildt-Persson & Wenner, 2019). Social sustainability in terms of perceived accessibility and convenience is explained in a previous policy document as less integrated than directly measurable variables, these aspects are nevertheless highlighted as important in creating urban social sustainability (Winter, PLkva, 2017). Örberg clarifies that measures directly targeted to increase accessibility for vulnerable groups are already implemented to some extent, but that the socioduct as a construction is identified as a potential socially sustainable solution in increasing accessibility.

4:1:3 The eco/socioducts in Hammarby Sjöstad

Olsson Thompson emphasizes that bridging structures should be designed with regard to the local environment, as bridging in itself would not solve problems related to social separation. For the passages to be used, there should be focal points on each side, which she returns to several times. She believes that an important aspect of succeeding in bridging Södra länken as barrier, was to give the passages generous measures:

Actually, I feel that when you stand on those transitions, the road actually disappears a little. You do not realize that it is a multi-lane highway, more or less a motorway that you cross. So the width and design with green elements make a point (Olsson Thompson, M, ²).

She further explains that the planning of the eco/socioducts in Hammarby Sjöstad was controversial at the time and that the constructions only are minor components of an extensive planning process. However, she emphasizes that the passages have resulted as an important link between Nacka nature reserve and Hammarby Sjöstad.

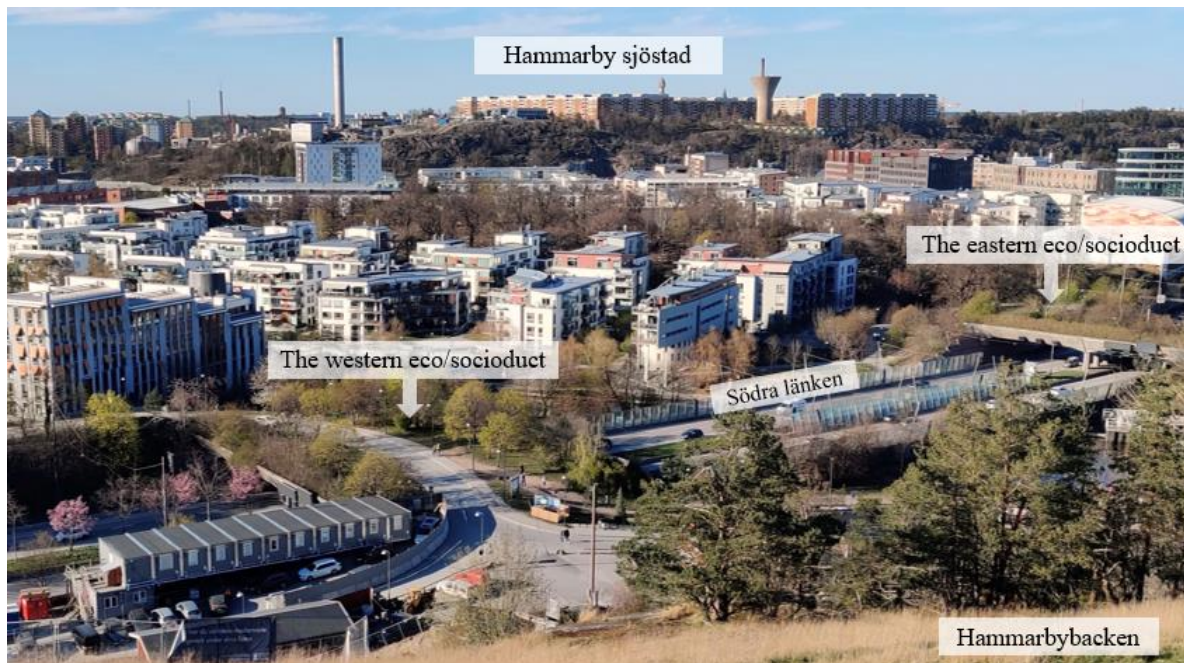


Figure 4. Photograph taken from Hammarbybacken showing the western and eastern eco/socioducts with surrounding environment (Photographer: Lisa Ekberg).

4:2 The user perspective

All respondents have moved to Hammarby Sjöstad after the eco/socioducts were built in 2000. Their perceptions and experiences are mostly consistent regarding the passages, however, attitudes towards Hammarby Sjöstad as a district differs to a certain extent between the interviewees. Many of the respondents mentioned that the motive for moving to the area was its focus on the environment, partly by its vision of being a sustainable district but also its actual proximity to green areas and recreation. Several respondents mention that they appreciate Hammarby Sjöstad as a district, that the proximity to both nature and city is valuable and that the social cohesion is strong. However, a more critical perspective emerges in the conversation with some respondents, stating that the area is homogeneous in terms of population and that its marketing of being a sustainable district does not match reality.

Södra länken, which separates Hammarby Sjöstad with Sickla and the nature reserve in Nacka is perceived by some of the respondents as a barrier while some argue the opposite. Some of the respondents refer to Hammarby fabriksväg as a major barrier passing through Hammarby Sjöstad, even though it is a single lane road and smaller than Södra länken. Hannah explains that she recently moved closer to Södra länken, which made the road more noticeable and now experienced as a barrier to a greater extent than before. However, she

emphasizes that the areas on each side of the road are well connected but that the road could be perceived less as a barrier if the areas were connected with public transport as well. The perceptions about this are diverse. Nancy also lives near Södra länken but do not experience the road as a barrier at all;

“No, I really do not. I do not think about Södra länken at all. We live very close to this passage, the one without car traffic and I do not reflect about what is happening below the passage. [...] Probably because of the vegetation on the bridge, it feels more like I am walking on a hill. That is how it feels to me, I am walking on a hill” (Nancy, ³).

Some respondents mention that it is impossible to disregard the fact that the road constitutes a major barrier, but that the eco/socioducts help to create a more coherent district. Nina emphasizes that the passages play an important role in bridging Södra länken; “Yes definitely, it is a barrier, it is a huge barrier. But these eco/socioducts, I think they are very important, for accessibility, for proximity to nature” (Nina, ⁴). This perspective is also shared with Alexander;

“I have my daughter and my daughter’s family on the other side towards Björkhagen, and of course it is a barrier [...] But I reckon, they did the best they could, really [...] It feels natural, it is very easy to get over to the nature reserve in Nacka and Hammarbybacken” (Alexander, ⁵).

Brit expresses that she does not perceive the road as a barrier due to the green promenade that follows from Hammarby Sjöstad, along the passages and over to the nature reserve in Nacka;

“No the opposite [...] the eco/socioducts link the forest, nature and Nacka with us in Sjöstaden [...] The eco/socioducts make you feel that you are on your way to nature, with nature around you. Because the green promenade, it simply continues over the passages, it does not feel like there is anything in the way. The only thing is the noise, we know the road is there. But the feeling when you use the passages, is that it is actually connected” (Brit, ⁶).

Noise is highlighted in several interviews as a problem, which is particularly evident in the conversation with the respondents living near the road.

4:2:1 Sense of place/attitude of respondents towards the eco/socioducts

Despite differing attitudes and feelings towards Hammarby Sjöstad and whether Södra länken is perceived as a barrier or not, the experiences and perceptions expressed by the respondents towards the eco/socioducts, are similar. Overall, the respondents are positively attuned to the eco/socioducts;

“I really like them, I think they are great. The first time I used them, I did not even realize what it was, that it was a bridge. Because you do not see Södra länken, It is like you just keep on walking” (Alyssa, ⁷).

“I think it is a very good solution [...] we both use the area around Sickla a lot, and I think they connect Hammarby Sjöstad with the area around Hammarbybacken in a natural way. If there was a tunnel instead, I think you would have lost what I was talking about earlier, that you have one foot in nature. [...] I think it is an elegant solution, absolutely. So I am positive towards them, if you contrast them to a tunnel or so” (Albin, ⁸).

Brit also contrasts the passages with a bridge and tunnel and believes that a narrow bridge, unlike the eco/socioducts had conveyed a feeling of Sickla as “on the other side” to a greater extent. Johan emphasizes that a bridge usually gives rise to a feeling of fraud, but that it does not occur when using the passages because it feels like the road just continues and the areas on each side are extended. The function of the eco/socioducts in connecting the areas on each side of Södra länken is also discussed by Brit;

“I think they are just perfect [...] Yes, absolutely, they link. And what we experience, there are two things, they connect the forest, walking paths, and the mall, it is easy to get there [...] If you drive a car it takes longer than walking, because you have to go around, so it is easier to simply walk” (Brit, ⁹).

Some respondents mention that the vegetation makes the construction appealing which distinguishes the eco/socioducts from a bridge. Erica believes that this type of construction is preferable as it provides a safe and pleasant environment; “This is completely different. Here, the sunlight flows, the rain and the snow. There are small bushes and trees and in the spring it

blooms, it is very beautiful” (Erica, ¹⁰). She further emphasizes that the constructions are used by everyone;

“I am very positive, because they are very beautiful and nice to use, today there were many people walking around in the sunshine, there were dogs, cyclists, wheelchair bound, children, very mixed. And now crocus is starting to emerge, I saw one right on the passage, so it is very nice there. I experience them as very positive” (Erica, ¹¹).

Olivia is also positive about the eco/socioducts and emphasizes how the passages are designed for all people. She argues that pedestrians are not usually prioritized in traffic. She has never owned a car herself, good connections for pedestrians and cyclists were thus a criterion when she moved from central Stockholm;

“I am very positive, I really am. Like I said, I think it is about time [...] You can take small children on a tricycle, you know, everyone I believe, yes, for all ages. I see no disadvantage at all. Because if the alternative is no eco/socioduct or a tunnel, then there is no choice” (Olivia, ¹²).

Joanna mentions that she had not reflected on the eco/socioducts as a passage across Södra länken before the interview took place. Although she uses them regularly, she had only perceived them as part of a long walking path.

4:2:2 Safety and security

When respondents talk freely about safety and security in an urban environment, lighting and openness are mentioned as two main factors. Openness is highlighted as an important aspect in being able to overlook the surrounding environment. It is also related by the interviewees to being able to move freely, where several respondents mention that narrow paths and roads create a sense of insecurity. The presence of people is described by some respondents as fundamental to feel safe and secure, where several believes that if a place is open and well-lit, security towards encountering other people increases;

“Absolutely, absolutely, it must be good lighting, because that is also a factor. That it is well-lit, that you do not feel insecure, both regarding ice spots in the winter when it is dark outside, but also because, when it is lit, you feel safer against other individuals” (Brit, ¹³).

Olivia further explains that she feels safe and secure when the roads are wide and well-lit; “[...] because it means that more people are there and security and safety for me means that I am surrounded by people” (Olivia, ¹⁴). The presence of others and the knowledge that others can see you, creates a sense of security for Nancy; “I think of lighting when I think of security. And openness, that you can overlook [...] and that others can see me. That is what I think of in the first place” (¹⁵).

Being able to move freely without being disturbed by car traffic is emphasized by Erica as an important aspect of safety and security;

“In a safe urban environment, there are many roads for pedestrians where many people can walk without being disturbed by car traffic and there should also be lighting so you do not feel worried at night [...] Then I think pedestrian and bicycle traffic should be separated. Because today, cyclists are often quite ruthless and children and dogs tend to run around. [...] The freer you can move, the safer you feel. When you walk in an urban environment and need to watch out, then you become more insecure” (Erica, ¹⁶).

Separating pedestrian and bicycle traffic is also emphasized by Malin as an important aspect of feeling safe and able to move freely. She further stresses that she perceives the eastern eco/socioduct in Hammarby Sjöstad as safer, as it excludes car traffic.



Figure 5: Photo collage of the western eco/socioduct, where picture 1 and 2 are taken standing on the eco/socioduct in the direction of travel, with its pavement and road for car traffic. Picture 3 and 4 are taken standing on the passage but with a view towards Södra länken (Photographer: Lisa Ekberg).

Most respondents perceive the eco/socioducts in Hammarby Sjöstad as safe and secure, however two respondents emphasize that the areas adjacent to the passages sometimes feels unsafe; “The eco/socioducts themselves are very nice. It is not a problem, they are bright and open. But the areas aside, they are not well planned” (Joanna, ¹⁷). The same is repeated in the interview with Hannah, who perceive the areas in connection to the passages as suspicious. She reckons that the area towards Sickla is not sufficiently illuminated, in addition, the pedestrian and bicycle lane is located on the back of the mall, which according to Hannah

feels unpleasant. Both interviewees emphasize the importance of planning from a holistic perspective to avoid areas being forgotten and thus creating unsafe environments.

The design of the eco/socioducts with their width and vegetation is discussed by some respondents to give a sense of security and safety;

“The width and the vegetation makes it feel safer. If I were to wish for something, I would like even more vegetation so that the noise from cars below disappeared, vegetation absorbs the sound very well” (Brit, ¹⁸).

Similarly, Olivia believes that the width of the eco/socioducts creates a sense of openness and that the vegetation is well planned as there is enough greenery to make the area inviting for people as well as animals, but not too dense to lose sight.

Alexander explains that he uses the eco/socioducts about ten to fifteen times a week, even in the evening when it is dark outside as he participates in activities located on the other side of Södra länken. He expresses that he always feels safe in the use of the eco/socioducts as they are well illuminated and there is no room for unpredictable actions. However, he emphasizes that it may differ depending on whether you are a woman or man; “I believe that it is different for a woman, a younger woman. I do not feel insecure myself. I feel safe wherever I am, really. But it might be different if someone else had answered” (Alexander, ¹⁹). He clarifies that he, himself, has never experienced the eco/socioducts as unsafe but that there are many factors that come into play.

Nancy explains that she uses the eco/socioducts in the evening as well, but that Sickla and the nature reserve in Nacka becomes very dark in the evening;

“When you have crossed the eco/socioduct, it becomes a forest or more of a natural environment very quickly [...] But on the passage itself, I definitely feel safe, even in the evening. Others would see me, even from afar if something were about to happen [...] If it had been an ordinary bridge, yes, a little bit more secure than a tunnel, but it would have felt more... not so nice to go there simply” (Nancy, ²⁰).

Similarly, Nina contrasts the eco/socioducts with alternative solutions such as tunnel or bridge and believes a tunnel does not provide the same sense of security;

“Tunnels are scary I think. Tunnels are a bit more secret and there are more hiding places. If I walk in a tunnel, it depends on what the entrance and the exit looks like, then I would think, what is on the other side of the tunnel when I exit. If I walk over an eco/socioduct I can overlook and there are more directions to move if something were about to happen” (Nina, ²¹).

Alyssa discusses alternative constructions in relation to its function and symbolism rather than security and safety and believes that an eco/socioduct creates a coherent environment to a greater extent;

“I think the feeling that the two places are connected would be weaker. A bridge symbolizes so much, that you are now going from one place to another. With an eco/socioduct it becomes more, that it just keeps going. So it feels like it is still part of Hammarby Sjöstad. But if it had been a bridge, then it would have felt more like I am now going over to the other side” (Alyssa, ²²).

Several respondents have children or grandchildren themselves and mention that they do not feel concerned about letting them use the eco/socioducts alone without adult companionship. Erica who has grandchildren, explains that the security she feels towards her grandchildren using the passages is largely due to the high edges of the eco/socioducts;

“It is totally okay for them to go there, they have asked their parents if it is okay to bike to Sicklasjön, and we have never felt worried. Because it is completely protected, there is a cycle lane that goes all the way. It feels very safe because there are no railings, as in normal cases there are bridge railings and children always find things to do at railings because it is exciting. But at the eco/socioducts there is so much vegetation so it does not invite at all” (Erica, ²³).

She adds, that if there had been no vegetation on the sides and possible to reach the rails, the passages would have been perceived as unsafe to a greater extent but that it now feels like wandering through a small park. Nina mentions that her children, for the time being are too

young to go that far from home, but that she does not see any problems regarding them using the socioducts at an older age;

“They are eight and five, so we have said that they cannot do it yet, but it is about being far from home. It is not a question about the design of the passages. I would have greater doubts if there was a bridge over Södra länken [...] when my oldest turn ten, if he would go there with his friends and start doing things, start pushing each other and fool around, then I would be worried even though I know I do not really have to. But with the eco/socioducts, they are wide, have protected railings and green areas, so that would be perfectly okay” (Nina, ²⁴).

Brit herself has grandchildren too small to be outside without adults, but she explains that there is a preschool close to the eastern eco/socioduct and that they often use it to get to Hammarby Sjöstad which she does not see as a problem but evaluates as safe and secure.

4:2:3 Accessibility

The western eco/socioduct follows the topography and thus has no marked height difference, however the eastern is slightly elevated and has a staircase and longer ramp facing Hammarby Sjöstad and a small slope on the other side. The passages are perceived by most of the respondents as accessible. Accessibility is discussed by the respondents partly in a physical sense as the ease of access, that there are no obstacles on the road and partly in terms of distance. Some respondents relate accessibility to being able to get around independently, without the help of anyone else;

“Accessibility, that I can move freely, with the help of my body and my muscles without being dependent on anything or anyone else, I do not depend on a bicycle, no car, bus or public transport, tram or train. And then I think it should be accessible to people with different conditions. If you think of Hammarbybacken, it is accessible to everyone with good physics, but it is definitely not accessible to a person in a wheelchair” (Nina, ²⁵).

“Accessibility means to me that it is possible to move freely. If I am in a wheelchair and there are stairs, then It is not an accessible environment, because then I am in need of help. But if I can get around independently, I value it as accessibility” (Brit, ²⁶).

Alyssa discusses accessibility based on two aspects; accessibility in its physical form, in terms of adaptations for disabilities or for example being able to use a stroller but also accessibility in terms of inviting and attractive environments. She believes that if an environment is inviting and appealing, it is also experienced as more accessible.

Most respondents refer to the eastern eco/socioduct in the conversation about accessibility where almost everyone emphasizes that they perceive it as accessible. Alexander who uses the eastern passage on a daily basis, explains that it is widely used and that he often meets elderly people with walkers and parents with strollers. He believes that the small differences in level makes it easy for everyone regardless of means of travel. He also emphasizes how the construction in an accessible way enables the use of the nature reserve in Nacka.

Accessibility in terms of proximity to nature is also mentioned by Nancy;

“Yes definitely, I think partly that it makes the forest accessible to us. It feels like when you get to the edge of Sjöstaden, where the road goes, you are in nature, that is how it feels. It does not feel like I am crossing a busy road [...] It feels like it is connected and then you have the stairs, you can also ride a bike, drive a stroller easily” (Nancy, ²⁷).

Johan himself has used the eastern eco/socioduct both with and without a stroller, to a great extent. He underlines that it is very convenient considering the ramp that runs towards Hammarby Sjöstad.



Figure 6. Photo collage of the eastern eco/socioduct where picture 1 is taken standing on the passage, picture 2 and 3 shows the ramp and the staircase that runs towards Hammarby Sjöstad and picture 4 shows the entrance on the side of Sickla (Photographer: Lisa Ekberg)..

The passages are strategically placed according to Olivia, that you can easily get to Sickla without a car. However, she believes that additional benches would have made it easier for the elderly people as the ramp in connection to the eastern eco/socioduct is relatively steep. A similar estimate is highlighted in the interview with Nina, she also points out that the road to Sickla turns into dirt road quickly which may create difficulties for some;

“If you think of a person using a wheelchair, then the eco/socioducts are difficult to access because one end has paved land and the end towards the nature reserve does not. I think that is a difficulty. Then there is a hill which can be difficult. [...] For a person with vision impairment, I also think they are difficult, especially where the forest takes off, where the curb suddenly ends and turns into a dirt road. Then it is not accessible. [...] When I think of elderly who have difficulty walking and moving, I think it is going well. [...] And then I think it is much nicer to go there” (Nina, ²⁸).

Joanna explains that she often uses the passages and has walked there a lot with a stroller. However she believes that the eastern eco/socioduct with its inviting environment and exclusion of cars feels accessible to a greater extent. She mentions that in comparison, it gets rather messy on the western eco/socioducts as cars, pedestrians and cyclists are close.

Erica believes that the eastern eco/socioduct is well planned with both stairs and a ramp on the side towards Hammarby Sjöstad which makes it accessible to everyone, whether you are on a bicycle or walking with/without a stroller.

4:2:4 Improvements and respondents' thoughts about the design as a solution to reduce segregation between different groups of users

Despite the respondents' overall positive attitudes towards the eco/socioducts in Hammarby Sjöstad, there is room for improvements according to some of the interviewees. Some of them mention that they wish the passages to be wider, with the main purpose of giving pedestrians more space;

“I think it would be great if you had much bigger and wider eco/socioducts, with wider walking paths to connect areas and integrate even more [...] Yes, more space for pedestrians. At one of the eco/socioducts there is car traffic, there is a parking lot below Hammarbybacken and transport to the treatment plant located there. [...] On that bridge, pedestrians have a regular pavement [...] but it is small. The other one has a width of a bicycle lane, and there are no cars which I think is very good. But I think it would be great if it was twice as wide at least” (Nina, ²⁹).

As cyclists and pedestrians are not separated, it sometimes becomes messy according to Hannah. She also thinks the eco/socioducts should be wider and that the paths for cyclists and pedestrians should be separated. She underlines that a lot of cyclists pass at high speed, and there are many children in the area. According to her, the eastern passage is to be preferred due to its exclusion of cars. However several respondents see no need for improvement and believe that the eco/socioducts are well planned out and connect the areas in a natural way.

As socioducts are mentioned in several comprehensive- and detailed development plans as a solution to reduce segregation, respondents answered a hypothetical question whether the constructions in Hammarby Sjöstad in that sense, also could be effective in other places. Nina has noted how railways and highways tend to separate areas in Stockholm and believes that it is important to bridge these, which also is emphasized by Nancy. Nancy explains that socioducts could possibly work as an effective solution in reducing segregation due to its appealing environment.

Some respondents emphasize that there are several aspects that matters and that segregation must be fought from different directions. Albin mentions that a socioduct could counteract perceived segregation as two areas separated by a road or railway could be experienced as one uniform area. Alyssa also believes that socioducts could be a good solution; “[...] in those areas where there is a big road dividing two areas and there are differences on the two sides, I think it would be great with socioducts” (Alyssa, ³⁰). She believes that pedestrians are not prioritized enough, but is hoping for a change.

5. Discussion

Socioducts can be understood in relation to the growing focus on social sustainability and soft values in urban planning. Its construction could theoretically, in terms of e.g. accessibility, be replaced by a tunnel or bridge, which probably would be less expensive. However, as the social dimension has been devoted greater focus in urban planning and subsequent effects, such as secondary severance from tunnels and bridges have been noticed, new solutions have emerged (Anciaes et al. 2016). With the adopted definition of socioducts in this study as constructions to reduce barriers, increase accessibility, create social cohesion and inviting and green environments, it can be related to urban social sustainability with regard to several factors and definitions. Shirazi & Keivani (2019) highlights a multidimensional definition of urban social sustainability including hard/soft values, objective/subjective and physical/non-physical factors. This can be linked to socioducts by its objective, hard values and physical factors in increasing accessibility, while its purpose to create social cohesion and inviting environments can be linked to soft, subjective and non-physical factors. In addition, the mention of socioducts in reports, comprehensive- and detailed development plans can also be related to Lariman & Sadeghi's (2019) interpretation of urban social sustainability with attributes such as social cohesion and social equity. Urban social sustainability is interpreted by several authors from a holistic perspective, *see chapter 2:3* where the city as a unit is analyzed. Assessing whether a single construct is socially sustainable can be argued as complex as socioducts, which is also indicated by the users of the eco/socioducts in Hammarby Sjöstad, are minor components of a much larger network. However, by interpreting socioducts in relation to urban social sustainability, one can read how its construction is attributed to several characteristics that are emphasized as socially sustainable.

What makes an environment inviting and attractive can be argued to be highly subjective. Studying the eco/socioducts in Hammarby Sjöstad from a humanistic approach can thus be considered essential. With arguments based in the humanist approach, an opposite planning process where planners develop concepts and ideas about what is inviting, inclusive and safe without studying the perspective of the users, would risk creating an insider/outsider situation (Åquist, 1994). By analyzing such a construction with a humanistic approach where users discuss attributes related to urban social sustainability including accessibility, sense of place, social cohesion, safety and security, valuable information emerges that can support a planning process towards socially sustainable solutions to counteract barriers. In addition,

conducting a dialogue with the city's residents in urban planning can be argued to be relevant in order to understand how secondary severance is created. Understanding the urban space based on what the inhabitants and in this case, the users of the eco/socioducts in Hammarby Sjöstad, believe creates a sense of security/safety and what makes an environment inviting can be considered essential for secondary severance not to arise in future constructions of socioducts.

By interpreting the responses of users related to aspects of urban social sustainability, an assumption is developed as to whether socioducts can be argued to be socially sustainable. Sense of place, which is central to humanistic geography, new urbanism as well as urban social sustainability can be considered difficult to access because of its subjective nature. In the study, the concept is related to how users feel about, and relate to the eco/socioducts. Since the eco/socioducts are a place where people pass by, users' sense of place can be argued to be affected if contrasted with a place where you stop, interact with people and thus can be identity-creating. However, statements about the eco/socioducts such as "great", "good solution", "elegant", "beautiful", "nice to use" indicates that the passages are perceived as inviting and can be interpreted as user's sense of place. The vegetation and the width, are mentioned as two important aspects in the matter of whether eco/socioducts are being perceived as inviting and appealing. A result confirming the theory of secondary severance and traditional crossing facilities as unsafe, emerges when the eco/socioducts are contrasted with alternative solutions. People asked in the interviews, explained how a bridge or tunnel would have affected sense of security and that the area on the other side of Södra länken would have been perceived as further afield. This is also reinforced by statements saying that the passages create proximity to nature and link the areas effectively. Whether the eco/socioducts in that sense have given rise to social cohesion is difficult to ascertain as there are few residences around Nacka nature reserve and in Sickla, if contrasted with two residential areas that had been linked. However, statements about how the eco/socioducts create an extension of each side and thus link the areas, gives an indication that cohesion and connectivity has been created. It could also be argued to influence the respondents' sense of place towards the other side, as a coherent area could be perceived as more uniform and thus as part of one's personal sphere.

Jane Jacobs' criticism of the built form regarding vehicular traffic that dominates and separates areas (Jacobs & Hjukström, 2005), can be seen as an important starting point in the search for bridging solutions, in which the socioduct can be interpreted as a product of. The socioduct as concept can also be interpreted in the light of the new urbanist ideal of creating social cohesion and reducing urban sprawl, since the purpose of socioducts as mentioned in the comprehensive- and detailed development plans, is to combine areas and create social connectivity. The new urbanist ideal of creating walkable neighbourhoods (Kelbaugh, 1997; Kim & Larsen, 2017), can be related to urban social sustainability and the need to increase accessibility for pedestrians and cyclists as highlighted from a planning perspective. Interpreted from the responses of users, such focus would also create a safe urban environment as several mention the absence of cars as a feeling of safety and security. Such statements indicate that the eastern eco/socioduct is perceived as safer due to its exclusion of cars, this becomes particularly evident in the conversations with the users that are parents or grandparents. Regarding safety and security, users also mentioned lighting and the presence of others as important factors, which furthermore is emphasized in previous research (Ujang, 2012; Ranum et al., 2018; Grisóla et al. 2015). In the interviews with the users, the eco/socioducts are contrasted to tunnels and bridges, where it is emphasized that the passages in Hammarby Sjöstad in comparison are perceived as safer which is partly related to a better overview. Given the statements, a strategic placement of future constructions can be argued as important for users to feel safe. If the crossing facility is placed where there is a natural flow of pedestrians and cyclists, the place will be, with reference to the users' statements, perceived as safe and secure. However, the need to create focal points on each side of the barrier to avoid constructions remaining unused is highlighted in both previous research, from a planning perspective and in the conversations with users. In order for a natural flow of people to occur and in turn create safe environments, there should be reasons to move beyond the barrier, otherwise bridging structures can be argued to risk causing secondary severance.

In the comparison with alternative crossing facilities, the eco/socioducts are highlighted as an advantageous solution. Such a comparison is difficult to draw conclusions from as the eco/socioducts have not replaced a bridge or tunnel, the statements are thus only related to past experiences from other places which in turn constitute unique compositions. However, with affiliations to previous research, these statements can be seen as an important result, as previous research also highlights how bridges and tunnels rarely reduces barriers completely and that in many places these structures have remained empty and unused (Roberto & Hwang

2015; Ranum et al., 2018; Anciaes et al. 2016). Reading the users' responses, the eco/socioducts in Hammarby Sjöstad could be interpreted to be a safe environment, partly with its high edges, which some cite as an important factor for children not being able to access the rails, but also thanks to its width, lightning and openness that allows users to overlook the surrounding environment.

Interpreting the responses from users, the eco/socioducts are also perceived as accessible. However the areas in connection are highlighted as inaccessible due to its surface. Despite the variation in age, all respondents are physically active which may have affected the responses. However, through observations and pronouncements of users, the presence of elderly, people with special needs and parents with strollers can be argued to testify that the eco/socioducts are accessible in a physical sense. The statements are partly based on the users own experiences, as several of them have been using the eco/socioducts with a stroller. The ramp towards Hammarby Sjöstad is highlighted as an important factor in creating accessibility. The eco/socioducts can also be interpreted to generate accessibility in a larger sense related to what Jane Jacobs and the new urbanist ideal refer to as accessibility for pedestrians. With arguments in the theoretical background, pedestrian accessibility creates active and interactive streets, which in turn generate a sense of safety (Jacobs & Hjukström, 2005; Fleming, 1998). As the eco/socioducts are emphasized as accessible to pedestrians, they can in that sense be explained to enhance a sense of security. This coincides with the need highlighted from a planning perspective where socioducts aim to increase accessibility for people without a car and vulnerable groups. The need for socioducts in creating accessibility for vulnerable groups, emphasized from a planning perspective, is also evident in previous research about transportation planning and secondary severance (Boschmann & Kwan, 2008; Anciaes et al., 2016). In addition accessibility for vulnerable groups is formulated in the global sustainable development goals (United Nations, n.d). The sampling limits the possibility of drawing conclusions about whether socioducts are effective in that sense. However, the result based on a majority of women can support such an argument. The users who have children also declare that they feel secure with the fact that their children are using the passages without the company of adults which can be seen as an interesting observation.

The social dimension of urban sustainability has recently been given more focus as explained in the literature review. This is also confirmed in the study as the constructions in Hammarby Sjöstad were planned based on their ecological values, but which subsequently have been reinterpreted to involve social aspects as well. An important contribution of the study is the increasing knowledge about whether socioducts can meet the need identified in previous research and by planners to counter barriers in order to create social sustainability. As highlighted in previous investigations, combined crossing facilities that provide an environment for both animals and humans have proven to be less effective as the presence of humans tends to scare wildlife (Trafikverket, 2011; Ekologigruppen AB, 2017). At the same time, a combined use can be argued to risk undermining the social aspects as these are not prioritized to the same extent. The measures proposed to prevent wildlife from being intimidated at combined facilities, for example by reducing the lighting and positioning pedestrians along the side, may affect people's sense of security as these aspects are identified by the users as an important feature in enhancing security. Such a design also indicates that the ecological values take over and are prioritized. This indicates that there is reason to separate ecoducts and socioducts in order to optimize each of its efficiency. With this mentioned, green elements are not unimportant as it is explained by the users as a component to create attractive and safe environments. Vegetation and access to recreation are also explained as part of urban social sustainability which could justify a green design (Dempsey et al., 2011). However, it can be argued that the vision of ecoducts in creating transitions for wildlife and fauna, which requires an environment with low illumination and absence of people, contradicts the vision of socioducts in creating safe and attractive environments for people. Separating the ecoduct and socioduct can thus be argued to be an essential step in order to achieve successful results for both types of passages. If socioducts are to succeed in meeting the visions set out in reports, comprehensive- and detailed development plans, the social dimension with arguments in this paragraph should be given priority.

To summarize, the eco/socioducts in Hammarby Sjöstad can be related to urban social sustainability with regard to several factors. Altogether, the responses of the users can be interpreted to emphasize a sense of security and safety towards the passages with a certain emphasis that the lighting could be improved. Statements that the passages function as an extension of each side and link the areas well indicate that the construction can serve as a solution for creating social cohesion and connectivity. At the same time, the importance of planning from a holistic perspective is highlighted so that adjacent areas do not remain

unsafe, which can be argued to be important for the construction not to give rise to secondary severance. Planning the surrounding environment can thus be seen as a necessity for the construction not to remain unused, as it is a component of a larger network. The green features and the width are explained as important components in creating inviting environments. An important result that is emphasized from a planning perspective and coincides with the perceptions of users is the importance of creating safe and accessible environments for pedestrians, in which the socioduct could play an important function. Statements about the effectiveness of socioducts in reducing segregation should only be seen as speculations as there is insufficient evidence to draw conclusions. But the design and purpose of the construction suggests that socioducts could create more coherent areas, both physically and socially.

6. Conclusions

The study examines how socioducts can contribute to urban social sustainability. This has been done by investigating the motives for socioducts identified from a planning perspective and by examining what values of urban social sustainability users identify in socioducts. The study shows that socioducts can be related to urban social sustainability with regard to several factors. Socioducts are explained to increase accessibility, create green, inviting environments and social cohesion, which can be related to several definitions and interpretations of social sustainability in urban environments. From a planning perspective there is a need to create safe accessibility, specifically for vulnerable groups where elderly people, women, children, people with disabilities and those who do not own a car should be given focus. This is indicated in the study as the eco/socioducts, with observations and statements from users can be considered safe and accessible to people regardless of physical ability. Empirically, from the perspective of users, it can be concluded that the socioduct conforms to what is defined as a socially sustainable environment. Its design is perceived by the users as safe, accessible and appealing which correlates with the theoretical reasoning of urban social sustainability. The indication that the socioduct is empirically socially sustainable is an important contribution and conclusion in the study.

Previous research indicates that the social dimension of sustainable development has not been prioritized to the same extent as the ecological and economical dimensions. This becomes evident in the recommendations for the design of combined crossing facilities as the social dimension is neglected to give room for ecological values. At the same time, there is an existing need to bridge physical barriers in order to create social cohesion and safe environments, which makes the social dimensions valuable. Thus, adding knowledge about socioducts would be an important contribution for separating the socioduct from ecoducts and for the concept to emerge as a separate subject. Such a conclusion can be seen as a contribution to urban planning, but also for the continued knowledge building of socioducts.

In order for secondary severance not to occur, safety-creating measures can be explained as essential. In the study, several important aspects emerge both theoretically and empirically about what constitutes a safe environment, where lighting, width and presence of others are emphasized. Including the surrounding environment in the planning and seeing the socioduct as a component of a larger network can be considered fundamental for the design to be

perceived as safe and accessible by its users. This leads to the final conclusion of the study which can be summarized, that the placement and design are basic for secondary severance not to occur. The construction itself could be perceived as safe, but if it is not strategically placed where there is a natural flow of people or where community service or focal points are located on either side of the barrier, the bridging structure is at risk of remaining empty and unused. Allowing the social aspects to determine the location can thus be seen as essential to success with its set vision.

The main contribution of the study is the knowledge that has emerged about what distinguishes socioducts from other crossing facilities in order to give the socioduct independence. The study can be seen as a basis for conducting systematic and quantitative studies in future research, where for example measurements of safety and accessibility could be carried out. In addition, quantitative methods in the form of questionnaires would assist with the possibility of obtaining a larger sampling. To expand the knowledge of socioducts there is a need for further studies on a case that is more limited in time as a case studied before and after construction would give a clear indication of the effects. Such an approach was difficult in this study, due to the fact that the eco/socioducts in Hammarby Sjöstad were completed in 2000. This made it difficult for residents to answer questions about before and after the construction of the passages. For future studies it would also have been interesting to conduct a comparative study focusing on safety and gender. In the conversation about safety and security, all men mentioned that they rarely feel insecure, while most women had answers to what constitutes an unsafe environment. Since the sampling is uneven in that sense, no conclusions can be drawn as to whether the experiences differ between men and women, but it could be a subject for future research.

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Appendix 1

Intervjuguide, respondentintervjuer

English version, see appendix 2

Informera/fråga

- Frivilligt deltagande
- Anonymitet
- Inspelning

Informera om studien, vad den handlar om, varför jag gör den och varför personens deltagande är viktigt. Förklara hur jag relaterar sociodukter till urban social hållbarhet och hur frågorna avspeglar olika teman inom social hållbarhet.

Sense of place/neighbourhood satisfaction:

- Vad är din känsla inför Hammarby Sjöstad?
- Upplever du Södra Länken som en barriär? Om ja: På vilket sätt? Om nej: gå vidare till nästa fråga.
- Vad är din inställning gentemot eko/sociodukterna som går över Södra länken?
- Anser du att en bro/tunnel skulle kunna fylla samma funktion?

Trygghet (safety and security):

- Hur skulle du beskriva en trygg stadsmiljö?
- Anser du att eko/sociodukterna i Hammarby Sjöstad motsvarar en sådan miljö?
- Hur skulle du känna dig i användandet av eko/sociodukterna kvällstid?
- Om du är förälder/mor-farförälder, hur skulle du känna inför att ditt barn/barnbarn använde eko/sociodukterna utan vuxet sällskap?

Tillgänglighet (social equity):

- Vad innebär tillgänglighet för dig?
- På vilket sätt upplever du att eko/sociodukterna är tillgängliga/otillgängliga för fotgängare? Personer med hjälpmedel/äldre? Cyklister?

Övriga frågor:

- På vilket sätt tror du att stadsmiljöer kan uppmuntra till interaktion?
- Deltar du i någon aktivitet som är lokaliserad på andra sidan om Södra Länken? Om ja: tar du dig till denna aktivitet via eko/sociodukterna? Om nej: nästa fråga
- Upplever du att någonting skulle kunna förbättras med eko/sociodukterna?

Hypotetiska frågor:

I flertalet översiktsplaner och detaljplaner anges att sociodukter ska skapa en sammanhängande stadsmiljö där sociala aspekter av barriäreffekter samt segregation minskar.

- På vilket sätt tror du att sociodukter skulle kunna minska segregation jämfört med en tunnel eller bro?

Är det någonting du önskar tillägga?

Appendix 2

Interview guide, respondent interviews

Inform/ask

- Voluntary participation
- Anonymity
- Recording

Explain the study, what it is about and why the contribution of participants is important. Explain how I relate the socioducts to urban social sustainability and how questions posed reflect different themes within urban social sustainability.

Sense of place/neighbourhood satisfaction:

- How do you feel about Hammarby Sjöstad?
- Do you perceive Södra Länken as a barrier? If yes: In what way? If no: move on to the next question.
- How do you perceive the eco/socioducts crossing Södra länken?
- Do you believe a bridge or tunnel could constitute the same function?

Safety and security:

- How would you describe a safe urban environment?
- Do you believe the eco/socioducts in Hammarby Sjöstad correspond to such an environment?
- How would you feel about using the eco/socioducts in the evening?
- If you are parent/grandparent, how would you feel about your child/grandchild using the eco/socioducts without adult companionship?

Social equity:

- What does accessibility mean to you?
- In what way do you perceive the eco/socioducts as accessible/inaccessible to pedestrians? People with special needs/elderly? Cyclists?

Other questions:

- In what way do you believe urban environments can encourage interaction?
- Do you participate in any activity located on the other side of Södra länken? If yes: are you travelling to this activity via the eco/socioducts? In no: move on to the next question.
- Do you feel that something could be improved with the eco/socioducts?

Hypothetical question:

Many comprehensive- and detailed development plans state that socioducts could create a coherent urban environment where social aspects of barrier effects and segregation decrease.

- In what way do you believe socioducts could reduce segregation compared to a tunnel or bridge?

Is there anything you would like to add?

Appendix 3

1. “För vi ser just att barn, äldre, kvinnor, personer med funktionsnedsättning eller personer som inte har möjlighet att äga en bil [...] Det är dom grupperna som en sociodukt skulle fylla en viktig funktion för. Dom grupperna som har ett extra behov av korta avstånd, lätt tillgänglighet till cykel och gång som färdstätt eller kunna ta sig med rullstol i kombination med att det är tryggt och tilltalande” (Örberg, L)
2. “Och faktiskt när man, jag upplever ändå att när man är på dom där övergångarna, så försvinner faktiskt vägen. Man fattar inte att det är en flerfilig motorväg, eller mer eller mindre motortrafikled som man tar sig över. Så bredden och utformningen med gröna inslag har någon poäng” (Olsson Thompson, M)
3. “Ja det är en barriär, det är en jättekraftig barriär. Men dom här eko/sociodukterna, dom är superviktiga, för tillgängligheten och för att komma ut i naturen” (Nina)
4. “Nej det gör jag verkligen inte. Jag tänker inte på Södra länken överhuvudtaget ska jag säga. Vi bor väldigt nära den här passagen, den som inte har en bilväg och jag reflekterar typ inte vad som händer där under passagen [...] Förmodligen just därför att det är natur, det känns ju mer som att jag går över den här lilla kullen eller vad man ska säga. Det är så det känns för mig. Jag går över en kulle” (Nancy)
5. “Jag har ju min dotter och min dotters familj på andra sidan mot Björkhagen och det är såklart att det är en barriär [...] Men jag tycker ändå att man har gjort det bästa man har kunnat egentligen, det tycker jag nog [...] Det känns ju väldigt naturligt, det blir på ett väldigt enkelt sätt att ta sig över till Nackareservatet och Hammarbybacken” (Alexander)
6. “Nej tvärtom. [...] Eko/sociodukterna binder ihop skogen, naturen och Nacka med oss i Sjöstaden [...] Eko/sociodukterna gör att man känner att man är på väg ut i naturen med naturen omkring sig. För dom gröna stråken, dom fortsätter helt enkelt över eko/sociodukterna, så det känns inte som att någonting är i vägen. Men känslan när man går där är ju faktiskt att det hänger ihop” (Brit)

7. “Jag tycker jättemycket om dom, jag tycker dom är jättebra. Första gången jag gick över så fattade jag inte ens vad det var, att det var en bro. För man ser ju inte Södra länken. Det är som att man bara fortsätter gå” (Alyssa)
8. “Jag tycker att det är en väldigt bra lösning [...] Vi båda rör oss ju mycket runt Sickla och jag tycker dom kopplar ihop Sjöstaden med områden vid Hammarbybacken på ett naturligt sätt. Om det hade varit en tunnel där istället, så tror jag att man hade tappat det här som jag pratade om tidigare att man har foten lite hela tiden i naturen [...] Jag tycker det är en elegant lösning, absolut. Så jag är positivt inställd till dom som sådana, om man kontrasterar till en tunnel eller så” (Albin)
9. “Jag tycker dom är alldeles perfekta [...] Ja absolut dom knyter ihop. Och det som vi upplever, det är två saker som dom framförallt knyter ihop och det är skogen, promenadvägar och shoppingcentret, det är lätt att ta sig dit [...] Ska man åka bil så tar det längre tid än att gå, för man måste åka runt. Så det går fortare att gå helt enkelt” (Brit)
10. “Det här är ju helt annorlunda. Här flödar solljuset och regnet och snön. Fina små buskar och träd och på våren blommor det så det är väldigt vacker” (Erica)
11. “Väldigt positiv, för dom är ju väldigt vackra och fina att gå över och idag var det väldigt mycket folk som var ute och gick i solljuset, det var hundar, cyklister, rullstolsburna, barn, väldigt blandat. Och nu börjar det ju komma krokus, jag såg en just där på bron, så det är väldigt vackert där. Jag upplever dom som väldigt positivt” (Erica)
12. “Jättepositiv, verkligen. Som jag sa jag tycker det är hög tid [...] Man kan ta med sig barn på trehjuling du vet, alla, ja alla åldrar. Jag kan inte se någon nackdel alls. För om alternativet är ingen eco/sociodukt eller en tunnel, då finns det ju ingenting att välja mellan” (Olivia)
13. “Absolut, absolut, det måste vara bra belysning, för det är ju också en faktor i det hela. Att det är bra upplyst, att man inte känner att det är osäkert, både utifrån

isfläckar på vintern när det är mörkt, men också, är det upplyst så känner man sig tryggare mot andra individer” (Brit)

14. “[...] för det gör ju att fler människor går där och trygghet för mig är att vi alltid är fler” (Olivia)
15. “Jag tänker på belysning när jag tänker på trygghet och att det är öppet, att man kan se [...] och att andra kan se mig. Ja det är väl vad jag tänker på i första hand” (Nancy)
16. “I en trygg stadsmiljö tycker jag att det finns många gångvägar så att många människor kan gå och vandra utan att bli störda av trafiken och också belysning för att man inte skall känna sig orolig på kvällen [...] Sen tycker jag att gångtrafikanterna och cykeltrafiken ska vara separerat. För idag, dom som cyklar är ganska hänsynslösa och barn och hundar har ju en benägenhet att springa lite hit och dit [...] Ju friare man kan röra sig, desto tryggare känner man sig. När man rör sig i en stadsmiljö och man måste akta sig, då blir man ju mer otrygg” (Erica)
17. “Eko/sociodukterna i sig är jättefina. Det är inget problem, dom är ljusa och öppna. Men dom här produkterna vid sidan om, dom är inte genomtänkta” (Joanna)
18. “Bredden och grönskan gör att det känns tryggare. Skulle jag få önska, så skulle jag ha ännu mer växtlighet så att ljudet från bilarna försvann, växtligheten absorberar ju ljud jättemycket” (Brit)
19. “Jag kan tänka mig att det är annorlunda för en kvinna, en yngre kvinna. Jag är inte särskilt otrygg av mig. Jag känner mig trygg vart jag än är, verkligen. Men det hade kanske varit annorlunda om det var någon annan som svarade” (Alexander)
20. “När man har korsat eco/sociodukten så blir det ju mer skogsmiljö väldigt snabbt [...] Men på själva bron i sig så känner jag mig definitivt trygg, även under kvällstid. Andra skulle se mig om någonting höll på att hända [...] Om det hade varit en vanlig bro, ja lite mer tryggt men det hade känts mer, ja men inte så trevligt att gå där helt enkelt” (Nancy)

21. “Tunnlar är ju läskigt tycker jag. Tunnlar är lite mer hemliga och det är ju lite mer sådär gömställe-aktigt. Om jag går i en tunnel, det beror ju lite på hur öppningen eller ingången ser ut, då skulle jag tänka, att vad finns på andra sidan tunneln när jag kommer ut. Om jag går över en eko/sociodukt då kan jag ju se vad som finns och det finns fler riktningar att röra sig i om någonting skulle hända” (Nina)
22. “Jag kan tänka mig att känslan av att dom två platserna hänger ihop skulle vara svagare. En bro symboliserar ju så mycket, att du nu går från ett ställe till ett annat. Som eko/sociodukt blir det mer att det bara fortsätter. Så det känns som att det fortfarande är en del av Hammarby sjöstad. Men om det hade varit en bro, då hade det känts som att nu går jag över till andra sidan” (Alyssa)
23. “Det är helt okej, dom har ju gjort det. Dom har frågat föräldrarna om det är okej att dom får cykla till Sicklasjön och vi har aldrig upplevt oss oroliga då. För det är helt skyddat, det är en cykelväg som går hela vägen. Den känns ju väldigt säker för det är ju inga broräcken, i vanliga fall så finns det ju broräcken och då kan ju barn alltid hitta på att dom ska göra saker vid broräcket för att det är spännande. Men på dom här eko/sociodukterna är det ju så mycket växtlighet så det inbjuder inte alls till det” (Erica)
24. “Dom är ju åtta och fem, så det har vi sagt att dom inte får än så länge. Men det handlar ju om att det ät långt från hemmet. Det handlar inte om att den är utformad på det sätt den är utformad. Jag skulle känna större tveksamheter till om det hade varit en gångbro över Södra länken [...] när min äldsta blir tio, om han skulle gå där med sina kompisar och så hittar dom på massa saker, börjar knuffas och skuffas, då skulle jag vara orolig även fast jag vet att jag inte behöver vara orolig. Men vid eko/sociodukterna, den är större, bredare och sen har den ju skyddade kanter och gröna partier. Så därför tycker jag att det är helt okej” (Nina)
25. “Tillgänglighet, att jag kan röra mig fritt, med hjälp av min kropp och mina muskler utan att jag är beroende av någonting annat eller utan beroende av någon annan. Jag är inte beroende av en cykel, jag är inte beroende av min bil, jag är inte beroende av en buss eller kommunala färdmedel, spårvagn eller tåg. Och sen tänker jag att det ska vara tillgängligt för människor med olika förutsättningar. Om jag tänker på

Hammarbybacken, den är ju tillgänglig för alla med god fysik, men den är ju absolut inte tillgänglig för en rullstolsburen person” (Nina)

26. “Tillgänglighet innebär ju för mig att jag obehindrat ska kunna röra mig. Sitter jag i en rullstol och det är trappor i vägen, då blir jag hindrad. Då har jag inte tillgänglighet, för då krävs det att jag får hjälp helt enkelt. Men kan jag transportera mig själv så värderar jag det som tillgängligt” (Brit)
27. “Ja men definitivt, jag tänker dels så gör det ju skogen tillgänglig för oss. Det känns som att så fort man kommer till kanten på Sjöstaden, där vägen går så kommer man ut i naturen liksom, det är så det känns. Det känns ju inte som att nu går jag över den här trafikerad bilvägen [...] det känns som att det är ihopkopplat, och sen har dom ju byggt så att man har trappor, man kan cykla man kan köra barnvagn” (Nancy)
28. “Om man tänker på en person som sitter i rullstol så är dom ju svårtillgängliga för att ena änden har asfalterad väg och andra änden mot reservatet har det inte. Det tänker jag är en svårighet. Sen är det ju en backe som kan vara jobbig [...] för en person med synnedsättning så tror jag också att dom är svåra, framförallt där skogen tar vid, där trottoaren plötsligt tar slut och övergår till grusväg. Då är den ju inte tillgänglig [...] när jag tänker på äldre som har svårt att gå och röra sig. Det tror jag går bra [...] Och sen tror jag, det är ju trevligare att gå där” (Nina)
29. “Jag skulle tycka att det vore fantastiskt om man skulle ha mycket större och bredare eko/sociodukter med bredare gångstråk som verkligen band samman [...] Ja mer plats för gångtrafikanter. På den ena eko/sociodukten så är det ju biltrafik, det är ju en parkeringsplats nedanför Hammarbybacken och transporter till reningsverket som ligger där [...] där har ju fotgängare en vanlig trottoarkantsbredd [...] men den är liten. Den andra har en bredd som en cykelbana och det är inga bilar vilket jag tycker är väldigt bra. Men jag tycker att den skulle vara, låt säga, dubbelt så bred åtminstone” (Nina)
30. “[...] i sådana områden där det är en stor väg som delar två områden och det finns skillnader på dom två sidorna. Där tror jag att det skulle vara jättebra med sociodukter” (Alyssa)