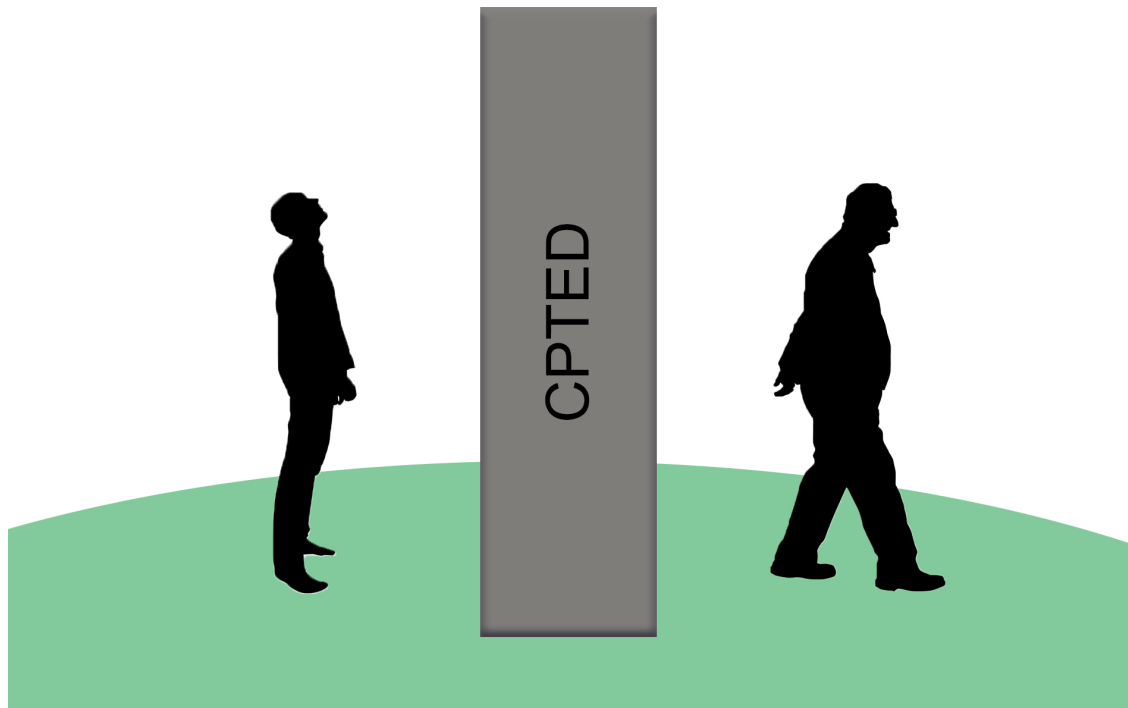




CHALMERS
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Increasing security in a vulnerable area of Gothenburg

A case study of improving the perceived and actual security in public spaces, using CPTED in south-east Tynnered

Master's thesis in Product Development

Johan Lindqvist
Adam Åkesson

DEPARTMENT OF TECHNOLOGY MANAGEMENT AND ECONOMICS

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JOHAN LINDQVIST & ADAM ÅKESSON

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Cover: Illustration of CPTED preventing a potential offender from carrying out a criminal act.

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Abstract

As Tynnered recently was classified as a particularly vulnerable area, measures to improve the actual and perceived security has to be taken. This thesis is based on the condition that the design of the physical environments could discourage or obstruct crimes from happening in public spaces.

This project was carried out together with *Stadsbyggnadskontoret* at *Göteborgs Stad* and focused on the south-east parts of Tynnered. Interviews were conducted, crime statistics were collected and field studies were made in the area. Based on the data collected, the three streets of *Briljantgatan*, *Smaragdgatan* and *Smycketorget* were considered to be the most problematic within south-east Tynnered. Since some areas are about to be re-built, this had to be taken into account when deciding which area to focus at. After being supplied with the planned work for Tynnered by *Stadsbyggnadskontoret*, *Smaragdgatan* and *Smycketorget* were disregarded. Initiatives had also been planned at *Briljantgatan*, but only in the western parts. Therefore, a decision was made to focus on the eastern parts of *Briljantgatan*, also referred to as *Röda Briljantgatan*.

In order to evaluate the problematic spots that were discovered from the data collection, CPTED (Crime prevention through environmental design) was used as a evaluative tool. The problematic locations were evaluated using the six parameters included in the CPTED theory (*Territorial control, target hardening, natural surveillance, image and milieu, access control and activity support*). From this it became apparent that the area between *Briljantgatan tram stop* and *Röda Briljantgatan* together with the area between *Röda Briljantgatan* and *Topasgatan*, were in dire need of crime preventing interventions.

As the decision had been made to focus on these two locations, further CPTED evaluations were performed in order to be able to address the problematic aspects. A literature review was performed to find already successfully implemented interventions. Based on these findings, suggestions were formulated regarding how these two areas environments could be improved, in terms of crime prevention and perceived security. Both areas were in desperate need of more eyes on the streets and had a problem with an absence of people being present in public spaces. Some suggestions were made to activate the areas in different ways, by for example installing a dog enclosure and improving an already existing outdoor gym. By addressing the problematic aspects that were found during the CPTED evaluation, the suggested interventions could improve both perceived and actual security for the local citizens.

Keywords: Crime prevention, CPTED, Particularly vulnerable area, Sweden

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We would like to thank our supervisor, Karl Fine de Licht, who has contributed with insights and expertise to help this thesis evolve. His knowledge and experience in this field proved to be very useful and helped the authors explore a new area of expertise.

We would also like to thank the local citizens of Tynnered that gave us the opportunity to hear their opinions and perception. Also, a huge thanks to the employees of the local housing companies *Bostadsbolaget*, *Stena fastigheter* and *Familjebostäder*. These interviews provided us with invaluable knowledge that otherwise would have been impossible to acquire.

We would like to give a special thanks to the police, who were very dedicated in helping us with our work. They put aside time at multiple occasions and showed us Tynnered from their point of view. Their contribution was extremely valuable to us.

Johan Lindqvist, Gothenburg, June 2021 Adam Åkesson, Gothenburg, June 2021

Contents

List of Figures	xiii
List of Tables	xv
1 Introduction	1
1.1 Background	1
1.2 Aim	3
1.3 Research questions	3
1.4 Delimitations	3
2 Theoretical framework	5
2.1 Actual security and perceived security	5
2.2 Routine activity theory	6
2.3 CPTED	7
2.3.1 First generation CPTED	8
2.3.2 Second generation CPTED	11
2.3.3 Implementation of CPTED	12
2.3.4 Criticism towards CPTED	14
2.3.5 Response to criticism	15
3 Methods	17
3.1 Case study	17
3.1.1 Data collection methods	17
3.1.1.1 Surveys	18
3.1.1.2 Interviews	19
3.1.1.3 Group interviews	20
3.1.1.4 Observations	21
3.1.2 Motivation of selected methods	22
3.2 Field studies	24
3.3 Initial interviews	24
3.3.1 Interviews with local citizens	25
3.3.2 Group interview with the police	25
3.3.3 Interview with local housing companies	26
3.4 Crime statistics	26
3.5 Evaluation and comparison of initial data	28
3.6 Deliberation with Stadsbyggnadskontoret	28
3.7 Second stage interviews	29

3.7.1	Interview with the police	29
3.7.2	Interview with local housing company	29
3.8	CPTED evaluation	30
3.9	Literature review	30
3.10	Choice of interventions	31
3.11	Creation of visual suggestions	31
4	Results	33
4.1	Initial field studies	33
4.2	Initial interviews	33
4.2.1	Interviews with local citizens	34
4.2.2	Group interview with the police	36
4.2.3	Interview with local housing companies	39
4.3	Crime statistics	40
4.4	Assessment of initial data	42
4.5	Summary initial stages	45
4.6	Continued field studies	45
4.7	Second stage interviews	47
4.7.1	Interview with the police	47
4.7.2	Interview with local housing company	50
4.8	CPTED evaluation	52
4.8.1	The Topas turning point	52
4.8.2	Briljantgatan tram stop	54
4.8.3	The outdoor gym	57
4.8.4	The pink trail	59
4.9	Literature review	61
4.10	Suggested interventions	62
4.10.1	Briljantgatan tram stop	62
4.10.2	The outdoor gym	63
5	Discussion	65
5.1	Results and their implications	65
5.1.1	Briljantgatan tram stop	65
5.1.2	The outdoor gym	69
5.1.3	Disregarded potential solutions	75
5.2	Ethical aspects	76
5.3	Validity	77
5.3.1	Interviews	77
5.3.2	Literature review	78
5.3.3	Alternative Method	78
5.4	Recommendation for future work	79
5.4.1	CPTED	80
5.4.2	Delimitations	80
5.4.3	Crime statistics	81
5.5	Next Step	81
5.5.1	Co-Creation	81
5.5.2	Detail development	82

6 Conclusion	83
Bibliography	85
A Interview with local citizens	I
B Group interview with the police	III
C Initial interview with local housing companies	V
D Second stage interview with local housing company	VII
E Articles found during the literature study	IX

List of Figures

1.1	Tynnered is defined by the red boundary. The areas of focus presented by <i>Stadsbyggnadskontoret</i> is within the blue boundary. @Lantmäteriet, no consent is required	2
2.1	The three aspects of the routine activity theory	6
2.2	An example where a semi-private space has been created, indicated by the bicycles in front of the building	9
2.3	An example where the level of territoriality is low and the inhabitants walks right onto the street	9
2.4	An illustration of the six principles of CPTED	11
3.1	Area where crime statistics were retrieved. @Lantmäteriet, no consent is required	27
4.1	The three most frequently mentioned problematic areas. @Lantmäteriet, no consent is required	35
4.2	Map displaying the ten streets were many crimes have been reported. @Lantmäteriet, no consent is required	42
4.3	A matrix to determine which streets/locations that qualifies to be further investigated	43
4.4	The area referred to as <i>Röda Brilljantgatan</i> and the surrounding areas is marked with a red line. @Lantmäteriet, no consent is required . . .	44
4.5	The process of determining the final focus area	45
4.6	The three identified areas that should be further investigated and evaluated. @Lantmäteriet, no consent is required	46
4.7	Problematic spots within <i>Röda Brilljantgatan</i> according to the police. @Lantmäteriet, no consent is required	48
4.8	The walking path from the <i>Brilljantgatan Tram Stop</i>	49
4.9	The outdoor gym hidden behind a rock and some trees	50
4.10	Locations chosen for CPTED evaluation. @Lantmäteriet, no consent is required	52
4.11	Problematic view related to <i>territorial control</i> at <i>The Topas Turning Point</i>	53
4.12	Problematic view related to <i>image and milieu</i> at <i>The Topas turning point</i>	54
4.13	Problematic view related to <i>territoriality control</i> at the <i>Brilljantgatan tram stop</i>	55

4.14	Problematic view related to <i>natural surveillance</i> at <i>Briljantgatan tram stop</i>	56
4.15	<i>Briljantgatan tram stop</i> at night	56
4.16	Problematic view related to <i>territorial control</i> at <i>The outdoor gym</i> . .	57
4.17	Problematic view related to <i>natural surveillance</i> at <i>The outdoor gym</i>	58
4.18	Problematic view related to <i>natural surveillance</i> at the patio in close vicinity to the <i>The outdoor gym</i>	59
4.19	<i>The pink trail</i> at night	60
4.20	Grove in front of apartment building at <i>The pink trail</i>	61
5.1	The line of sight from the apartment buildings when trees have been removed, marked with with red and yellow lines. @Lantmäteriet, no consent is required	66
5.2	The current situation before any interventions have been applied . . .	69
5.3	Illustration of the suggested interventions with the dog enclosure seen in the middle of the picture	69
5.4	A picture showing where in the park, the different interventions should be implemented. Red marks removal of trees, green marks addition of trees and yellow marks the three different sections of the area. @Lantmäteriet, no consent is required	71
5.5	The current situation at the location of The outdoor gym before any interventions	73
5.6	An illustration of the the suggested interventions with the dog enclosure seen in the middle of the picture	73
5.7	An illustration of the suggested alterations to the existing patio . . .	74

List of Tables

4.1	Compilation of crime statistics during the year 2019 in the defined area	41
4.2	A table showing the identified problems and which CPTED parameter it correlates to, with the corresponding suggested solution for Brilljantgatan tram stop	63
4.3	A table showing the identified problems and which CPTED parameter it correlates to, with the corresponding suggested solution at the outdoor gym	64

1

Introduction

This thesis will result in suggestions that could be used to prevent crime and increase the perceived security in public spaces in Tynnered, Sweden. The starting point of this thesis and the main evaluation tool used is Crime prevention through environmental design (CPTED). The literature related to CPTED argues that interventions to the physical environment could prevent crime [Newman, 1972].

1.1 Background

The city planning office, i.e. *Stadsbyggnadskontoret* at Göteborgs Stad, aims to make different kinds of interventions, in an attempt to remove Tynnered from the list of particularly vulnerable areas [Nationella operativa avdelningen, 2017]. For an area to be classified as a vulnerable area in Sweden, it needs to be a geographically limited area with a generally low socioeconomic status. Also, it has to be an area where criminals are having an impact on the area at large [Nationella operativa avdelningen, 2017]. The efforts are made in an attempt to change the image of the area and improve living conditions. From 2013-2017 there have been 17 shootings in and around the area of Tynnered [Silva, 2018]. This is the main reason why Tynnered is classified as a particularly vulnerable area today. A policeman claimed that the problem was "*Established criminal organisations around Frölunda Torg are trying to infiltrate Tynnered and increase their territory*". To prevent this from happening and isolate Tynnered from these gangs, investments are being made and initiatives are being taken.

Some investments have already been made and areas in the south-west of Tynnered have undergone (or is currently undergoing) re-construction. Efforts have been made in one of the main squares, Opaltorget, by adding new housing complexes to densify the urban area [Förvaltningen AB Framtiden, 2018]. The area within the blue markings in *Figure 1.1* have not yet had any larger improvements and *Stadsbyggnadskontoret* aims to make efforts in the area in the upcoming years. Some areas within Tynnered are going to be altered in an attempt to make the area safer and try to prevent crime.

In Sweden today, only 27% of the city planners design the physical environments in public spaces in a way that is intended to prevent crime [Cecato et al., 2019]. There is a huge knowledge gap regarding the use of tools like CPTED and there is a need of improvement.

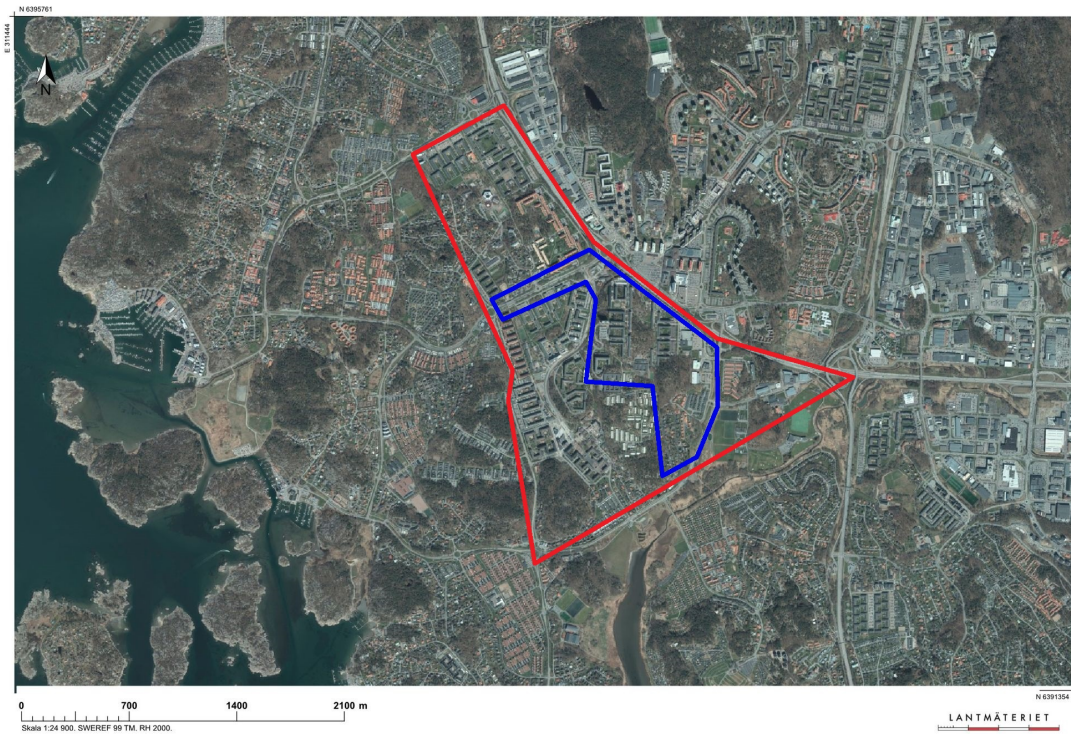


Figure 1.1: Map displaying the area of Tynnered with the red boundary and the area that will undergo improvements relevant to this project, with the blue boundary. @Lantmäteriet, no consent is required

In this project changes that can be implemented to the already existing physical environments will be considered. Changes that could potentially decrease the crime rates and increase the inhabitants' perceived security, will be considered. In a report by the Swedish police, it was determined that one of the success factors to improve security in the vulnerable areas of Sweden, is by situational crime prevention [Nationella operativa avdelningen, 2017]. *Stadsbyggnadskontoret* needs help evaluating certain areas within the blue marking in *Figure 1.1*, in an attempt to understand what could be done regarding the current situation of the physical environments. Even though an analysis will be conducted including the boundaries presented by *Stadsbyggnadskontoret*, the goal is to be able to focus on small, delimited areas. There are several findings that suggest that there are crime concentrations at specific places, which is why there could be a great intra-neighborhood variance [Goff et al., 2010]. This is the main reason why a smaller, delimited area within the boundary presented by *Stadsbyggnadskontoret* will be addressed. Implementing initiatives to counteract criminal acts at the source.

1.2 Aim

The aim of this project is to investigate the current levels of security and perceived security in public spaces and how they could be improved for the citizens of Tynnered. This will be attempted using methods that originate from the field of urban development, in order to evaluate and suggest alterations to the physical environments.

1.3 Research questions

In this section, the research questions that intends to be answered by the end of the project will be presented. The research questions are the following:

- *How is the security of the neighborhood perceived by various stakeholders?*
- *Where is there a need of improvement regarding perceived and actual security?*
- *What interventions could be suggested to increase security and perceived security according to CPTED?*

1.4 Delimitations

The work will be delimited to certain areas of Tynnered and the work efforts will be concentrated towards these areas. The size of these so called "areas" could vary. Therefore, the size of the "final" areas will depend on what is gathered during the data collection. Also, the results of the project will not be implemented into the physical environments as part of this project. Instead the project will result in a visual and textual suggestion of improvement. The suggestions will be regarding alterations in the physical environment rather than suggestions related to social aspects. Also, the visual suggestions will be on a conceptual level, i.e. sketches that do not include the solutions chosen on a detailed level.

Some delimitations were made to the traditional product development process, used by the authors during their Master studies. Because of the fact that this project addresses a new area of expertise for the authors, concepts or products will not be developed through traditional concept generation according to the book *Product design and development* [Eppinger & Ulrich, 2012]. Instead of developing concepts applicable to this new area, a decision was made to use existing solutions or ideas extracted from various sources during the project. The idea and hope of using this delimitation is to gain experience regarding the field of Urban development, well-known solutions and methods rather than developing something new with a limited amount of group members. Therefore, suggestions will be inspired by already existing solutions or ideas, and not developed from scratch.

Because of the educational background of the authors, delimitations were made to the physical environment. Buildings are, during the course of this project, perceived to be static objects in terms of form and size although some alterations could potentially be made. These sorts of alterations will be referred to as "incremental". An incremental change could for example be suggesting that French balconies are installed or suggesting that a service store should be put into the ground floor. None of these incremental changes would necessarily need changes to the form and size of a building.

Some delimitations were also made to the various solutions that will be evaluated during this process. As mentioned above, no social aspects will be considered. For example, suggestions such as more social workers, activities or more policemen will be disregarded in this thesis even though they might be of utter importance. Instead, all the solutions that will be considered, will be related to the physical environment.

A delimitation was also made in order to ensure that the final visual suggestion would be valuable and based on the contemporary setting of the neighborhood. Thus, areas where work have been planned will be disregarded. It is also difficult to evaluate a setting, before the result of the planned initiatives have been implemented. Therefore, the focus area will be an area where no work has been planned. This is a delimitation that is possible to facilitate, since *Stadsbyggnadskontoret* has access to all planned work within the area. Although, this delimitation might be reconsidered, if the problematic areas that are found, all turns out to be areas where work have been planned.

The Covid-19 pandemic introduced a few more delimitation that had to be considered. It limited the number of social interactions that could be introduced throughout the project. This dis-enabled the project to for example use workshops or interactions with inhabitants on the streets of Tynnered, as a means of understanding and exploring the local inhabitants thoughts of the matter. Instead, methods that does not include physical interaction and ensures social distancing have to be used.

2

Theoretical framework

This chapter presents and explains the Routine activity theory used throughout this project, the main practical tool implied by this theory, Crime prevention through environmental design (CPTED) and important conceptual distinctions such as the difference between actual security and perceived security.

2.1 Actual security and perceived security

There is an important distinction to make between “actual“ and “perceived“ security where actual security refers to what extent people are in the risk of being subjected to crime and perceived security refers to what extent people believe that they will be subjected to crime. Thus, actual security has to do with the objective probability of someone being subject to crime at a certain time, place, while perceived security has to do with the subjective probabilities conjured up by the person in the situation. The level of actual security and perceived security could vary quite a lot depending on multiple factors which is also true for perceived security [Heber, 2008].

The reason for why it is important to make the distinction between perceived- and actual security is that they can come apart, where people sometimes feel insecure when they are not, and the other way around. This implies, for example, that people’s fears sometimes, to some extent, are unjustified. This is something called *The fear of crime paradox*. Women and elderly have the highest fear of becoming the victims of crime, even though they are not disproportionately exposed to it [Schaut, 2006]. It is also important to keep actual and perceived security apart as they could be improved in different ways. However, it is sometimes possible to increase the perceived security by means that lead to an increase in the actual security. For example, by making residents feeling safe in the area surrounding their residence, could make them use these public spaces more. The presence of people could then have a positive effect on actual security as this prevents crime [PRISMA, 2019].

Reducing crime rates and increasing the actual security is a wide topic that involves education, police and many other parts of society. Regarding perceived security, there are four main factors that are causes of worry for the individuals security [Heber, 2008]:

1. Exposure to crime: how exposed the individual is to crimes happening around him/her and crime rates in the area.

2. Individual factors: could for example be gender, age, physical vulnerability, ethnicity and more. As mentioned, women and elderly have unproportionally many experiences of insecurity.
3. Factors in a certain situation: could be the physical environment in terms of lighting and the presence of other people.
4. Factors of society: is how crimes are reported in the media and how the news of crimes are spread. As people become more informed of committed crimes, their perceived insecurity seems to increase even though they have not been a victim themselves.

Another factor that could affect people's perceived security is if there is an increase in crime rates which makes the citizens feel like there is a loss of control from the state and authorities [Andershed et al., 2015].

2.2 Routine activity theory

The Routine activity theory argues that there are three aspects that needs to be fulfilled for a criminal act to take place; a suitable target, a likely offender, and the absence of a capable guardian as seen in *Figure 2.1* [Cohen & Felson, 1979]. According to this theory the lack of any of these elements could prevent a direct-contact predatory crime from happening. A *predatory violation* is when someone intentionally damages or steals the properties of another person [Glaser, 1971]. The definition of a *direct-contact predatory crime* is a crime that involves direct contact between an offender and a victim [Cohen & Felson, 1979]. Such as a robbery, physical abuse or other criminal acts with direct contact.

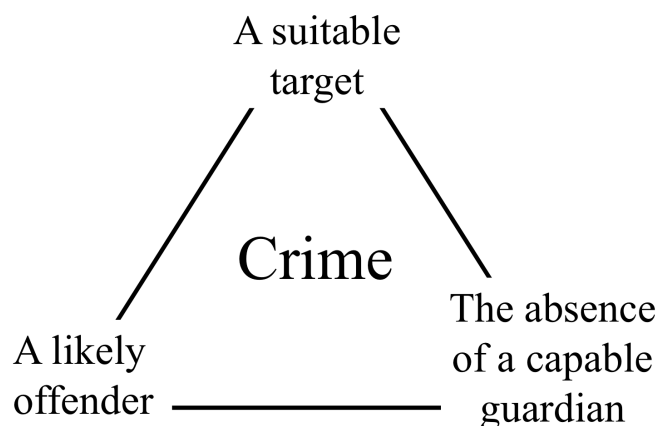


Figure 2.1: The three aspect of the routine activity theory

The theory argues that if there are fewer suitable targets there are less opportunities for the criminal to perform a crime towards someone and this will result in less criminal activity according to the routine activity theory. There are multiple ways to make the target less suitable for a crime by for example using *Closed-circuit*

television (CCTV) surveillance which are surveillance cameras. There is also the possibility to prevent crime through reducing the number of likely offenders that are motivated to commit the crime, according to this theory. As mentioned above, for a crime to occur there needs to be an absence of a capable guardian. This guardian could be police but also other types of controlling functions such as informal social control from other civilians. Solely the presence of people could be something that correlates to a capable guardian, even though they do not have any formal obligation to intervene or stop a crime.

The Routine activity theory is based on the Rational choice theory which is derived from the theory of methodology individualism, where an individual's subjective motivation is the ultimate foundation to social interaction between humans [Weber, 1921]. This is in contrast to other beliefs that class and other group structures can explain social interactions [Engdahl & Lindgren, 2017]. From this came the Rational choice theory which argues that individuals act rationally and in self-interest [Hindmoor & Taylor, 2015]. This also means that criminals act rationally in the way they commit a crime and that they are also dependent of circumstances and available information. It is in this way the Routine activity theory is connected to Rational choice theory. A likely offender will rationally deliberate whether the target is a suitable target or whether there is any capable guardian, to choose whether or not to commit the direct-contact predatory crime and act in maximizing self-interest.

Criticism towards the Rational choice theory have been voiced by the criminologist Jock Young, among others [Engdahl & Lindgren, 2017]. Young expressed concerns about something he called *administrative criminology* that come to be during the 1970-1980s. According to Young the Rational choice theory was too much of a technical criminology strategy that oversimplified the problem and came with solutions that did not solve the problem at its core [Engdahl & Lindgren, 2017]. Young argued that the Rational choice theory did not take into account social aspect of society and its impact on crime. This criticism have been answered with the explanation that the Rational choice theory is not supposed to be comprehensive but that it is adequate to prevent crime and that is what is of importance [Clarke & Cornish, 2014].

2.3 CPTED

Crime prevention through environmental design (CPTED) is a crime prevention theory where three generations have been developed since it was first created, where the third generation was developed recently and has not been implemented to any greater extent. CPTED is an approach for analysing and altering small-scale environments in order to prevent crime. It is important to understand that CPTED is a *process of thinking* and not a collection of design elements [Cozens & Love, 2017]. This tool originates from the Routine activity theory, which means that a crime can be prevented not only by preventing a criminal from becoming a criminal but also by making the target less suitable and supply some sort of capable guardian [Engdahl & Lindgren, 2017]. This means that there is a limitation to CPTED, as it

does not address offenders that act in an irrational way. Criminal acts conducted by offenders that are intoxicated or mentally ill are therefore not explicitly addressed when using CPTED. CPTED is built around the fact that crimes can be prevented by altering the physical environment where the direct-contact predatory crime will occur.

Many aspects of CPTED have also been proven to increase the perceived security in other studies [PRISMA, 2019]. It could be used in city planning at an early stage but also in already existing neighborhoods where smaller changes could be implemented. CPTED is focusing on three fields [Atlas, 2008]:

1. The physical environment by manipulating buildings, parks and so on.
2. How people interact with their surrounding physical environment.
3. Using existing space to design or redesign in a way that makes better use of the space and therefore also encourages desirable behaviors.

As cities grew larger during the 20:th century, many social mechanisms disappeared [Newman, 1972]. People moved into huge apartment complexes and became neighbours with strangers, which has made the social framework deteriorate. The social framework that contained morals, security and community, that is closely associated with a small-town environment. CPTED aims to rebuild the social framework in the urban environments to prevent crimes by introducing real and symbolic barriers and create some sort of community and social responsibility [Newman, 1972].

2.3.1 First generation CPTED

What is today referred to as the first generation of CPTED is derived from the book, *Defensible space* that was introduced in 1972 and is divided into three principles. [Newman, 1972]. These three principles are *territorial control*, *natural surveillance* and *image and milieu*.

The principle of *territorial control* revolves around creating semi-public spaces that the residents feel like they have some sort of ownership of [Newman, 1972]. It has previously been evident that a concern for law-abiding behavior has increased when territorial feelings have emerged [Newman, 1972]. Spaces that are public but might be perceived by the residents as “their own” or “ours” are defined as semi-public. In the same way that people would not allow their homes to deteriorate and become messy, a sense of informal ownership will make the residents care more about the public spaces and being willing to invest time and commitment to it. The single-family household usually has its own type of territoriality. Some sort of lawn usually separates the house from public spaces and it could at times be reinforced with symbolic barriers such as low fences or real barriers such as walls and gates. Apartment buildings in urban environments do not naturally have these barriers. But the need for territoriality is still present and needs to be fulfilled. This could be done in a variety of ways, for example, building houses in certain shapes, using symbolic and real barriers. As people expand their perception to spaces around their residence, as something that they feel a sense of ownership for, they are more likely to take care

of those places. They are also more motivated to get involved in what is happening outside their door and making sure the law is obeyed. *Figure 2.2* and *2.3* shows an example of where territoriality have been created and a corresponding example without any territoriality created.



Figure 2.2: An example where a semi-private space has been created, indicated of by the bicycles in front of the building
Figure 2.3: An example where the level of territoriality is low and the inhabitants walks right onto the street

One important sub-category to *territorial control* is *access control*, which is brought up by Newman but not divided into a separate principle. *Access control* is to *limit the access* into properties by architecture or other means [Newman, 1972]. By introducing limited access, the creation of semi-public spaces will be supported. By for example having some sort of low fencing surrounding the residence, it is still accessible by the public but it creates a sense of ownership and therefore becomes a semi-public space. It aims to increase the criminals perception of risk and sway the criminal to judge the risk of being too high [Cozens et al., 2005]. Even though the residents do not own the space within the low fence, it still brings the feeling that it somewhat belongs to them.

The subject of surveillance is a delicate matter. The increasing use of CCTV in public spaces have raised numerous questions. Question regarding whether individuals' privacy are violated, that there is no informal consent and that it could be used to get access to people's private lives [Chamlin et al., 2002]. However, this is not what Newman meant with the principle *natural surveillance*, even though the use of CCTV could have a crime preventing effect. In contrast to performing surveillance using CCTV, CPTED points out the benefits of residents casually observing the semi-public spaces [Newman, 1972]. This basically translates to the residents ability to see what is going on in semi-public spaces and thereby acting as *natural surveillance* which creates informal social control. To achieve this, design needs to be implemented that increases visibility by for example having better lighting, clear lines of sight and enhanced visibility. This could prevent destructive behaviour and act to increase the perceived security of the people using the semi-public spaces. Irrational fears and anxieties are decreased as the inhabitants feel like someone is

observing them. This increases the feeling of having someone close to intervene if a crime would be initiated, acting as a potential guardian [Newman, 1972]. It could also increase the fear of the criminals since it increases the likeliness of being spotted by potential witnesses. To enhance the visibility (etc.) gives a very positive effect as spaces that are viewed as safe, are more frequently used by the people living there. In turn, having public and semi-public spaces populated by residents increases the security and the perceived security [PRISMA, 2019].

The third principle presented by Newman is *image and milieu*. CPTED argues that the physical conditions surrounding buildings and the image of the area, has an impact on the perception of the area, which in turn affects crime rates [Newman, 1972]. According to Newman the residents will to some extent act according to the image of the area they are living in. At times certain destructive behavior could be encouraged by the negative perception and image of an area, which often is the result of poor integration between wealthy and poor areas. If an area is not taken care of, there is no incentive for the residents to make an effort to keep the area in good condition. In cases like this, the area will deteriorate more and more rapidly. As the *image and milieu* of the area deteriorates, less people will use the public spaces. Partly because it is not a nice place to be and also because these places are perceived as unsafe [PRISMA, 2019]. This is also supported by the broken window theory that argues that if environments are not taken care of this could lead to more crimes and even more serious crimes [Hale, 1987]. It is important to make the residents feel like the public spaces have not been neglected or not taken care of, otherwise the area would feel unsafe. Areas that feel like they have deteriorated gives an impression of not having a capable guardian present that prevents crimes. Measures to increase the image of a public space could be to remove graffiti or clean up the streets from litter and avoid constructing the urban areas in a way that distinctly separates the wealthy areas from the poor.

In 1983 there were two additional principles introduced to the first generation of CPTED which are *activity support* and *target hardening* [Moffatt, 1983]. This version of CPTED, that consists of six principles (*territorial control, natural surveillance, image & milieu, access control, activity support, target hardening*) is one of the most common ways of working with CPTED which is displayed in *Figure 2.4*. *Activity support* aims at introducing playgrounds, stores and other places where people could meet during different hours of the day which encourage positive behavior. The idea is that these positive social activities builds community and could repress anti-social behavior at the same time [Engdahl & Lindgren, 2017]. These activities will increase peoples' presence in the areas and the amount of people moving around in public spaces. The people present in public spaces will make the potential victim less suitable as the victim is less exposed, which prevents crime in accordance to the Routine activity theory [Cohen & Felson, 1979]. Having the public spaces more heavily populated will increase the perceived security and also decrease crime rates [PRISMA, 2019]. *Target hardening* aims to complicate for the criminal to commit a crime and limit their access to a target. This could be done by having locks or alarms that prohibits the criminal from performing a crime. In contrast to *access*

control, it includes more traditional ways of preventing crimes such as not symbolic but actual barriers [Cozens et al., 2005]. It does also compliment *natural surveillance* by introducing CCTV to CPTED as a way of making the target less suitable due to surveillance from cameras [Engdahl & Lindgren, 2017].

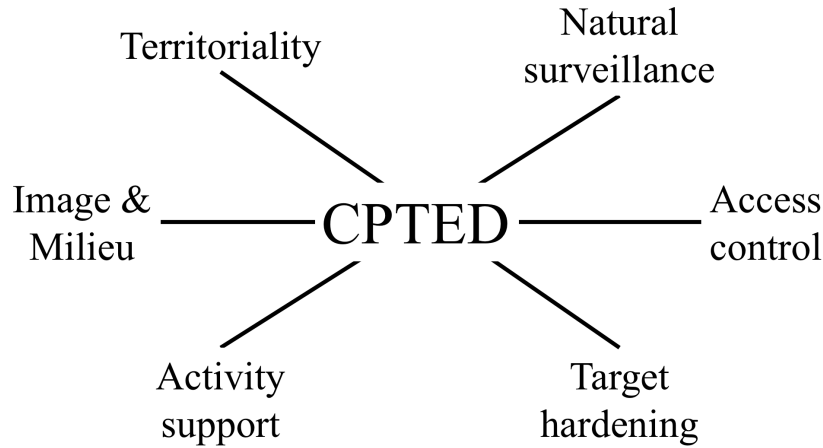


Figure 2.4: An illustration of the six principles of CPTED

2.3.2 Second generation CPTED

Over the years, the tool of CPTED progressed and evolved. A second generation CPTED was created in 1997 by Cleveland and Saville that introduced and included social and cultural dynamics to CPTED [Atlas, 2008]. Work regarding social factors such as reducing criminality by creating jobs and increasing the possibility for a person to retain a job are strategies to decrease criminality [Cleveland & Saville, 1997]. This is not what CPTED is about as it focuses more on each individual neighborhood and preventing crime in a short-term perspective. Small scale and short-term social factors that were introduced to the second generation of CPTED to broaden the scope of the method. Four new strategies were introduced; social cohesion, connectivity, community culture and threshold capacity.

Social cohesion refers to the importance of creating positive relations between the residents with a focus to solve local problems [Cleveland & Saville, 1997]. The community becomes stronger and creates a type of social security by for example introducing neighborhood watch. The phenomenon of having people who live in the area, walking around the neighborhood together to reduce burglaries or robberies. An important aspect of social cohesion is that it is targeted to the local neighborhood and not extended into other neighborhoods. This will support the aim of having semi-public areas as a feeling of collective responsibility for the neighborhood is created. It does also increase the perceived security as more people are present in public spaces.

The difference between community culture and social cohesion is that community culture does not focus on a specific problem to be solved. It aims to build community within the neighbourhood, sometimes related to culture and events such as art and festivals. It is much broader than social cohesion and aims to build community in general.

The first generation have been criticized for excluding people outside of the neighborhood and that is why the second generation of CPTED introduced connectivity [Atlas, 2008]. This strategy encourages the construction of linkages to other communities and governments. CPTED builds around the fact that the residents could be contributing to the safety and security of their neighborhood. This could result in conscious isolation and being suspicious to anyone *not* being part of the community. That is why connectivity was introduced even though it treats the well-being of the citizens and not crime prevention, to make sure that there are connections between neighborhoods even though CPTED builds on the community within the neighborhood.

The concept of *threshold capacity* focuses on achieving diverse neighborhoods regarding social groups (e.g. that there is a mix of people from different socio-economical and ethnical backgrounds) and the way the land is being used [Cleveland & Saville, 1997]. By having social spaces where people can meet and having the area being used in different ways, the amount of people using the space at different hours will increase. It aims to create land use that prevents crime by social security and more people using the public spaces. For example, by having cafes and sport facilities where it is possible to workout, people will spend time at these places which will eventually result in a more safe and vibrant area. Also, by for example having demographic diversity, the land use will differ and be spread out depending on different demographics interests.

2.3.3 Implementation of CPTED

CPTED is quite straightforward and simple to understand and research has shown that the real challenges comes when implementing CPTED and what is referred to as the "dark side" of CPTED [Cozens & Love, 2017]. According to Cozens and Love there are four aspects that affects the outcome in the implementation of the CPTED process [Cozens & Love, 2015]:

1. Oversimplification
2. Agendas and politics
3. Conflicts and opposing effects
4. Conflicts with other factors

It has been observed that the desired reduction in crimes has not been achieved in cases where CPTED is implemented in an oversimplified manner [Cozens & Love, 2017]. In cases where CPTED has been institutionalized and where the same solutions have been copied and re-used, there has been adverse outcomes. By introduced formal regulations there are more difficulties in adapting the CPTED process to the specific situations [Zahm, 2005]. There is a risk that people could be assigned with

the responsibility of implementing CPTED without understanding why, if it was just implemented as an inflexible rule. The reason for institutionalizing CPTED is to increase efficiency and cost-reduction by applying the same solution to multiple different situations. But this is problematic to do with CPTED and could lead to outputs that gives adverse outcomes. To avoid this problem, a lot of data and information needs to be collected and more thinking must go into the implementation. CPTED is, after all, a *process of thinking* and not a collection of design elements. Every location is unique and must be evaluated using CPTED which leads to the implementation of unique outputs [Cozens & Love, 2017].

There are also problems when CPTED is used in a "top-down manner", i.e. where upper management makes the decisions to a larger extent, which leads to outcome-based results due to agendas and politics [Cozens & Love, 2017]. Politicians wants fast results from limited resources and by not being fully prepared to economically support the implementation of CPTED, the results will, most likely, be disappointing. There is also a problem when there is an absence of cohesion between different stakeholders such as city planners and politicians [Fisher & Piracha, 2012]. They might possess different levels of knowledge regarding CPTED or have various views of CPTED. The result of this is outputs from the CPTED process that might not generate desirable outcomes.

There is also the risk of implementing CPTED interventions that could be in conflict with each other and have opposing effects [Cozens & Love, 2015]. For example the use of walls as a mean of *target hardening* could have a negative effect on *natural surveillance*. During the CPTED process, these conflicts has to be addressed and evaluated. By implementing some CPTED interventions without thinking about how they affect other CPTED parameters, the result could be adverse. It is a process that requires thinking and every suggestion of altering the physical environment needs to consider the other aspects of CPTED.

The CPTED interventions also need to be balanced towards other factors that might *not* be related to crime prevention [Cozens & Love, 2017]. Some crime prevention measures of CPTED such as *target hardening* might have a negative effect on other factors. Locks and CCTV could be used for *target hardening*, but these measures could have a negative effect on the accessibility of the residents and their privacy. This could lead to positive results regarding crime prevention but negative results regarding overall standard of living for the residents. Factors regarding cultural value is also an example of something that needs to be kept in mind and not discouraged or disrupted. Before the CPTED interventions are implemented, factors that might not be considered in CPTED as they are not connected to crime prevention, need to be evaluated. For example, there have been occasions where the extensive use of *target hardening* has led to buildings becoming fortresses-like. This makes the building very private and anti-social (i.e. "fortress mentality") which might be very negative for the residents.

2.3.4 Criticism towards CPTED

Even though CPTED is a proven and established method there are aspects that could be questioned [Cozens & Love, 2015]. As mentioned in *Chapter 2.3.2* there have been criticism towards the first generation of CPTED for being excluding and not including more social factors. There are also warnings voiced by Paul Cozens and Terence Love (2015) about making simplified assumptions in the planning and execution of CPTED. Some of the more common assumptions are [Engdahl & Lindgren, 2017]:

1. High presence of people always reduces crimes
2. Intense use of street lighting reduces crimes
3. Permeable streets always reduce crimes
4. More eyes on the streets always reduces crimes
5. The use of CCTVs always reduces crimes
6. Mixed-use development always reduces crimes

Some of these assumptions are fundamental to CPTED and have mainly been derived from observations made by Newman in an American urban housing project, built in 1954 in Chicago called *Pruitt-Igoe* [Newman, 1972]. Whether these assumptions are always valid is a difficult question to answer, which have led to scepticism and criticism towards CPTED.

CPTED have also been criticized for being excluding and that it gave birth to hostile architecture [Carr, 2020]. Hostile architecture is the discipline of designing public spaces to dis-encourage a certain group of people to occupy the space or certain behaviors taking place at that space. These critics of hostile architecture argues that free and open public spaces are threatened by CPTED and that these are essential to a healthy urban environment [Carr, 2020]. By dis-encouraging a certain group of people to occupy the public spaces, a very excluding public space will be created. Excluding people who are not residents or people who are victim of poverty and homelessness. This will lead to a very homogeneous group of people using the space, which some argue is problematic.

Criticism have also been expressed that Defensible space and CPTED leads to displacement of crimes [Cozens & Love, 2015]. As the CPTED projects later are evaluated, the decreased amount of crimes make the CPTED projects seem like they have been successful. These displaced crimes are lost in the evaluation which creates a false image of that CPTED projects are being successful in reducing crimes. This criticism argues that CPTED only decreases crime rates in that specific area or nudges the criminals to commit other types of crimes. It is very difficult to measure displacement which makes this criticism even more complicated to assess whether it is legitimate or not [Hollin, 1989]. To measure displacement the crime rates of the area where CPTED have been implemented, has to be compared to crime rates in neighboring areas, with trends in crime rates in general used as a reference.

2.3.5 Response to criticism

As mentioned earlier oversimplification could lead to assumptions that gives adverse outcomes of the CPTED process. The six assumptions listed in *Chapter 2.3.4* come to be due to oversimplification of CPTED and not from CPTED as a theory [Cozens & Love, 2015]. The fault lays at the one who uses CPTED and uses it in the wrong way. It is a matter of implementing it incorrectly, rather than CPTED being unusable. The CPTED practitioners need to be thinking and not use CPTED as simplistic design outcome. By constantly having a thought-process and having the practitioners evaluating the multiple aspects that CPTED entails, the risk of oversimplification could be avoided. The previously mentioned assumptions could in some situations be applicable and in other situation not applicable.

The discussion regarding that defensible space including CPTED, excludes people is complicated. There could be an aspect of exclusion in creating territoriality, as it aims to create a sense of ownership. But on the other hand, the option of not having any ownership yields negative behavior as people have not made any emotional investments to place like that [Newman, 1972]. To some extent society might gain more than it would loose from implementing the strategy of defensible space. It is a delicate matter whether victims of poverty and homelessness should be allowed to occupy public spaces. There might be better ways of helping these people than having them living on the streets. But the theory of CPTED does not need to be excluding in public spaces. There are ways of implementing CPTED, creating semi-public spaces but still having environments that are welcoming and including. The aim of CPTED is not to be excluding but to prevent crimes of happening.

Regarding the claim that CPTED leads to displacement of crime, this might not be a problem. During interviews with police presented in *Chapter 4.2.2*, it was stated that displacement is actually a strategy of the police. The police explained it as it is impossible to get rid of *all* criminal behavior. But every time the criminals are forced to move (displacement), it obstruct their criminal activities. The polices strategy was to make it more difficult to be a successful criminal. For this reason, displacement of crime might not be a negative thing. Of course the best outcome would be to reduce crime rate overall and it is more uncommon than common with crime displacement as a result of situational interventions [Bowers & Guerette, 2009].

3

Methods

Throughout this chapter, the methods used to answer the research question are presented and explained. Starting out with defining what a case study is and how data should be collected together with a motivation of the selected methods. Then the work performed during the project could easily be followed through multiple chapters.

3.1 Case study

A case study is typically used in research that in some way studies social and life science [Heale & Twycross, 2018]. What defines a case study is the narrow focus on a specific area, group of people or situation. The core aim in a case study is to retrieve as much knowledge as possible about the specific case in order to understand that case very well. The focal point of this project is south-east Tynnered. By conducting research as a case study, the researchers are able to take a broad topic and narrow it down [Heale & Twycross, 2018]. Most case studies perform the data collection with qualitative methods rather than quantitative. There could be a risk of not having enough data points to be able to do a quantitative data collection as the study treats a limited area, a limited amount of people or a specific situation. Where this study differs from other case studies is that this project will not only collect data but also suggest *interventions* based on the collected data. This project could be described as a case study to the point until the data collection have been finished. However, suggesting interventions based on the collected data from the case study, is not considered to be part of the case study.

3.1.1 Data collection methods

One of the first things worth taking into consideration when performing data collection is the approach of using mixed methods. Each data collection method has its own strengths and weaknesses, which is why combining methods could potentially provide a broader and more complete perspective of the problem at hand. Also, by using the multi-method approach the findings will be easier to corroborate, which is why one should use more than one method when investigating a topic [Denscombe, 1998].

When it comes to the various data collection methods, there are arguments for and against each method. [Denscombe, 1998] claims “*One data collection method is not superior to all others in an absolute sense*” (p.131). Instead the choice of data collection method should be based on what is being studied, as well as what the purpose of the study is.

3.1.1.1 Surveys

Surveys are a useful tool when it comes to getting standardized answers. They are easy to arrange and give the respondent pre-coded answers. In relation to other methods, they can also be economical and time-efficient, especially when using on-line surveys [Denscombe, 1998].

Surveys usually result in factual and opinionated answers. Usually, the first part of a survey is to establish facts about the respondent such as address, age, sex, marital status etc. Followed by questions related to the topic, which are supposed to be based on their opinion and insight regarding the task at hand. Ethically, it is important to ensure the safety of the participants, which is why anonymity should be considered, as well as when other data collection methods are used [Denscombe, 1998].

Surveys are most productive when there is a large number of respondents coming from a lot of different locations, occupations and backgrounds [Denscombe, 1998]. Information should be straightforward, uncontroversial and brief. The social climate should provide enough safety for the respondent to answer the questions honestly. Also, it is more relevant to use when there is a need for standardized data from identical questions that do not require face to face interaction. Surveys should be distributed when there is enough time to manage delays. Also, it is important to ensure that the language used will not prove to be too complex for the respondent.

There are some shortcomings when using surveys and online surveys in particular. Social status could be one excluding factor. Even though most people in Sweden have access to their phones, the choice of forums to use could potentially exclude certain people and perhaps even people from lower socioeconomic classes. Age is another disqualifying factor. Since people using online services are more commonly from a younger age group, some of the elderly people might get excluded from the process [Denscombe, 1998]. Also, the pre-coded answers might create a lack of depth which might lead to understanding of casual mechanisms being lost and never discovered. All these shortcomings are important to keep in mind, in order to make sure that there are representatives from all ages and ethnic groups.

Apart from what the outcome usually is, what makes a survey productive and the potential shortcomings, there are some other aspects to consider as well. The costs, the production and organization of the surveys, the schedule and confidentiality need to be considered [Denscombe, 1998]. Also, it is important to keep in mind that some questions need voluntary responses and in the end of the survey the respondents should be thanked for participating. Lastly, the progression status is also important to display in order to give the respondent instant feedback.

3.1.1.2 Interviews

Interviews can be conducted in a variety of ways, with different benefits depending on the structure of the interviews. Usually, this data collected is qualitative since there is an element of reflection for the interviewee. The qualitative data is useful when preparing for questionnaires but also helpful when triangulation is used, by comparing results to data collected using other methods. Last, qualitative data can be used to find casual mechanisms which is crucial to find why something happens, that us to find casual connections between different events, instead of just correlations between these events. The data is usually privileged information based on emotions, experiences and feelings [Denscombe, 1998]. Experience based data is not considered "false" or "true", but something that the interviewee owns [Esaiasson et al., 2017].

When doing interviews, it is easy to get a lot of detailed information about the topic at hand. Interviewing is a great format when it comes to getting to know how people perceive their world [Esaiasson et al., 2017]. By deciding that detailed information is necessary, the interviews are usually most productive. Although, since interviewing participants might be quite time-consuming, one would have to ask oneself whether it is reasonable to rely on information gathered from a small number of informants [Denscombe, 1998].

There are some limitations to using interviews. Firstly, one would have to gain access to the prospective interviewees as well as their cooperation. Interviews could potentially be based on sensitive issues, which might make people reluctant to cooperate [Denscombe, 1998]. Another parameter that might be limiting, is the kind and number of forums that interviewees will be retrieved from. Performing the interviews by the help of modern technology might be a bit excluding, since elderly and people with lower socioeconomic status might not have access to the same forums [Denscombe, 1998].

There are three different ways to structure an interview. When using a structured approach, the interviewer should not let the interviewer get off topic and have tight control over the format. A structured interview could be a sort of face to face questionnaire, usually not resulting in as much qualitative data as the semi-structured or the unstructured interviews. Interviews are usually about being able to identify how certain situations are perceived. Because of this, a structured interview, might end up in a result that could be quite similar to a questionnaire [Esaiasson et al., 2017]. A structured interview could be preferred when it is applied to a large-scale project. The amount of data and the time of each of the interviews is usually a bit easier to streamline, usually resulting in more quantitative data, rather than qualitative [Denscombe, 1998].

The unstructured interview puts an emphasis on the interviewee's thoughts. This usually an approach that is preferable when the interviewee has a lot of experience regarding the topic at hand. This approach is usually used to make discoveries, rather than checking the interviewer's own assumptions. By letting the interviewee speak their mind, a lot more discoveries could be made, in relation to structuring the interview around something that the interviewer already knows a bit about [Denscombe, 1998].

The last interview structure is the semi-structured one. The easiest way to describe this method is saying it is a bit more structured than the unstructured one. The main guidelines are that the interviewer is supposed to decide the topic, but take a quite passive role in the interviewing phase. The interviewer should only nudge the interviewee towards the topic if the interviewer ends up talking about something that is irrelevant for the study. The main strength of this, as well as the unstructured format, is that it provides the interviewer with some freedom to develop their own ideas based on what they are vocalizing [Denscombe, 1998].

Apart from the actual structure of the interview, there are a few points to keep in mind when conducting the interviews [Denscombe, 1998]. Firstly, get to know the interviewee generally. This includes getting to know how the interviewee is interconnected with the overall area of interest. Secondly, stay engaged in the discussion and identify the main points being stated by the interviewee. Thirdly, try and look for inconsistencies, and address them. By keeping these points in mind, the result will more likely become more useful and have more depth [Esaiasson et al., 2017].

When it comes to the benefits, it usually depends on how (or if) the data has been processed sufficiently or not. Transcripts are usually quite laborious, but it usually helps the interviewer to get closer to the data. This could also be seen as an approach that could help increase the quality of the qualitative data [Denscombe, 1998]. Secondly, interviews usually result in data with more depth and detail in comparison to the other methods mentioned in this chapter. The qualitative data also usually results in key insights, gained from key informants, i.e. people who are closer to the problem at hand. Another benefit is the fact that the data collected from the direct contact can easily be checked for accuracy and relevance as they are collected. This also helps increase the quality of the data. Also, in relation to, for example surveys, the response rate is usually higher if the interviews are pre-arranged [Denscombe, 1998].

3.1.1.3 Group interviews

A group interview is, as the name suggests, an interview where there is more than one interviewee being questioned at a time. In group interviews, there are normally four to six people included in the discussion. When conducting group interviews, it is important for the moderator not to address individuals, since the result should be a group-based view of the discussion topics [Denscombe, 1998]. This is achieved by letting the interviewees interact with one another and come to consensus on various issues.

These sessions normally revolve around a moderator that introduces triggers and prompts to set the focus of the discussion. The interview format normally revolves around a central theme [Esaiasson et al., 2017]. It is also less important for the moderator to take a neutral role. A parameter worth taking into consideration is the fact that the interviewees might be reluctant to disclose sensitive, personal, political or emotional information. This is why the emphasis of this method is on the collective view [Denscombe, 1998].

The aim of this strategy is to achieve the collective view of a group of people [Denscombe, 1998]. This could result in insights that might not have surfaced if one-on-one interviews were conducted. Another benefit of this method is that the responses are usually a bit richer, in relation to one-on-one interviews, since the goal is to let the participants challenge each other's views. Apart from this, it also helps to verify ideas. If there are statements that are being uttered that might not be factual or accurate, the participants might challenge the views that are being presented. This results in an environment where the ideas that are being suggested might get challenged, resulting in verification of certain facts or ideas.

There are some disadvantages when using this method. This method might drown out the voices of people who tend to be less talkative. Therefore, the validity of the views suggested in the interview might not be representative for the entire group. Also, there is an issue regarding gender when using this method. Men tend to hog the center of attention, whilst women's opinions might get passed over, resulting in inconclusive assumptions [Denscombe, 1998].

Another problem might be that people with contradicting views might keep quiet, if the majority of the group consent to a view or opinion [Esaiasson et al., 2017]. This is another parameter worth taking into consideration. This could be counteracted by trying to include people in the periphery of the discussion, in order to potentially let deviating opinions arise.

3.1.1.4 Observations

Direct observations is an approach that results in first-hand information. When conducting interviews or questionnaires, the researcher is moved one step away from the action, which results in secondary source information [Denscombe, 1998]. Although, there are some risks when conducting observations. For example, there is a risk of altering the natural setting. Therefore, it is important to remember that there are a couple of strategies that can be used in order to minimize the risk of altering the natural setting. Firstly, one would have to try to be as unobtrusive as possible when deciding on the position in which the observations will take place. This should, however, not influence the view of the area of interest negatively, resulting in not being able to see the entire area. Secondly, do not interact with people within the setting. This could also alter the natural setting. Thirdly, the longer the researcher stays on site, the more their presence will be taken for granted. All the strategies mentioned above usually results in a less altered setting [Denscombe, 1998].

When conducting observations, it is beneficial if statistical data is collected as the frequency of events and documenting the time between events [Denscombe, 1998]. Secondly, the duration of each event needs to be described as well. This includes documenting the time it takes for each event to start and conclude. Sample size, i.e. the number of people observed should also be documented. This increases the legitimacy of the study.

When it comes to the advantages of using direct observation, the first one mentioned is the fact that it is data retrieved from a primary source [Denscombe, 1998]. The strategy extracts what people do or how places are, rather than what they say that they do or perceive. Therefore, the information gathered is not based on personal perception of the interviewee but direct observations of the one collecting the data. Also, by including an observation schedule, the results usually become objective observations and eliminate any bias based on emotions or personal background. Observation is also a relatively efficient data collection method. It makes it quite easy to collect substantial amounts of data in a relatively short time span, in comparison to, for example, surveys or interviews. If the observation includes timing certain events of interest, it also results in pre-coded data producing quantitative data that can instantly be analysed. The timing of events also results in reliable data, which should not differ a lot when comparing to other observers. Another benefit is the fact that “basic equipment” can be used. Timer and notebook should be more or less everything that is needed to document the data of interest [Denscombe, 1998].

There are some disadvantages when using observation that needs to be kept in mind. The observer only sees the behaviour, not the intentions. It is a method that is used to describe what happens, but not why. This could result in an oversimplification, when there might be other parameters at work than just the ones that are being observed [Denscombe, 1998]. Also, despite the fact that it is a way to gain information directly from the setting, it also influences the naturalness of the setting, which might lead to uncommon behaviour from the people that are being observed [Denscombe, 1998].

3.1.2 Motivation of selected methods

The methods/tools that were mainly used during the project were field studies, qualitative interviews, collection of crime statistics and evaluation using CPTED.

The field studies performed during the project were vital for this project to be successful. It would have been difficult to identify problems and make concrete suggestions without visiting the area and spend time at the sights. It would also have been very difficult to understanding the complex geographical layout of the Tynnered and get a sense of the size of the locations. Without field studies, the project would have had to rely on flight images which are in two dimensions and have relatively low resolution. Tynnered vary a lot in elevation and it would have

been difficult to understand these differences only from photos. Initially there were ideas of having the authors temporally live in the area to fully gain understanding and knowledge. This was disregarded as it was not possible from a financial perspective.

Throughout the project, several qualitative interviews were conducted, with various stakeholders and experts. The use of a qualitative data collection methods combined with a diverse group of interviewees, yielded a nuanced picture of the problems. Mainly semi-structured interviews were conducted as the flexibility made it possible to deeply assess the questions and redirect the prepared question during the interview to some extent. This was important especially at the group interview with the police, as they added to each other's answers and spoke quite freely. A *quantitative* method such as surveys could have been used to find out if people perceive Tynnered as insecure and where they felt insecure. But as perceived security includes very complex feeling and social mechanisms, there would be a risk of receiving misleading answers. For example, during the qualitative interviews, it became apparent that the answer to the question if the citizens felt insecure or not, was not as straight-forward as it might seem. There were a lot of depth in these types of questions that needed to be thoroughly examined. This might have been missed with a survey. Also, as mentioned above, surveys are most productive when there is many respondents from different locations, occupations and backgrounds [Denscombe, 1998]. The identified forums that were available for communicating with local citizens did not include people from a variety of different locations and backgrounds.

Crime statistics were also collected and evaluated. Both collecting individuals' personal opinions and perception about, for instance, whether they were feeling secure in Tynnered and where more problematic spots are located in tandem with impartial statistics, broadened the understanding of which areas that are problematic and why. Statistics could be misleading, but these figures were judged to be fairly trustworthy and the best source of impartial data available.

This project focuses on the theory of CPTED and it is the method of choice to improve the actual and perceived security. The reason for this is that CPTED projects have proved successful internationally and is supported by governments all over the world [Cozens & Love, 2015]. It is a proven and established theory but have been used in Sweden to a limited extent by architects and city planners. Many projects in Sweden make design changes to the physical environment attempting to improve the security. These projects would gain more legitimacy if they were based in a theory such as CPTED. Since CPTED seems to have potential to yield great results and that it is fairly unknown in Sweden, it was decided to use this theory. Thus CPTED is used in an attempt to show how this theory could be applicable and useful in the Swedish context as well. The decision to use the extended *first* generation of CPTED was made because it is the version that is used by most who implement CPTED in city planning and other projects. Another reason is that the scope of the project would have become too extensive if the second generation of CPTED would

have been used. The second generation of CPTED includes more social aspects of crime prevention and due to the authors academic background not being in social sciences, this was disregarded.

To verify and make sure that the suggested solutions would be appreciated by the local citizens, workshops could have been useful. It was decided to not arrange workshops with local citizens because of the risks with Covid-19. The pandemic increased the difficulty to gather people for a workshop and digital workshops was judged to not yield desirable results.

3.2 Field studies

As the work of this thesis treats a real-world scenario in a defined and limited area within Tynnered, field studies were conducted to gain knowledge and understanding of this place. These field studies could be classified as some sort of observation, as the environment and how people might interact with it was observed. During the initial stages of the project, field studies were used to get to know the area of interest. As this work will result in suggestions of very concrete improvements in some selected locations, it is important to get a first-hand understanding of the area and its structure. These field studies are essential for the project to become successful since understanding of the geographical layout is important.

Later in the project, field studies were used to examine the results from the data collection more narrowly, i.e. further exploring the identified problematic areas. Based on the results from the data collection, specific places within Tynnered were visited and analysed. They were analysed in their need for improvements and if it is possible to improve security by using the tool CPTED. These visits took place during different hours of the day, both during the day and at night. This is important for a variety of reasons. Firstly, it is a way to see how well-lit a place is, depending on the amount of natural light. As dark environments could influence peoples perception of feeling secure, the dark setting has to be considered. Therefore, observations while it was dark outside is important in order to get to know the variability of an area. Another reason was to observe these locations at different hours of the day is that during times when less people might be present outside and the effects of this. During these field studies the environment was not be evaluated with the CPTED tool, but aspects of CPTED were kept in mind.

3.3 Initial interviews

In this chapter, the methods of the initial interviews conducted with various stakeholders and experts are presented. Stakeholders and experts included in the initial interviews are local citizens, police, and local housing companies.

3.3.1 Interviews with local citizens

In order to get a grasp of the situation in Tynnered, initial interviews with local citizens were conducted. The main aim of these interviews was to identify some of the troublesome areas and understand why they are considered to be problematic, after saturation had been achieved. These interviews were instrumental in terms of being able to narrow down the scope further, after the initial boundaries presented by *Stadsbyggnadskontoret*.

The initial interviews were conducted in a semi-structured manner. The reason for this was that *Stadsbyggnadskontoret* presented a defined area where alterations could be made and the focus of the interviews needed to be put there. This was the main reason why an unstructured interview format was not preferable. Since an unstructured format gives the interviewee room to express their opinions and roam freely without the interviewer being able to nudge the interviewee to stay on topic, and in this case, within the boundary of interest [Denscombe, 1998].

A structured interview format was also disregarded, since it is usually used to get quantitative data rather than qualitative, acting like a sort of face-to-face questionnaire [Denscombe, 1998]. This might lead to the risk of overlooking crucial facts of the matter, since a structured interview format disregards certain aspects that were perceived to be irrelevant, even though they might not be. The semi-structured approach was used to ensure that the result would end up being valuable and relevant and within the defined boundary of interest.

Because of the circumstances surrounding Covid-19, alternate approaches had to be taken in order to get in contact with people living in Tynnered. Initially social media was used to contact inhabitants through multiple Facebook-groups. These groups were created by people living in Tynnered and most members were living in Tynnered. The interviewees that were collected from Facebook, did not cover all demographics. To manage this, contact was made with an organisation called PRO, *Pensionärens riksförbund*, i.e. the national association of pensioners. This was an attempt in order to increase the age span of the participants.

After increasing the age span, the aim of the semi-structured interviews was to reach saturation. Saturation is indicated when the same statements appear over and over again. Therefore, the interviewer becomes empirically confident that saturation is reached. Although, some attempts should be made in order to stretch the diversity of data as far as possible, to be able to say with confidence that saturation has been reached [Saunders & Sim 1998].

3.3.2 Group interview with the police

A group interview was held with different experts from the police. The aim of this interview was to gain further understanding regarding the situation in Tynnered. Because of the fact that the police have further insight into the crime statistics and criminal patterns, the police were considered to be a sort of expert source. This

interview was also considered to be a critical examination of the data collected so far. For example, was the presumptions and perceived security warranted by the local citizens? The reason why a group interview was held, was because individual interviews would have occupied more resources at the police than with the use of a group interview. Because of the fact that the information received from the police was considered to be from an expert source, based on statistics and experiences, there were some benefits using the group interview format. For example, if there is something stated that is factually incorrect, the rest of the group has an opportunity to argue or question that specific statement [Denscombe, 1998]. The police felt that a group interview with all the Tynnered experts on the police force would be a good place to start.

In comparison to the interviews with the local citizens, the interview was less structured. The main idea was to gain further knowledge, rather than confirming presumptions. This included letting the various people from the police finish their thoughts and not necessarily force them to stay within the perceived boundaries of the project. There was some structure to the interviews though. In an early stage of the interview, a picture was presented, displaying the boundary introduced by *Stadsbyggnadskontoret*.

In order to get closer to the data collected, the interview was recorded and listened to several times [Denscombe, 1998]. Important findings from the interview were documented, in order to be able to go back and verify certain statements that might be used later in the report.

3.3.3 Interview with local housing companies

To gain further knowledge regarding the ramifications of the criminal activities in Tynnered, local housing companies were also interviewed. The aim of these interviews was to see if the local housing companies have been affected by the local criminal activities, and how. In order to stay on topic, and minimize speculation regarding the criminal situation in the area by people not living there (none of the representatives lived in Tynnered), the interview was a bit more structured than the ones conducted with the local citizens. As stated in the first paragraph of this chapter, the aim was to gain knowledge regarding the ramifications of the criminal activities related to the buildings and spaces owned by the housing companies.

In order to stay on topic, when speculative statements regarding the general environment of Tynnered were uttered, the interviewee was guided back to focus on their area of expertise.

3.4 Crime statistics

Throughout this project both perceived security and actual security have been discussed and evaluated. To receive knowledge of committed crimes and where they are being committed, statistics of crimes were collected. These statistics were collected

by contacting the police and getting access to their internal database *Hobit*, which is a system that connects crimes to a specific street where the crime has been reported. The data was collected by contacting the police and having them gather all the recorded crimes from the defined area of interest, displayed in *Figure 3.1*. This enables the identification of problematic streets where a lot of crimes are committed and areas in potential need of improvements regarding crime prevention measures. This was important for the project as the goal is to identify problematic areas and streets. To some extent this could be made through interviews with locals and police but that only gives their perception of the situation. As the perception is heavily affected by personal encounters and experiences, crime statistics gives unbiased and neutral answers. It is important to complement the answers from the interviews with statistics even though statistics could be misleading to some extent, not displaying all perspectives. But by complementing the interviews with statistics, a clearer picture of the crime situation was acquired.

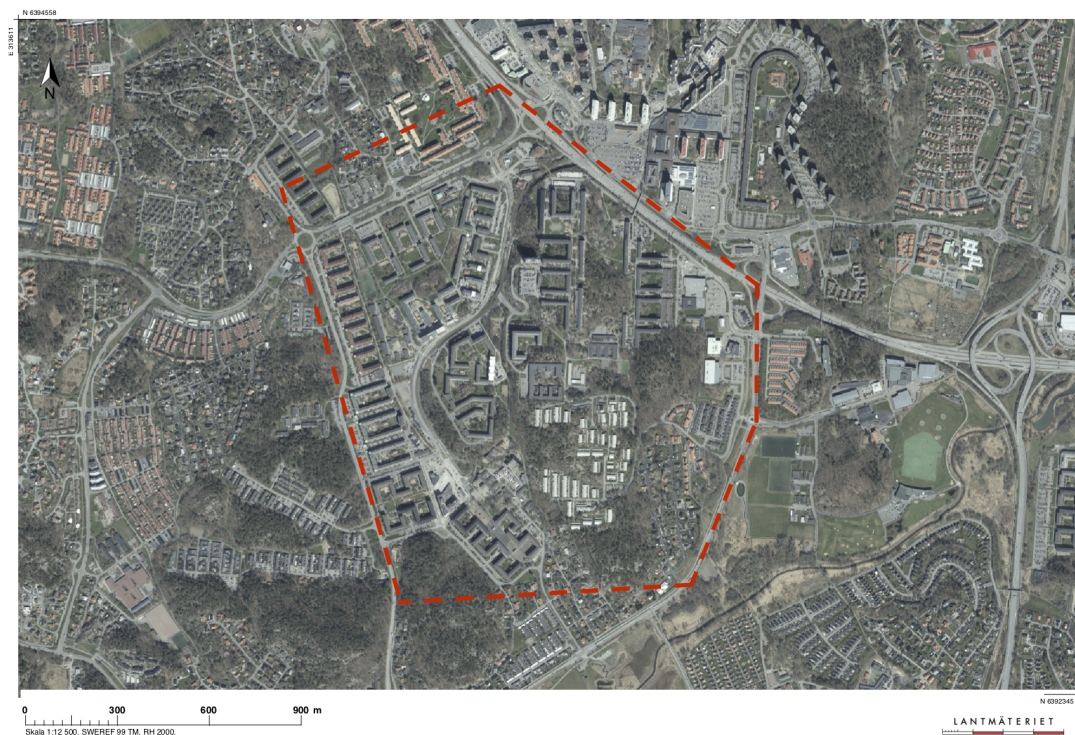


Figure 3.1: Area where crime statistics were retrieved. ©Lantmäteriet, no consent is required

The area is limited by *Skattegårdsvägen* to the north, *Topasgatan* to the east, *Näsetvägen* to the south and *Grevegårdsvägen* to the west. The street *Smyckegatan* north of *Skattegårdsvägen* was also included as it was relevant for this project. The search was made for crimes committed during 2019 labeled as *Assault and vandalism (Tillgrepps- och skadegörelsebrott)* and *Violent crime (Våldsbrott)*. These types of crimes are including, but not limited to, theft, rape, assault, vandalism, fraud. As not all crimes received from the search are relevant to this project as

some are not committed in public and semi-public spaces, a screening was made to remove crimes irrelevant to this project. This step was important as the statistics should support the data received from the interviews regarding problematic areas. But the data could be misleading if it includes crimes that are not affected by the physical environment in public spaces. By including the wrong types of crimes, the project might lose empirical focus, since certain crimes could be domestic disturbances and non-violent crimes. The search covered crimes committed during the year 2019 rather than 2020. The reason for this is that the Covid-19 pandemic could generate some deviations in the crime trends and was therefore not included. The deviation as a result of the pandemic are temporary and are therefore not considered

Next step in interpreting the data was to sort the statistics by which street the crimes were committed. This enabled the identification of streets that had high crime rates. This information was then sorted once again and divided into type of crime, for every street with high crime rates. This gave the possibility to compare figures of different streets with high crime rates and what type of crime that was committed on that specific street. This gave some numerical results that could easily be compared to and considered when analysing the interviews.

3.5 Evaluation and comparison of initial data

The aim of the initial interviews was to gain knowledge regarding problematic areas within the defined boundary. In the end, six problematic areas or streets made it through to the comparison. The chosen spots qualified for further investigation since they, in some way, stood out during the initial data collection phase.

In order to conclude the initial data collection and narrow the scope further from the six areas, the importance of each data collection method was considered. Because the police mentioned that the crime statistics were inaccurate in some cases, the collected statistics were considered to be less important. Instead, a decision was made to put an emphasis on personal experiences of local citizens and the police. The culture of silence was mentioned as another factor influencing the crime statistics of the neighbourhood. This insight made it easier to choose which spots to further consider during the project. In the end of this comparison, three problematic areas made it through to the deliberation that was made with the company supervisor at *Stadsbyggnadskontoret*.

3.6 Deliberation with Stadsbyggnadskontoret

To ensure that the final chosen area did not have any planned work within it, a presentation for *Stadsbyggnadskontoret* was held. This presentation focused on presenting the methodology used to narrow it down to the three areas that were still up for contention. After the presentation, a discussion was held with the supervisor at *Stadsbyggnadskontoret*. The aim of this discussion was to disqualify areas where improvements were already planned. This could further narrow the scope, and act

as a form of assistance when trying to decide on a final focus area. In the end of this meeting, only one problematic area was left, i.e. the final area of focus. The final area was *Röda Brilljantgatan*.

3.7 Second stage interviews

After the final focus area was chosen, more data needed to be collected in order to gain further knowledge regarding the contemporary setting in the area of *Röda Brilljantgatan* located in the south-east part of the pre-defined boundary presented by *Stadsbyggnadskontoret*.

3.7.1 Interview with the police

In order to gain further knowledge regarding the chosen area, an additional semi-structured interview was conducted with the police. The geographical boundary of the chosen area was presented to the interviewees and used as a mediating tool in order to stay within the area of interest. In this interview, public- and semi-public spaces were mainly discussed. The main reason why a semi-structured format was used, was to ensure that the discussion revolved around the area of interest.

Because crime can have a large intra-neighbourhood variance [Goff et al., 2010], particularly problematic geographical locations within the area were highlighted by the police. The highlighted locations are places where destructive behaviour, narcotics, violent crime and accessibility are problematic factors contributing negatively to the perceived security of the local citizens. To get a grasp on what happens where, color coded indications were used when pointing out problematic locations.

3.7.2 Interview with local housing company

In order to further understand the public and semi-public areas around *Röda Brilljantgatan*, an interview was conducted with a local housing company that hadn't yet been interviewed. The housing company that were interviewed, owned at least one building within the defined boundary. Because there was a strict boundary encapsulating the houses of interest, a semi-structured approach was used. This would help keep the discussion within the area of interest, but also leave a bit of freedom to elaborate [Denscombe, 1998].

Since the interviewee from the housing company did not live in Tynnered, the public and semi-public areas in close vicinity to the housing companies' buildings were the main point of discussion.

3.8 CPTED evaluation

After deciding on the focus area of the project, additional field studies were conducted in order to evaluate certain problematic areas, mentioned by local citizens, the police, local housing companies and results from crime statistics.

In order to be able to evaluate these areas, the six CPTED parameters from the extended first generation of CPTED presented in *Chapter 2.3.1*, were considered. Each site was visited and assessed in relation to these parameters. Also, in order to create a valuable result, a decision was made to focus on the two areas that were perceived to be particularly problematic in terms of the CPTED parameters. This meant that two delimited areas were to be further investigated and have interventions suggested for. Lastly, each location and the problematic aspects within these locations, were documented through text and photos. This enabled the authors to evaluate and observe the locations and the problematic CPTED aspects, whilst not on site.

3.9 Literature review

A qualitative literature review was performed to gain knowledge about what interventions have yielded positive results in other studies and projects. To the extent that there were studies to be found, other sources that could provide inspiration for various solutions was included as well, such as articles about various projects treating safety in public. In order to ensure that relevant potential solutions were considered, certain delimitations needed to be made to yield a good result [Funck & Karlsson, 2021].

Since CPTED was developed in the 1970s, this became the temporal delimitation, when trying to locate relevant articles. No articles or literature published before 1970 were considered. Secondly, this project is conducted in a particularly vulnerable area of Gothenburg, with the main purpose of visualizing a conceptual solution that could increase perceived security and prevent crime. Therefore, solutions that have already been used and implemented in order to address perceived and actual security were primarily considered. Thirdly, solutions that have mainly been implemented in semi-public or public spaces were considered. Therefore, solutions implemented in privately owned properties or spaces were disregarded.

Initially the goal of the literature review was to find articles where CPTED had been used and interventions had been implemented based on this theory. These findings were meant to support the suggestions that the authors argued to increase actual and perceived security. For this reason, evaluations of implemented solutions from CPTED projects were preferred. The reason for this was that the authors could point to different CPTED projects and point to what worked and what did not work. But because these articles were few, the scope of the literature review had to be broadened. Articles regarding CPTED project that still had not been

implemented and evaluated were now also considered. Furthermore, Articles that concerned individual parameters of the CPTED theory but that were not explicitly CPTED project, were now also considered. There was also some literature collected that did not have a direct connection to CPTED but treated crime prevention and increasing security, by doing alterations to the physical environment. These dissertations or papers were also considered.

A variety of search terms were used such as "CPTED", "crime prevention through environmental design", "CPTED+case study", "Evaluation+CPTED". The searches were mainly performed on *Google scholar* but other databases were also used and the *Snowball method* was also used to find relevant literature from the initial searches. These searches gave results but there were also some literature found from going through various organisations websites such as *Brottsförebyggande rådet (BRÅ)* and *Boverket* to find relevant projects regarding security. Some findings were evaluations of CPTED project, some findings were evaluations of project regarding security without a connection to CPTED and other findings were used as inspirations for interventions to this project.

3.10 Choice of interventions

As the areas had been evaluated in accordance to the CPTED theory and relevant literature had been assessed, the next step in the process was to suggest interventions. This was done by discussions between the authors where new ideas and interventions from other projects were discussed. This was a dynamic process that took place at-sight on a few occasions, to make the interventions as feasible as possible. Relevant literature was used to support the choice of interventions. The interventions suggested addressed all the CPTED parameters that were judge problematic and other aspect not related to CPTED were also partly considered.

3.11 Creation of visual suggestions

In order to visualize how the problematic aspects identified in each of the two chosen areas can be counteracted, visual suggestions were created using the software *Adobe Photoshop*. To make the reader understand and be able to picture the suggested interventions, pictures of the sites were manipulated. Some objects were removed and some simple digital drawings were included. The pictures used for the visual suggestions were shot by the authors themselves in Tynnered. The main aim of this part of the project was to clearly visualize the difference of the environment prior and post implementing the various suggested interventions.

4

Results

This chapter presents the findings from the data collection such as interviews, crime statistics, field studies and how these findings guided the project. In the end of the chapter the evaluation using CPTED and the suggested interventions are presented.

4.1 Initial field studies

The field studies performed during the initial phase of the project gave a lot of grounded knowledge about the area of Tynnered. The visits to the area and time spent there gave many insights and understanding that could not have been retained if the work would have been conducted on distance.

The visits gave the perception that Tynnered is an area that is fairly taken care of. A lot of efforts have been made to improve the *image and milieu* of the area such as building new schools and re-building squares. But there were also areas that did not seem well designed and there was garbage laying around. The area varies in elevation which complicates and further divides the area. It is difficult to get an overview of some areas as the hills break the line of sight. The varying elevation in Tynnered also makes it difficult to build densely and there are a lot of spaces that do not really serve a purpose, where people only passed through to get to and from, for example, the tram stop and their apartment building. Some of these sections were also surrounded by greenery which made them even more isolated. There were also some sections where it was difficult to get access through by car and it is only accessible through walking or by two wheeled vehicles.

4.2 Initial interviews

In this chapter, the result from the initial interviews are presented. The result from the three interviewee groups will be presented separately. The following sub-chapters will answer the research question regarding the perceived security presented in *Chapter 1.3*.

4.2.1 Interviews with local citizens

Interviews were conducted until saturation was achieved. This was apparent when the answers to the questions became repetitive. Eleven interviews were conducted before reaching saturation. To ensure that saturation was achieved, the last two interviewees were not represented within the current age span. This, however, still resulted in repetitive answers to the questions. Therefore, no further interviews were held.

The age span of the participants was 27 to 78 years old. This was considered to be a sufficient age range. Seven women and four men participated and answered the question that could be accessed in *Appendix A*. Their answers were quite similar in general, and no gender specific problem can be reported based on the collected data.

A general theme for all the participants was that they expressed that they felt safe in the area of Tynnered. Although, after some further questioning, it became apparent that they avoided going outside during the darker hours of the day and adjusted their lives to this. "*I don't have any reason to be outside at night*", was a common answer. It seems that the typical Tynnered citizens have adapted to the subnormal norms imposed by the local criminals. The conclusion is that the citizens described themselves as not being afraid but that they had just adjusted to not being outside during certain hours of the day. This illuminated the problems regarding perceived security in Tynnered. Evenings and nights are usually the time of day when the local citizen feels unsafe going outside.

The time of year also influences the sense of security in Tynnered. Although, there were some negative aspects with the seasons on each side of the spectra. Winters were considered to decrease the sense of security, although this was mainly because of the fact that the winter has less daylight. Related to this, the local residents expressed dissatisfaction regarding the lighting in Tynnered in general. Summers were considered, according to some, to be the season that decreases the sense of security the most. During the summer months, the local citizens experience that the number of people with destructive behaviour show up in larger numbers. To quote one of the interviewees, "*When the snow thaws, the idiots appear*". Some of the citizens were doubtful that summers were worse, stating that they think that the darkness of the winter might just hide the criminal activities.

The participants lived mainly in the western parts of the considered area, around the tram tracks, i.e. in close vicinity to the square *Opaltorget*. This might point to the fact that geographical diversity was not sufficiently diverse. Although, the result from the interviews resulted in sufficient data to continue the study. The main reason why they were considered to be sufficient is that when some people living in other parts of Tynnered participated, nothing new was discovered.

When trying to get the local citizens to say which areas of Tynnered that were the most problematic ones, there were some locations that stood out from the rest. The ones most frequently mentioned were *Briljantgatan*, *Smaragdgatan* and *Smyck-*

esgatan. Although *Grevegården*, *Frejaskolan* and *Almas Livs* were also mentioned a couple of times. These locations were generated from the opinions of the interviewed citizens and their perception. These locations do not represent the general opinion but will be used together with other means of data to conclude a more nuanced picture of problematic locations within Tynnered.

The problematic aspects of the three most frequently mentioned spots were several. These three spots are displayed in *Figure 4.1*, yellow highlights the area referred to as *Smycketorget*, blue indicates the area referred to as *Smaragdgatan* and the red oval shows the boundary of *Briljantgatan*. The main reason, though, is that these places have a lot of known, criminally active people living in them, according to the police. The places where the known previous offenders live, are usually places where several known criminals meet up and "hang out". This was, according to most of the interviewees, the main problem. Groups of young men spreading a sense of insecurity. Also, this is one of the reasons why people avoid certain parts of these neighbourhoods.

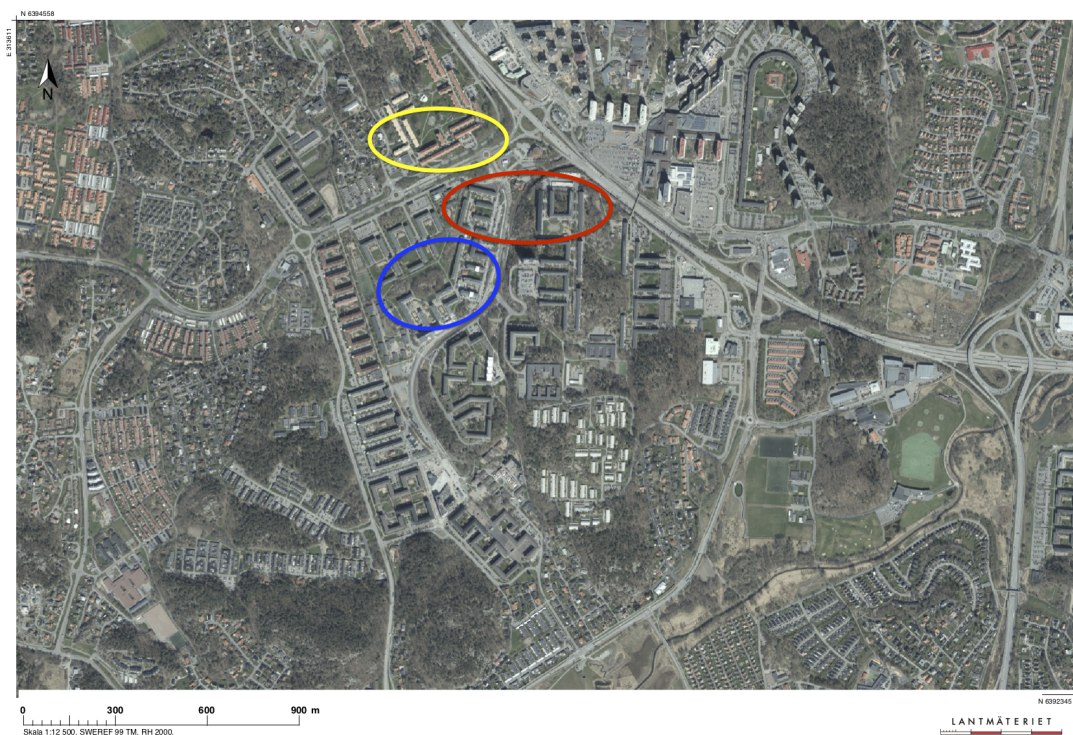


Figure 4.1: The three most frequently mentioned problematic areas. ©Lantmäteriet, no consent is required

It was just a minority of the interviewees that had been the victim of any crimes. One of the interviewees said that it had received death threats, another one had been assaulted for no real reason. Another one had their car vandalized. Apart from that, crime wise, the only common theme seems to be that more or less all of

the interviewees had observed some sort of drug related crime. This includes selling or using. Furthermore, something that might indicate a normalization of the fact that crime is part of life in Tynnered, is that one of the interviewees forgot to tell us that he or she got attacked, unprovoked. *"My friend and I were walking home, and all of a sudden young men started to provoke and verbally abuse us. Eventually they attacked us. I guess that is what happens when you're not careful."*

The sense of community is perceived quite differently by the various local citizens that were interviewed. Some of them were satisfied with the unity of their neighbourhood, others were not.

The interviewees expressed some dissatisfaction with the maintenance of their neighbourhood. Some expressed that they were very dissatisfied. This varied a lot depending on where in Tynnered they live. Although, the work that is currently being conducted at the square *Opalorget* has increased the sense of not being neglected by the rest of *Göteborgs stad*, i.e. Gothenburgs governing organisations.

The interviewees claimed that the crimes have gotten worse over time. This statement was usually clarified further, explaining that the frequency of crime is about the same, but the severity of crime has gotten worse. *"Back in the days, people were just knocked out. Today, if someone gets knocked out, people kick them while they are lying there unconscious"*. Some interviewees expressed that they felt like the severity of crime have gotten worse, compared to 10-20 years ago.

The interviewed citizens of Tynnered were satisfied with the presence of police in the neighbourhood. Stating that they appreciate their presence, and that they are there quite frequently. Some of the participants, felt that the police could do even more.

4.2.2 Group interview with the police

The group interview with the police was conducted with five people from various instances within the police force and they answered the questions that could be accessed in *Appendix B*. What they all had in common was that they work with the area of Tynnered on a daily basis. One of the interviewees claimed that, *"Collectively, we know more or less every criminal in Tynnered, as well as where they live"*. They all have various strategies trying to improve the neighbourhood. One of the interviewees is part of the area police. The area police are frequently visiting Tynnered, talking to the local citizens, getting more hands-on experience. Two of the interviewees are working more strategically, trying to collaborate with various stakeholders in order to increase security and prevent crime. The last two participants are operational coordinators, working primarily with coordinating the police force in Tynnered. Although, both of the last two participants also have experience from being part of the area police.

There are various reasons why Tynnered has become a particularly vulnerable area, according to the police. Apart from the criminal organisations that are present in the area, there are other problematic aspects that drive younger and younger people into organized crime.

Because of the fact that Tynnered is surrounded by wealthier and calmer territories such as *Billdal* and *Fiskebäck*, the statistics have been somewhat misleading as these areas improves the statistics of the larger area. The results of children in schools is below average which, according to the police, is an indication that it is easier to end up in criminality. There is a culture of silence in Tynnered, and government agencies are not trusted. Criminal organisations have been successful in silencing the people of Tynnered, resulting in a lot of people being afraid of communicating what they have experienced to the authorities.

The police says that there is a big problem with narcotics in Tynnered. There are people selling, holding and using it. A problem regarding criminal activities in Tynnered, is that the police do not get to know about them. The silence culture influences the number of crimes that the police find out about. What also makes it more difficult, is that even if the police know who has committed a crime, the victim might not want to confirm who it is. An example of this is when a young man got assaulted, and in the heat of the moment accidentally told one of the policemen who his offenders were. His older brother was there as well and told the police to leave the room for a minute. *"When I came back, the young man said that I could not use any of the information that he previously gave me. This resulted in a situation where I could see the offenders on a semi-daily basis, and not do anything about it"*, said one of the policemen.

The areas that are particularly problematic within the boundary defined by *Stadsbyggnadskontoret* are *Smaragdgatan*, *Smyckesparken*, *Smyckestorget*, and *Briljantgatan*, according to the police. There are a couple of common denominators. People that are involved in organized crime live at all of these locations. This results in some of the stairwells of the tenancy houses becoming hang-out spots for local criminals. Another common denominator is that the surrounding environment is quite dark and not providing sufficient lighting during the darker months of the year. Apart from the physical aspects, the silence culture is also a common theme of these areas where people are less prone to report crime and interact with the police.

According to a local housing company's surveys, it appears that the perceived security has increased, according to the police as well as a local housing company. It is hard to tell what the cause of this is, but the police named a couple of potential factors. The first one mentioned by the police was that they have increased their presence in Tynnered, visiting and being on site more frequently. Another factor mentioned by the police is that the presence of the criminal organisations has been normalized, resulting in people feeling safe, as long as they follow the unwritten rules of the criminals. Some local citizens even claim that the organized criminality increases the sense of security, according to the police.

There is a big problem of young men walking around or hanging around in various parts of Tynnered, creating a sense of insecurity. According to the interviews with local citizens, they are mostly kids, pre-teens or teenagers, with nothing to do. However, according to the police, a lot of these kids are in some way involved with the criminal organisations in Tynnered. From a very young age, a lot of these boys are spying, selling narcotics and running errands. In the police's experience, the well-behaved boys are not outside, hanging around during evenings and nights. Also, some of the boys that the local citizens consider to be "*harmless youngsters with nothing to do*" have been caught possessing narcotics and weapons, according to the police. Criminals or not, these young men create a sense of insecurity for the local citizens.

In 2011-2012, there was a lot of cars being lit on fire, which caused a collective social anxiety. The criminal activity culminated in 2016 and 2017, which is something that the local citizens still have in their collective memory, according to the police. In comparison to other vulnerable areas, the situation in Tynnered is not as bad even though it is a area with problems related to criminality and security. One of the main reasons why Tynnered got classified as a particularly vulnerable area is the double homicide of 2016.

The police force have made a couple of attempts to alter the physical environment in order to prevent crime and increase security. Cameras have been installed on several locations. Although, the effect of the cameras was quite temporary. Eventually the presence of the cameras got normalized, and criminals adjusted their way of operating. But, they mentioned that maybe if cameras are placed along trails where people are moving a lot, the adjustments that have to be made by the criminals would force them to move elsewhere. The police are also communicating with local housing companies, when there are apparent problems related to their work. Lighting and the possibility to casually observe when passing by are usually aspects that are discussed, with varying degrees success. Apart from the changes in the physical environment, there is also a continuous work taking place involving the social aspects. One example of this is that there is a dialogue between the police and the parents of kids that are in risk of becoming part of the criminal organisations.

In order to have greater success with their work, the police thinks that they need to help and address the fact that younger kids are involved in criminal activities. Therefore, they are trying to affect kids that are at risk of becoming criminally involved at a very early age. They did also express that only efforts from the police, school and social workers would not be enough and that alterations to the physical environments are needed as well to prevent crime.

All the representatives of the police were positive to the idea of altering the environment in order to counteract criminal activity. From their experience though, forcing the criminal activity out of a specific area does not mean that the problem disappears. But, according to their personal experience, the criminal activity decreases

every time the activities are forced away. They expressed it as, the police cannot remove all crimes from the streets but their goal is to make it difficult for the criminals to operate. One of the strategies used by the police is to displace crime, which disrupts the criminal activities even if just for a short period of time. *"Every time criminally involved people are forced away from an area, we experience that about 90 percent of the activity moves, rather than all of it"*, said one of the policemen.

During the interview, the police pointed out locations they judged being problematic regarding crime and where for example narcotics were sold frequently. To make the authors get a clear picture of these locations, the police invited the two authors to join them during a work shift in Tynnered. This took place during the evening together with two police officers. They pointed out and showed areas that they thought needed improvements and these areas were also places where more serious crimes such as shootings, had occurred. This gave a lot of valuable knowledge about the area and provided a further understanding of the area, its complicated past and its challenges. For example, when visiting *Briljantgatan* during the field studies with the police, they could point to several entrances where known criminals live. This information might not be very useful to prevent crimes in public spaces but added further relevant knowledge that could be considered when choosing areas to address in close vicinity to these locations.

4.2.3 Interview with local housing companies

Two interviews were conducted with the two housing companies *Familjebostäder* and *Stena Fastigheter*. The questions of the interview could be accessed in *Appendix C*.

The person interviewed from *Familjebostäder* works as a communicator for the company. They mostly have housing in the south-east part of the defined area of Tynnered which this project covers. Their biggest problem concerning security is unauthorized people using their staircases to hang around. It might not be criminal behavior but it is something that creates insecurity amongst their residents. They have also had some problems with break-ins into common areas where properties were being stolen. But this have not been a problem where proper locks have been installed. They try to prevent these break-ins and increase security by having employees regularly visiting these common areas within their residences. They do perform surveys every year which have shown that their residents are feeling somewhat insecure. The convenience store *Alma Livs* was mentioned as a place where the resident feel insecure. The interview gave limited insight as the interviewee did not seem to have deep knowledge about the problems of security related to Tynnered, apart from the surveys mentioned above.

The second interview was with *Stena Fastigheter* and with an employee working as a trustee, responsible for maintaining the buildings and semi-public spaces in the *Stena Fastigheter* buildings in Tynnered. *Stena Fastigheter* do have housing in the north part of the defined area and especially at *Smyckegatan*. As in the interview with *Familjebostäder*, it was also mentioned that there is a problem with groups of

young people hanging around where they are not authorized to be. These people might not necessarily do anything criminal except some property damage at times. But the biggest problem according to *Stena Fastigheter* was still that these groups of people made the residents feel unsafe.

This last year more and more people that create insecurity among the residents, have moved from hanging out at *Vita Briljantgatan* to *Smyckegatan*, according to the interviewee. The interviewee believed that this was partly because of the CCTV that have been installed at *Vita Briljantgatan*. They try to solve this problem by frequently communicate with the police and be part of different initiatives. They believe that the problem will not disappear if they restrict staircases and other common areas, as the problematic group of people would only move to another location close by. They expressed that there are feelings of insecurity amongst their residents. Especially amongst elderly as they read about crimes on social media and in newspapers and becomes frightened by it. The interviewee also expressed that some areas such as *Vita Briljantgatan*, have become accustomed to more serious crimes. Therefore, the residents living in *Vita Briljantgatan* might not express feelings of insecurity anymore, to the same extent, since it is not as bad in comparison to how it has been.

There are a lot of initiatives from authorities to fight crime but it is more focused on organised crime, which the local citizens might not notice or know much about. Most serious crimes in connection to their housings are taken place at *Vita Briljantgatan* and *Smaragdgatan* but more visible crimes such as the dealing drugs are taken place at *Smyckegatan*. This have led to the residents asking for better locks and systems of controlling entries to housings. *Stena Fastigheter* do also initiate projects to build a sense of community amongst their residents to increase security. They have initiatives focused on seniors and collaborate with local sport clubs. They try to communicate as much as possible with their residents and every year they let half of the residents answer a survey about perceived security. The results of this survey have showed that there is a broad sense of insecurity.

4.3 Crime statistics

The crime statistics were collected from the police and then went through a screening process where irrelevant crimes were removed. After this, 709 crimes remained that had been committed in the defined area during 2019 [Polisen, 2021]. From this, ten streets were identified where more than 20 crimes had been reported. These ten streets are *Briljantgatan*, *Bronsåldersgatan*, *Grevegårdsvägen*, *Opalgatan*, *Opaltorget*, *Rubingatan*, *Safirgatan*, *Smaragdgatan*, *Smyckegatan* and *Topasgatan*. Together, they made up 629 out of the 709 crimes that were committed in the area during 2019. The crimes reported on these ten street were divided into *Assault and vandalism (Tillgrepps- och skadegörelsebrott)*, *Violent crime (Våldsbrott)* and *Other crimes* for every individual street. The results of this is displayed in *Table 4.1*.

Table 4.1: Compilation of crime statistics during the year 2019 in the defined area

Street name	Total	Assault and vandalism	Violent crime	Other
Topasgatan	129	88	25	16
Grevegårdsvägen	101	62	29	10
Smyckegatan	98	73	18	7
Briljantgatan	94	61	22	11
Smaragdsgatan	48	29	13	6
Opalgatan	43	25	8	10
Bronsåldersgatan	34	21	6	7
Rubingatan	30	20	7	3
Opaltorget	28	22	6	0
Safirgatan	24	15	5	4

Topasgatan is the street with the most crimes reported (129) followed by *Grevegårdsvägen* (101), *Smyckegatan* (98) and *Briljantgatan* (94). Both *Topasgatan* and *Briljantgatan* are located in the north-east region of the defined area, displayed in *Figure 4.2*, marked with the number nine and eight. *Grevegårdsvägen* on the other hand marked with the number one, is located to the west of the defined boundary. *Smyckegatan* marked with the number ten is located on the other side of *Skattegårdsvägen* which is a larger passage which to some extent isolates it from the rest of the streets. Common for all these streets are that they cover quite large areas and have a lot of residents living on these addresses, which might explain the high numbers. But regardless of this, the numbers of these four streets are significantly higher than the other six streets.

Grevegårdsvägen do have the most *Violent crimes* reported even though *Topasgatan* do have more crimes reported in total. *Topasgatan* do stand out in the distribution between *Assault and vandalism* and *Violent crimes*. This could be connected to the fact that many businesses are located in the southern parts of *Topasgatan*. Burglar-ies at these businesses could be the reason for the deviation in the data. *Smyckegatan* do also have many crimes within the category *Assault and vandalism* in relation to *Violent crimes*. The statistics of *Smyckegatan* was dominated by property (such as bicycles etc.) being stolen. Otherwise there is not any figure that stands out, they all follow the same pattern. The pattern of having about 20-30% being *Violent crime* and 60-70% being *Assault and vandalism*.

It is also important to keep in mind that the police, interviewed throughout this project, expressed that the problem of local residents being hesitant to report crimes, described in *Chapter 4.2.2* might influence the statistics. During an interview it was said that "*The crime rates are not sky high. But it is a part of the culture of silence towards the police, to not report crimes. They rather solve it on their own or with the help of other inhabitants or criminals*". In Tynnered there is a somewhat skeptical attitude towards the police and other authorities. According to some policemen that have been participating in this project, not all crimes are being reported and this of course affects the statistics. But if the problem mentioned by the police is true,

4. Results

and the hesitancy to report crimes is spread throughout Tynnered, the statistics should still give a relatively accurate picture of distribution of crimes in the area of Tynnered.

In *Figure 4.2*, all the ten streets seen in *Table 4.1* have been marked out and given an unique number. *Grevegårdsvägen* with number the one, *Opaltorget* with the number two, *Opalgatan* with the number three, *Bronsåldersgatan* with the number four, *Smaragdgatan* with the number five, *Rubingatan* with the number six, *Safirgatan* with the number seven, *Briljantgatan* with the number eight, *Topasgatan* with the number nine and *Smyckegatan* with the number ten.

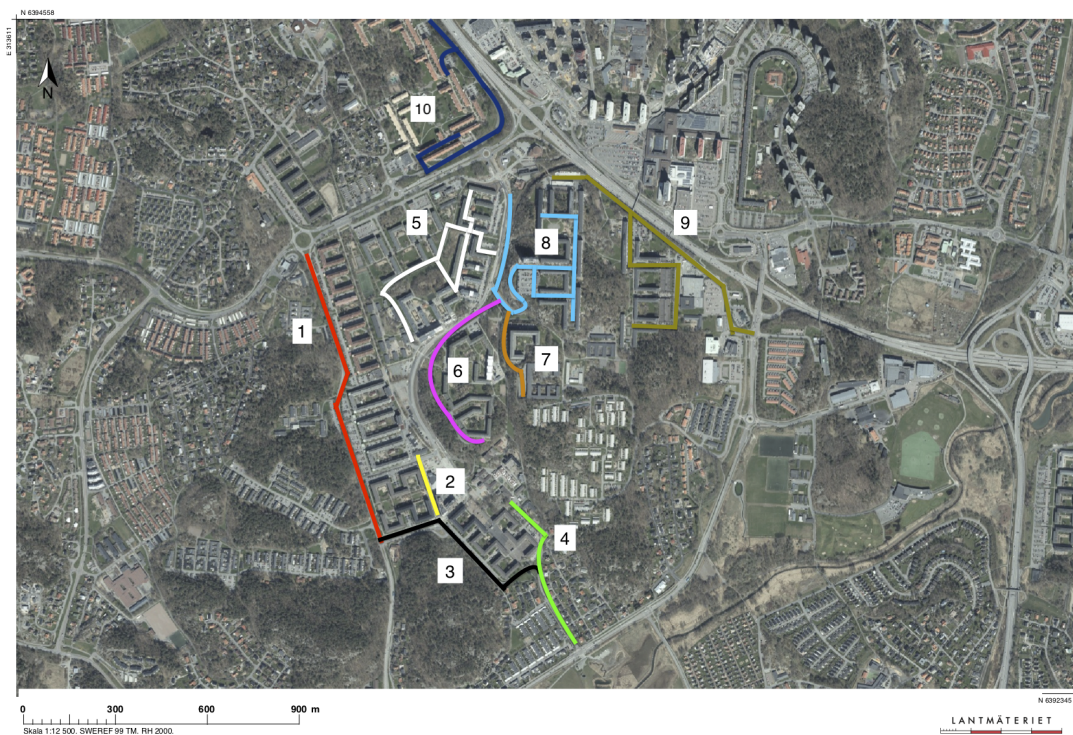


Figure 4.2: Map displaying the ten streets were many crimes have been reported. @Lantmäteriet, no consent is required

4.4 Assessment of initial data

The results presented in Chapter 4.2 and 4.3 was compiled and compared to determine which area within the defined area that should be the focus point of the project and evaluated using the CPTED theory. The following chapter also answers the research question regarding the which areas are in need of improvement, formulated in *Chapter 1.3*.

From the interviews with the local citizens five streets/locations were mentioned by two or more interviewees. These steets/locations were *Briljantgatan*, *Smyckegatan*,

Smaragdgatan, *Grevegårdsvägen* and *Alma Livs*. These are listed in *Figure 4.3*. In the same figure it is displayed which street that were mentioned during the group interview with the police as problematic streets regarding crime. These streets were *Smaragdgatan*, *Smyckegatan* and *Briljantgatan*. The figure also displays the streets/locations that were mentioned in the interviews with the housing companies as well as the compilation of crime statistics. From the interviews with the housing companies, three streets/locations were mentioned and those were *Briljantgatan*, *Smyckesgatan* and *Almas Livs*. From the compilation of the crime statistics, four streets stood out as they had more than 90 crimes reported in total and they were *Grevegårdsvägen*, *Briljantgatan*, *Smyckesgatan* and *Topasgatan*.

The results from these different data collections were put together in *Figure 4.3* to compare and draw a conclusion. The matrix illustrates which streets/locations which will be eliminated and not moved on to the next stage of the process. The street/location is disqualified in the local citizens interviews category if they have not been mentioned three times or more as problematic streets/locations.

Local citizens interviews (3+)	● ● ●	● Grevegårdsvägen
Housing companies interviews	● ● ●	● Briljantgatan
Police interview	● ● ●	● Smaragdgatan
Crime statistics (Total 90+)	● ● ● ●	● Smyckegatan
		● Almas Livs
		● Topasgatan

Figure 4.3: A matrix to determine which streets/locations that qualifies to be further investigated

Two of the streets in *Figure 4.3* are mentioned in all four data collection categories and they are *Briljantgatan* and *Smyckegatan* and do therefore qualify to be further investigated. The street of *Smaragdgatan* was mentioned in the interviews with the local citizens and in the police interview. It was decided to not disqualify *Smaragdgatan* as it was discussed quite a lot during the interview with the police. As displayed in *Figure 4.3*, *Grevegårdsvägen*, *Almas Livs* and *Topasgatan* only qualify in one of the data collection categories. *Topasgatan* did have the highest number regarding reported crimes but it is also a street that covers a large area, in comparison to the other streets. This led to *Topasgatan* being disqualified. Therefore, they did not move on to the next stage of the project. This means that *Briljantgatan*, *Smyckegatan* and *Smaragdgatan* qualified for the next step.

During the next stage, these streets were presented to *Stadsbyggnadskontoret*. As it turns out, *Stadsbyggnadskontoret* have already planned alterations to the physical environment at *Smaragdgatan* and the western parts of *Briljantgatan*, also referred to as *Vita Briljantgatan*, which refers to the white colour of the buildings in that

4. Results

specific area. During the meeting the contact person, Eva Tenow at *Stadsbyggnadskontoret*, also mentioned that changes will be made to the environment close to *Skattegårdsvägen* which is next to *Smyckegatan*. This means that the areas that qualified for further investigation, all three of them already had changes planned in the physical environment to be realised the upcoming years. This meant that the project would have to work around the initiatives already planned. Therefore, a decision was made to narrow the scope further. As of right now, there are no initiatives planned in the eastern parts of the *Briljantgatan*, referred to as *Röda Briljantgatan*, referring to the red colour of the buildings. The area of *Röda Briljantgatan* is displayed in *Figure 4.4*.



Figure 4.4: The area referred to as *Röda Briljantgatan* and the surrounding areas is marked with a red line. ©Lantmäteriet, no consent is required

Based on the information that was gathered regarding the initiatives that are about to be taken, a decision was made to focus on *Röda Briljantgatan* and discard the part referred to as *Vita Briljantgatan*. In *Röda Briljantgatan*, no alterations to the physical environment have been planned. This means that the result of this project might be applicable to the actual environment when the project is completed. Therefore, the focus will be put towards the area of *Röda Briljantgatan* and the surrounding environment, which might include parts of *Topasgatan* as well, i.e. the street with the most reported crimes.

4.5 Summary initial stages

To summarize the initial stages, an illustration was made to visualize how the first areas were discovered, and the process of elimination leading towards the final location of *Röda Brillantgatan*. This illustration could be seen in *Figure 4.5*.

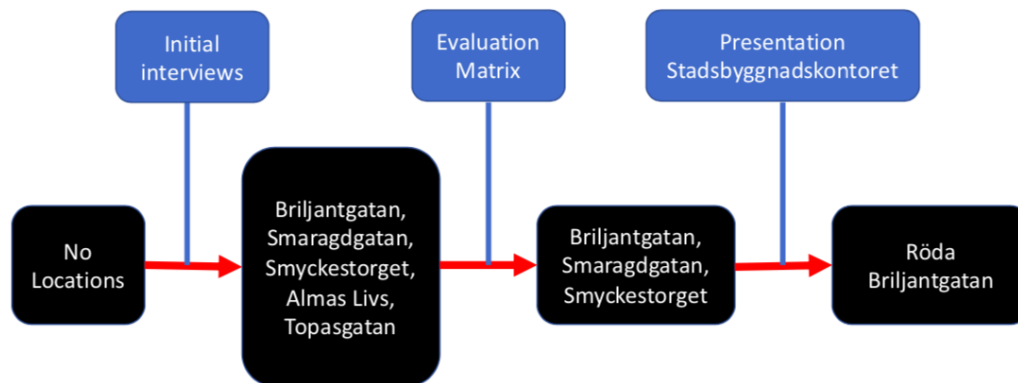


Figure 4.5: The process of determining the final focus area

In order to identify the initial, problematic locations, interviews were conducted with local citizens, the police and local housing companies and crime statistics were collected. After the initial problematic locations were discovered, an evaluation matrix was used to compare the locations to each other. In the evaluation matrix, the data collected from the interviews and crime statistics were used to detect the most problematic locations, according to the participants and the statistics. When the final three locations were decided, a presentation was made to *Stadsbyggnadskontoret*. After consultation, it became clear that the only location with no planned initiatives, was *Röda Brillantgatan*. I.e. the eastern parts of *Brillantgatan*, which became the location chosen for further investigation.

4.6 Continued field studies

As the project had progressed, field studies were performed in the problematic area identified from the initial data collection and dialogue with *Stadsbyggnadskontoret*. This area is henceforth referred to as *Röda Brillantgatan* and is presented in *chapter 4.4*. During these field studies, the area was examined and explored to identify places that seemed problematic regarding security. Questions like "Impressions of the site at first glance?", "How vandalised is the area?" and "How is the space used by the inhabitants?" were discussed amongst the authors and other factors were continually discussed through dialogue. The whole area was explored and observed during the field studies. As a result of the field studies, mainly three areas were identified that would be further investigated which are marked out in *Figure 4.6*.

4. Results



Figure 4.6: The three identified areas that should be further investigated and evaluated. ©Lantmäteriet, no consent is required

The area marked with blue in *Figure 4.6* is referred to as the *Briljantgatan tram stop*, the area marked with red is referred to as *The outdoor gym* and the area marked with pink is referred to as *The pink trail*. These areas stood out as they were not well taken care of and there were garbage laying around. These areas were also quite uninspiring and did not seem to be places where citizens would like to utilize for activities and socialising. These areas are right now only used to walk through by people, rather than an area where the citizens stay and spend time, according to local citizens that were met during the field studies. The aspects of CPTED were kept in mind and factors such as *natural surveillance* were observed throughout the field studies.

The area referred to as *The outdoor gym* has great potential to be a green area where the nearby residents could socialize or make use of it as a park. Right now, it is not a nice place to be and during all the field studies, it was never observed that this area was being used other than for people walking through.

The areas referred as *Briljantgatan tram stop* and *The pink trail* on the other hand are only walked through by the citizens and will probably remain as this type of area. But they both had problems regarding perceived security and mainly that the authors observed a sense of being lonely in these areas. There was an absence of informal social control as the line of sight from the building were limited.

Field studies to these three areas were also performed during evenings to observe how well-lit the areas are after sunset. But these field studies did not only give information about the lighting but also gave the authors a feel of how the areas were perceived during nightfall. The *Briljantgatan tram stop* was quite dark and felt a lot more intimidating during the darker hours of the day. The same could be said for *The outdoor gym* and the area *The pink trail*. They felt more intimidating than during the day and it is understandable that citizens avoids going outside after dark, as some interviewees mentioned in the interviews presented in *Chapter 4.2.1*.

4.7 Second stage interviews

In an attempt to further get to know *Röda Briljantgatan*, interviews were conducted with a local housing company, as well as with the police. In this chapter, the result of these interviews will be presented.

4.7.1 Interview with the police

During the interview, a mediating tool was used. To ensure that the discussion and interview would revolve around the chosen area, a satellite image of the chosen area was presented on a paper in front on the interviewees. The goal of using this strategy, was for the police to be able to point to certain problematic spots within the chosen area and not get off track or focus on areas outside *Röda Briljantgatan*. This resulted in a colour coded map, highlighting certain spots within the chosen area displayed in *Figure 4.7*.

4. Results



Figure 4.7: Problematic spots within *Röda Briljantgatan* according to the police. @Lantmäteriet, no consent is required

Yellow was used to indicate where accessibility was a problem. Blue was used to indicate where violent crimes have been conducted. Red was used to indicate locations where selling narcotics is common. Purple was used to highlight locations with destructive behaviour and locations where the perceived security is quite low. Green was used to point to initiatives that have been implemented in an attempt to prevent crime and increase security of the local citizens.

Based on the areas highlighted by the police, some of problematic spots, were found. In order to gain further knowledge regarding the problematic aspects of each spot, the policemen were asked to further explain the problematic aspects and on-site experiences of each of the spots. The first spot within the chosen boundary that was brought up by the policemen was the *Briljantgatan tram stop*.

Here, there are several problematic parameters to consider. Historically, this is a spot where crimes have been committed. The police mentioned that there are people dealing drugs close to the viaduct seen in *Figure 4.8*, and that there has been a homicide at the tram stop "a few years ago". Apart from the actual crimes being committed, the police also mentioned that the stretch between the tram stop and the courtyard at *Röda Briljantgatan* is quite problematic. This stretch is not sufficiently lit, which decreases the perceived security, according to the police.



Figure 4.8: The walking path from the *Briljantgatan Tram Stop*

In close vicinity to the area presented in *Figure 4.8* above, in the opposite direction of the picture, there are several previous offenders living in the neighbouring houses. The courtyard is a common hang-out spot for these criminals, which is another aspect that decreases the perceived security. Even though this is a problem, the main focus will be the stretch between the courtyard and the tram stop.

The second spot that was chosen to further investigate was the *The outdoor Gym* marked in *Figure 4.7*. This place was perceived to be a bit of a blind spot by the police.

The only crime that the policemen could recall was a robbery a few months ago. The robbery was carried out east of the marking, in between the bridge leading to Frölunda Torg and the dental clinic. The outdoor gym was considered to be a bit of a blind spot for the police, mainly because of the fact that the area is not well lit, according to the police as well as locals. This, in combination with a non-existent *natural surveillance* from adjacent apartment buildings makes it hard to monitor this area, as seen in *Figure 4.9*. Therefore, the police did not have a lot of information to provide regarding this specific area.



Figure 4.9: The outdoor gym hidden behind a rock and some trees

This interview, in combination with previous field studies, resulted in The outdoor gym and the *Briljantgatan Tram Stop* becoming the chosen areas to further investigate during the CPTED evaluation phase. There were a couple of other alternatives, but these areas were chosen because they had clear indications of problematic aspects that could easily be related back to the parameters originating from CPTED. Also, these areas were the ones within the chosen boundary that the police perceive to be (and potentially to be) problematic as of right now. The rest of the spots that were highlighted were mainly places where there had previously been problematic aspects.

4.7.2 Interview with local housing company

In order to get input from another stakeholder, a local housing companies were also interviewed with the questions that could be accessed in *Appendix D*. The only premise for these participants was that they would have to own buildings within the chosen area. Because the participants from the local housing company did not live in Tynnered, the questions mainly revolved around their residences and courtyards. *Bostadsbolaget* owns 3 apartment buildings within the chosen area.

There are some indications of destructive behaviour in and around their buildings. "In comparison to what happens on the other side of Västerleden (i.e. Frölunda Torg), we are blessed with a calm neighbourhood in comparison", expressed one of the interviewees. When further questioned about this, it surfaced that there is some vandalism present in periods. Also, there have been some cars that had been burgled in their garages.

There are some areas that are perceived to be quite unsafe by the *Bostadsbolaget* tenants. *Bostadsbolaget* have a dialogue with their tenants, which helps them to further gain knowledge regarding their experiences and potentially help them counteract certain dissatisfying aspects. Based on their digital (as well as face to face) dialogue, the interviewees were able to point out certain problematic spots within the chosen area. Apart from their parking garages (which is excluded because it is private property), they also mentioned that the park with the Outdoor Gym was "not perfect". They said that several tenants have expressed that they feel insecure in that specific area, partially because there is insufficient lighting. Also, the recent robbery is still collectively remembered by the tenants, according to one of the interviewees.

Bostadsbolaget claims that the stretch between *Röda Briljantgatan* and the *Briljantgatan tram stop* has been quite problematic and unsafe. Although, they think that the camera that has been put up have increased the perceived security of that specific spot. In order to increase security for their tenants, *Bostadsbolaget* are working with various projects. For example, they have started a lighting project which has been successful so far, according to one of the interviewees. Also, they are collaborating with the police when working with these questions. They have hired a monitoring company that sends out watchmen to their buildings a couple times a week, in order to further increase security and prevent destructive behaviour, in addition, they have also applied the "*Broken Window Principle*" which roughly suggests that they are trying to remedy any vandalism within 24 hours [Hale, 1987].

According to *Bostadsbolaget's* surveys, the perceived security has increased during the past years. This, however, might depend on when the surveys are sent out, one of the interviewees claims. For instance, if one were to send out a survey during a period when several crimes have been committed, that might influence the result of the survey, which seems logical.

In general, *Bostadsbolaget* do not have many problems regarding vandalism. In comparison to other areas of Tynnered, the vandalism that irregularly and rarely appears is quite manageable. Also, because of the circumstances surrounding Covid-19, the main problem is not vandalism or destructive behaviour in public spaces. Instead, the main problem as of right now is that people spend a lot of time at home, which has resulted in more complaints towards neighbors. "*People are at home more often, and there are noises that might not have been noticed otherwise*", expressed the interviewee. Even though it might be a result of the pandemic, it is their main problem as of right now.

Bostadsbolaget does not have a lot of insight to their tenants in terms of whether they are involved in criminal organisations. The interviewee expressed it as following "*When I worked in Biskopsgården we knew every criminally active tenant. In Tynnered it is different. We suspect some people at specific addresses, but do not really know for sure*".

All in all, *Bostadsbolaget* seem to work a lot with security for their tenants, although they might not have a great insight into who their tenants are. When it comes to identifying destructive behaviour, they are usually aware and tries to counteract these behaviours with various countermeasures.

4.8 CPTED evaluation

After conducting the interviews specifically aimed towards the chosen area, four problematic locations were found. Each problematic location was visited and assessed, and all of them can be seen in *Figure 4.10*.



Figure 4.10: Locations chosen for CPTED evaluation. @Lantmäteriet, no consent is required

4.8.1 The Topas turning point

When considering the aspect of *territorial control* at the Topas turning point marked with number one in *Figure 4.10*, there were certain problematic aspects that were found. For example, the space between the street and the tram tracks held a lot of trash. This specific spot was in between the parking area and the tram tracks, which makes it a place that could easily be neglected. Based on the observations that were made, no real maintenance had been done for a while as seen in *Figure 4.11*.



Figure 4.11: Problematic view related to *territorial control* at *The Topas Turning Point*

The turning point located in the end of the street named *Topasgatan*, and also in the outskirts of the residential area of *Röda Brilljantgatan*. The surrounding apartments would implicate that there is some *natural surveillance*, even though it is a spot that is sort of tucked in the corner outside the residential area. In terms of *access control*, it is a spot where there is no regulation of any kind when it comes to various vehicles. People who have no intention of ending up there, or perhaps people who has intentions of conducting a crime here, are not restricted to enter this spot. It is also easy for criminals to escape the area in different directions quickly, after a crime has been committed.

Target hardening has been increased if there are any initiatives that has been taken to prevent or deter criminal actions, using actual barriers such as surveillance cameras, locks or high fences. From what was gathered, there was nothing standing in the way if someone was to conduct any criminal activity in this spot, apart from a limited amount of *natural surveillance*. In terms of *activity support*, there is not any. Though, this location might not be the first choice to conduct constructive activities overall.

In terms of *activity support*, there is none. Though it might not be the first choice location to conduct constructive activities overall. When it comes to the final parameter, *image and milieu*, there were some problematic locations observed that are seen in *Figure 4.11* and *Figure 4.12*. There was some destruction of property, some vandalism but especially a lot of littering. There is no trash can in close vicinity to the turning point, and it seems like a spot where people are smoking and eating. Though, since it is the last resort and "the corner" of this neighbourhood which is situated a bit higher than the western parts of Tynnered, the littering might also be influenced by the wind.



Figure 4.12: Problematic view related to *image and milieu* at *The Topas turning point*

To sum up, there were some aspects that indicated that this could be a problematic spot. Although, when conducting the interviews with the police, they had no recollection of any crime taking place here. Some quite inexpensive measures could be taken to improve this spot. A trash can and some maintenance could really increase the *image and milieu* of this specific spot. But, since the police cannot recall any crime, and the fact that some CPTED parameters are partially met, this spot will *not* be part of the visual suggestion later on in the report.

4.8.2 Briljantgatan tram stop

Briljantgatan tram stop marked with number two in *Figure 4.10*, is a place that has been considered during a long period of time when conducting this project. This was one of the first spots that were shown by the police during a field study, and the main reason is that a shooting took place there a couple of years ago.

The first of the CPTED parameters considered here was *territorial control*. As it turned out, this place is publicly owned by the government funded traffic management organisation. Also, as the name of the government funded organisation suggests, the tram stop itself was well taken care of. Although, the walking path between the tram stop and *Röda Briljantgatan*, which the traffic management organisation also is responsible for, is not well taken care of. There is a lot of trash in the bushes, the shrubbery is not well taken care of and collects a lot of trash. It seems like the traffic management organisation is taking care of the tram stop, but the stretch between the tram stop and *Röda Briljantgatan*, which they also are responsible for, is not very well taken care of as seen in *Figure 4.13*.



Figure 4.13: Problematic view related to *territoriality control* at the *Briljantgatan tram stop*

This spot has restricted potential usage in some respects. Cars cannot get to this place. Although, the main problem when it comes to criminally active people in Tynnered, is that a lot of them use mopeds. Therefore, some *access control* related aspects could potentially be considered. But apart from that, this is a public space that anyone should have access to.

As mentioned above, there is a lot of littering and haven't been cleaned for a long time. So, in terms of the parameter of *image and milieu*, several improvements could be made. Although, this is also in the outskirts of the highly situated *Röda Briljantgatan*. Therefore, it might not only be that people throw their trash here, the wind might also be an influencing factor worth taking into consideration.

As far as *natural surveillance* is concerned, it is very limited. The people living in *Röda Briljantgatan*, situated close to this trail, have their vision blocked by numerous trees and bushes seen in *Figure 4.14*. Apart from this, some interviews also suggest that the lighting along the trail is quite insufficient when it comes to giving an opportunity for *natural surveillance*. Also, the lighting does not provide enough information regarding the surrounding environment, according to interviews with local citizens and the police displayed in *Figure 4.15*.



Figure 4.14: Problematic view related to *natural surveillance* at *Briljantgatan tram stop*



Figure 4.15: *Briljantgatan tram stop* at night

There have been some initiatives taken, that partially addresses the *target hardening* parameter of CPTED. A surveillance camera has been installed at the short side at one of the building situated in the outskirts of the area. At first glance, though, the camera does not monitor the path itself. It seems to be blocked by several trees and could potentially not have any impact on what is happening further down the path.

This spot does not have any *activity support*, though some measures supporting activity could potentially be implemented. If maintaining this spot, and potentially providing space in the groves around the trail, something could potentially be implemented to support various activities.

To conclude, this area has a lot of apparent problems. Even though there are apartment situated close, they do not provide any *natural surveillance* of the area. There is no indication of maintenance, and a lot of vegetation might need to be removed. Also, the lighting does not provide a sufficient sense of security. Because of the obvious shortcomings, and the potential to improve, this location has been chosen to further investigation.

4.8.3 The outdoor gym

The outdoor gym marked with the number three in *Figure 4.10*, is located between residential buildings at *Röda Brilljantgatan* and a building with a dental clinic. This has taken some toll on the outdoor gym, since it is in a spot where neither building complex takes responsibility of the area, which has its implications when it comes to the *territorial control* over the location. The area is owned by the Park Management department of Göteborgs Stad, but they do not seem to handle the spot sufficiently on their own. There is a lot of trash in the bushes, and there is nothing that implicates that they have tried to get rid of the bushes seen in *Figure 4.16*.



Figure 4.16: Problematic view related to *territorial control* at *The outdoor gym*

When it comes to the parameter, *image and milieu*, there were also a couple of negative aspects. Even though there is an outdoor gym, the variety and quality of the gym equipment's are quite limited. Also, there is a lot of littering in the surrounding grove, which further influences the *image and milieu* of the area.

4. Results

As the name of the spot suggests there is some *activity support*, an outdoor gym. According to local citizens and the police, though, very few are using it. Neither the police nor the local citizens knows why that is, but some of the aspects mentioned above might be influencing factors. For instance, all the outdoor gym equipment are hidden behind a large cliff and the out of control grove that is not sufficiently maintained.

There is very little *natural surveillance*, which is further aggravated at night, when the dental clinic is closed. The only part of any building that would provide *natural surveillance* of the outdoor gym is the part of the building where the dental clinic is located. The apartments in the same house are all partially blocked by trees, seen in *Figure 4.17*. The somewhat elevated apartments at *Röda Brilljantgatan* behind the outdoor gym are blocked by the stone structure in the middle of the area. The apartment complexes at *Röda Brilljantgatan* do not have any insight into the area because of the dense vegetation of trees. This makes the actual outdoor gym a bit of a blind spot. Also, according to interviews with police and local citizens, there is insufficient lighting in this spot as well. This further decreases the perceived security and prevents *natural surveillance*.



Figure 4.17: Problematic view related to *natural surveillance* at *The outdoor gym*

Apart from the *natural surveillance* related problematic aspects regarding the outdoor gym, there is another spot next to the outdoor gym that have similar problems. There is a patio that, during the darker hours of the night, becomes completely dark. Also, there is out-of-control vegetation placed in the centre of the patio, further decreasing the possibility of casual observation when passing by. Also, it is a spot where potential offenders could hide and become more or less invisible to the surrounding environment as seen in *Figure 4.18*.



Figure 4.18: Problematic view related to *natural surveillance* at the patio in close vicinity to the *The outdoor gym*

When it comes to *access control*, it is a spot that could easily be reached by foot, moped or bicycle. Although, there is a beam that can be closed during the later hours of the day when the dental clinic has closed. This regulates the *access control* for people using cars.

As far as the *target hardening* aspect is concerned, there are no initiatives that implicates that this aspect has been considered. There is no camera and insufficient lighting.

To summarize, this area has a lot of problems related to *natural surveillance*. Maintenance needs to be improved and done more frequently by the parks department at *Göteborgs Stad*. A while ago a woman was attacked at this location. This has further decreased the sense of security in this specific spot, since that is part of the collective memory of the local citizens, according to *Bostadsbolaget*. This spot has been chosen to be further investigated, mainly because of the shortcomings of the environment but also because of the fact that alterations to the environment could hopefully influence the actual security of the spot as well. This spot could potentially become a nice park where the citizens socialize.

4.8.4 The pink trail

The pink trail marked with the number four in *Figure 4.10*, is located just south of *Röda Brilljantgatan*. It is referred to as pink is that there are pink streetlamps along the trail. The spot that was investigated had a couple of shortcomings. Starting with *territorial control*, there were no sense of ownership of the space as it sits just between multiple apartment buildings that are located on varying heights.

4. Results

In terms of *access control*, there is nothing that excludes vehicles of any kind. Cars could enter the spot from two different points of entry, and there are several different routes to take, when leaving this location. This might be an aspects to consider if the area becomes problematic once again.

Regarding *natural surveillance*, there are some problematic aspects. Firstly, there is a small power station that conveniently could be used as cover when engaging in destructive behaviour. Also, according to interviews with the police and local citizens, the lighting does not provide enough information of the surrounding environment as seen in *Figure 4.19*. There is some *natural surveillance* from the surrounding apartment buildings, but the ones above this lowered spot are not perpendicularly placed towards this spot. Therefore, the buildings in *Röda Briljantgatan* have limited informal control over the area. Also, the apartment building just beside the evaluated area is partially blocked by the grove that is in between the apartment building that could provide *natural surveillance* and the problematic location as seen in *Figure 4.20*.



Figure 4.19: *The pink trail at night*



Figure 4.20: Grove in front of apartment building at *The pink trail*

There is no apparent indication that *target hardening* has been applied to this area. Some additional lighting has been provided, but apart from that, no actual initiatives seem to have been taken in order to obstruct criminal acts.

Apart from the fact that this spot is part of a trail where people sometimes take a walk, according to interviews and on-site observations, there is no *activity support*. There is a large grass surface, that could provide enough space to implement some *activity support* if needed. Apart from the small, "forgotten" spaces that have some littering in them, this is a spot that is quite acceptably maintained. There is some graffiti on the small power station, but apart from that it is a spot that is quite well maintained.

According to interviews with the police, this is a spot that historically has been problematic. Although, recently it has not been a spot where criminal activity is taking place. There are some aspects that could be improved, but in terms of the CPTED parameters, none of them are completely disregarded. Perhaps some *access control* could be implemented if this spot, in the future, becomes problematic once again. As far as this project is concerned though, it will *not* be further investigated and developed. Mainly because this spot is not problematic as of right now in terms of criminal activity, but also because a lot of the CPTED parameters are partially fulfilled.

4.9 Literature review

The literature review generated 25 relevant articles that were supposed to be used in the next stage of the project and these are listed in *Appendix E*. The articles that were perceived to be relevant to this part of the project were articles that brought

up various solutions and the positive impact that these solutions could have on the setting.

Out of the 25 articles that were found, four articles treated evaluations of interventions derived from CPTED projects. Two of these were conducted in Seoul, one in Portland and one in Gothenburg. Finding these types of articles were the main aim as the literature review was initiated. But as the scope was broadened, this yielded more results. Six of the 25 articles treated CPTED project that had not yet been evaluated. Three articles were evaluations of projects that did not have any direct connection to CPTED but treated crime prevention by doing alterations in the physical environment. These three articles were very useful still and contributed with a lot of inspiration and ideas. The remaining eleven articles treated individual parameters of CPTED (*territorial control, natural surveillance, image and milieu, access control, activity support, target hardening*). For example, one of the articles studied how improved street lightning affected the crime rates. This is connected to the CPTED parameter *natural surveillance*, since improved street lightning could be used to improve the perceivable area from various residences in close vicinity to the area where lighting is increased.

The literature that was found was later used as a foundation of discussing the suggested alterations. Therefore, results of this literature review will appear during the discussion, when validation of certain concepts or ideas need to be made.

4.10 Suggested interventions

In this chapter, the final suggestions as well as the problematic aspects that they address will be presented. The following chapter will also answer the research question regarding which interventions that could be made in order to increase actual and perceived security, mentioned in *Chapter 1.3*.

4.10.1 Briljantgatan tram stop

In order to counteract the problems that were identified during the CPTED evaluation of the *Briljantgatan tram stop*, certain measures had to be taken. Each problem and the solutions used to address each problem will be summarized in the *Table 4.2*. The first problem that was identified was that people were throwing trash into the areas beside the walking path. In order to address this problem, a suggestion was made to clear the areas of thicket and tall grass and remove trash from the area. This would expose the trash being thrown and potentially increase the *image and milieu*, since it would indicate that the area is being taken care of.

The second problem that was discovered was the lack of eyes on the street, i.e. *natural surveillance*. Also, there is a CCTV located on one of the facades overlooking the area. But, as of right now, there are trees blocking the view of this camera as well. Therefore, in order to provide more *natural surveillance* and increase the view of the CCTV, a suggestion was made to strategically remove some of the trees

blocking the view from apartments located in the outskirts of the evaluated area, as well as removing some of the trees blocking the camera.

When the area was evaluated at night, it became clear that the lighting was not sufficient in terms of providing perceived security. The walking path was sufficiently lit but the area around the walking path was completely dark. Since the apartments overlooking the area could barely see anything of the walking path as it is, with trees blocking the view, a decision was made to improve the lighting and install lighting beside the walking path. This could potentially increase the *natural surveillance*, but also decrease the number of spots potential offenders could hide. This could, in turn, increase the perceived security [PRISMA, 2019].

The evaluated area is not an area that is providing *activity support*. It is mainly an area that is used to walk through. In order to provide the possibility of conducting activities here, a suggestion was made to include a lit dog enclosure. Since some of the trees will be removed, an unused area will appear. The suggestion is therefore to use this area to increase *activity support* and *territorial control*, using a lit dog enclosure.

The visual suggestions and their implications will be further discussed in *Chapter 5.1*. All the addressed problems are presented below in *Table 4.2*.

Table 4.2: A table showing the identified problems and which CPTED parameter it correlates to, with the corresponding suggested solution for Briljantgatan tram stop

Problem	Solution
Residents throw trash in the area (Territoriality control, Image & milieu)	Clear area from vegetation that hides trash and remove the exposed trash
Absence of eyes on the street (Natural surveillance)	Strategically cut down trees
The camera is covered by trees (Target hardening)	Strategically cut down trees that are blocking the camera
Poor lighting in connection to the walking path (Natural surveillance)	Improve lighting in the terrain and beside the walking path
Absence of people in the area (Activity support, Territoriality control)	Build a lit dog enclosure

4.10.2 The outdoor gym

Several problems were found at The outdoor gym. In order to address these problems, certain measures have to be taken. The suggestions of this thesis will be presented below, and summarized in *Table 4.3*.

4. Results

One of the first problems that were identified, was that there was very limited *natural surveillance*. There was only one part of a building that had any overview of the outdoor gym, and that part of the building housed a dental clinic. Therefore, there is no *natural surveillance* at the outdoor gym during weekends or in the evenings. With this in mind, a suggestion was made to cut down certain trees in order to provide further insight from the apartments in close vicinity to the outdoor gym, so that further surveillance is present even during the darker hours of the day.

There are not a lot of people present in the area. In order to provide further *activity support*, the outdoor gym could be improved. Also, the outdoor gym is quite dark at night. Therefore, a suggestion was made to include additional lighting at the outdoor gym.

Because there are not a lot of people present, there is no sense of ownership in the area. There are no people present that could dispute destructive behaviour. Therefore, a suggestion was made to install pallet collars. This could potentially increase the *territorial control* as well as providing additional *activity support*.

In order to further strengthen the CPTED parameters of *image and milieu*, *activity support* as well as *territorial control*, another suggestion was formulated. By installing two grills and an area to socialize and include places to sit, in tandem with the pallet collars, the parameters mentioned above could potentially be further strengthened.

Also, there is an already existing patio in this area that could potentially provide a local blind spot for potential offenders. Therefore, a suggestion was made to remove the vegetation at this patio and install lighting. This would increase the *natural surveillance* and provide a spot for socializing, i.e. *activity support*. No additional suggestions were made to this spot, although there is some space that could be designated to various solutions, depending on whether there are any problematic aspects that arise after implementing the solutions mentioned above.

Table 4.3: A table showing the identified problems and which CPTED parameter it correlates to, with the corresponding suggested solution at the outdoor gym

Problem	Solution
No possibility to casually observe (Natural surveillance, Image & milieu)	Cut down trees and install lights
Lack of people present (Activity support)	Improve outdoor gym and install lights
No sense of ownership from the citizens (Territoriality control)	Install pallet collars that the citizens are responsible for
No clear identity of the park (Image & milieu, Activity support)	Install grills and the possibility to sit down and socialise
Lack of people present (Natural surveillance, Activity support)	Remove some vegetation where the benches are placed

5

Discussion

This chapter will present the suggested interventions and why they should yield good results regarding crime prevention and perceived security. Aspects of the thesis that could have been improved or why it could not, will also be discussed. Recommendation for future work and what the next step would have been if this project would have continued will also be covered.

5.1 Results and their implications

After considering a variety of solutions, the chosen solutions were illustrated in the environment by visual suggestions. The solutions were partly collected during the literature review and partly generated during discussions between the two authors. The suggestions are meant to improve the problems regarding the six CPTED parameter presented in *Chapter 4.8*.

5.1.1 Briljantgatan tram stop

One of the problematic aspects in this area that was discovered during the evaluation phase was the absence of *natural surveillance*. Some changes were needed in order to improve this parameter. Therefore, the first suggestion was to remove some of the trees that are blocking the view from the apartments with windows facing the walking path at *Röda Briljantgatan*. This would increase the *natural surveillance* of the area, from the surrounding apartments. To supply the existing CCTV with an expanded view, the trees just in front of the camera would also be removed. CCTV do not have a dramatic effect on crimes but a small but significant decrease of 16% of crimes have been observed by compiling results from 44 studies regarding CCTV in different countries [Farrington & Welsh, 2007]. Although studies have shown that CCTV have limited effect on crimes, it could still be deterrent to a likely offender. It could also communicate to inhabitants that action is taken in the area to prevent crimes, which improves the image of the area as well as the perceived security [Cecato et al., 2019]. As this camera have already been approved and mounted, it could help improve the CPTED parameter of *target hardening* even though the effect might be modest. By removing some of the trees, this could subsequently increase both the natural and "artificial" surveillance as seen in *Figure 5.1* which shows the line of sight from the apartment buildings if the trees are to be removed.

5. Discussion

There were no concerns expressed during the interviews or observation made during the field studies, regarding mopeds using the walking path. But if this would occur, barriers could be added to improve *access control*. There have been problems related to mopeds in other areas of Tynnered. For now, barriers will not be included in the suggested interventions as there seems to be no problem regarding mopeds using this specific stretch.

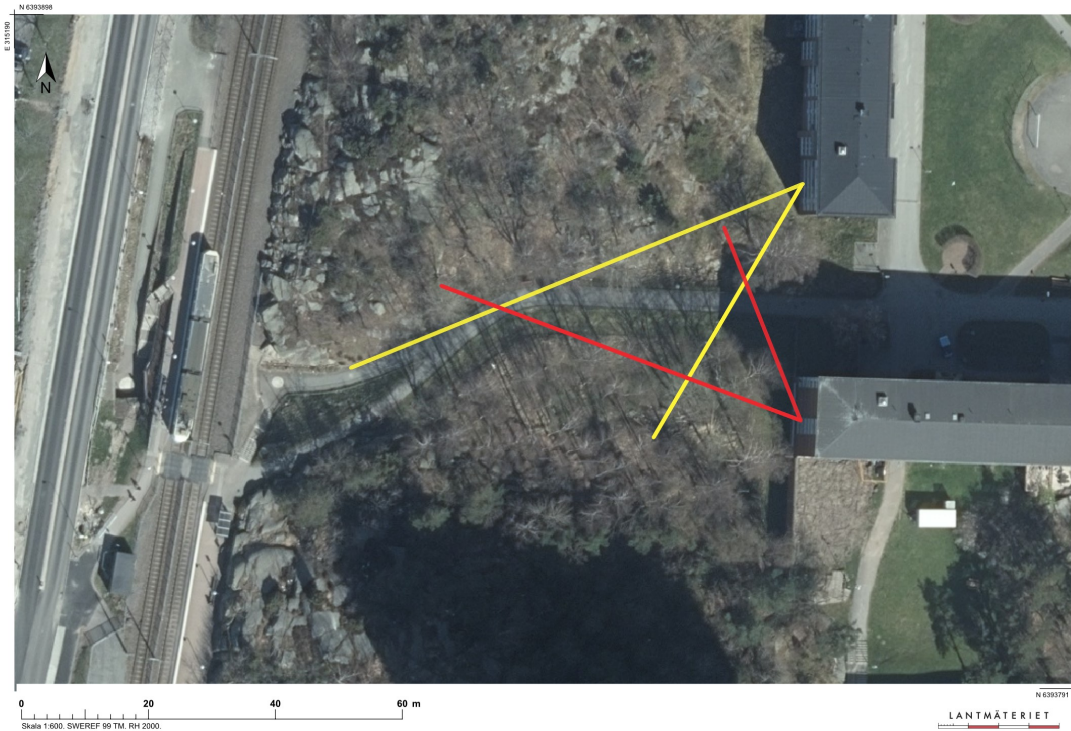


Figure 5.1: The line of sight from the apartment buildings when trees have been removed, marked with with red and yellow lines. @Lantmäteriet, no consent is required

Secondly, there is an obvious problem related to *image and milieu*. There is a lot of trash laying around in the area and the maintenance of the green areas along the sides of the walking path is more or less non-existing. There is a lot of thicket in the green areas and the littering is somewhat hidden in this vegetation. The trash needs to be removed to improve the milieu and to make the inhabitants feel like the area is being taken care of which increases the perceived security [Newman, 1972]. A study in Australia showed that cleaning and improving the milieu of the subway system, decreased crimes with 42% [Carr & Spring, 1991]. Another idea in connection to this, is to remove the thicket to display the trash laying around. This could improve the *territorial control* if the residents could see the trash laying around. If the trash is visible, the residents could be more prone to take care of and prevent others of littering the area. If the territoriality could be increased and the residents were to take more responsibility of the area, maintenance such as cleaning might

not be needed to the same extent. It is important to clean up the area but it is equally important to keep it clean over time and subsequently improving the *image and milieu* parameter as well.

With *territorial control* in mind, a suggestion was formulated to implement a dog enclosure in the area that will appear when some of the trees are removed, in front of the CCTV seen in *Figure 5.3*. No documented cases of implementing a dog enclosure and the outcome were found. Although, based on the routine activity theory, providing potential guardians should increase the perceived security [Cohen & Felson, 1979]. In this case, dogs and dog owners could potentially act as potential guardians. The area between *Briljantgatan tram stop* and *Röda Briljantgatan* is difficult to activate as there are more attractive locations nearby and limited sunlight due to the surrounding buildings and varying elevation. Also, the noise from the tram tracks further decreases the degree of comfort in the area [PRISMA, 2019]. It seems challenging to activate people in this area, because of this. But as dogs do not have the same preferences as humans, this space could be dedicated to the dogs and their owners. Recently, a dog enclosure in the nearby area was removed due to construction of new apartment buildings. This has left the area at large without a place where dog owners could set their dogs free. There are a couple of potential benefits of including a dog enclosure. First, it would provide *activity support* in the area. By having more people present, the walking path from the tram stop would be perceived as more secure [PRISMA, 2019]. By having dog owners use the area they might also contribute to cleaning up trash and ensuring that the area is not being littered, since there might be a risk that it could harm their dogs. The sense of ownership would subsequently increase as the dog owners would like the area to be tidy and nice as they would spend time there. As of right now, the traffic management office is not taking responsibility for the area, even though they officially have ownership of it. Therefore, a suggestion like this might transfer some of the ownership to the local citizens, or rather dog owners, which could have a positive impact on the *territorial control*. It could also improve the parameter of *image and milieu*, lowering the threshold between rich and poor, if used by people from different parts of Tynnered [Hale, 1987]. Dog owners are not exclusively wealthy and including a dog enclosure might make people from different socio-economic groups interact. The suggestion of a dog enclosure could activate different demographics at different hours of the day in the area. This is positive both regarding the living standards of the inhabitants and regarding crime prevention.

The dog enclosure should be lit to encourage use after dark and make it a more pleasant space for the dog owners. A bench or two could also be placed in connection to the enclosure for the dog owners to sit down and have a rest. A trash can was also included to complement the dog enclosure. There were two reasons for this. Firstly, it would provide the dog owners with a natural place to dispose their trash that owning a dog usually entails. Also, by providing a trash can along the walking trail, in front of the most heavily littered spot at *Briljantgatan tram stop*, might be beneficial to prevent people from littering that area.

To further increase the sense of security, a suggestion was also made to improve the lighting. A study that conducted a set of experiments in New York showed that improved street lighting reduced nighttime crime with 36% which shows that it could act as a very effective crime prevention measure to implement light sources [Chalfin et al., 2019]. Another study performed in Dudley showed that improved street lighting reduced crime with 21% [Farrington & Painter, 1997]. Apart from the lighting that will be included close to the dog enclosure, a suggestion could also be to include lighting with low levels of illumination outside the walking path, in the vegetation. Implementing lights in the vegetation contribute to increased perceived security but it should not create an uncomfortable glare. An uncomfortable glare could be annoying and could worsen people's ability to detect an offender. It is important to think about light pollution when introducing new light sources as this could interfere with peoples sleeping habits and affect the sense of privacy [Jägerbrand, 2015]. For this reason, the lighting will not be bright but rather a way of slightly improving visibility in the vegetation and improve the perceived security. The lights will not provide bright light but enough light to prevent offender of being invisible in the vegetation.

To summarize, these suggestions would make sure that all of the problematic parameters that were found would be addressed and these are illustrated in *Figure 5.2* and *5.3* below. The *natural surveillance* and *target hardening* would be improved, and the sense of ownership could be increased which would address the problem regarding territoriality. The problems regarding *image and milieu* and the absence of people present in the area, would be addressed by removing the trash and the thicket and installing a dog enclosure, extending some responsibility to the local dog owners. The parameter of *access control* will not be addressed for now but could be improved by the installations of barriers. During the interviews with the police and local citizens, there was no indication that mopeds driving was a substantial problem in these parts of Tynnered.



Figure 5.2: The current situation before any interventions have been applied



Figure 5.3: Illustration of the suggested interventions with the dog enclosure seen in the middle of the picture

5.1.2 The outdoor gym

In comparison to the area between *Briljantgatan tram stop* and *Röda Briljantgatan*, this area was a spot that had a lot of potential in terms of the environmental composition. For example, there is a great deal of vegetation, there is plenty of daylight exposure and there have been some attempts trying to activate the space by building an outdoor gym and a football pitch. A study performed regarding the greening strategy of *Clean & green* showed that greening initiatives

can serve as a crime prevention mechanism and increase the density of social ties [Goldstick et al., 2020]. With the right measures, this area could become a social space people could come to use for various activities and socialise. There is no other green area such as this one in the nearby area and living close to a green area increases physical activities, reduces stress and helps with mental recovery [PRISMA, 2019]. This makes it a unique spot that has a lot of potential to become *the* local park. As for now, the park lacks an identity and is not designed in a way that invites the inhabitants to spend time there. To create an accessible green area in connection to the citizens residents, is a great incentive to make investment to this area.

As explained in *chapter 4.8* this does not fulfill the parameter of *natural surveillance*. There are not many residential housings nearby, and there is no clear line of sight to the area from the surrounding apartments. What is important to keep in mind is that the site was visited before there were any leaves on the trees. But regardless, the trees without leaves made it clear that changes had to be made to the environment to increase the *natural surveillance*. Therefore, one of the suggestions is to remove some of the trees that breaks the line of sight. The idea is not to remove all trees but to remove some in the areas close to the apartments buildings shown in *Figure 5.4* marked with red, to make the vegetation less compact. Some trees may also be removed in the centre of the park also shown in *Figure 5.4* marked with red. The reason for this is that green areas are perceived as more secure if it is easy to get an overview, a possibility to easily escape is supplied and the number of spots where likely offender could potentially hide is minimized. [PRISMA, 2019]. The idea is to open up the park to create an open space that is framed by vegetation to the same extent and not separated by it. To support this, some of the trees making it impossible to casually observe the park when passing through will also be removed, seen in *Figure 5.4* marked with red. This will contribute to improved *natural surveillance*, since passing cars and pedestrians could casually observe a larger portion of the area. As it is now, the park is separated into smaller portions by trees and walking paths. To unite the park and make it coherent, trees in the centre of the park should be removed. To compensate for the trees removed, additional trees will be planted in the position shown in *Figure 5.4* marked with green. These trees will contribute to keeping the area green. These new trees will also act as a sound barrier towards the motorway, to create a more pleasant soundscape, addressing the auditory comfort [PRISMA, 2019].



Figure 5.4: A picture showing where in the park, the different interventions should be implemented. Red marks removal of trees, green marks addition of trees and yellow marks the three different sections of the area. @Lantmäteriet, no consent is required

There have already been some efforts made trying to make the area more active which the CPTED parameter of *activity support* aims to do. One of these efforts is the construction of an outdoor gym which is marked in *Figure 5.4* with yellow and the number one. During all field studies, the authors have never observed any person using this gym and neither had the police. This could have to do with the poor *natural surveillance* and the equipment of the outdoor gym. By removing some of the trees described in the previous chapter and installing an additional light source at the gym, the problems regarding *natural surveillance* could be solved. People could then utilize the gym even after dark as a spotlight would keep it lit and there would be informal social control by observers from the nearby apartments. The condition of the equipment is still good, which indicates that it has not been used to any larger extent. One factor that could be a reason why the gym is not used is the equipment included in the outdoor gym. To use some of the equipment you would have to be very physically fit and it is not very inclusive to people of various physical condition. To enable people of various physical shape and strength to use the outdoor gym, the metal construction should be removed and replaced with equipment that could be used by a wider range of users. For the sake of consistency, the orange color used for the majority of the equipment could be used for the new equipment as well. The already existing orange gym equipment is judged to be useful, it is in great condition and it is in no need of replacement. It has been proved in other projects such as the project at Furutorpplatsen in Helsingborg, that an outdoor gym

could attract and populate an area and make the perception of the space more secure [Spacescape & Arkdes, 2019]. To separate this part of the outdoor gym to the walking path, a suggestion is to have artificial grass covering both sides of the gym. By separating the walk path from the outdoor gym with a symbolic barrier, it could be more of a pleasant experience to make use of the outdoor gym, since it would be more apparent that the zone is designated to the outdoor gym. To summarize, some adjustments should be made to the outdoor gym but the current positioning of the gym and some of the equipment should be kept as it is.

To further support activity, territoriality and improve the image of the park, there are a few more suggestion that aims to make this an area where citizens could socialise in the space marked with yellow and the number two in *Figure 5.4*. One suggestion is to have heightened pallet collars in the location shown in *Figure 5.6*. By having the pallet collars being raised, it is more easily used by people with limited mobility. Therefore, it would be more including to different demographics. This is something that have been implemented in Härnösand by *Stiftelsen Vårsta diakongård* and it provided some positive results related to crime prevention and activity support [Boverket, 2019]. The suggestion is to remove the gravel and replace it with grass. The area that will appear could be used for the pallet collars and potentially a bench to provide an opportunity to sit down and rest. By giving residents responsibility of their own pallet collar, this could increase their sense of ownership of the area. As these people have a greater sense of ownership of the area, they are more invested and more prone to take care of it and act as capable guardians. This is in line with the CPTED theory that argues that making public spaces in to semi-public will prevent crime [Newman, 1972]. The implementation does also improve *activity support* and would also contribute to the citizens well-being as gardening is a common hobby. To clearly show that the pallet collars are only for the use of their owners, a symbolic barrier could be constructed. This barrier should not separate the pallet collars from the rest of the park but highlight that this area belongs to the owners of the pallet collars. Next to the pallet collars, a suggestion is to construct possibilities to barbecue and dine as demonstrated in *Figure 5.6*. One or two grills and a long table will support activity and improve the image of the park. This will contribute to having a vivid and active park where people come to socialise, rather than only using it to get from A to B.



Figure 5.5: The current situation at the location of The outdoor gym before any interventions



Figure 5.6: An illustration of the suggested interventions with the pallet collars and abilities to socialise

The third space within, the area defined as The outdoor gym, in need of interventions will only be partly altered and is marked with yellow and the number three in *Figure 5.4*. The space where there is currently some bushes and some benches will be opened up and bushes in the centre of this constellation will be removed. One of the problems regarding the CPTED parameters, is the absence of light which is connected to *natural surveillance*. For this reason, a few more light sources will be added to make the space more inviting and increase ability of *natural surveillance*.

These light sources will be placed about a meter above ground and not installed like traditional street lighting where the light source is located a few meter above ground. The main reason for this, is to differentiate from the traditional street lights and provide a more attractive space to spend time, potentially indicating that it is not a spot that you should just pass through. In the area between the benches something of cultural significance could be installed. A potential landmark could provide an identity to the park, which could also potentially improve the CPTED parameter *image and milieu*. Although, creating something of cultural significance is something that is considered to be outside the knowledge frame based on the educational background of the authors. Therefore, as of right now, this area between the benches will be kept as a blank canvas, open to additional possibilities. In front of this patio in the foreground in *Figure 5.4*, there is a large area of grass that could be used for socializing. One suggestion that was considered was the implementation of sunbeds. That could potentially increase the *activity support* and be used to sunbath or relaxing in the park.



Figure 5.7: An illustration of the suggested alterations to the existing patio

Apart from the solutions related to CPTED mentioned above, problematic aspects related to noise were considered. Noise pollution decreases the comfort of people spending an extended amount of time in green areas [PRISMA, 2019]. This could be counteracted either by providing noise barriers or increasing the "positive noise", implementing solutions such as fountains, trees with noisy leaves or a bird feeder [PRISMA, 2019]. With this in mind, explicitly recommending a noise plank and solutions increasing the positive noise could potentially increase the perceived comfort of the park. Increasing the auditory comfort might be beneficial, when trying to get people to use the outdoor gym or spend extended amounts of time in the area.

To summarize, these suggestions would address the problematic CPTED parameters that were identified. *Natural surveillance* would be improved by removing some of

the trees and installing lights where needed. The absence of territoriality would be improved by extending ownership of the space, to the owners of the pallet collars. Also, by making the park more vivid and pleasant in terms of noise pollution, the citizens would be using it more frequently and be more engaged in taking responsibility of the space. This will also help to improve the CPTED parameter of *image and milieu*. By creating an identity for the park and make it into a comfortable place to spend some time, this parameter will be fulfilled. It was concluded that the two CPTED parameters of *target hardening* and *access control* were not in need of any interventions in this area. The interventions will encourage activities as people could use the outdoor gym, the barbecues, the benches, the sunbeds or the pallet collars. Then the parameter of *activity support* has also been fulfilled.

5.1.3 Disregarded potential solutions

During the process where suitable interventions were selected for the two location, some interventions that were discussed were not chosen for different reasons. One of the solutions that were disregarded instantly was playgrounds. There is nearly one playground for each apartment house at *Röda Briljantgatan*. By building another playground, there could be a risk of it not being used as there are already playground all over the area. A playground could otherwise serve several purposes such as activating an area. Due to the fact that there already existed so many playgrounds in the area, a decision was made to provide something new instead.

Another solution that was disregarded was an *art wall*. This means that some sort of wall is built where people are encourage to draw graffiti or express themselves in that art form. This could prevent graffiti in other places in the area and activate the location and provide the area with a piece of art in public. The main reason why this solution was disregarded is that there is not a lot of problems related to graffiti in the area of *Röda Briljantgatan* today. The local housing companies expressed that they were *blessed* with not having problems regarding graffiti. For this reason the idea was disregarded as there could be a risk of creating a problem regarding graffiti in the area if more people starts expressing themselves through graffiti and this interest increases.

During the field studies an idea arose about building a walking trail through the greater area. This idea came to be as the authors found it difficult to move between the different areas and people kept themselves to the areas surrounding their apartment building. The walking trail could create more unity in the area and have people moving between different areas. Having more people outside and being present in the public spaces would increase security. There is not a place for people to jog or walk their dogs as it is for now and this would be good for the well-being of the citizens. A project that implemented the principles of CPTED to create a fitness circuit in Seoul, Korea, proved to have successful outcomes of using CPTED to design a waling trail [Gamman & Thorpe, 2013]. This idea was disregarded even though the authors believed it could be feasible and useful. The reason to this is that the trail goes through many different areas and it was judged to be too big of

an mission for a master thesis to realise.

There were some solutions, and barriers considered to regulate the *access control* of the two final locations. During field studies and interviews, though, there was no indication that mopeds or other vehicles using these area was a problem. Although, there is a problem related to moped users in Tynnered, this was not explicitly found to be true in the two final locations. Therefore, no traffic barriers were suggested in the final solutions.

5.2 Ethical aspects

The importance of the field studies have been highlighted multiple times throughout this thesis. They gave lots of understanding for the people living in Tynnered by visiting the area where they live. There are ethical questions raised of having higher level academics visiting socioeconomical vulnerable areas to tell them what they need to do, to lower crime rates. There needs to be a humility towards the fact that the local citizens know the area they live in the best. It is important for researchers to stay humble and listen in order to learn. In the end the interventions will be implemented for the sake of the people living in Tynnered and they need, to some extent, approve the interventions for them to work. Having authorities like *Stadsbyggnadkontoret* intervening in the area and alter it, without the approval of the citizens, could be perceived as an intrusion. The feeling of being overruled need to be avoided. Walking around in the area of Tynnered, taking pictures has to be done with respect towards the citizens and the researchers have to be mindful that people might feel uncomfortable by their presence. In the pictures taken by the two authors during the project, including people were avoided to not infringe on their integrity.

A problem with the interviews with the local citizens, was that the pool of interviewees was not as diverse as it would ideally have been. Since social media was used to initiate the contact between the authors and the interviewees, citizens without the access to internet or who were unable to understand Swedish were excluded. This could be problematic as portions of the inhabitants of Tynnered may be excluded as they do not master the Swedish language yet and cannot express their needs and wishes. This could be seen as discriminatory but as the authors interviewed people from multiple categories (local citizens, local housing companies and police) it is believed that the results from the interviews are somewhat fair and nuanced.

To make sure that none of the people participating in the interviews would suffer any consequences by participating, all interviewees remained anonymous. There are criminal organisations present in Tynnered that might be relying on having the citizens of Tynnered keeping quiet in order to ensure that their criminal activities will pass by unnoticed by authorities and police. Therefore, the interviewees were kept anonymous. Also, as mentioned previously, the data is privileged information often based on emotions, experiences and feelings [Denscombe, 1998]. Experience based data is not considered "false" or "true", but something that the interviewee

owns [Esaiasson et al., 2017]. Therefore, anonymity has been a key component for the authors to ensure that the interviewees opinions or experience are not taken out of context and misrepresented.

As mentioned in *Chapter 2.3.4* there has been some criticism voiced towards hostile architecture, which CPTED is part of. Hostile architecture could exclude certain groups of people and has, for example, been used to prevent homeless people of using public spaces to sleep or live. CPTED is focused on preventing crime and solely designing public spaces to make sure that the target becomes less suitable and that there are capable guardians present. Making the argument that criminals gets excluded by the use of CPTED, is problematic. Criminals are part of society but they are also part of an alternative society where the societal laws are not obeyed. It is very complicated to include individuals that do not want to be part of society and its premises. In the same way that prisons excludes people from society who do not obey the law, CPTED is excluding towards criminals but it should not be considered as problematic, as long as you are a law-abiding citizen.

5.3 Validity

This chapter will treat the validity of the project and the validity of the different parts of the thesis.

5.3.1 Interviews

In general, the initial interviews were quite successful. Insight was gained regarding the problematic spots within the area, as well as where criminal activity is common. Because of the circumstances surrounding Covid-19, no face-to-face interviews were made and the main forum of collecting interviewees was various forums on social media. This meant that the participant were already committed in questions regarding making Tynnered a safer place. Ideally people who have not been engaged in this types of questions would have been part of the pool of interviewees. One positive aspect of having participants that were already committed, was that they were keen on helping and made it easy to perform the interviews. But other means to get in contact with citizens were also used, which made the pool of interviewees more diverse. A senior citizens organisation was used to get in touch with their members to reach other demographics. In order to get a more comprehensive image of the area, more people might have had to be included as well. Using digital medias such as websites and forums excludes some people and could have ramifications for the validity of the collected data [Esaiasson et al., 2017].

One thing that became apparent during the interviews was that local citizens might, unconsciously, conform to the local norms imposed by the criminal activity. For instance, when asked about the perceived security, more or less everyone expressed that they felt safe in their own neighbourhood. But, when a follow-up question was asked regarding entering the public space during the darker hours of the day, the majority of the people said that they do not go out during that time of day.

Also, when re-phrasing questions about how they felt about having family members visiting public spaces of Tynnered during the darker hours, the response was quite homogeneously worrisome. In these case, the interviewees expressed concern regarding the safety of their loved ones. With this in mind, the authors would recommend to investigate further and ask follow-up questions when interviewees are responding in a way that contradicts the hypotheses or your preconceptions. In this case, the authors preconception was that the perceived security in Tynnered was quite bad. These are complicated question and it is important to critically but impartial interpret the results from the data collection.

5.3.2 Literature review

The main problematic aspects regarding the literature review, was that it was hard to find literature that had evaluated the outcomes of projects using CPTED. Most studies either evaluated CPTED as a theory or presented interventions that were going to be implemented. It was difficult to find cases with concrete examples of interventions and how these interventions later affected the crime rates.

When conducting the literature review, another problem was to find various success stories, further strengthening the hypothesis of certain solutions. Eventually, some dissertations were found that presented the problematic aspects that were addressed and the consequences the implemented solutions subsequently had [Boverket, 2019]. Accordingly, some of the ideas that were found during earlier stages of the literature review could, because of that document, be verified as empirically plausible solutions to counteract that problematic aspects that were found. Even though, the results or the consequences of the implemented solutions were not explicitly related to CPTED, the result of the implemented solutions were expressed in a way that was translatable into the CPTED parameters.

The aim was to have all the suggested interventions supported by literature with concrete real world examples, ideally connected to CPTED. This was not possible and some of the interventions had support from literature that was more general. As this is a case study and treats a unique location in the real world, this could be somewhat expected. This type of project had never been conducted in the area of south-east Tynnered and the project had to break new ground.

5.3.3 Alternative Method

When starting the project, two evaluating methods were considered as part of the evaluative phase, Prisma and CPTED. As the project progressed, delimiting the project to one of the evaluative methods was important in order to be able to keep up with the schedule. Firstly, CPTED is a method that is internationally renowned. It has been used across more or less the entire world, since it was first formulated in 1970 [Cozens & Love, 2015]. Prisma, on the other hand, is a novel method, introduced 2019, with less empirical proof of actually working and is based on other research [PRISMA, 2019]. Prisma have already been implemented in a few projects

in Sweden but the outcome of these initiatives have not yet been presented.

Another parameter that influenced the choice of evaluation method was the perspectives of the different methods. Prisma included several residential aspects, such as density and settlement and other social factors [PRISMA, 2019]. Because of the delimitation observing buildings as static objects apart from incremental changes, this parameter was a bit contradictory. The aim of the project was to address small, limited areas (i.e. micro-level perspective), therefore macro-level parameters such as cultural significance and service would have potentially also decreased the ability to solely look at problematic micro-level locations [Goff et al., 2010]. The parameters included in the CPTED theory were all more easily applied to smaller defined areas. Also, since the intra-neighbourhood variance of crime can vary a lot, addressing the problem at a micro-level could be important in order to positively influence impact of the final suggestions [Goff et al., 2010].

Even though Prisma was disregarded as evaluation tool during the course of this project, it provided the authors with several insights into various solutions. CPTED is more exclusively focused towards crime prevention, whilst Prisma includes aspects that could negatively influence the comfort or general living situation of local citizens. With this in mind, solutions related to noise pollution, lighting and air could be discovered [PRISMA, 2019]. Even though the majority of the mentioned initiatives were disregarded because of the fact that they did not address the CPTED parameters, certain solutions were included as discussion points previously in this chapter.

CPTED was used for this project but there are still questions whether it could have an effect of lowering crime rates in Sweden. CPTED was developed in the United States of America in the 1970s and there might be cultural differences between USA in the 70s and Sweden today, which might prove that it is less suitable. CPTED have been used in recent projects with successful outcomes and in other European countries and it was therefore judged to still be useful.

Even though Prisma and CPTED were the ones that were considered to be included in this project, there are several other methods that could have been considered as well. But since the author's supervisor was included in developing Prisma and that CPTED is being one of the first social sustainability tools, these ones were considered instead of spending too much time getting to know other available methods [Eken et al., 2019].

5.4 Recommendation for future work

Throughout this chapter recommendations are given about how future projects similar to this one, could acquire better results or what should be kept to achieve great results.

5.4.1 CPTED

As mentioned in other parts of the thesis, both second and third generation of CPTED were disregarded in favor of the extended first generation of CPTED. The second and third generation were developed to address deficiencies in the theory. The outcome of the project might have been different if these had been used instead. These aren't as proven as the first generation of CPTED and it would have been more difficult to find relevant literature and knowledgeable people. For this reason the second and third generation of CPTED were disregarded in this project but it could be recommended for other projects of greater magnitude to make use of these.

5.4.2 Delimitations

The delimitation of disregarding the architecture and viewing buildings as static objects helped focus the project towards the surrounding environments. Because the project was conducted in collaboration with *Stadsbyggnadskontoret*, private properties and potential problematic aspects related to them were subsequently disregarded. This was a very helpful delimitation, since it shifted the focus from the buildings and towards solutions used in public spaces. These solutions, their strengths and weaknesses were easier to evaluate based on the author's educational background. Depending on educational background, proper delimitations could help increase the focus of the project, and limit the risk of being side-tracked.

The delimitation of focusing on areas where no work has currently been planned, was also been helpful. If these delimitations were not made, the final focus area of *Röda Briljantgatan* would not have been chosen at the same stage as it was chosen. Without this delimitation, the authors might have had to further investigate some of the areas included at an early stage and spend more time on trying to motivate their choice of location. Also, if changes were suggested to a location where work had already been planned, the authors suggestions might have been instantly rejected. But since changes were suggested to locations that had not been addressed, the suggestions are more likely to be implemented by *Stadsbyggnadskontoret* in the future. In order to increase the impact of the study, make sure that the locations that are chosen are not about to undergo any changes in the physical environment.

A traditional concept generation phase was disregarded in order to focus on solutions that have already been successfully implemented at various places. In retrospect, a concept generation phase might have helped in order to have a common thread throughout the project. In the stage where the problematic aspects of the chosen locations were identified and potential solutions were collected, certain problems were occurred. It was especially difficult to try and relate the problematic aspects to the potential solutions in a structured way, thereby resulting in a more speculative text when trying to connect these dots.

5.4.3 Crime statistics

The crime statistics that were collected were perceived to be an alternative way of collecting data that highlights the problematic aspects and areas of Tynnered. Although, after discussions between the authors as well as with the police, the influence of the statistics were re-assessed. Firstly, the collected crime statistics only provides the number of crimes committed on each street in Tynnered. It does not take the number of people living on each street into consideration and it is obviously not a tool that could point to oppression in certain locations within Tynnered. Also, the size of each street is not taken into consideration and therefore does not provide fully tangible statistic. Because of this, the other means of data collection had greater influence on the project.

5.5 Next Step

This chapter explains what the next step would have been if the project would have continued. As for now, the limitation of time made it impossible to bring this project to a stage where the interventions are ready to be implemented.

5.5.1 Co-Creation

During the course of the project, there were several sources stating that co-creation is a very rewarding approach to use in order to provide local participation and dedication to the cause of increasing safety and local involvement [Cecato et al., 2019]. In order to further help people choose the more productive path of societal engagement, co-creation could have been used in order to provide a forum for people at risk of becoming part of the organised crime in Tynnered and thereby try to create some sort of mutual respect and loyalty. Another positive aspect of using this strategy is that it can be applied in order to provide a forum for people that might not get to express their thoughts otherwise [Cecato et al., 2019].

The reasons why this route was not used were, first of all, the circumstances surrounding Covid-19, face-to-face interactions would have been problematic. A digital format was considered, but after discussing this alternative, a decision was made to stick to the formulated project plan in order to ensure that the project would be finished on time. The next step for this project might be to construct a workshop where co-creation should be utilized. Either to create new suggestions together or to validate that the suggested interventions from this thesis are approved by the citizens.

5.5.2 Detail development

Because of the fact that the final suggestions are on a conceptual level, the next step would be to further develop details regarding the suggestions and the chosen areas overall. This could include detailing in terms of designing the included components of the area, as well as adding additional components. For example, aspects that are presented in *Prisma*, such as auditory comfort or an overall analysis of Tynnered in terms of cultural significance could potentially be used as a theoretical foundation for adding further components, products or initiatives to the chosen areas in order to improve various aspects [PRISMA, 2019]. Also, complementary items to the suggested solutions might be considered and evaluated whether they were economically or realistically feasible. For example, a water source in close vicinity to the pallet collars might increase the convenience for the owners of the pallet collars. These sort of suggestions might complement and improve the perception of the suggested interventions in previous chapters.

Perhaps another way of approaching the next step would be to formulate a couple of conceptual designs that fulfills the identified problematic aspects that were found during the course of this project, and present them to local citizens. This could provide further feedback and increase the likeliness of the final implementation being accepted by the local citizens, since it would provide an opportunity for the locals to express any concerns or opinions [Cecato et al., 2019].

6

Conclusion

The project revolved around the theory of CPTED and the aim was to suggest interventions to the physical environment in an attempt to prevent crimes and increase the perceived security of the chosen areas.

The data collection generated a lot of insights and valuable information. The interviews with the citizens showed that the question regarding perceived and actual security is not as straight forwards as it might seem. Humans are very complex beings and could at times act contradictory. Even though some citizens expressed that there was a limited amount of problems regarding crime in Tynnered, it became clear that this was not the case by reading between the lines. This was supported by the interviews with the police where a lot of problems were brought to the surface. There was a concern of Tynnered becoming even more ruled by organised criminal gangs and a need for interventions was expressed.

Historically the area of *Vita Briljantgatan* has been the most exposed to serious crimes. Because of this, many investments and plans have already been made in this area. The square *Opaltorget* is also currently undergoing changes in its structure. There are projects, both small and big, that is currently being carried out all around Tynnered in an attempt to stop the degradation. Many interviewed citizens expressed that Tynnered was a good neighbourhood earlier, that it has gotten worse and that criminality has increased. There are many areas in need of improvement regarding the physical environment, to prevent crime and make the citizens feel more secure. One area that has not seen any investments and that seemed to be almost forgotten was the area around *Röda Briljantgatan*. It is an area that houses many people and have been somewhat overlooked when investment have been made to the area. Both the interviews and the crime statistics showed that it is an area in need of improvements.

Two spots in the area around *Röda Briljantgatan* were chosen to be focused on. These locations were evaluated using the six CPTED parameters *territorial control, natural surveillance, image and milieu, access control, activity support and target hardening*. There were big problems regarding *natural surveillance* and "eyes on the street" in both location that had to be addressed. There were also an absence of people in the two locations which meant that there were no capable guardians present. In order to address the problems of the locations in accordance to the CPTED theory, a series of interventions were suggested. Both locations need to have some vegetation removed that breaks the line of sight in to the areas. This

vegetation also negatively influences the *image and milieu*, since it makes it obvious that the area is not well taken care of in terms of maintenance. It was also suggested to implement a dog enclosure in the area referred to as *Briljantgatan tram stop*, in an attempt to activate the area and give the citizens the possibility of releasing their dogs safely. In the area referred to as *The outdoor gym* the suggestion is to create a park where people could socialise and enjoy. By installing pallet collars, grills and improving the already existing outdoor gym, the park could become a pleasant place which improves the well-being of the people living in the area. It is believed that these interventions could prevent crime and increase the perceived security of the citizens.

These interventions should be evaluated by the local citizens before installation, to ensure that their needs and wishes are met. This could be performed with some sort of workshop or other interactive activities.

To sum up, the suggested interventions should, according to the literature, decrease the likelihood of crime and increase the perceived security. Complementary components, solutions and initiatives to the suggested interventions might further increase the impact of the environmental alteration. Also, additional initiatives addressing other aspects than the CPTED parameters might further increase the general perception of the chosen areas, as well as Tynnered.

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A

Interview with local citizens

1. How old are you?
2. Which areas of Tynnered are you commonly moving around in?
3. How would you describe the crime situation in the area you live?
4. Which are the most severe problems related to crime in your area?
5. Have you ever been the victim of a crime in your neighbourhood?
6. If that's the case, what was the crime you were exposed to?
7. Has this affected your life somehow?
8. Approximately, how many times a week are you experiencing some sort of anxiety in your neighbourhood?
9. Does the time of day influence your sense of security?
10. If so, when and why?
11. Do you experience a change in the sense of security, depending on the season?
12. If so, when and why?
13. Are there any areas where you feel particularly unsafe?
14. If that's the case, why?
- 15 . Are you avoiding these areas?
16. Do you think that the security within Tynnered have improved or gotten worse?
17. Do you know who lives in your neighborhood and around it?
18. Is there a strong community among the residents where you live?

A. Interview with local citizens

19. Do you think your neighborhood is taken care of?

20. Do you feel like the police are present enough in your neighborhood?

B

Group interview with the police

1. What are the biggest problems in the area of Tynnered?
2. What is it that makes Tynnered classified as a particularly vulnerable area according to NOA?
3. Which categories of crimes are common in Tynnered?
4. What are the biggest problems regarding criminality in Tynnered?
5. What are the reasons for these problems emerging?
6. Is organised crime a big problem in the area?
7. Do these organisation have influence on peoples everyday life and in which way?
8. Do the presence of organized crime encourage other people to also engage in criminal activities?
9. How do you work to counteract these organisations?
10. Within the defined area, are there any places you find problematic?
11. If that's the case, what makes these places problematic?
12. Is your perception that the local citizens feel safe?
13. Which places do you believe that the local citizens feel unsafe?
14. From the interviews with the local citizens, we got the impression that many of them felt uncomfortable regarding groups of young men hanging around in public spaces. Do you believe that these groups are harmless, law-abiding youth or part of criminal organisations?
15. How have the situation regarding crime, changed over time in Tynnered?
16. What effort have you done to increase security and decrease the amount of crimes in Tynnered?

B. Group interview with the police

17. Have you seen any positive effects of your work?
18. What else do you need to do in the future to improve the situation?
19. Are there any types of crimes that fluctuate depending on the season of the year?
20. Do you have any experience from project where crime is prevented by doing alterations to the physical environment?
21. If so, have these projects been successful?
22. Stadsbyggnadskontoret plans to make investment and re-build areas within Tynnered. What is your experience from these types of investments?
23. Do you believe it is possible to build away violent crime and robberies?
24. Do you have any experience of displacement, when alteration have been made to the physical environment?
25. If so, have this lead to negative or positive outcomes?

C

Initial interview with local housing companies

1. What company do you represent?
2. What is your position?
3. Where in Tynnered do your organisation have housing?
4. What are the biggest problems for your organisation regarding crime?
5. What do you do to counteract these problems?
6. Do you have any personal connection to the area of Tynnered?
7. Do the residents of your apartments feel safe in and around their residence?
8. How do the perception of security differ between different age group amongst your residents?
9. Have you introduced any surveys to find out what the resident feel about security in the area?
10. What areas in connection to your housing, are the most problematic regarding crime?
11. What effort do you do to increase security of your residents?
12. Is there anything that your resident feel like the area is lacking?
13. What effort do you do to build community amongst your residents?
14. Is there an interest to engage in community building activities?
15. Is there any common areas in your housing?
16. If so, what are these used to?

D

Second stage interview with local housing company

1. What is your position?
2. Where do your organisation have housing within the defined area?
3. Are the rest of the houses condominiums or tenancies?
4. What types of apartments are there within this area?
5. Have you noticed any destructive behavior in or around your housing, which creates insecurity amongst the residents?
6. Could you point out where the residents feel insecure?
7. What efforts do you do to increase the perceived security in and around your housing?
8. Have you introduced any surveys to find out what the resident feel about security in the area??
9. What is your organisations attitude towards keeping the areas around and in between your housing clean?
10. Where in connection to your housing is there problems with vandalism?
11. Have their been many police operations within the defined area?
12. Is there any residents of yours, that you know or have reports of being active in any criminal organisation?
13. What do you have to say about the area between the Brilljantgatan tram stop and the entrance to Röda Brilljantgatan?
14. The area between Topasgatan and Röda Brilljantgatan where there is an outdoor gym. Who has ownership of this area?

D. Second stage interview with local housing company

15. Do you have any information about how your residents experiences the area of Rosa vandringsstråket?
16. The road that goes along Topasgatan and Röda Brilljantgatan, have you experienced any problems there?
17. How is the situation regarding security at your courtyards?
18. Is there anything that your resident feel like the area is lacking?

E

Articles found during the literature study

1. Effects of CPTED measures on active living and fear of crime(2016)
2. Crime prevention in urban spaces(2019)
3. Is CPTED useful to guide inventory of safety, a case study in Stockholm, Sweden(2016)
4. Safer places, the planning system and crime prevention(2004)
5. A re-evaluation of CPTED program in Portland(1981)
6. CPTED assessment report(2018)
7. Utvärdering av Helsingborgs stads trygghetsarbete(2019)
8. PRISMA- Procesverktyg för social hållbar stadomvandling(2019)
9. Hur kan vi bygga bort brott och bygga fram trygghet(2018)
10. Safe school design: A handbook for educational leaders(2000)
11. Effektstudie trygghetsskapande åtgärder. Hur tryggt blev det?(2019)
12. Investigation of the relationships between CPTED principles and peoples feelings of safety a pilot study in the city of Adelaide(2015)
13. Walking with Park Exploring the re-framing and integration of CPTED principles in neighbourhood regeneration in Seoul, South Korea(2013)
14. Uppföljning av stöd till utemiljöer i vissa bostadsomraden(2019)
15. Kan akutisk design och musik förebygga brott och öka trygghet(2019)
16. Reducing crime through environmental design: Evidence from randomized experiment of street lightning in New York city(2019)
17. Förbättra belysning och brottsprevention(2007)
18. New framework of sustainable indicators for outdoor LED lighting and SSL(2015)
19. The crime reducing effect of improved street lighting: The Dudley project(2008)
20. IoT som ett komplement till att öka tryggheten(2020)
21. Public transport safety(1991)
22. Community-driven disorder reduction: Crime prevention through clean and green initiative in a legacy city(2020)
23. CCTV in deprived neighbourhoods(2020)
24. Återrapportering av ekonomiskt stöd till lokalt brottsförebyggande projekt(2005)
25. Kameraövervakning och brottsprevention: En systematisk forskningsgenomgång(2007)

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