Applying Technology in a Bangkok Slum:
CCTV Systems to Benefit the Khlong Toei Community

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Abstract

The Khlong Toei slum is Bangkok's oldest and largest slum, whose residents face issues such as poverty, crime, drug abuse and fire. Local authorities and charities such as the Duang Prateep Foundation, our project sponsor, have been working towards solving these issues. Recently, some Closed Circuit Television (CCTV) systems have been installed by diverse authorities to help address these issues. However, this resulted in confusion regarding camera owners and purposes in the Khlong Toei community due to the lack of communication between the authorities and the residents. The goal of this project was to promote better understanding and use of the CCTV systems in the Khlong Toei slum. We determined owners, purposes and consequences of the CCTV systems in Khlong Toei and created informative media to provide this information to the public. Additionally, we provided recommendations for making the CCTV systems more useful to the community.

Acknowledgments

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We would like to thank the Khlong Toei residents who shared their experiences with the currently installed CCTV systems; their input helped us gain a better understanding of the impact the systems have had on the community.

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Finally, we would like to thank both our Chulalongkorn University and Worcester Polytechnic Institute Advisors, namely Ajahn Siripastr Jayanta, Ajahn Stanley Selkow, and Ajahn Seth Tuler, for their guidance and patience throughout the entire project. Their constructive comments and input helped to keep the team on track and improve the quality of our work.

Executive Summary

Our project was centered on the Khlong Toei slum, one of Bangkok's largest and oldest slums. As with other slums, the Khlong Toei slum is the home of many poor residents who live on land illegally and face a number of issues, including crime, drug abuse, diseases, lack of education, and fire and other emergencies, among others. A variety of organizations in Bangkok have taken responsibility to address these issues, including the Duang Prateep Foundation (DPF), the Office of Narcotics Control Board (ONCB), the Khlong Toei District Office, and the Bangkok Metropolitan Administration (BMA).

The Duang Prateep Foundation, the sponsor of this project, is a charitable organization that works to improve the living conditions of the slum community. The DPF has been aware of the existence of Closed Circuit Television (CCTV) cameras in the Khlong Toei community and would like to use the cameras to help alleviate some of the issues mentioned above. However, they did not understand how the cameras can be used to benefit the community and how the utilization of the cameras affects community members. Since the use of CCTV cameras has direct effects on the residents of Khlong Toei, our goal was to promote better understanding and use of the CCTV systems in the Khlong Toei slum. In order to achieve our goal, we identified three major objectives:

1) Assess and characterize the current CCTV systems in Khlong Toei
2) Determine and analyze the use of the current CCTV systems in Khlong Toei
3) Investigate methods for promoting the positive and mitigating the negative consequences of the CCTV systems

Methodology

In order to meet our objectives, we traveled to Khlong Toei to first examine the physical aspects of the CCTV systems, and determine the owners and uses of the cameras. We took a tour around Lock 1-2-3, Lock 4-5-6, and 70 Rai, and made an initial observation of where the currently installed CCTV cameras were located and how many there were, as well as the location of the local police monitoring station. Upon subsequent visits to Khlong Toei, we collected more detailed information about the physical aspects of the CCTV systems, and produced a map that contained some of that information. We also identified a number of organizations as owners of the CCTV cameras, and interviewed some of them to gain insight into why and how they used the cameras, and whether their utilization of the cameras has alleviated some of the issues in the community.

Subsequent visits to Khlong Toei also involved gathering information that would help us to understand the positive, negative, and unintended consequences of the current utilization of the CCTV system. We interviewed residents about their experiences in the community in order to understand what major issues they believed must be addressed, what they thought the CCTV cameras were being used for, and whether they were satisfied with the cameras. Using general guidelines for content analysis, we evaluated interview responses to discern trends in the residents' opinions of the cameras. In order to gain a more informative insight into what consequences the use of CCTV systems has had on the community, as well as how the systems have been used to help deal specifically with drugs and fire, we interviewed local experts on drug prevention and fire protection, as well as community leaders from Lock 1-2-3, Lock 4-5-6, and 70 Rai.

Finally, based on the information we gathered from previous objectives, we investigated ways that the use of CCTV systems would yield more positive and less negative consequences for the Khlong Toei community. Three major steps we identified within this objective were to provide the residents with basic information about the CCTV system, investigate ways in which the residents can participate in using the CCTV systems for their benefit, and provide recommendations as to how utilization of the CCTV systems can be better adjusted to meet the needs of the Khlong Toei residents. In the first step, we compiled basic information on the CCTV systems using printed and interactive media. In the second step, we classified

resident participation into active and passive components. An example of active participation would be residents initiating a behavioral pattern, which would be detected by cameras that use pattern recognition software; an example of passive participation would be residents accessing video feeds that may provide evidence of a crime. The third step involved recommending ways in which the CCTV systems could be better adjusted to meet the needs of the community, by comparing the technical aspects of the CCTV systems to previously collected information.

Findings

Through the completion of our objectives, we made the following findings:

1. **CCTV cameras are independently owned by various organizations, resulting in overlapping of camera installment and causing inefficient monitoring in terms of cameras per area.**
   Cameras owned by different organizations are not labeled clearly, making it difficult for Khlong Toei residents to identify who they should consult for information from specific cameras. Through interview analysis and additional research, it was confirmed that the ONCB, BMA, and a company known as CAT Telecom own CCTV cameras in Lock 1-2-3, Lock 4-5-6- and 70 Rai of the Khlong Toei community. There were also CCTV cameras whose owners are unknown to us. Using this information, we created a map that displayed the locations of camera clusters and known and unknown owners.

2. **CCTV cameras are unevenly distributed in Lock 1-2-3, Lock 4-5-6, and 70 Rai of Khlong Toei. This means certain areas have a sufficient amount of cameras while others don't have enough to be properly monitored.**
   Most cameras are on the main streets, while there are not as many in the smaller streets and none in the soi, the very narrow and smallest of streets in Khlong Toei. The uneven distribution of cameras results in an absence of monitoring in different areas in the community. The soi seem especially dangerous, as resident interviewees have indicated that crimes often occur within the narrow streets. The residents we interviewed expressed that they would like cameras to be installed in the soi. However, due to poor lighting conditions in the soi, as well as legal boundaries, the BMA cannot install cameras there.

3. **The purposes of the CCTV systems are already fixed. However, there is a possibility of collaboration between the authorities that own public CCTV systems in Khlong Toei and other government departments that can result in better CCTV coverage.**
   Most of the cameras are owned by the BMA, ONCB and CAT Telecom Public Company. Each organization uses the cameras for different purposes, and the range of their CCTV network focuses are tailored to the systems' specific purpose. The various system owners do not currently collaborate with each other, nor do they share the camera feeds. However, it seems that some organizations and authorities can work together towards using the CCTV systems in Khlong Toei for additional purposes. Sharing the feeds could also result in wider coverage of surveillance, and perhaps less expensive expansion.

4. **The residents generally feel comfortable with the CCTV cameras in their community and expressed a desire for more cameras to be installed. The residents would also like to see the camera feeds.**
   Most of the resident interviewees expressed that they are comfortable with the cameras, have felt safer since their installation, and want more cameras to be installed, specifically in the soi (see Appendix C: Khlong Toei Resident Interview Data). Privacy concerns were never brought up by the residents.

5. **The residents are not well informed about CCTV camera owners and purposes and have a vague understanding of how to obtain the camera feeds.**
Most residents expressed that they thought the CCTV cameras were installed for crime-related purposes, and there was much less consensus on the other reasons residents thought the cameras were installed for. When compared to what the organizations that owned the CCTV systems told us the purposes of the systems were, we concluded that resident interviewee responses and the actual purposes of the CCTV systems did not fully correlate. In addition, the general consensus of the community leader interviewees was that the residents were not aware of the true purposes of the CCTV systems in the community. All of this led us to believe that few of the organizations, if any, which own CCTV systems in the Khlong Toei community actively informed Khlong Toei residents of the purpose for their installation of their CCTV systems.

Recommendations

Based on our findings, we developed a list of recommendations for various stakeholders in this project.

Recommendations for the Duang Prateep Foundation

1. **Inform the Khlong Toei residents about the CCTV systems in the community by distributing informative pamphlets.**
Most resident interviewees claimed that they want to be able to see the CCTV camera feeds (see Table 7 in Appendix C), and that many residents were not sure who to contact in order to get access to the camera feeds. We created a map that displays the locations of all the CCTV cameras in Lock 1-2-3, Lock 4-5-6, and 70 Rai of Khlong Toei. We included this map on a pamphlet which also contains contact information of the authorities that own the cameras, as well as the instructions for obtaining the camera feeds (see Appendix F). We recommend that the Duang Prateep Foundation print copies of these pamphlets to distribute to the Khlong Toei residents so that the residents can be made aware of the who the owners of the CCTV systems are, where all the cameras are located, what they are used for, and how to get access to the camera feeds.

2. **Keep the information about the CCTV systems in the community updated by periodically contacting the respective camera owners**
While the map and pamphlet may provide basic info about the CCTV systems, it should be kept up to date in order to retain its usefulness. We recommend that the DPF keep in contact with the organizations that own public CCTV systems in Khlong Toei in order to keep up with system changes that may occur. If there are updates, the pamphlets should be updated too so that residents also be kept up-to-date.

3. **Provide residents access to interactive map for further information on specific CCTV camera.**
Unlike the pamphlet, the interactive map contains pictures and the direction of each CCTV camera in Lock 1-2-3, Lock 4-5-6 and 70 Rai, and differentiates between individual cameras in a cluster. The interactive map would help the residents to identify the specific camera for which they would like access to the feeds. The residents' chances of obtaining the camera feeds will increase if he/she gets additional camera information which they will use while requesting the feeds.

Recommendations for Organizations that Own Public CCTV Systems in Khlong Toei

1. **Improve coordination of the Khlong Toei public CCTV systems**
All of the CCTV systems in Khlong Toei communicate via the internet to their respective operators. However, the different systems are very independent and only transmit feeds to their respective owners. Sharing camera feeds would mean that fewer cameras would have to be installed in one area and that future expansions could be done more cheaply. We recommend that the organizations that own the public CCTV systems work together to access each other's camera feeds. The IT personnel

of each of the CCTV systems could work together to allow their different CCTV systems to interface with each other.

2. **Conduct research on the consequences of CCTV systems, as well as effective places to install additional cameras**
In addition to positive consequences, CCTV systems have negative consequences, as well as consequences that cannot always simply be labeled negative or positive. We recommend that further research be carried out to understand these effects in order to increase and improve the positive consequences and mitigate the negative consequences of the CCTV systems. In addition to understanding the consequences of the CCTV systems, we also recommend that the owners of public CCTV systems in the Khlong Toei community research effective places in the community to place the CCTV cameras in order to improve the usefulness of the CCTV systems to the community.

Recommendation for the Bangkok Metropolitan Administration

Install more street lights in the Khlong Toei community
Several resident interviewees mentioned that there was an issue of lighting at night, and that dark areas tend to be dangerous. Therefore, we recommend that more street lights be installed in the community, particularly in the soi. The illumination would increase safety, as well as provide the necessary lighting for cameras without night vision to record at night.

Recommendation for the Office of Narcotics Control Board

Make ONCB CCTV system statistics available to the Khlong Toei residents
Posting the crime statistics is an effective way to inform the residents of how the CCTV systems have been helping, but if possible we recommend separating the statistics into crimes reported and arrests made. We also recommend stating specific examples when the CCTV systems have aided the ONCB in arrests. For example, one officer stated that the cameras have helped catch thieves after robberies. Stating facts like these would explicitly show the community how the CCTV systems help.

Recommendations for the Khlong Toei Residents

1. **Learn more about the Khlong Toei CCTV systems and be aware of the details of one's incident when requesting camera feeds.**
We recommend that the residents inform themselves about the CCTV systems in their community by carefully studying the informative pamphlet. Additionally, should the residents desire camera feeds from a specific camera, we recommend that they study the interactive map. This way the residents can confirm the owner of the camera and possibly obtain more detailed camera information that, once presented to the camera owning organization, can speed up the process of getting the camera feed.

2. **Request additional camera installment in Khlong Toei.**
We learned through our interview with the BMA that the residents have the right of requesting CCTV cameras to be installed in their communities. There is evident desire for more CCTV cameras in the Khlong Toei community (see Table 4 in Appendix C) as they provide for decreased rates of criminal activities and a feeling of safety among the residents. We recommend that the residents take steps towards requesting additional CCTV camera installment as they can give permission to the authorities to install cameras in the soi.

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Chapter 1: Introduction

Estimates are that around one billion people live in slums today (UN Habitat, 2003), representing one seventh of the world's population (United States Census, 2012). The number of slum dwellers has been increasing at an alarming rate since the 1990s, and in the next 30 years the total world slum population is projected to increase to two billion (Bolay, 2006). Problems that the slum residents deal with include poverty, unemployment, eviction, increased crime rate, lack of clean water, poor waste management, diseases, drug abuse, higher vulnerability to natural and other catastrophes, and slow (if any) emergency response (Ooi, Phua, 2007).

Over one million people live in slums in Bangkok today (Duang Prateep Foundation, 2013). Khlong Toei, a district in central Bangkok, contains one of the most well-known slums in Bangkok. In spite of the efforts of the local authorities and many charities, the Khlong Toei slum remains one of the most impoverished slums in Bangkok. Crime and drug abuse are prevalent issues that influence many residents' lives. The Khlong Toei slum has been referred to as "the most drug-prone, especially in areas called Lock 1-3 and Lock 4-5 over a 70-rai area" ("Khlong Toei slum under close scrutiny", 2012). Fires and floods are frequent each year and their consequences are made more severe by the poor living conditions. Just one out of many examples was the fire in 2007 that "destroyed more than 200 homes and displaced more than 1,800 residents" ("Khlong Toei blaze hurts", 2007). All these represent serious issues that still need to be addressed in order to alleviate the Khlong Toei slum residents' everyday hardship.

Closed Circuit Television (CCTV) camera systems have generally been recognized as a potential tool for decreasing crime rates and assisting with emergencies in communities around the world (Welsh, Farrington, 2002). In 2009, the Bangkok Metropolitan Administration announced plans to install 20,000 CCTV cameras around Bangkok for remote traffic surveillance and public safety in the following three years ("Technology to help poorly designed city", 2009). Khlong Toei district has been a target of this program, as well as a target of other organizations' installment of CCTV cameras. Today, CCTV cameras can be found in dense clusters around diverse areas of the district. However, it is arguable whether the current uses of the CCTV cameras in Khlong Toei are as effective in helping with the communal issues as they could be. Another problem is that the Khlong Toei residents do not know who owns these cameras and what purposes they are used for, as the cameras have been installed with no input from the community.

The Duang Prateep Foundation is a charity that creates and maintains programs to help improve the everyday life of slum communities, especially that of Khlong Toei. Aside of finding out who owns the cameras and what purposes they have been installed for, the Foundation is interested in ways the cameras are affecting the residents and how they could be used to further benefit the community.

The goal of this project was to promote better understanding and use of the CCTV systems in the Khlong Toei slum. In order to achieve this goal, we performed a following set of objectives. We first characterized the present CCTV systems by performing site research and contacting the authorities who own the cameras to learn more about the CCTV uses and their effects on the Khlong Toei community. We assessed residents' opinions about the cameras to investigate ways for improvement of public interaction with the CCTV systems. We created informative media to eliminate any confusion about the cameras in the Khlong Toei community, especially concerning camera owners and ways to obtain the camera feeds. By performing these objectives we came to a conclusion that there was a lack of communication between the authorities who installed the cameras and the Khlong Toei residents. The residents were comfortable with the cameras in their community and wanted more to be installed, but were at times doubting the cameras' integrity. The residents also wanted to be able to see the camera

feeds, but have had negative experiences in trying to do so. Based on our findings and background research, we were able to provide a set of recommendations for the DPF, the authorities and the residents. The main ideas behind these recommendations concern educating the residents about ways they can interact with the CCTV cameras and establishing collaboration between the different authorities to create a more integrated system, which altogether will hopefully result in a more beneficial usage of the CCTV systems in Khlong Toei.

Following is the report of our work organized in chapters, each representing a major part of our project. Chapter 2 presents the background research we performed preparing for the field work. Chapter 3 presents the Methodology that we took upon in conducting our work. Chapter 4 talks about the project findings and finally Chapter 5 provides a set of recommendations we established for the long term success of our project.

Chapter 2: Background

This chapter opens with the topics of urbanization and slum formation, and then concentrates on the Khlong Toei slum, the community our project focused on, within Bangkok. It then goes on to elaborate on some organizations that help the Khlong Toei community, namely our project sponsor the Duang Prateep Foundation (DPF), the Bangkok Metropolitan Administration (BMA), and the Office of Narcotics Control Board (ONCB). What follows is detailed information about Closed Circuit Television (CCTV), a tool that may be used to address Khlong Toei issues, and a main focus of our project. The final section then shows how all the topics covered are related, and how this information affects our project work.

2.1 Urbanization and Slum Formation

Approximately 50% of the world's seven billion people live in urban areas around the planet (Public Reference Bureau, 2012). Urban population has been increasing in the past century in both undeveloped and developing countries, as people have sought to move into cities in search of jobs (UN-Habitat, 2003). Unfortunately, not many local governments have been ready for such large population increases and have not coped well with the consequences. According to Ooi and Phua, local governments "invariably lack the financial and expert capacity to carry out the work needed to address urban problems." (Ooi, Phua, 2007)

One of the major results of this unpreparedness and inability to deal with urbanization is slum formation. Slums are generally characterized as settlements with poor hygienic conditions, substandard and overcrowded housing, degraded environment, no water supply, limited privacy, and other poverty-related issues (Tinlin, 1999). People arriving to cities often represent members of poorer communities and can seldom afford proper housing, which forces them to settle in slum environments lacking basic services.

Slum residents are also often victims of natural disasters. When asked why this might be the case, Mike Davis, the author of "Planet of Slums," states: "So, people survive by settling on the only free, untitled land that is left. By definition the land nobody wants and which has no market value—on a steep, unstable hillside, along a polluted river or in a dangerous flood plain. It is only a matter of time for natural disaster to strike" (Davis, 2006). The point that Davis is trying to convey is that slums are often on vulnerable lands, resulting in more severe disaster impacts. All these circumstances together significantly degrade the quality of life of slum residents.

There are approximately 1 billion slum dwellers around the world today (UN-Habitat, 2003), however this figure is predicted to increase. "The total number of slum dwellers in the world increased by about 36 per cent during the 1990s, and in the next 30 years the global number of slum dwellers will increase to about two billion if no concerted action to address the challenge of slums is taken." (Bolay, 2006) In every country, slum dwellers account for an average of 31% of the urban population. This number varies from country to country, but what does not change is the fact that urbanization and slum populations are predicted to grow. As can be observed from Figure 1, the rate of worldwide population growth is predicted to decrease, while the rate of urbanization is expected to increase (UN-Habitat, 2003). This is a problem because it means more and more people will live in urban areas, putting a strain on local governments to accommodate more residents and improve city infrastructures.
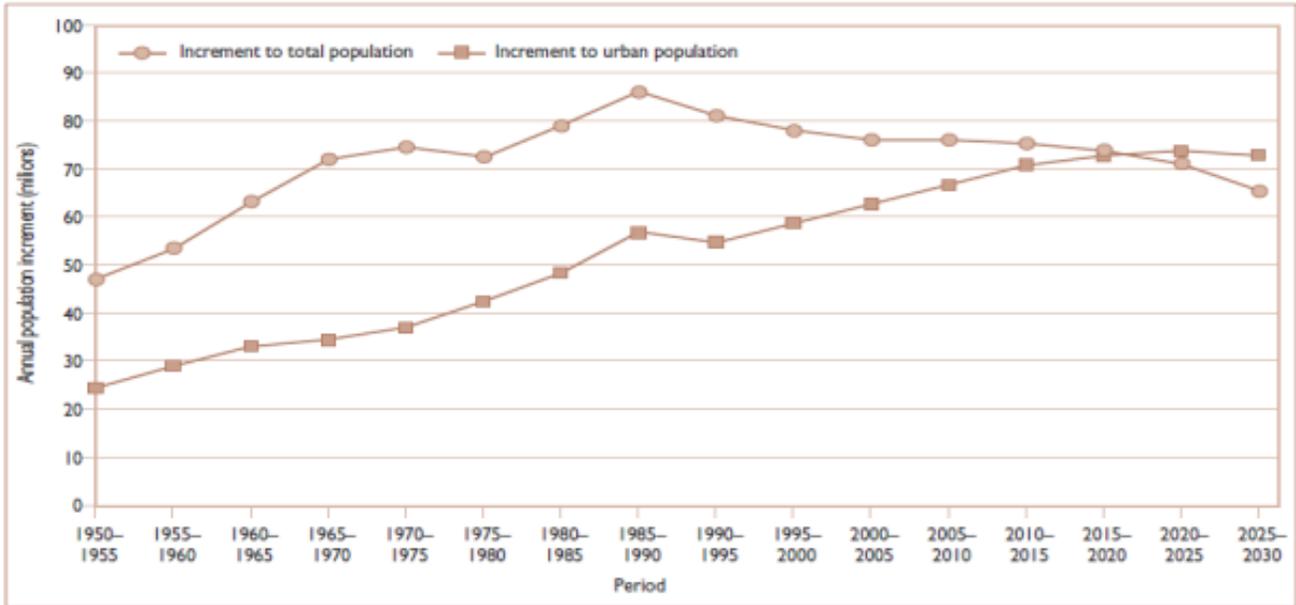
Figure 1: Annual increment in total and urban population.

2.2 Khlong Toei

Khlong Toei is a community located in southern Bangkok that borders the Chao Praya River, as depicted in Figure 2. While commonly known for its slum, only certain areas are greatly impoverished. Parts that are more developed contain the Stock Exchange of Thailand, Benjakitti Park, the daily market and other landmarks. Southern parts of the district are owned and controlled by the Port Authority of Thailand (PAT) because of the extensive water port. This poses a problem for the slum residents of Khlong Toei as most of them are squatters and are illegally living on the land owned by the PAT. The PAT has been attempting to evict residents but have been mostly unsuccessful (Casey et al. 2010).

These squatters were not always considered illegal. In the 1930's the Bangkok government offered cheap land rentals in the area of Khlong Toei for poorer residents. This did not last long as the rental program was discontinued when PAT was established in 1951. Any residents that are living under land that PAT owns are subject to be evicted and relocated. Even though the residents are under the pressure of eviction, the government does not often follow through because the land is typically not

Figure 2: Bangkok and Khlong Toei (red)

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commercially viable (Maier, 2005). However, when parts of Khlong Toei were destroyed by fires the government took the opportunity to build and relocate people to low-rise flats further away from PAT owned land. Residents do not usually like being forcefully relocated and occasionally move back to slums located next to the flats (Pugh, 1997).

2.2.a Major Issues: Crime and Drugs

Crime is regarded as one of many severe problems that exist in Khlong Toei. The daily occurrence of crime, as well as its increase in violence, contributes to the insecurity and other vexatious problems that people live with. The government and authorities bear a heavy responsibility for working against crime, and provide prevention and intervention programs. Although costly, the authorities also develop strategies to punish the criminals and provide rehabilitation for prisoners ("The method to prevent crime", 2010).

Khlong Toei has also been facing major issues with drug abuse. The most dangerous drug residents use is a mixture of methamphetamine and caffeine called "yaba". Medical drugs and heroin are also used but are less prevalent. Rehabilitating drug users in Khlong Toei is a tremendous issue to solve compared to health problems (William L. Dewey, n.d.) Oftentimes, drugs can lead to crimes as drug addicts are more likely to commit theft for money to buy more drugs ("Impact of Drugs on Society", n.d.). Children are also commonly affected by drugs if their parents are users because it creates physically and emotionally unhealthy living conditions. Charitable organizations working with the slum community have helped to provide better alternatives for the children by removing them from harmful environments and situating them in those where they can less affected by drugs and develop useful educational, vocational, and agricultural skills, as well as confidence in meeting life's challenges (Duang Prateep Foundation, n.d.).

2.2.b Major Issues: Fires

One of the most dangerous hazards in the Khlong Toei slum is fire, as it is the most destructive incident that occurs on a frequent basis. In Khlong Toei, houses are made from wood and tin, and are built so closely together that the community is very crowded, as can be seen in Figure 3. Fires spread so quickly that several homes are destroyed at once. Trained fire-fighting volunteers have been enlisted and fire-engines have been acquired to respond to fires more quickly and keep them from spreading. However, fires remain a serious threat to the residents, despite the efforts to decrease their frequency (Duang Prateep Foundation, n.d.).

In addition to efforts made by the Duang Prateep Foundation, local authorities have attempted to improve their response to fire. In response to the fire that destroyed more than 300 homes, the Khlong Toei District Office, working under the Bangkok Metropolitan Administration, established fire extinguishing system training at the PPT fuel depot in order to prepare for future fires in Khlong Toei, especially in Lock 4-5-6. (Khlong Toei District Office, 2013)

Figure 3: Cramped housing in Lock 1,2,3. Fires spread rapidly through these areas.

2.2.c Helping Organizations

Several organizations are involved in addressing these issues of crime, drugs, fire and other hardships in Khlong Toei. The ONCB is a government department that polices narcotic trade in Thailand and subsequently Khlong Toei. In Bangkok the local government is referred to as the BMA and manages the city's transportation, urban development, and crime. Finally the

DPF is a charity that helps deal with poor living conditions and hardships faced in the slum of Khlong Toei.

The Duang Prateep Foundation (DPF) was founded in 1978 with the mission to improve conditions in poorer communities of Thailand, specifically Khlong Toei. They help empower residents to be self-reliant, and their volunteers are largely made up of those who live in the poor communities. A variety of programs have been established to help the community such as education sponsorships, kindergartens for children, HIV/AIDS awareness programs, hospices for the elderly and AIDS inflicted, a credit union, and others (Duang Prateep Foundation, n.d.). Although the Duang Prateep Foundation has made considerable progress, the Khlong Toei community continues to face numerous issues that they and other groups try to amend.

Another organization that helps Khlong Toei is the Bangkok Metropolitan Administration (BMA) which is Bangkok's local government. And as per the Bangkok Metropolitan Administration Act 1985 they are responsible for the welfare of the city (Bangkok Metropolitan Administration, 2012). In order to promote a more livable city, the BMA has taken on the task of making the following improvements in Bangkok ("Bangkok Metropolitan Administration IP", 2011): making the public transport system more efficient, achieving faster emergency response times, and reducing transport accidents, traffic congestion, and crime.

With regard to crime, the BMA has called for the installation of Closed Circuit Television (CCTV) systems to increase security in Bangkok, due especially to crimes such as bomb attacks and assassination plots. On December 31, 2006, eight bomb attacks killed 3 people and injured almost 40, including 9 foreigners. The bomb blasts psychologically affected the mood of local shoppers and foreign travelers ("Thai Government to Install", 2007). In 2009, the Bangkok Metropolitan Administration decided to install an additional 10,000 CCTV cameras around the major areas throughout Bangkok, following the political turmoil and failed attempt to assassinate Sondhi Limthongkul, an important media figure and critical leader of the People's Alliance for Democracy. In October 2012, more cameras were installed in the Khlong Toei community to help monitor crime problems.

Finally, the Office of Narcotics Control Board (ONCB) also helps address issues in Khlong Toei. The ONCB was established in November 1976 by the provision of the Narcotics Control Act 1976. It was set up to function as the main authoritative body for drug prevention and suppression. Today, the ONCB operates as an independent body under the Ministry of Justice. Their Office has the following vision:

"The ONCB will be the central agency of excellence in integrated managing and confidence building on drug control of national and international counterparts by 2015" (The ONCB website, 2013). In addition, the ONCB's mission statement is as follows:

- To formulate national narcotics control strategy by taking into account drug situations
- To manage the narcotics control work as stipulated in the national narcotics control strategy
- To supervise and direct the integration & codification of narcotics law enforcement and other related narcotics control laws
- To cooperate with foreign countries, international organizations, and communities in fighting against illicit drugs
- To monitor, examine, and keep a close watch over the epidemic of drugs

In order to diminish the spread of drug abuse in Thailand the ONCB developed and implemented an official Drug Control Policy. This policy consists of 7 plans, 4 adjustments, 3 principles and 6 priorities. Some of the points in the policy discuss the need of monitoring certain risky areas. Examples of these are:

- "Risk areas and places would also be closely monitored and controlled, particularly, entertainment places, massage parlors, computer service centers and commercial residences" (Plan 3, The ONCB website, 2013).

- "To step up efforts taken by each provincial authority in keeping social order and minimizing the risk factors in communities/villages. In doing so, entertainment places, public and private youth gathering places must closely be monitored and controlled" (In Priority 5: The ONCB website, 2013).

The examples above highlight the ONCB's inclination to install CCTV cameras in areas considered risky. At the time the Drug Control Policy was establish, the Secretary-General was Pongsapat Pongcharoen who described the "Khlong Toei slum as the most drug-prone, especially in areas called Lock 1-3 and Lock 4-6 over a 70-rai area and occupied by some 7,000 to 8,000 people" ("Khlong Toei slum under close scrutiny", 2012). The Secretary-General also added: "Some 3,000 youths were thought to be at risk, said Pongsapat, and the authorities had surrounded the communities to "x-ray every inch over a 90-day period", which began on October 1. That includes police patrols, installing CCTV cameras and officers at all the 18 entrance and exits. This, he said, had led to many arrests so far."

Although the CCTVs seem to have been working well for the police, using them doesn't always result in good consequences. In order to understand these consequences, we did substantial research to first understand what CCTVs are and how they work.

2.3 Closed Circuit Television (CCTV)

Closed Circuit Television, also known by the acronym CCTV, is a private or closed video system where viewing of the video is restricted to a specific group of individuals (Inter-Pacific CCTV Product Overview, n.d.). This section covers the details of a CCTV system and how it is used to address the problems of crime and emergency situations, such as fire, in communities around the world.

2.3.a The CCTV System

A CCTV system is a linked system of components (as shown in Figure 4) that enables surveillance from a series of control rooms and/or a central point of operation continent (Inter-Pacific CCTV Product Overview, n.d.). Restriction of view is the key characteristic that sets the CCTV system apart from a broadcast television system which sends out a signal for the public at large to view.

As depicted in Figure 4 a typical CCTV system consists of the following electronic components:

- **Camera**: converts the visible scene formed by its lens into an electrical signal suitable for transmission to the remote monitor and recorder (Kruegle, 2007). The camera, and the transmission link if the system is hard-wired, is usually the only readily visible components of the CCTV system (Inter-Pacific CCTV Product Overview, n.d.). Figure 5 depicts an outdoor CCTV camera.

- **Transmission Means**: carries the electrical video signal from the camera to the remote monitor (Kruegle, 2007). A CCTV system can be hard-wired, in which the signals are transmitted through cables connecting the camera and monitor, or wireless, in which the signals are transmitted by electromagnetic waves through the air.

- **Monitor**: displays the camera image by converting the electrical video signal back into a visible image on the monitor (Kruegle, 2007).

- **Video Recorder**: records the camera scene using a real-time or time-lapse recording device.

Figure 4: An outdoor CCTV camera with exposed transmission cable

- **Camera Quad, Multiplexer or Switcher**: used in CCTV systems that have multiple cameras. They are used to select different cameras automatically or manually to display the images on one or more monitors, as individual or multiple scenes (Kruegle, 2007).

Some CCTV systems may involve sophisticated technologies or electronic interfaces such as:
- night vision or low light cameras for operations at night
- cameras that can be moved by remote control to follow an object of interest
- computer-assisted operation; interfacing with electronic alarm systems, and much more (Inter-Pacific CCTV Product Overview, n.d.).

CCTV systems, consisting of the technology and human elements, can be categorized into passive or active systems. In a passive system devices record images which can later be replayed if information is needed and no one actively monitors the images. In an active system, an operator sits and monitors several video displays in real time. In reality, many systems are a hybrid, where recording devices record all images and an operator scans from monitor to monitor, concentrating on some and ignoring others.

Some CCTV systems are able to pick up relevant signs and patterns automatically. This detection is done
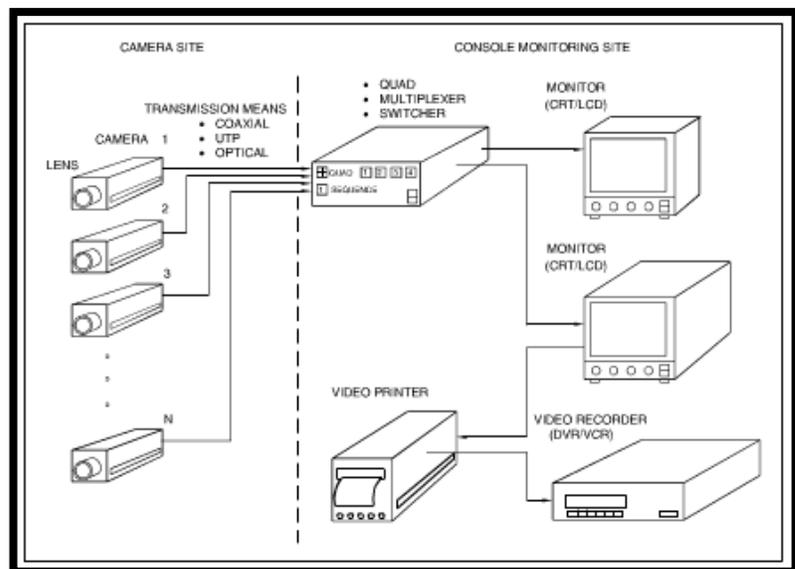
Figure 5: A Component View of a CCTV system (Kruegle, 2007)

through the use of video analytics. Generally speaking, video analytics is "the extraction of meaningful and relevant information from digital video" (Gagvani, 2008, p. 1). Video analytics has allowed for the development of "smart cameras and intelligent digital video recorders (DVRs) with automated capabilities that just a few years ago would have required human monitoring" (Gagvani, 2008, p. 1). For example, CCTV systems can now automatically identify characters on a license plate or a specific person's face.

CCTV systems can range in size from being within a single building, to a complex of buildings, to large campuses and city centers, and can even span across a continent (Inter-Pacific CCTV Product Overview, n.d.). The CCTV is set up to monitor an area and people, objects or activities in an area. This monitoring may be used for security, safety, industrial or private purposes (Inter-Pacific CCTV Product Overview, n.d.), some of which will be discussed in the following sections.

2.3.b Crime Prevention

The prevention of personal and property crime is among the primary objectives of the use of Closed Circuit Television systems in public spaces (Welsh & Farrington, 2003). CCTV is viewed as a technique of "formal surveillance," which is surveillance by persons employed to keep watch. In this regard, CCTV cameras are seen to enhance or take the place of security personnel (Welsh & Farrington, 2003).

CCTVs provide highly situational crime prevention, meaning that they only have crime prevention capacity in particular situations (Ratcliffe, 2011). More specifically, a CCTV system cannot physically limit access to certain areas, make an object harder to steal or a person more difficult to assault and rob. Instead, CCTV cameras are intended to (Welsh & Farrington, 2003, p. 111, Armitage, Smyth, and Pease (1999, p. 226-27)):

- increase the likelihood of perpetrators being caught in the act so that they can be possibly removed or deterred and
- deter potential offenders who perceive an elevated risk of apprehension.

In addition, CCTV cameras can influence specific behaviors in potential offenders and civilians that can result in crime prevention (Ratcliffe, 2011). There are several behaviors that CCTV may trigger. The main ones are (Welsh & Farrington, 2003, p. 111, Armitage, Smyth, and Pease, 1999, p. 226-27):

- Nosy Parker – CCTV may lead more people to feel able to frequent the places under surveillance. This will increase the extent of natural surveillance by newcomers, which may deter potential offenders.
- Effective deployment – CCTV directs security personnel to ambiguous situations, which may head off their translation into crime.
- Publicity – CCTV could symbolize efforts to take crime seriously, and the perception of those efforts may energize law-abiding citizens and/or deter crime.
- Time for crime – CCTV may be perceived as reducing the time available to commit crime, preventing those crimes that require extended time and effort.
- Memory jogging – the presence of CCTV may induce people to take elementary security precautions, such as locking their car, by jogging their memory.
- Anticipated shaming – the presence of CCTV may induce people to take elementary security precautions for fear that they will be shamed by being shown on CCTV.
- Appeal to the cautious – cautious people migrate to the areas with CCTV to shop, leave their cars, and so on. Their caution and security mindedness reduce the risk.

In order for these behaviors to take effect, two important elements must exist (Ratcliffe, 2011, p. 12)

- The offender or non-offender must be aware of the camera's presence.
- The offender must believe the cameras present enough risk of capture to negate the rewards of the intended crime.

A third important element that should exist is the belief by the offender or non-offender that the authorities will act on information received from the CCTVs. The usefulness of CCTV system is negated if there is no threat of punishment for criminal activity.

CCTVs are associated with the reduction of the fear of crime. Several studies have been done to determine if the presence of cameras in public places reduces fear of crime in people in the area. These studies found that "there is some reduced level of fear of crime among people in CCTV areas, but only among people who were aware they were in an area under surveillance." (Ratcliffe, 2011, p. 15).The likelihood of people being aware of the presence of the cameras in an area can be increased by the use of CCTV signs, as depicted in Figure 6.

Figure 6: CCTV Public Awareness Signs

The use of CCTV systems as a crime preventative method can vary from country to country, and even from community to community.

In the United Kingdom, for example, CCTV is the most funded crime prevention method, accounting for 78% of the Home Office's crime prevention funding in the 1990's (Lepon & Popkin, 2007). London is the most densely surveyed city in the world, with over 500,000 cameras installed (Lepon & Popkin, 2007), and with an estimated one camera for every fourteen residents in 1999 (Norris & Armstrong, 1999). Each Borough in London is responsible for its own CCTV systems. London authorities have access to them, but do not own them (Lepon & Popkin, 2007).

CCTVs are used for manually and automatically identifying criminals in the UK. The Town of Accrington, UK has a 26-camera CCTV system used largely for manually identifying town offenders. The CCTVs are controlled from the local police station, and operators are linked via radio with police and

retailers. The town has a relatively small population (30,000), much like the Khlong Toei slum. Due to the relatively small population, operators can gain knowledge of local offenders and identify them. Also, police provide photographs of convicted shoplifters, only available for view by the police and CCTV operators (UK Parliamentary Office of Science and Technology, 2002).

The Town of Newham, UK (pop. 235,000) opted for automatically identifying criminals when they piloted face recognition software in 1998. In controlled conditions these systems can achieve accuracy of 96%. However, obtaining clear facial images can prove difficult due to factors such as lighting, movement and accessories such as hats or glasses that obscure the face. Images are compared against a police list of approximately 100 convicted offenders wanted for arrest or considered likely to re-offend. Chances of a false match increase with the size of the photograph database, thus the small size of the database of images. CCTV operators have access only to personal data that is necessary for identifying criminals. If an operator verifies that a match made by the software is false, the CCTV image is deleted (UK Parliamentary Office of Science and Technology, 2002). "The system is highly publicized to deter crime; youths placed on the list are taken to view the system's capabilities" (UK Parliamentary Office of Science and Technology, 2002, p. 1).

Several UK CCTV systems have also been equipped with talking cameras by local governments in several municipalities. The project was first started in the city of Middlesbrough, and its success there lead to its adoption in London and other cities. Loudspeakers attached to the cameras are used to warn individuals that are observed breaking the law, such as by littering (Welsh & Farrington, 2003).

More instances of CCTV uses can be found in Western Australia, where there has been a rapid expansion of CCTV systems installed in recent years, though the actual number installed is unknown. These systems are owned both privately and by the government (Auditor General Western Australia, 2011).

With support from Commonwealth and state governments, the Australian city of Bunbury has spent more than $300 000 on its CCTV systems. Its CCTV cameras installed in public, such as those depicted in Figure 7, are concentrated

Figure 7: City of Bunbury's CCTV System (Auditor General Western Australia, 2011)

in its central areas of business and entertainment. There are 21 CCTV cameras connected to monitoring sites in the city. The City underwent a two-year trial of active monitoring of CCTV during evenings and public holidays, times when crime was expected to be at its peak. Its hopes are to use CCTV to prevent crime, facilitate rapid police response and improve public safety (Auditor General Western Australia, 2011).

Figure 8: City of Stirling's CCTV System (Auditor General Western Australia, 2011)

The Australian City of Stirling's CCTV installations have also been largely funded by Commonwealth and state government grants. The City's CCTV system consists of 114 public CCTV cameras, such as the one pictured in Figure 8, located in 16 geographically dispersed locations. The CCTV systems are linked to a central monitoring facility and all cameras record continuously, but most are not actively monitored because of current limits on communication bandwidth (Auditor General Western Australia, 2011). In Stirling, video surveillance is specifically intended "to deter antisocial behavior, vandalism and crime; to assist police in responding to antisocial and crime incidents; for investigating and prosecuting offenders; and to

improve the sense of safety of the general public" (Auditor General Western Australia, 2011, p. 16).

The results of CCTV use as a crime preventative also vary from case to case. For the Town of Accrington, UK, the first year of its system's application resulted in "a drop in shoplifting, criminal damage and theft from motor vehicles, with little sign of crime displacement to adjacent areas" (UK Parliamentary Office of Science and Technology, 2002, p. 1). In the Town of Newham, UK, crime in CCTV areas decreased by an average of 35%, incidents of property crime became more common, incidents of crimes against people became less common, and motor vehicle crime in the surrounding non-CCTV areas rose by 10%. In both the cases of Accrington and Newham however, it is unclear the extent to which CCTV was responsible for these effects, as other crime reduction measures were introduced concurrently (UK Parliamentary Office of Science and Technology, 2002).

Similarly, in Western Australia, CCTV has generally "been shown to have significant benefits to reducing burglary and petty theft within premises and car-parks, and has also been used successfully to reduce graffiti in targeted areas" (Auditor General Western Australia, 2011, p. 9). First, police of the City of Bunbury, Australia have "reported that actively monitored CCTV enables them to intervene by deploying staff before a situation escalates. Police responded to more than 80 per cent of all incidents reported by the City and to more than 90 per cent of more serious incidents. The response rate improved after monitoring began and the improvement has been generally sustained over time" (Auditor General Western Australia, 2011, p. 21). Figure 9 and Figure 10 indicate the general increase in police response to incidents and the general decrease in number of incidents per week, respectively.
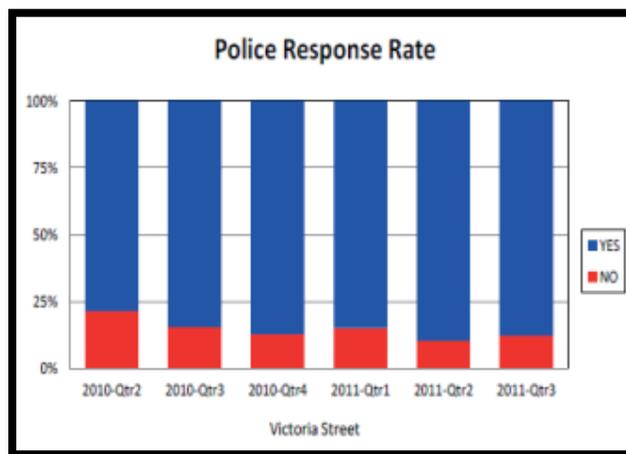
Figure 9: Graph of Bunbury Police Crime Response Rate (Auditor General Western Australia, 2011)
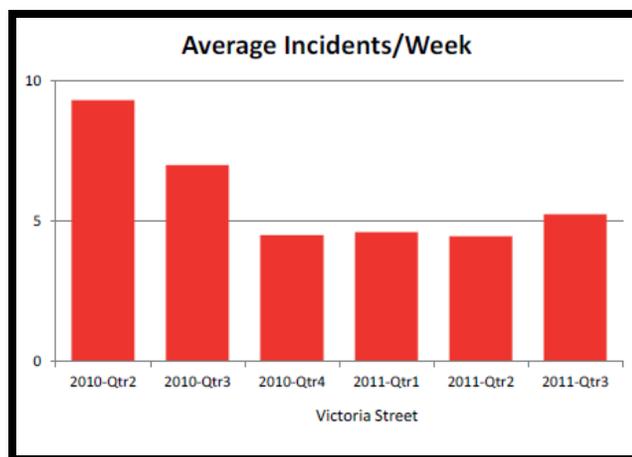
Second, police of the City of Stirling, Australia "claimed a marked reduction in antisocial behavior and offenses against the person, resulting from the use of active CCTV monitoring at foreshore events. Police have also used the City's recorded CCTV imagery to apprehend and prosecute a number of offenders" (Auditor General Western Australia, 2011, p. 23).

Third, as in the city of Stirling, CCTVs can not only be used to prevent crime, but to help solve crime cases. Footage can be used to identify perpetrators, and sometimes be used as evidence in court (Lepon & Popkin, 2007).

Finally, the West Australian Public Transport Authority (PTA) and the Police Transport Division initiated Operation Cleanskin, which used CCTV to address the significant problem of graffiti. "Recorded rail car CCTV was systematically reviewed to identify graffiti perpetrators. Their movements are tracked using other rail / bus station CCTV recordings. Comprehensive information about each offense is forwarded to Police for further investigation. Media publicity enlisted public assistance to identify some of the offenders. Since March 2010, the operation has resulted in 195 apprehensions and 330 charges. The marked reduction of graffiti is reflected in substantially reduced cleaning costs" (Auditor General Western Australia, 2011, 24), as depicted in Figure 11. In addition, the railcars were able to be kept in service longer before they required cleaning (Auditor General Western Australia, 2011, 24).

2.3.c Emergency Prevention and Response

Closed Circuit Television can be a helpful tool when used for emergency prevention and response applications. The presence of CCTV cameras can help reduce activities that could potentially result in emergency situations, such as an assault crime resulting in the need for an ambulance response, or arson. As will be discussed in this section, local authorities can be informed of and directed to the scene of an incident where they can work to address the situation. In the case of the Khlong Toei slum, one of the most prevalent emergency situations arises from fire. Hence, this section covers emergency prevention and response with a focus on fire protection.

"In fire protection, there are three principal goals: (1) reduce fire occurrence, (2) control the spread and duration of fires, and (3) provide escape routes for people trapped in a burning structure" (Colangelo, Nguyen, Palacio & Tressel, 2002, p. 10).
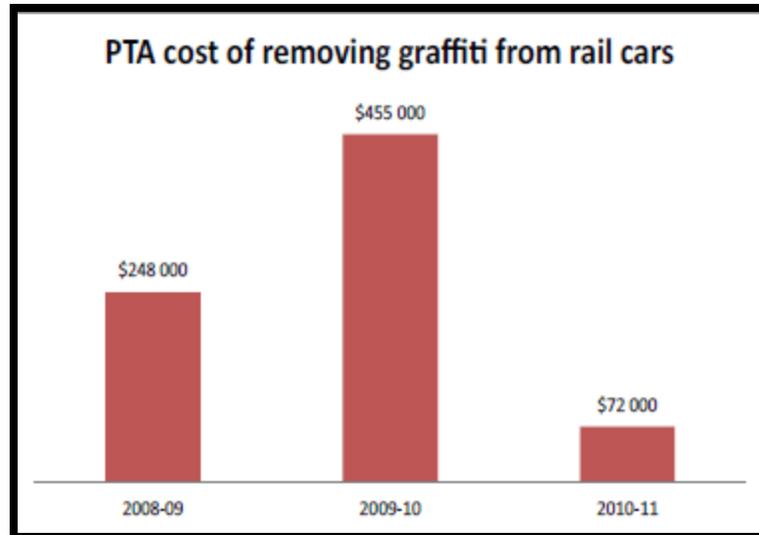
Figure 11: Graph of PTA Graffiti Removal Costs (Auditor General Western Australia, 2011)

While there are not many cases of Closed Circuit Television being used as a primary tool for fire protection, CCTV systems can be used to aid in the fire protection process.

First, CCTV can be used to aid in the achievement of the first goal, reduction of fire occurrence, and to detect the early signs of fire or smoke in an area, especially if there is no one physically present in the area at the time to notice the fire signs. Smoke and fire detection can be done with human intervention, where the CCTV operator sees the smoke or fire through the camera video feed. Detection can also be done automatically, through the use of video analytics. One such capability is fire or smoke detection, as depicted in Figure 12 and Figure 13. Imbued with video analytics technology, it may be possible for a CCTV camera to be able to detect smoke or fire and raise an alert.
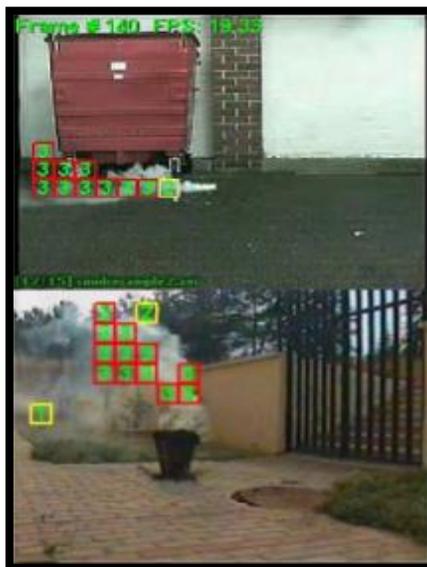
Figure 12: Video Analytics software detecting smoke (http://signal.ee.bilkent.edu.tr/VisiFi
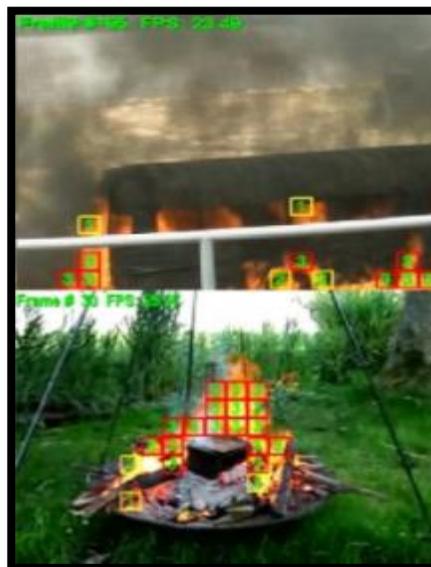
Figure 13: Video Analytics software detecting fire (http://signal.ee.bilkent.edu.tr/VisiFi

Once the early signs of fire are detected, through active or passive means, the authorities can be notified in order to prevent the situation from escalating into a full-fledged fire emergency. In the case of a suspected fire, while a sprinkler may activate or a fire sensor may produce an alarm, a CCTV camera can be used to determine the severity of the fire, or if it is a false alarm (Kruegle, 2007).

Arson has occurred in the Khlong Toei slums as a means of eviction (Colangelo, Nguyen, Palacio & Tressel, 2002). CCTV can also be used to prevent arson, much as it might be able to prevent other crimes. Arsonists will be less likely to set fires to buildings where cameras are present, due to the fear of being caught in the act.

Strategic placement of the cameras in areas most susceptible to fire is important. In Khlong Toei, there have been fires in the port that spread through the slums rapidly. Some residents lose their homes and suffer long-term side effects from the poisonous fumes (Colangelo, Nguyen, Palacio & Tressel, 2002). The port would be a prime location to place CCTV cameras in order to help prevent the fires.

Second, video is an inexpensive investment for not only preventing accidents, but also minimizing damage when an accident occurs, and thus the achievement of the second goal of fire prevention. Since the reaction time to a fire is critical having various cameras at the critical locations could be helpful in expediting a response (Kruegle, 2007). "Closed circuit television cameras act as real-time eyes at the emergency location, permitting security and safety personnel to send the appropriate reaction force with adequate equipment to provide optimum response. The automatic sprinkler and fire alarm system might alert the guard to the event but the video "eyes" viewing the actual scene prior to the emergency team's dispatch often save lives and reduce asset losses" (Kruegle, 2007, p. 11).

Finally, CCTV can be used to assist in the achievement of the third goal of fire protection: providing escape routes for people trapped in burning areas. Video aids in minimizing personal injury by permitting "remote eyes" to get to those people who require immediate attention, or to send personnel to the area being affected most to remove them from the area, or to bring in equipment to protect them (Kruegle, 2007). By monitoring the area of the fire, CCTV operators can help to identify any individual trapped by fire, identify a safe route to the individual, and direct emergency authorities, such as firemen, through those identified paths through radio technology. Emergency personnel might then be able to rescue the individual.

A disaster control plan that allows for quick response and medical care for those in need is also necessary when using the CCTV system to aid in emergency response. Kruegle's template for a good disaster control plan is designed for organizations, but can also be applied to communities. A logical and effective disaster control plan should do the following (Kruegle, 2007, p. 6):

- Define emergencies and disasters that could occur as they relate to the particular organization.
- Establish an organization and specific tasks with personnel designated to carry out the plan immediately before, during, and immediately following a disaster.
- Establish a method for utilizing the organization's resources, in particular video, to analyze the disaster situation and bring to bear all available resources.
- Recognize a plan to change from normal operations into and out of the disaster emergency mode as soon as possible.

Furthermore, "as a community safety feature, CCTV camera operators can contact medical services if they see people in the street suffering from illness or injury as a result of criminal activity (such as robberies and assaults) or non-crime medical emergencies. The ability to summon assistance is a public safety benefit of CCTV" (Ratcliffe, 2011, p. 16).

2.3.d Negative Consequences of CCTV

CCTV systems can also result in negative effects. The negative consequences discussed in this section are:

- Negative public response to the CCTV cameras' existence
- Abuse of the CCTV system

First, there is the possibility of a negative public response to the cameras' existence. "In one survey, one-third of respondents felt that one purpose of CCTV was "to spy on people." In other surveys, some city managers were reluctant to advertise the cameras or have overt CCTV systems for fear they would make shoppers and consumers more fearful. In other words, it is hoped that most citizens will feel safer under the watchful eye of the cameras, but CCTV may have the reverse effect on some people" (Ratcliffe, 2011, p. 18).

Concerns about CCTV also arise due to observations that have indicated that video surveillance has not been proven effective in deterring criminal activity. Terrorist suicide attackers are not deterred by video cameras, and may even be attracted by the increased media exposure that the cameras may provide (American Civil Liberties Union, 2002). Some studies indicate no effect on, or even an increase in, the crime rate in areas where CCTV systems have been installed. One such example is a study that was done on a city center in Glasgow, UK, 1994, that revealed a 9% increase in total recorded crime, and little effect of the cameras on crime stopping rates (UK Parliamentary Office of Science and Technology, 2002).

Adding to the negative views on CCTV in public spaces is the technology's susceptibility to abuse. In the UK, for example, "human rights groups, such as Liberty, are concerned that new CCTV technology is rapidly applied with little consideration for the implications for privacy and civil liberties. With the increasing power of cameras, people may be unaware that they are subjects of intrusive surveillance" (UK Parliamentary Office of Science and Technology, 2002, p. 4). Figure 14 depicts an anti-CCTV graphic from no-cctv.org, a website put forward by a group dedicated to the theme of eliminating CCTVs from society.

Figure 14: An Anti-CCTV graphic (no-cctv.org.uk)

This combination of rapidly increasing surveillance technology, little consideration of its implications, and the public's general unawareness can allow for the exploitation of the technology by those with the desire and the position to do so. The following are various ways in which video surveillance technology may be misused (American Civil Liberties Union, 2002):

- **Criminal Abuse** – a CCTV operator with bad intents can use the technology for criminal misuse. An example is a case in 1997 when a police official in Washington, DC used video surveillance technology to blackmail patrons at a gay club (UK Parliamentary Office of Science and Technology, 2002).
- **Institutional Abuse** – in times of social turmoil, such as during war, the line between what are socially accepted as right and wrong can become blurred, and entire institutions may misuse video surveillance technology. An example occurred during the Vietnam War when the FBI used video surveillance technology to spy on activists that protested the war (UK Parliamentary Office of Science and Technology, 2002).
- **Discriminatory Targeting** – prejudiced operators will tend to focus disproportionately on individuals in the group they are prejudice against.
- **Voyeurism** – operators can use the technology to voyeuristically spy on people.

2.3.e Additional Consequences of CCTV

CCTV systems may also have additional consequences that cannot be classified as simply positive or negative, because they do not always produce a net negative or positive effect. The three possibilities discussed in the following section are:

- Crime Displacement
- Crime Diffusion
- Increased Crime Reporting

Crime displacement "is the relocation of crime from one place, time, target, offense, or tactic to another as a result of some crime prevention initiative" (Guerette, 2009, p. 1). There are five types of crime displacement (Welsh & Farrington, 2003): temporal (change in time), tactical (change in method), target (change in victim), spatial/territorial (change in place), and functional (change in type of crime). In other words, instead of a reduction in offenses, offenders may react by moving their activities to a place out of sight of the CCTV cameras. This is an example of spatial displacement (Ratcliffe, 2011), which is what is usually meant when displacement is discussed, and is depicted in Figure 15. Spatial displacement is not necessarily a negative effect as it can make it more difficult for offenders to operate or move crime to areas where it can be better managed (UK Parliamentary Office of Science and Technology, 2002).
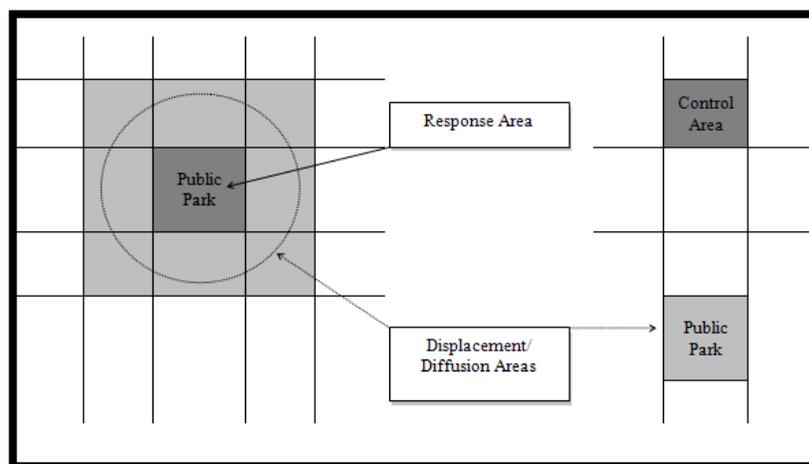
Figure 15: CCTV may cause Spatial Displacement of crime to surrounding areas (Guerette, 2009)

A CCTV system may also force a criminal or criminal group "to be more imaginative and to diversify operations. For example, researchers reported that in a London drug market the presence of cameras encouraged the drug market to move to a system where orders were taken by mobile phone and then delivered, and as such increased "the speed and ingenuity of the drug transaction." This is an example of tactical displacement, where offenders change their method of operation to continue the same criminal acts. Even though this particular introduction of CCTV may not be seen as an unqualified success, the fact that the CCTV system forced a change in behavior is positive. CCTV is likely to have forced drug dealers to adopt a less effective way of conducting business, resulting in a net reduction in crime" (Ratcliffe, 2011, p. 18).

"Crime diffusion entails the reduction of crime (or other improvements) in areas or ways that are related to the targeted crime prevention efforts, but not targeted by the response itself" (Guerette, 2009, p. 1). It is also considered to be the "complete reverse" of displacement (Welsh & Farrington, 2003). "Diffusion effects are referred to in a variety of ways including the "bonus effect," the "halo effect," the "free-rider effect," and the "multiplier effect." In cases where any degree of diffusion is observed, the benefit of any response effects experienced in the targeted area are amplified as improvements were gained without expending resources in those areas. As with displacement, diffusion of benefits can occur in many forms. Spatial and target diffusion occur when areas or other crime targets near the intervention zone also experience a reduction in crime. Temporal diffusion occurs when other time periods experience a reduction in crime even though the intervention was not applied during those times. Crime type diffusion occurs when other crime types are prevented even though they were not targeted by the intervention (for instance, a project targeting commercial burglary may also achieve an added reduction in shoplifting)" (Guerette, 2009, p. 1).

Another consequence of CCTV is increased crime reporting and recording. Many offenses are often not reported by civilians, "especially minor acts of violence, graffiti, and drug offenses" (Ratcliffe, 2011, p. 19). In addition, CCTV operators are better placed to spot offenses, also possibly resulting in an increase in recorded crime figures (Ratcliffe, 2011, p. 19). There is not necessarily an increase in actual crime, just the amount of crime that is recorded (Ratcliffe, 2011).

2.4 Implications for the Project

As discussed in the previous section, Closed Circuit Television cameras are used for video surveillance, particularly to monitor crime and respond to emergency situations. In the Khlong Toei slum, the use of video surveillance may increase the capacity of the residents and authorities to counteract the hindrances to safety brought about by crime, drug abuse and fire. However, the reception and results of video surveillance tend to vary depending on location, population, and usage. Since our initial research did not yield many results on the consequences of implementing CCTV systems in slums, our assessment on the feasibility of using CCTVs in the Khlong Toei slum depended largely on the information we obtained on site.

We identified two major concerns surrounding the numerous CCTV cameras that are currently installed in the Khlong Toei slum. We do not know the exact number of cameras, and initially we did not know who owns them or for what purpose. The combination of these conditions results in an ambiguous situation that is typically an element in the misuse of video surveillance. In the Khlong Toei slum, it is possible that exposure to such an obscure situation may have influenced residents to develop a generally negative view of video surveillance.

Another factor that may influence the residents' views on the video surveillance technology is the relationship they have with the BMA and other organizations mentioned above. If the residents do not have a positive relationship with these organizations, their views on the video surveillance technology may become more negative, which may lead to an increase in negative consequences of CCTV usage in the slum. Similarly, a more positive relationship between the residents and organizations will likely lead to a more positive view of the video surveillance technology, and likely less negative consequences.

The organizations' intentions regarding their use of the CCTV systems also have an effect on how useful the video surveillance is in the Khlong Toei slum. For example, the BMA has used CCTV systems to monitor traffic, which is not particularly useful in the Khlong Toei slum. In the crowded community, the roads are just wide enough for two cars to travel simultaneously, and cannot accommodate the type of traffic that exists on Bangkok's main roads. Instead of traffic control, it may be more applicable to use CCTV systems for fire protection, as was discussed in section 2.3.c.

A second factor regarding the usefulness of video surveillance is the residents' awareness of the CCTV cameras. As discussed in section 2.3.b, public awareness of CCTV cameras is vital for the benefits of video surveillance to take effect. If the Khlong Toei slum residents are not aware of the general presence, uses, and intents behind the uses of the CCTV systems in their community, they are less likely to experience the benefits of the technology. As part of the Duang Prateep Foundation's mission to help the residents address and improve issues within the slum, they have considered utilizing the CCTV systems that were recently installed. The Duang Prateep Foundation has also acknowledged that it is important for them and residents to understand the consequences that using the CCTV systems can have on the community. A significant part of our on-site research involved the examination of the CCTV systems and the consequences their presence and uses have on the community. The following section defines and describes the methods we used to address the essential research questions of the project.

Chapter 3: Methods

The goal of this project was to promote better understanding and use of the CCTV systems in the Khlong Toei slum. This was necessary to clarify ambiguities in the Khlong Toei slum with regard to the owners and purposes of the systems, and to improve the usefulness of the systems to the community.

In order to achieve this goal, we set the following objectives:

1) Assess and characterize the current CCTV systems in Khlong Toei
    i.   Map the camera distribution in Khlong Toei,
    ii. Identify the owners of each CCTV system and the purpose of system installations by interviewing the appropriate organizations.
2) Determine and analyze the uses of the current CCTV systems in Khlong Toei
    i.   Interview Khlong Toei residents of different age and gender, as found appropriate,
    ii. Interview Khlong Toei community leaders, anti-drug campaign representatives, firefighters and other community members as deemed relevant.
3) Investigate methods for promoting the positive consequences and mitigating the negative consequences of the CCTV systems
    i.   Specify ways for residents to participate in using the CCTV systems,
    ii. Create designs for informative media for Khlong Toei residents,
    iii. Perform a technical analysis of CCTV systems suitable for possible additional installment in the Khlong Toei community.

Our project site was located in Khlong Toei, Bangkok, as depicted in Figure 2. Our sponsor organization is located near the center of Khlong Toei and is surrounded by schools and residential areas. As seen in Figure 17, the names of the residential sub-communities around the DPF are Lock 1-2-3, Lock 4-5-6, and 70 Rai. Our project work was centered on these sub-communities. In this chapter, we discuss in detaileach objective, including its importance in the project, the plan for accomplishing it, and how the plan was executed in order to   achieve the project goal.
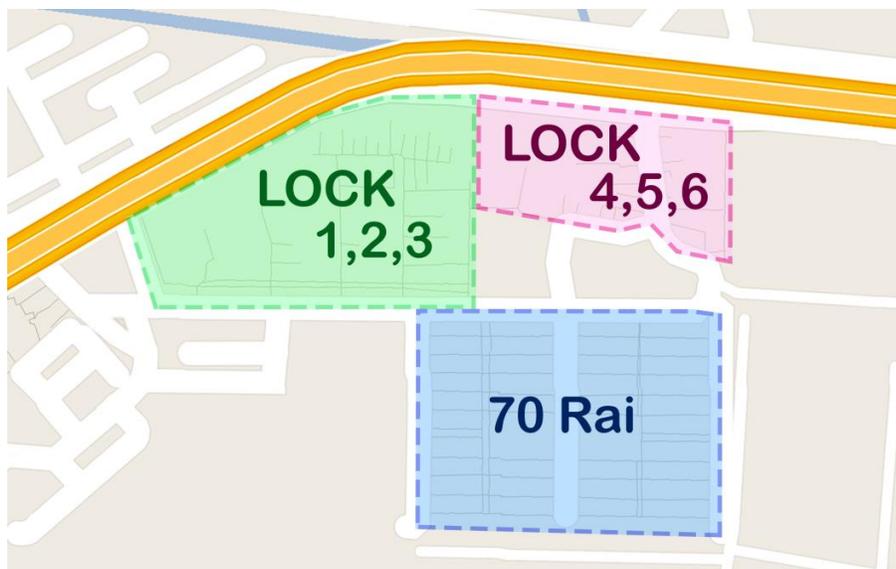
Figure 16: Locks 1-2-3 (Green), Locks 4-5-6 (Red), and 70 Rai (Blue)

3.1 Assess and Characterize the Current CCTV System in Khlong Toei

The purpose of this objective was to obtain a well-informed understanding of who owns the currently installed CCTV cameras, how they are used in Khlong Toei, and whether the physical and technical characteristics of the cameras permit them to be used in ways that suit both the intentions of their owners and the needs of the residents. Understanding how the CCTVs are and can be applied in the Khlong Toei community would enable us to propose ways in which the utilization of current CCTV cameras, as well as cameras to be installed in the future, can be adjusted for the benefit of the community.

3.1.a Map Camera Distribution in Khlong Toei

As mentioned above, the scope of the project was centered on specific areas in Khlong Toei, namely Lock 1-2-3, Lock 4-5-6, and 70 Rai. Since we were not able to find a map of the CCTV cameras in those specific areas, we created our own map that contained particular information on the cameras, namely their specific locations within the Lock and 70 Rai, the number of cameras mounted on each pole, the directions they were facing and their serial numbers. We found and printed various maps of Khlong Toei, one of which included all of the Lock and 70 Rai, while the other maps displayed magnified sections of the Lock and 70 Rai. We used the first map as a general guideline through each of the Lock and 70 Rai. On the other maps, we recorded the desired information on the cameras we found on the main streets. The maps that displayed magnified sections of the area were the key components of the camera mapping, as the information we recorded could be compiled into a more cohesive map that would ultimately display the cameras' locations as well as their owners.

3.1.b Identify Camera Owners and Purposes

In order to discover who owned the cameras currently installed in Khlong Toei, as well as what the cameras were being used for, we directed our inquiry toward organizations that were related to the cameras in Khlong Toei. We initially assumed that the Bangkok Metropolitan Administration was the only organization that had installed cameras in Khlong Toei; however, our sponsor revealed that a number of different types of cameras were installed, and that the BMA was among the multiple organizations that owned them. As we took a tour around the area, we discovered that there were also cameras that did not have a clear owner. In addition to interviewing the BMA and the Office of Narcotics Control Board (ONCB), we contacted a number of other organizations that we thought would help us gain additional insight into who owned the unknown cameras, namely CAT Telecom Public Company (CAT), the Ministry of Information and Communication Technology (MICT), and the Metropolitan Electricity Authority (MEA).

In our interviews with the BMA and ONCB, we primarily sought to understand why they installed cameras in Khlong Toei, what they used the cameras for, and whether using the cameras helped them fulfill their intentions, especially increasing security, monitoring and preventing crime and drug trafficking. We also sought statistics about the owners' use of the CCTV cameras and their effectiveness in preventing problems. With this information we hoped to understand from the owners' perspectives how the CCTVs were and can be used in the Khlong Toei slum, and determine whether their use of the cameras met the needs of the residents.

Secondary and more specific information we desired involved the more technical and physical aspects of the system, such as the cost of implementing the CCTVs, how information from the cameras is recorded and whether it is accessible to the public, their video quality and capacity to utilize additional software, and why some poles contained more cameras than others . Based on this information, we expected to understand whether enhancing the technology would help improve efforts made by the camera owners, as well as the budget required for the cameras that will be installed in Khlong Toei in the future, and where it would best benefit the residents to place them.

Unfortunately, not all of the organizations we contacted seemed willing to give us any information about the cameras. In particular, it was difficult to contact the MICT and MEA, and despite multiple attempts, we either did not receive a reply or the information we received contradicted what was indicated by our sponsor and additional research. Also, we did not fully investigate the budget required for the cameras that will be installed in Khlong Toei. Instead, we focused more on examining how the currently installed cameras can be used to more precisely meet the residents' needs.

3.2 Determine and Analyze the Use of Current CCTV Systems in Khlong Toei

With this objective, we sought to understand the social consequences, both positive and negative, that the current CCTV systems uses had on the Khlong Toei community. In addition, we sought to find out how well the CCTV systems had been implemented into the community and whether there were some undesired effects and issues that had arisen from the use of the CCTV systems. This knowledge was important in order to achieve the goal of our project, as we could not provide any recommendations for improvement if we did not understand the current situation regarding the impact of the CCTV systems on the residents.

3.2.a Interview the Khlong Toei Residents

We first gathered information from the Khlong Toei residents. We wanted to know their thoughts on and feelings towards the CCTV systems, authorities, and issues in the community. Since the residents are the ones regularly exposed to the CCTV systems and the community issues,   we considered their input to be highly valuable.

We initially identified three options for gathering information from community residents: questionnaires, interviews, and focus groups. We learned from members of the Duang Prateep Foundation that there was an issue of literacy in the Khlong Toei slum.. Therefore, if we used questionnaires to gather information in the community, we would have only been able to assess the views of the literate members of the community. Therefore, we decided to not use questionnaires. This left us with the options of interviews and focus groups.

Interviews are appropriate for eliciting individual thoughts and experiences and addressing sensitive topics, while focus groups are appropriate for identifying group norms (Mack, Woodsong, MacQueen, Guest, Namey, 2005). Between focus groups and interviews, focus groups require more skills for managing group discussions. Additionally, our sponsor wanted us to go into the community to speak with the residents, rather than set up formal sessions. Interviews were more appropriate for our purposes, and as such became our primary method for gathering information from the residents.

 The following questions describe what we wanted to learn from the residents:

- What are the major issues in the Khlong Toei slum?
- Where are the most dangerous places in the community?
- What do the residents know about the CCTV systems' uses and purposes?
- Are the residents comfortable with the presence of the CCTV cameras?
- Have the CCTV systems been helpful to the residents?
- Are the residents interested in seeing the camera feeds?
- Do the residents want the CCTV systems to be uninstalled?
- How helpful do the residents find the Khlong Toei authorities?

We developed an initial list of 23 interview questions. The questions were clustered under the following general themes:

- Who are you?

- How do you feel about the CCTV systems?
- Issues in Khlong Toei
- Wrap up

We used these themes to develop an overall flow of the interview questions in order to make the questioning more natural and logical. We also created a short briefing script that outlined the information that residents needed to know before the questioning process.

We wanted to convey to the residents:

- Our identity
- Our desire to interviewing the resident
- Our plans for the information we receive from the resident
- Our intent to keep the resident's identity confidential
- Our desire to record the resident's responses by writing and audio recording device

We also selected pictures we took of CCTV cameras in the community to use as a reference for residents who were unclear of what we were referring to when we mentioned the cameras.

The Chulalongkorn team members then translated the interview questions and briefing script from English to Thai. We then incorporated the interview questions, briefing script and CCTV camera pictures into a packet for pre-testing. The pre-test packet can be found in Appendix A.2.2.

The goals of the pre-test were to:

- determine whether the questions would extract the information that we were looking for
- give the team exposure to the interviewing process
- test the interview flow
- test the length of the interview

The team went into the Khlong Toei community, with the guidance of two DPF members, to pre-test. We divided the team into three groups: two groups consisting of 1 Chulalongkorn and 1 WPI partners and one group consisting of 1 Chulalongkorn and 2 WPI partners. The Chulalongkorn partners conducted all of the resident interactions, specifically briefing and interviewing. The WPI partners took pictures and did audio recording of the interviews. We interviewed a total of 10 residents in Lock 4-5-6.
From the pre-test, we learned that:

- There were too many questions. Some residents became impatient or fatigued.
- Some questions, though different from each other in English, were similar in Thai, and were interpreted similarly by the residents. Thus, residents felt they were being asked the same question more than once. This also led to identical responses for different questions.
- Some of the questions were too complicated for the residents to answer, and they did not know how to respond.
- Residents were not open to speaking candidly about the government or authority groups/figures.

Based on the feedback, we adjusted the interview questions and reduced the number of questions from 23 to 10. The final version of the interview questions can be found in Appendix A.2.3. We then conducted official interviews in Lock 1-2- 3, Lock 4-5-6 and 70 Rai. We divided the team into 3 groups as we did during pre-testing, and designated a group each to:

- Lock 1-2-3
- Lock 4-5-6
- 70 Rai

We conducted a total of 17 interviews. After an initial review of the interviewee demographics and responses, we realized that the views of the younger generation of Khlong Toei, more specifically those under the age of 30, were not represented as well as the older generation in our data. We also learned that some residents may have been intimidated by the presence of foreigners during the interviews, which may have caused them to give less truthful or thoughtful responses. Thus, we decided to conduct a second round of interviews in which the WPI partners would not be present and residents under 30 would be more actively sought.

Two Chulalongkorn partners conducted the second round of interviews in Lock 1-2-3, Lock 4-5-6 and 70 Rai. A total of 7 residents were interviewed, all under 30 years of age. The age and gender demographics of all 24 interviewees are presented in Figure 17 and Figure 18.
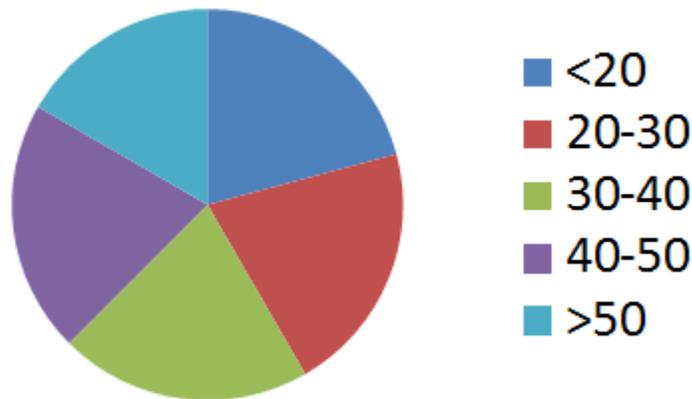
Figure 17: Gender Demographic of Khlong Toei Resident Interviewees
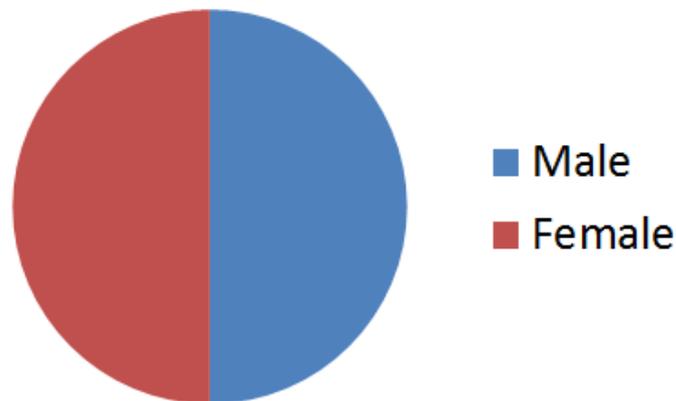
Figure 18: Age Demographic of Khlong Toei Resident Interviewees

In order to analyze and interpret the interview data, we followed general guidelines for content analysis (Berg, 1998). Using these guidelines, we arranged similar data under specific themes that were extracted while we reviewed the data. This process is called open coding (Berg, 1998). Through open coding, we reduced the influence we had on what the data portrayed, and made more room for the meaning of the data to emerge by itself.

The interview data that we collected represents at best the opinions of some of the residents living in the Khlong Toei slum community. We did not employ the necessary sampling techniques that would enable us to claim that the responses we received through our interviews represent a general view of the residents of the Khlong Toei community.

During our interviews, we found that interviewees were sometimes reluctant to give thoughtful or candid

responses to questions dealing with authority, such as the government. We attributed this to the modesty of the community and/or Thai culture, and did not try to press interviewees harder for answers, as we felt this would be counter-productive. Pressing the interviewees harder would have made the interviewees more uncomfortable and unwilling to continue the interview.

The Chulalongkorn partners also felt that some residents were intimidated by the presence of foreigners (the WPI partners), and so did not want to give open responses. Thus, our 1st round interview data was retrieved under different circumstances than our 2nd round interview data.

Another issue arose from the possibility that some of our interviewees could have been drug abusers and/or criminals themselves. If this were the case, it is likely that they would not want to give open responses, for fear of being incriminated or some other negative consequence they may have perceived such as the possible installation of more cameras for more coverage.

Another issue was the loss of information during translation from Thai to English. Our Chulalongkorn partners are not professional translators. Thus, some loss of information and meaning was unavoidable. This was addressed by listening to interview recordings and retranslating the interviews when the information provided by the initial translation was particularly scarce or unclear.

3.2.b Interview Community Leaders and Local Experts

Though assessing the views of Khlong Toei slum residents was important to gain an understanding of the relationship between the residents and the CCTV systems, it was not done in such a way that would truly reflect the views of the entire community. Many residents were also not knowledgeable enough of the CCTV systems to give very useful information other than personal opinions. Therefore, in order to gain more informed views of the effects of CCTV systems on the community, we decided to speak with residents of authority and knowledge in the community.

Our specific areas of interest were the relationship between the CCTV systems and the residents and the effects of the CCTV systems on crime, particularly drug trafficking, and fire. In order to gain information on the relationship between the residents and the CCTV systems, we interviewed community leaders from Lock 1-2-3, Lock 4-5-6, and 70 Rai. We believed that the community leaders would not only be more knowledgeable of the CCTV systems and its effects on the community, but would have a good idea of the residents' feelings towards the systems and would be more open to sharing this information with us. For information on the CCTV systems and their effects on drug use, we interviewed a representative from the Khlong Toei anti-drug campaign. For information on the CCTV systems and their effect on fire in Khlong Toei, we interviewed an ex-firefighter that currently works for the Duang Prateep Foundation and a Khlong Toei resident coordinator in charge of coordinating resident attempts to cooperatively fight fires.

The interview questions for the community leaders were similar to the interview questions used for the Khlong Toei residents. They were structured to elicit the community leaders' knowledge of the residents' feelings with respect to the CCTV systems and the helpfulness of the CCTV systems and the authorities. In terms of the interview questions for the local experts on fire, we realized it was not feasible to directly ask how the CCTV system could be used to address fire, since it was likely to be a concept that they did not previously explicitly consider. As discussed in the literature review, CCTV systems are not used commonly for fire protection. Therefore, the questions for the interviews with the ex-firefighter and the resident coordinator were structured to elicit information on what was necessary for good fire protection and what hindrances to good fire protection existed in Khlong Toei. From this, we would then determine ways that CCTV systems could be used to aid in good fire protection and help eliminate hindrances. The interview questions for the anti-drug campaign representative were structured to determine how effectively the CCTV system had been used to deal with drug trafficking in the community. All interview questions can be found in Appendix A.

In order to set up the community leader interviews, we contacted the DPF to request their assistance. They gathered 5 community leaders whom we interviewed consecutively at the Duang Prateep Foundation.

We contacted the ex-firefighter, resident coordinator and anti-drug representative and set up interviews with them. We carried out all the interviews during the same Khlong Toei site visit.

We used content analysis to interpret and analyze the responses from the community leaders and local experts.

3.3 Investigate Methods for Promoting the Positive and Mitigating the Negative Consequences of the CCTV Systems

With this final objective we sought to investigate methods that will promote the positive consequences of the CCTV cameras and work towards mitigating the negative consequences. We hoped that these methods will allow for better integration of the CCTV system into the Khlong Toei community. To achieve a better integration of the system it was important to:

1. Provide basic information about the CCTV system to the Khlong Toei residents',
2. Determine ways for resident to participate in the usage of the CCTV cameras,
3. Recommend CCTV system adjustments to match the needs of the community determined by the background research and community interviews.

3.2.c Create Designs for Informative Media for Residents

Our first step was to provide basic information about the CCTV system to the residents, as this would create a base for more interaction between the system and the residents. The more the residents understand the system, the better the position they will be in to use the system and recognize issues that they may have. The residents would be more likely accept the CCTV system as a part of their community if they understood why it was there in the first place, who controls it and how it works.

In order to create the informative media, we first needed to determine the exact information that we wanted to convey to the residents, and the most appropriate means of media through which we should convey the information.

The motivation behind the formation of this project, among other things, was the fact that the Khlong Toei residents are unaware of who owns the CCTV cameras in their community or what purposes they are there for. Therefore, the identity of the CCTV camera owners and the purposes for the installations of the cameras were the primary things we wanted to inform the residents of. We hoped to additionally use the information gathered from our community interviews in order to assess what other informational needs regarding the CCTV systems existed in the community. In this manner, we would be able to give residents information that would be most helpful to them and contribute to the better use of the CCTV systems.

Second, to convey the information to the residents, we had to keep in mind what kind of information we wanted to share. As we were providing a map of the Khlong Toei camera distribution, we could not use the radio or the PA system for obvious reasons. The other two options we had were the pamphlets and the posters. We decided to use pamphlets as they are relatively easy to make and distribute, and because the residents could not use a poster to point to the location of their incident once requesting camera feeds from the authorities as it is not portable.

3.2.d Specify Ways for Resident Participation in the Use of the CCTV Systems

The second step was to determine ways for residents to participate in the usage of the CCTV systems. We hoped that if residents were able to take on a more active role in the CCTV systems, they would be in a position to judge the integrity and results of the system for themselves.

There were two ways the residents could participate in the usage of the CCTV system: active and passive. The active participation represents dealing with the CCTV camera input to send information, whereas the passive participation represents dealing with the CCTV camera output to get information. An example of active participation would be residents presenting certain patterns to the camera in order to send a message to the people monitoring the camera feeds. This would involve pattern recognition software to identify the shape that the people are presenting and then decipher its meaning using an established message base. An example of passive participation would be to use the camera feeds to identify license plates, thieves, drug dealers and other criminals after a certain crime took place. Determining which type of participation would be best fit for the Khlong Toei community depended on the assessment of the community needs, as well as characteristics of the current CCTV system (specifically, the extent to which it could be adjusted to allow for resident participation). As we found out that the ways the CCTV cameras are used in Khlong Toei are currently fixed, the type of the participation we focused on was the passive participation i.e. providing access to the camera feeds to the residents.

3.2.e Perform a Technical Analysis of CCTV Systems

Finally the third step of this objective was to recommend a CCTV system adjustment to match the needs of the community. This step involved analyzing the characteristics of the Khlong Toei slum area, as well as those of the currently installed CCTV system and comparing these to the communal needs and opinions identified in the prior objectives. Once all of this data was gathered and processed, it was possible to create a list of factors that determined the set of recommendations for the CCTV system adjustments. This included recommendations for adjustment of the number of the CCTV cameras (either decrease or increase), recommendations for possible future camera installment locations, and recommendations for specific CCTV system features for the Khlong Toei area.

Chapter 4: Findings

In this chapter we present our results and findings from the completion of our objectives that were outlined in the Methodology chapter. The chapter consists of five important findings each supported by the details of the outcomes of our objectives. First, we elaborate on our findings concerning the various organizations that own the CCTV systems in Khlong Toei, and the uneven distribution of the systems. We then go on to discuss the purposes of the CCTV systems and their effectiveness thus far in fulfilling those purposes. Finally, we discuss the Khlong Toei residents' feelings about to the CCTV systems, and elaborate on the disconnection between the residents and the CCTV systems.

Finding 1: CCTV cameras are independently owned by various organizations, resulting in overlapping of camera installment and causing inefficient monitoring in terms of cameras per area.

Surveying the Lock 1-2-3, Lock 4-5-6 and 70 Rai areas in search of any signs of CCTV camera ownership, we learned that many of the cameras are poorly labeled, if at all, which makes it difficult to know who the camera owners are and who to contact if one would like to see the camera feeds. There were a few noticeable patterns among the specific cameras:

1. White CCTV cameras mounted on a pole, labeled with a symbol or a serial number (Figure 19),

Figure 19: Labeled white cameras

2. Black AVTECH CCTV cameras mounted onto black plates, usually labeled with a number (Figure 20),

Figure 20: Black AVTECH brand cameras

3. White CCTV cameras mounted on a pole, not labeled with any symbols (Figure 21),

Figure 21: White unlabeled cameras

4. And random CCTV cameras of all types, manufacturers and colors, usually single mounted (Figure 22).

Figure 22: Single mounted unlabeled cameras

The feedback that we received through our community interviews indicates that there is a discrepancy in people's opinions about the camera owners. Often, people did not know who the owners are at all. Hence, informing the Khlong Toei dwellers about who owns the cameras in their community seemed a necessary step towards achieving our goal. Some of the responses we got from the residents and the DPF members were that the cameras are owned by the Bangkok Metropolitan Administration (BMA), Office of Narcotics Control Board (ONCB), Ministry of Information and Communication Technology (MICT) and that some are private. This gave us a starting point and we proceeded with trying to contact these authorities. Shortly after, we found out that there is a Command Center controlled by the ONCB in the vicinity of the Duang Prateep Foundation that controls many of the cameras and decided to pay them a visit.

From our meeting with the representatives of the ONCB at the Khlong Toei Command Center, we confirmed that the ONCB owns public CCTV cameras in the Khlong Toei community that were installed in October 2012. The Command Center officers also pointed to another possible camera owner – CAT Telecom, stating that there are 8 CAT cameras in the area. The BMA also confirmed their ownership of CCTV cameras in Khlong Toei (see Appendix B.1: Bangkok Metropolitan) during our meeting at the BMA CCTV Headquarters, where we were also able to witness the system that the BMA uses to monitor many areas of Bangkok, including Khlong Toei. Finally, we learned from the MICT officers that the MICT does not own any cameras in Khlong Toei, but rather installs them for other organizations such as the BMA and the ONCB.

After all the interviews with the BMA and the ONCB took place, we combined the information we received with the data from the site research we conducted and performed a thorough analysis in order to determine which cameras belong to which organizations. We created a map that marks camera/camera cluster locations in the Khlong Toei community, distinguishing them with different colors representing each camera owner. The BMA cameras are marked with green, the ONCB cameras with blue, the CAT cameras with yellow and the unknown cameras are marked with red. The camera icons mark camera and camera cluster locations, and thus in some places an icon marks only a single camera, whereas in others it

marks up to 4 cameras. There are 16 BMA cameras, 32 ONCB cameras, 8 CAT cameras and the rest are unknown. The map is shown in the Figure 23.
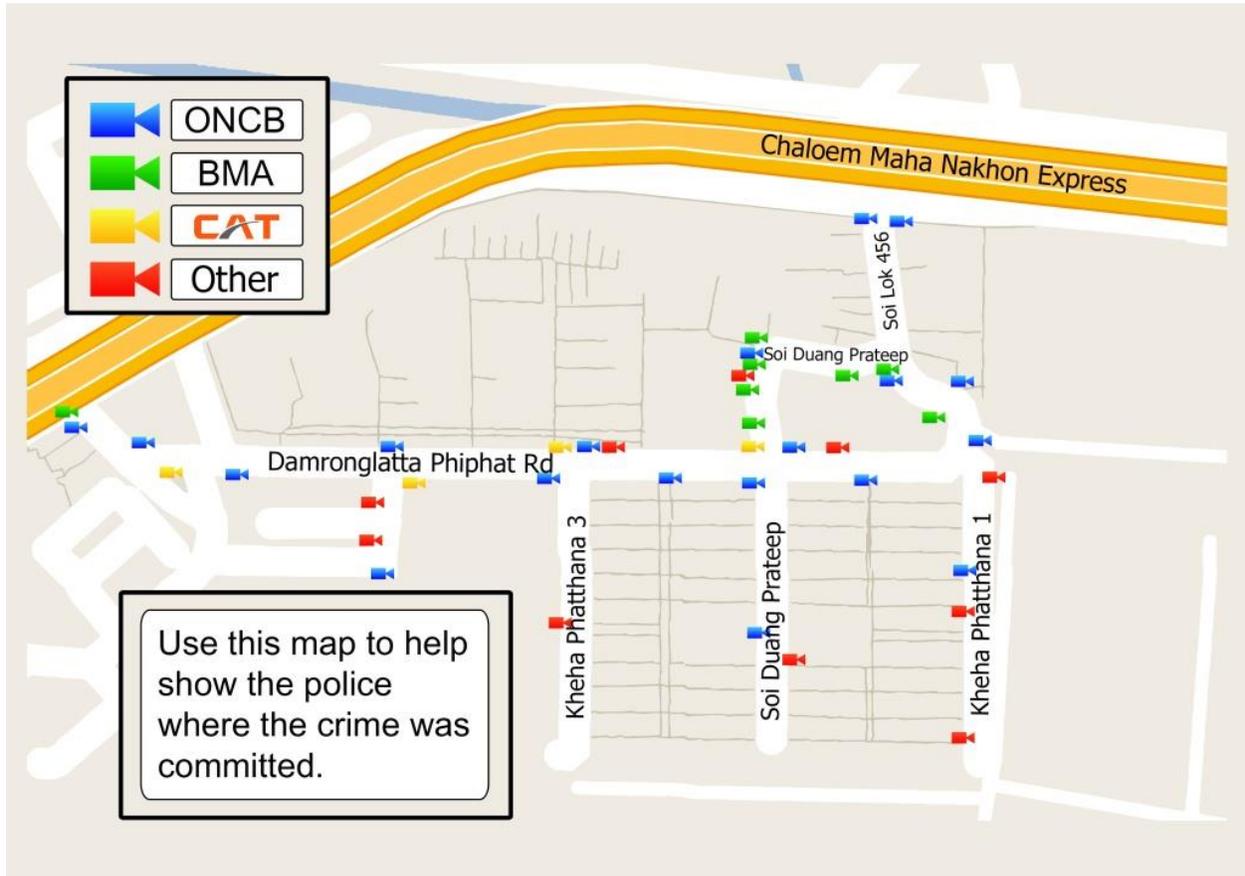
Figure 23: The map of camera distribution (per location) in Lock 1-2-3, Lock 4-5-6 and 70 Rai

As can be observed from the map, there are certain points that have been target of multiple camera installments. These installments resulted in creation of camera clusters that consist of cameras owned by different organizations. Because none of the camera owning organizations currently share CCTV information, such overlapping of camera installment was inevitable. This, however, reduces the efficiency of monitoring in terms of cameras per area as there are multiple sets of cameras surveying the same street. An example is given in the Figure 24.

Figure 24: Overlapping cameras

Finding 2: CCTV cameras are unevenly distributed in Lock 1-2-3, Lock 4-5-6, and 70 Rai of Khlong Toei. This means certain areas have a sufficient amount of cameras while others don't have enough to be properly monitored.

Through our site research, we discovered that the CCTV camera distribution in Khlong Toei is very uneven. There are many cameras clustered in groups on the main roads, but there are few of them in the smaller streets and none in the soi. This is exemplified in Figure 25, a map we created of the CCTV camera distribution in Lock 1-2-3, Lock 4-5-6 and 70 Rai. Each arrow represents a camera and the direction in which the camera is pointing. There are 78 cameras in total.
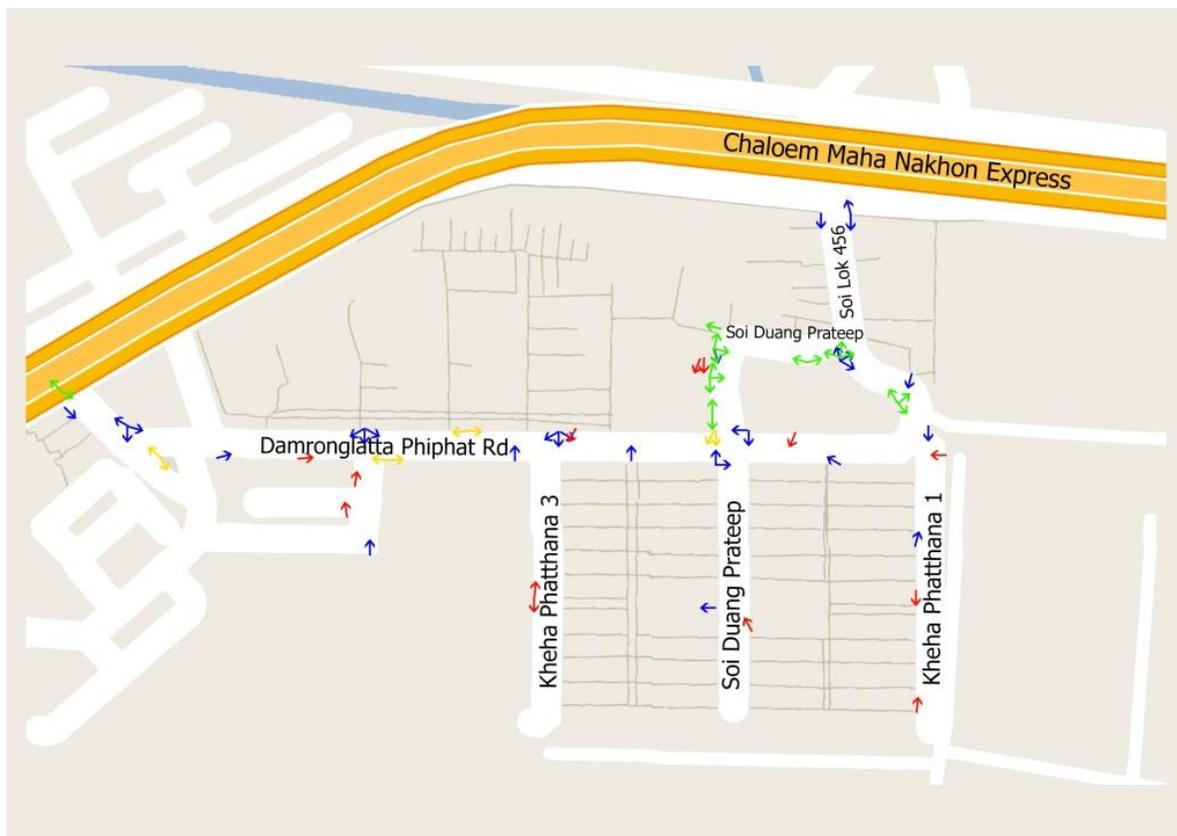
Figure 25: The map of camera distribution (per camera) in Lock 1-2-3, Lock 4-5-6 and 70 Rai

As can be observed from the map in Figure 25, the soi rarely have camera coverage. This uneven distribution of CCTV cameras in Khlong Toei is a problem, especially because areas not covered by the CCTV cameras are considered dangerous by the community members. As can be seen from Table 5 in Appendix C, the soi in Lock 1-2-3, Lock 4-5-6 and 70 Rai are areas which the resident interviewees considered to be most dangerous.

This data matches the resident recommendations for places that more cameras should be installed. One of the reasons the soi are considered dangerous is because they are, according to the residents, a frequent scene of many criminal activities. The soi are very narrow and poorly lit passages between the shacks in which most of the Khlong Toei residents reside. Such characteristics make them very susceptible to criminal activities especially during the evening and late night hours. Resident interviewees claimed that they would like to see cameras installed in these soi in order to help prevent crime from taking place there. We learned from the interview with the BMA that they were unable to install cameras in the soi as it would have been breaking the law (see Appendix B.1). Installing cameras in the soi would also be technically challenging due to the lack of mounting locations and proper lighting. However, the BMA representatives we interviewed also stated that there is an option of installing additional cameras should the residents request so.

Finding 3: The purposes of the CCTV systems are already fixed. However, there is a possibility of collaboration between the authorities that own public CCTV systems in Khlong Toei and other government departments that can result in better CCTV coverage.

The majority of cameras in Khlong Toei are owned and operated by three organizations: the ONCB, the BMA, and the CAT telecom company. From out authority interviews, we learned that each set of cameras owned by the distinct organizations serve different purposes. The ONCB, an authority that polices narcotic trade, uses their cameras to help catch drug dealers and deal with crimes such as vehicle theft. The BMA, an authority usually involved in maintaining traffic and the wellbeing of Bangkok, uses their cameras in Khlong Toei mainly for resident safety. Finally the CAT, a company that works with the telecom infrastructure, installed cameras to monitor crime and drug trade in Khlong Toei. There are also a few cameras that are owned by shop owners and other residents to monitor store fronts and for other personal interests.

After we completed the analysis of camera owners and their respective systems, it was very clear that the ONCB has the largest CCTV network in Khlong Toei. Additionally, the ONCB is the only organization that owns cameras which has a supportive community program to complement the services provided by the camera system. 18 ONCB camera spots are maintained throughout Lock 1-2-3, Lock 4-5-6 and 70 Rai, all located on the main roads. These were installed in conjunction with an ongoing project called the Safe and Warm House. An aim of this project is to help the community abolish drugs and drug-related activities. Part of the project is directly related to the cameras which help keep the crime rates down and assist officers in catching drug dealers. Another part of this project is a drug rehabilitation program aimed to decrease the number of active drug abusers. This program teaches the drug abusers how to control their addiction while providing them the basic working skills with a goal of decreasing chances of future drug abuse.

The BMA's CCTV network is broader than the ONCB's covering many parts of Bangkok and only sparse parts of Khlong Toei. Much of their system is used for actively monitoring traffic, crime, and accident monitoring. It is also used for passively collecting video without monitoring it to be used as evidence and referenced when needed. In Khlong Toei they have a traffic camera installed near the entrance to Lock 1-2-3, as well as several cameras in Lock 4-5-6 used for resident safety.

CAT has the smallest CCTV system installed consisting of eight cameras lining the main road running through Lock 1-2-3, Lock 4-5-6 and 70 Rai. These cameras were installed by the ICT for the CAT in order to perform a demo of their Smart Thailand project for one year. This project aims to monitor crime, drug trafficking, and other incidents in the Khlong Toei community. It also provides free Wi-Fi at the Duang Prateep Foundation while making the camera feeds accessible online to the residents. After the one year demonstration the CAT will assess whether or not to expand the system, keep it the same, or terminate it. A consequence of this temporary installment is that different politicians running for the head of the BMA, such as Pongsapat Pongcharoen, promise in their political campaigns to expand the system.

Although all the camera uses are fixed, there is a possibility of collaboration between different departments to further assist the community. Specifically, the collaboration between the BMA and the Fire Department would be possible as the Fire Department works under the auspices of the BMA. The two departments could possibly work together towards implementing the CCTV cameras in the Khlong Toei slum to be used as a fire detection system. Another point to make is that the camera feeds are not shared between the different authorities. If they collaborate properly, sharing feeds could drastically extend the coverage of their systems in Khlong Toei making future expansions cheap. Moreover, having the residents freely access camera feeds was a use for the CCTV systems that our sponsor wanted us to look into. Currently, resident interaction with the camera system is limited to accessing camera feeds after a crime has been committed against a resident.

Finding 4: The residents generally feel comfortable with the CCTV cameras in their community and expressed a desire for more cameras to be installed. The residents would also like to see the camera feeds.

The 12 out of 15 resident interviewees who were not unhappy with the cameras expressed that they are comfortable with the cameras, and have even felt safer since their installation. 19 out of 23 resident interviewees also expressed that they want more cameras to be installed, specifically in the soi. The data supporting this can be found in Appendix C. Community leader interviewees also all claimed that the Khlong Toei residents like having the CCTV cameras in their community, and expressed that they and the residents want more cameras to be installed, once again specifying the soi as the desirable locations for additional camera installment. Privacy concerns were never brought up by the residents. This is interesting because it is unlike American and European culture where privacy concerns are very prevalent (UK Parliamentary Office of Science and Technology, 2002, p. 4). It is possible this is due to Thai culture norms or because the issues facing Khlong Toei residents can be helped by cameras so much that they don't appear to notice or mind the constant surveillance. It could also be due to the lack of cameras in the soi where most residents live.

 The fact that the resident interviewees said that they would like more cameras installed is particularly interesting when the numerous cameras already installed in Khlong Toei are considered. Coming into this project, we were curious about the issue of privacy that arises with the usage of CCTV as described in section 2.3.d in the Background chapter. However, in this environment where criminal activities affect people's lives, privacy is a luxury in a way. People are rather worried about their safety, which is a more essential need compared to privacy. Hence, more cameras are desirable, not problematic.

Additionally, 8 resident and community leader interviewees mentioned that since the CCTV cameras were installed in the community, incidents of drug trafficking and theft had decreased. The representative from the Khlong Toei anti-drug campaign also confirmed the decrease in drug trafficking since the installation of the CCTV cameras. Statistics gathered from the ONCB also suggest the same (see Appendix D).

As for fire protection, both local fire experts claimed in their interviews that the CCTV systems have not been particularly helpful for fighting fires, and they both believed that the systems would not be very

helpful for fire protection in Khlong Toei. However, the firefighter explained that cameras would be more useful to assist with fire protection if they were installed much higher than the currently installed cameras. This way, the cameras would be better placed to pick up signs of smoke that may signal a fire.

Finally, as can be seen in Table 7 in Appendix C, most of the resident interviewees were interested in seeing the camera feeds. We also came across resident attitudes that would imply that they think the cameras are fake and/or not helpful to them when they need crime evidence. This suggested that providing the residents the ability of obtaining the camera feeds would have worked towards our goal.

Finding 5: The residents are not well informed about CCTV camera owners and purposes and have a vague understanding of how to obtain the camera feeds.

Figure 26 shows the responses of resident interviewees when asked for their opinions on why the CCTV cameras were installed in the Khlong Toei community, compared to what the respective claimed the cameras were actually installed for.
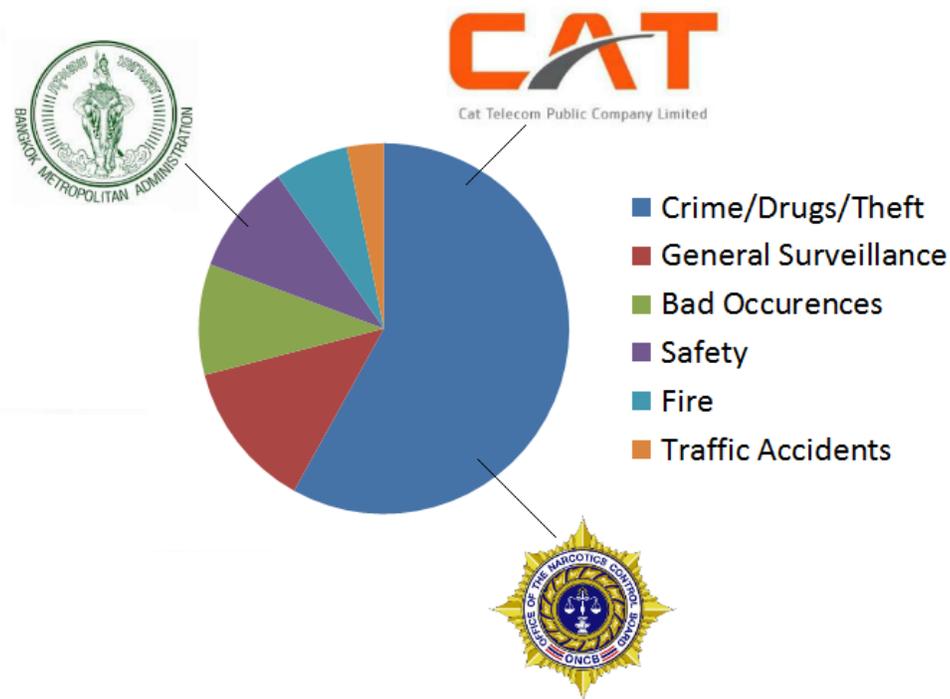
Figure 26: Resident Interviewee Opinions on the Purposes of CCTV Cameras in Khlong Toei vs. Actual Purposes

As can be seen in Figure 26, most residents expressed that they thought the CCTV cameras were installed for crime-related purposes, and there was much less consensus on the other reasons residents thought the cameras were installed for. When compared to what the authorities told us the about the CCTV systems' purposes, it can be seen that resident interviewee responses correlate with the purposes of the BMA and the ONCB CCTV systems, but not of the CAT CCTV systems. Furthermore, none of the resident interviewees differentiated between the different CCTV systems and their different purposes. The general consensus of the community leader interviewees was that the residents were not aware of the true purposes of the CCTV systems in the community. All of this led us to believe that few of the organizations, if any, which own CCTV systems in the Khlong Toei community actively informed Khlong Toei residents of the purpose for their installation of their CCTV systems.

Most resident interviewees responded that they would like to have access to the CCTV camera feeds. However, 5 resident interviewees claimed that at some time in the past when they had attempted to get

access to the feeds to help solve an issue, they were not able to. One resident interviewee claimed that 2 weeks prior to the interview, his motorcycle was stolen. The resident went to the ONCB in order to get access to the camera feeds to spot the thief, but the ONCB told them that they had to go to the police first. In addition, another resident interviewee reported that after he got shot, he could not get the camera feeds either as the Command Center officers stated that they do not have those feeds. During our interview with the representatives of the ONCB, the respondent said that not all cameras are owned by them and that residents have to fill out a police report before requesting feeds. In general, it appears that residents know that the ONCB Command Center owns some cameras and that they can get camera feeds from the Center; however they do not necessarily understand that not every camera in the area is owned by the ONCB and that police forms have to be filled out first in order to obtain any feeds. Hence, the issue here is the confusion over who owns which cameras, that the authorities do not share feeds, and that police forms have to be filled out before requesting feeds. Since different authorities own different cameras it is important to know which authority to contact for specific camera feedback.

When asked if the residents knew whom to contact in order to get access to the camera feeds, four out of the five of the community leader interviewees said that they believed the residents knew whom to contact. One leader commented "they just know that they need to contact the Command Center or Khlong Toei district", while another said that "they just know that they need to contact the head of the community, then the head of each community will help them out when people want to see a camera feed". Though most of the community leader interviewees claimed the residents know whom to contact, there was no consensus on whom the community leader interviewees believed should be contacted.

All of these findings led us to believe that the residents do not have a clear understanding of who owns the cameras in their community and whom to go to for camera feeds. This misunderstanding is apparent when crime victims ask for the camera feeds and have difficulty getting assistance from the authorities that own the CCTV cameras. We have worked towards figuring out ways for the residents to get camera feeds from specific authorities and have compiled this information in a form of instructions. These instructions can be found on the informative pamphlet we designed (see Appendix F.1: English Pamphlet), as well as the interactive map containing additional camera information (see Appendix F.3: Interactive Map). Residents can use both of these informative media sources to familiarize themselves with the CCTV system in their community, as well as learning how to properly access camera feeds.

Chapter 5: Recommendations

Based on our findings and background research, we have formulated several recommendations for promoting better understanding and use of the CCTV system in the Khlong Toei slum community. These recommendations are grouped under the following headings based on the organizations to which the recommendations specifically apply.

5.1 Recommendations for the Duang Prateep Foundation

1. **Inform the Khlong Toei residents about the CCTV systems in the community by distributing informative pamphlets.**

From our community interviews, we concluded that most residents want to be able to view the public CCTV camera feeds. Resident interviewees also related to us that sometimes when they requested the cameras feeds, they were denied for various reasons. The community leader interviewees generally believed that the residents know who to contact if they want access to the CCTV camera feeds. However, there was no consensus on who the community leader interviewees thought the residents should contact.

In order to increase the chances that the residents will be able to get access to the CCTV camera feeds, they must know who owns the specific camera they need the feeds from. Additionally, as discussed in section 2.3.b of the Background chapter, in order for the CCTV cameras to assist in crime prevention, offenders must believe the cameras present enough risk of capture to negate the rewards of the intended crime. Therefore, if an offender knows that the cameras belong to law-enforcing agencies, the chances that they will commit a crime in the presence of the cameras would most likely decrease. In order to make these situations possible, we spoke with various organizations to determine the owner of each camera.

Based on these findings, we created a map that displays the locations of all the CCTV cameras in Lock 1-2-3, Lock 4-5-6, and 70 Rai. We included this map on a pamphlet which also contains contact information of the authorities that own the cameras, as well as the instructions for obtaining the camera feeds. We recommend that the Duang Prateep Foundation print copies of these pamphlets to be distributed to the Khlong Toei residents so that they can be made aware of the who the owners of the cameras are, where all the cameras are located, what they are used for, and how to get access to the camera feeds. A Thai and English version of this pamphlet can be found in Appendix F: Informative Media.

2. **Keep the information about the CCTV systems in the community updated by periodically contacting the respective camera owners**

The map of the CCTV cameras in Lock 1-2-3, Lock 4-5-6 and 70 Rai, the interactive map and the information on the pamphlet will only be useful if they are kept up to date. Therefore, we recommend that the Duang Prateep Foundation keep in contact with the Bangkok Metropolitan Administration, the Office of Narcotics Control Board, and CAT Telecom to learn about any updates to the respective CCTV systems. This information should be used to update the pamphlets, which should then be redistributed to the residents as needed so they can continue to properly interact with the systems.

The following is some information that we gained for the Duang Prateep Foundation about the future plans and contingencies for the BMA, the ONCB and the CAT:

- **BMA:** Gradually, they are increasing the number of cameras in Bangkok. Eventually, more of them will be placed in Khlong Toei to increase camera coverage. These additional locations will need to be recorded to keep the Khlong Toei CCTV information up to date.
- **ONCB:** The direction that the ONCB goes in with their CCTV system depends on the outcome of the current elections which end March 3rd (after our project completion date.) We recommend that the DPF be aware of any influence the election results will have on the CCTV systems.

- **CAT:** These cameras are operated under a one year trial period that started in October 2012. It is unclear what will happen to their system after the end of the trial, but until then the usage and amount of cameras will remain the same. CAT's online camera stream is currently broken and is under repair, so at this time the Khlong Toei residents cannot take advantage of the camera recordings. Therefore, attempts should be made soon to contact a CAT representative to learn when and how the cameras can be monitored online.

3. **Provide residents access to interactive map for further information on specific CCTV camera.**
Although the pamphlet contains significant information about the CCTV systems in the Khlong Toei community, we recommend that the DPF provides access to the interactive map to the residents. This is primarily because the interactive map contains pictures of each camera in the community and would help the residents identify the specific camera whose feeds they want. The pamphlet map does not indicate camera directions and contains certain spots where two camera clusters are very close to each other. Therefore, it might be difficult for the resident to figure out who owns the camera he/she wants the feeds from. However, by using the interactive map, any such confusion will be solved because the residents will be able to visually recognize the desired camera. Moreover, the residents will increase their chances of obtaining the video feeds if he/she gets additional camera information, where applicable. For example, most BMA cameras have serial numbers on them that are all available in the interactive map and that would significantly speed up the process of locating the exact camera feed. One limitation to this recommendation is that the resident would have to know how to use a computer and Google Map to a certain extent, and might require one of the DPF volunteers help. A screenshot of this map can be found in Appendix F.3: Interactive Map and can be interacted with [here](#).

5.2 Recommendations for Organizations that Own Public CCTV Systems in Khlong Toei

1. **Improve coordination of the Khlong Toei public CCTV systems**
All of the publically owned CCTV systems in Khlong Toei are quite new. Similar to most new electronics today, all of the CCTVs communicate via the internet to their respective operators. However, different CCTV systems are independent of each other and only transmit feeds to their respective owners. This means that in order to cover one area multiple cameras are installed by each organization so they can individually monitor that area. Sharing camera feeds would mean that fewer cameras would have to be installed in one area and that future expansions could be done more cheaply. We recommend that the camera owning organizations work together to access each other's camera feeds.

Linking the cameras systems to share video feeds is very possible. Each organization has many people in charge of monitoring and maintaining the CCTVs including IT personnel who connect the feeds to the monitoring stations. These IT personnel could work together to allow their different CCTV systems to interface with each other. A larger hurdle to work around would be the bureaucratic differences and legalities of connecting these systems together specifically with the BMA and the ONCB.

Elections are being held March 2013 in Bangkok to elect the head of the BMA. This will affect the way different departments are run as well as the management of CCTVs in Bangkok as they are a topic of many politicians' campaigns. After the elections are over, it would be an ideal time for the ONCB and the BMA to work together to share feeds specifically because the BMA will want to expand upon their CCTV systems and appending existing cameras is a cheap way to do this. This would also help the ONCB negotiate getting feeds from the BMA as each authority could benefit from the other.

2. **Conduct research on the consequences of CCTV systems, as well as effective places to install additional cameras**

The CCTV systems installed in the Khlong Toei slum have resulted in a decrease of theft and drug trafficking in the area, and resident interviewees claimed that they feel safer with the CCTV cameras installed.

Though CCTV systems clearly have some positive effects, there are some negative effects that can also occur, such as the development of a negative view of the system and criminal abuse of the system, both discussed in section 2.4.d of the Background chapter. There are also effects of the system that cannot always simply be labeled negative or positive, such as crime displacement also discussed in section 2.4.d.

Our project work did not lead to the discovery of any obvious negative consequences of the CCTV system. However, we did not carry out an extensive investigation into the topic. Therefore, even though we did not discover any negative consequences, it is still possible that they exist in the community. For example, resident interviewees claimed that they felt safer with the CCTV cameras installed in the community, but it is possible that some residents may have feelings of false security. This could result in some residents' beliefs that it is not likely for them to fall victim to criminal activity if there are cameras in the community. Those residents might then act less cautiously than they would have if the cameras were not installed, which leaves them more susceptible to becoming victims to criminal activity.

We recommend that the owners of public CCTV systems in the Khlong Toei community carry out research on additional effects that their CCTV systems can have and are already having on the Khlong Toei community. Once all the possible consequences of the system are understood, it will then be possible to continue to increase and improve the positive consequences and mitigate the negative consequences of the CCTV systems.

In addition to understanding the consequences of the CCTV systems, we also recommend that the owners of public CCTV systems in the Khlong Toei community research effective places in the community to place the CCTV cameras in order to improve the usefulness of the CCTV systems to the community. From our community interviews, for example, we learned that the inner areas of the slum are regarded as the most dangerous areas in the community. When we visited Khlong Toei, we noticed that there were effectively no cameras installed in the inner areas. This can be observed in the map of CCTV cameras we created, see Figure 23. Our results indicate that residents want more cameras installed in the soi, where they could help decrease the criminal activities, make the area less dangerous, and make residents feel safer. Our interview with the Khlong Toei firefighter leader revealed that cameras could be more useful to assist with fire protection if they were installed higher than the currently installed cameras, and in areas that are most susceptible to fire, such as areas where the buildings are very close together. The inside of the slum and other areas that are susceptible to fire are examples of areas that should be considered for effective placement of CCTV cameras.

5.3 Recommendation for the Bangkok Metropolitan Administration
Install more street lights in the Khlong Toei community

Several resident interviewees mentioned that there was an issue of lighting at night, and that dark areas tend to be dangerous. Therefore, we recommend that more street lights be installed in the community, particularly in the soi. The illumination would increase safety, as well as provide the necessary lighting for cameras without night vision to record at night. The street lights may be more cost efficient in the long term, as cameras with night vision technology would be more expensive than cameras without night vision technology. Also, night vision technology would only provide for camera vision at night. More street lights would allow better vision for both residents and cameras, as well as increase safety.

5.4 Recommendation for the Office of Narcotics Control Board
Make ONCB CCTV system statistics available to the Khlong Toei residents

After resident and ONCB interviews it seems that the authorities are supportive of the CCTV systems and excited about how they have been helping reduce crime and catch criminals while the residents have mixed opinions. To help improve residents' opinions, the residents will need to be better informed of how the cameras have been helping them. Posting the crime statistics is an effective way to do so, but we recommend separating the statistics into crimes reported and arrests made. We also recommend stating specific examples when the CCTVs have aided the ONCB in an arrest. For example one officer stated how the cameras have helped catch thieves after robberies. Stating facts like these would explicitly show the community how the cameras help and would remove any doubts of the CCTV systems.

As a part of their CCTV system and drug rehabilitation program in Khlong Toei, the ONCB has been generating data on how many crimes have been committed and arrests they have made (aggregated). This data is statistically broken down into different types of crime and reported on a monthly basis (see Appendix D: Crime Statistics from the ONCB). While this is useful way to view how the ONCB is helping the community it is made largely unknown to the residents of Khlong Toei unless they specifically ask for the information. We recommend that the ONCB post these statistics outside their station and other areas they see fit so the residents can see how the ONCB is helping the Khlong Toei community.

5.5 Recommendations for the Khlong Toei Residents
1. **Learn more about the Khlong Toei CCTV systems and be aware of the details of one's incident when requesting camera feeds.**

The community interviews we conducted have shown that there were cases of residents being unsuccessful in obtaining the camera feeds. The reasons behind this lie mostly in the overall confusion over who the specific camera owners are. Residents know that they can access camera feeds at the ONCB Command Center, but do not seem to understand which specific cameras are ONCB's. Hence, we recommend that the residents learn more about the CCTV systems in their community by carefully studying the informative pamphlet. Additionally, should the residents desire camera feeds from a specific camera, we recommend that they study the interactive map. This way the residents can confirm the owner of the camera and possibly obtain more detailed camera information that once presented to the authority can speed up the process of getting the camera feed. The interactive map can be found in Appendix F.3:Interactive Map and online here. Moreover, the residents should also know the time of the incident in which they participated, while making sure to request the camera feeds within the 7 days from the incident.

2. **Request additional camera installment in Khlong Toei.**

Conducting the BMA interview we have learned that the residents have the right of requesting cameras to be installed in their communities. Furthermore, there is also evident desire for more cameras in the Khlong Toei community as they provide for decreased rates of criminal activities and a feeling of safety among the residents. This desire is especially for camera coverage of the soi that could have not been monitored before due to law restrictions imposed upon the authorities. Therefore, we recommend the residents to take steps towards requesting additional camera installment as they can give permission to the authorities to install cameras in the soi. However, a possible limitation to this project is the fact that there are few mounting options for the cameras if they were to be installed in the soi, hence it may not even be possible, or it may be costly, making the authorities hesitant to install. Additionally, because the soi go through the residential area of the Khlong Toei, cameras that would be installed there could raise privacy issues in the long term.

Conclusion

The goal of this project was to promote better understanding and use of the CCTV systems in the Khlong Toei slum. Characterization of the Khlong Toei CCTV systems through site research and authority interviews, as well as conducting community interviews have made us realize the consequences and possible improvements for the current CCTV systems. We believe that the recommendations we provided, accompanied by our project deliverables will allow the Khlong Toei community to achieve better a understanding of all the current CCTV cameras. Hopefully this will accomplish a more bidirectional interaction between the Khlong Toei residents and the authorities who own the cameras, as we consider this to be an important factor in realizing a more beneficial usage of the CCTV systems in the Khlong Toei slum. We would like for our project work can serve as an example for the implementation of CCTV systems in other slum communities around the world.

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Appendix A: Interview Protocols

Appendix A.1: Bangkok Metropolitan Administration

Interviewer(s): Chavanvit Srisaranukrom, Papatsorn Thammaprasit, Nataša Trkulja
Interviewee: Vaitaya Nawasethakul, Head of BMA Traffic Command Center

Date: February 13th, 2013
Time: 10:00 a.m.
Location: Bangkok Metropolitan Administration Main Office

Information on the Current CCTV System

1. We have learned that the main purpose of your CCTV cameras is to aid in traffic control. Do your current cameras have any other purposes in Khlong Toei?

    พวกเราคาดว่าจุดประสงค์หลักของสจส.ในการติดกล้องวงจรปิดเพื่อช่วยด้านการจราจรอย่างไรก็ตามจากการสำรวจของเรากลับพบว่าการจราจรที่นี่ไม่หนาแน่น ดังนั้นเราขอทราบจุดประสงค์ที่มีการติดกล้องวงจรปิดบริเวณนี้ด้วย?

2. How much did it cost to implement the CCTV system in Khlong Toei?

    ไม่ทราบว่าสจส. สามารถเปิดเผยถึงงบประมาณคร่าวๆ ในการติดตั้งกล้องวงจรปิดที่ชุมชนคลองเตยที่ผ่านมาได้หรือไม่?

3. Were there particular camera installment specifications for the places where they were installed? For example, was there a specific number of cameras meant to be put on a single pole, or was there to be a specific distance between each camera?

    สจส. มีข้อกำหนดใดๆหรือไม่ในการเลือกตำแหน่งติดตั้งกล้องวงจรปิด? ข้อมูลที่เราสนใจคือตำแหน่งเสา จำนวนกล้องต่อเสา และระยะห่างของกล้อง?

4. Can you tell us about the capabilities of the cameras, for example, how good the video quality is, and if they could be used with pattern recognition software?

    เราอยากได้ข้อมูลด้านประสิทธิภาพของกล้องจากท่านด้วย เช่น ความละเอียดของ vdo และภาพที่บันทึก

    กล้องที่ใช้ในปัจจุบันสามารถใช้ได้กับ software จดจำรูปแบบได้หรือไม่

    และความสามารถของกล้องและข้อมูลอื่นๆที่เป็นประโยชน์ต่อประชาชน

Capability of System to Help Residents

5. Do you record the camera feeds? If the data is recorded, how long are camera feeds saved?

    สจม. บันทึกภาพจากกล้องวงจรปิดหรือไม่? กรณีที่มีการบันทึก สจมเก็บเทปไว้นานเท่าใด?

6. Who has access to the camera feeds?
    (If the interviewee seems comfortable with the question, proceed to ask the next one.)
    Is it possible for the public or other government agency to get access to the camera feeds if they need to, for example, to get evidence of an assault?

    ใครมีสิทธิดูภาพจากกล้องวงจรปิดและจากเทปของ สจม. บ้าง?

    มีการเปิดเผยข้อมูลเหล่านี้แก่ประชาชนหรือหน่วยงานราชการอื่นๆหรือไม่? เช่น

    เพื่อใช้ประกอบหลักฐานในคดีต่างๆตามกฎหมาย เช่น กรณีถูกทำร้าย

    a. If so, where and how?

หากได้, สามารถขอดูเทปได้ที่ไหนอย่างไร?

Effects of the CCTV System
7. How have the cameras helped with traffic?
   กล้องวงจรปิดช่วยด้านการจราจรอย่างไร?

8. Are there any differences in numbers of crime and drug-related events before and after the cameras were installed?
   หลังจากที่ติดตั้งกล้องวงจรปิด อัตราการเกิดอาชญากรรม, ยาเสพติดและการจราจร เปลี่ยนแปลงไปอย่างไร?

9. Have you assessed the possibility that the presence of these cameras may have negative consequences on the community? If so, what do you believe these negative consequences are?
   สจม. เคยประเมินผลกระทบทางด้านลบที่เกิดจากการติดกล้องวงจรปิดในชุมชนหรือไม่? กรณีที่มีการประเมิน
   ผลเสียมีอะไรบ้าง ?

Future Plans for CCTV in Khlong Toei
10. Are there any plans to install additional cameras in Khlong Toei? *If so:*
    สจม. มีแผนที่จะติดตั้งกล้องวงจรปิดเพิ่มในชุมชนคลองเตย? หากมี:
    a. Where would they be placed and why?
       จะติดตั้งที่ตำแหน่งไหน? เพราะเหตุใด?
    b. What would the budget for this be?
       งบประมาณที่ใช้ประมาณเท่าไหร่?

    Do you think there is a possibility of collaboration with the Khlong Toei community to come up with a plan to further benefit the residents through additional ways of using the CCTV in Khlong Toei?
    ท่านคิดว่าจะเป็นไปได้ไหมที่จะมีการพูดคุยกับประชาชนในพื้นที่ก่อนการติดตั้งกล้องวงจรปิด
    ทั้งนี้เพื่อเป็นการหาช่องทางในการใช้ประโยชน์จากกล้องวงจรปิดให้บังเกิดประโยชน์สูงสุดแก่ชุมชน

11. Do you think a collaboration with another public department (such as perhaps the Fire Department) on the CCTV system would be possible if deemed helpful to the Khlong Toei community?
    ท่านคิดว่าสจม. จะร่วมมือกับหน่วยงานสาธารณะ อย่างเช่น กองบัญชาการการดับเพลิง
    เพื่อใช้กล้องวงจรปิดให้เกิดประโยชน์สูงสุดต่อชุมชนคลองเตย?

12. We would like to make an informative pamphlet or audio clip for the radio that would inform residents of the uses of CCTV in Khlong Toei, the locations of the cameras, the controllers of the cameras, and contact information for the respective authorities. We would appreciate working with you on developing this pamphlet as well, should you be interested. Do you think this is a good idea?
    พวกเราต้องการจัดทำแผ่นพับหรือคลิปเสียงที่จะสามารถให้ความรู้กับประชาชนในคลองเตยเกี่ยวกับประโยชน์ของกล้องว
    งจรปิด, ตำแหน่งของกล้องวงจรปิด, ผู้ดูภาพจากกล้องวงจรปิด, เบอร์โทรศัพท์ที่ของเจ้าหน้าที่
    พวกเรายินดีที่จะร่วมพัฒนาสื่อแผ่นพับหากคุณสนใจ คุณมีความคิดเห็นหรือข้อเสนอแนะอย่างไร?

Appendix A.2: Khlong Toei Residents

Interviewer(s): Kimani Gyening, Michael Murillo, Sanpitcha Siangsuebchart, Chavanvit Srisaranukrom,
Papatsorn Thammaprasit, Nataša Trkulja, Raphael Walcott
Interviewee: Randomly Selected Khlong Toei Residents

Date: January 20th, 2013; January 29th, 2013
Time: 2:00 p.m.
Location: Lock 1-2-3, Lock 4-5-6 and 70 Rai of the Khlong Toei Community

Appendix A.2.1 Resident Briefing Script

We are university students from WPI and Chulalongkorn University and we are working on a social project involving the Khlong Toei community.

พวกเราคือคณะนักเรียนจาก WPI และจุฬาลงกรณ์มหาวิทยาลัย ได้ทำโปรเจคเกี่ยวกับการช่วยเหลือสังคมที่ชุมชนคลองเตย

[Introduce names]

Our project involves investigating current usage of the CCTV cameras by the authorities, as well as researching ways in which CCTV cameras can be used in Khlong Toei to assist with everyday needs of the community.

โครงการที่เราได้รับหมอบหมายเกี่ยวกับการค้นคว้าประโยชน์ของกล้องวงจรปิดจากหน่วยงานที่เกี่ยวข้อง

ตลอดจนค้นคว้าวิธีที่จะสามารถนำกล้องวงจรปิดไปใช้ประโยชน์ในชุมชนคลองเตยได้อย่างตรงความต้องการและมีประสิทธิภา

พที่สุด

We would like to ask you some questions that we think will help further our research.

พวกเราต้องการสอบถามคำถามเพื่อนำไปใช้ในประกอบในการค้นหาข้อมูล

Your responses are voluntary and if at any point you feel uncomfortable answering our questions, you may stop the interview.

ถ้าหากท่านรู้สึกไม่สะดวกที่จะอธิบายและตอบคำถามก็สามารถบอกได้

We will not be recording your name. Your identity will be kept confidential and we will not use it in our report.

ทางคณะผู้สอบถามจะไม่ทำการจดบันทึกชื่อ และจะเก็บข้อมูลเป็นความลับร่วมถึงไม่เปิดเผยลงไปในรายงาน

We will be writing down your responses. We would also like to record our conversation, and would like your permission to do so. Unless you ask us not to, we might quote you as a "Khlong Toei resident" in our report.

ทางคณะผู้สัมภาษณ์จะทำการจดบันทึก นอกจากนั้นแล้วก็ขออนุญาตทำการอัดเสียงเพื่อบันทึกการสนทนา
และถ้าหากผู้ตอบคำถามไม่อนุญาต ทางคณะผู้จัดจะทำการโดยการบันทึกว่า " ประชาชนในชุมชนคลองเตย " ในรายงาน

[Ask Permission to Voice Record]

Appendix A.2.2 Resident Pre-Test Questions

Who are you? (Warm up) แบบสัมภาษณ์เกี่ยวกับประวัติส่วนตัว

1. How old are you?
   คุณอายุเท่าไหร่แล้วคะ/ครับ?

2. How long have you been living in Khlong Toei?
   คุณและครอบครัวอยู่ที่คลองเตยมานานเท่าไหร่แล้วคะ/ครับ?

3. How do you like living in Khlong Toei?
   อยู่ที่นี่ (คลองเตย) ดีไหมคะ/ครับ?

4. What is your job?
   คุณประกอบอาชีพอะไรคะ/ครับ?

5. Have you noticed the cameras installed around the community?
   คุณเคยสังเกตเห็นกล้องวงจรปิดในละแวกนี้ไหมคะ/ครับอยู่?

How do you feel about CCTVs? รู้สึกอย่างไรกับกล้องวงจรปิด?

6. Do you know what Closed Circuit Television is?
   คุณรู้จักกล้องวงจรปิดไหมคะ/ครับ?

7. Do you know why CCTV cameras are set up in this neighborhood?
   คุณคิดว่าคนที่นำกล้องมาติดมีจุดประสงค์อะไร?

8. Who do you think monitors the cameras?
   คุณคิดว่าใครเป็นผู้คุมภาพจากกล้องวงจรปิด?

9. How do you think the cameras have helped address any problems you and others face in the community, such as safety, crime, fire, drugs?
   คุณคิดว่าการติดตั้งกล้องวงจรในละแวกนี้ช่วยแก้ปัญหาด้านความปลอดภัย, อาชญากรรม,
   ไฟไหม้และยาเสพติดในชุมชนไหม คะ/ครับ?

10. Do you think there is a difference between before the cameras were installed and after?
    คุณสังเหตุเห็นความเปลี่ยนแปลงในชุมชนระหว่างก่อนและหลังการใช้ กล้องวงจรปิดในพื้นที่ไหมคะ/ครับ?

11. Do you feel uncomfortable being on CCTV during everyday activities?
    คุณรู้สึกไม่สบายใจกับกล้องวงจรปิดไหมคะ/ครับ เช่นรู้สึกว่าคุณถูกลุกล้ำสิทธิส่วนบุคคลไหม?

12. Are there places where you feel there should be fewer cameras or no cameras?
    คุณคิดว่าตำแหน่งและจำนวนของกล้องที่ติดอยู่ในปัจจุบันเหมาะสมไหม?

13. Are there places where you feel there should be more cameras?
คุณคิดว่ามีสถานที่บางแห่งในชุมชนที่ควรมีการติดตั้งกล้องหรือควรมีเพิ่มให้มากขึ้นไหมคะ/ครับ?

14. The Bangkok Metropolitan Administration will be installing more cameras. What do you think about that?
สำนักงานเขตกรุงเทพมหานคร(กทม.) มีนโยบายที่จะติดตั้งกล้องวงจรปิดเพิ่มเติมในบริเวณนี้
คุณมีความคิดเห็นอย่างไรกับนโยบายรี้คะ/ครับ?

15. How would you feel if you were allowed to see the camera feeds?
คุณอยากดูภาพที่ถ่ายผ่านกล้องวงจรปิดไหมคะ/ครับ?

16. Is there a good way you think you could be involved in using the CCTV?
คุณมีคำแนะนำถึงการใช้ประโยชน์จากกล้องวงจรปิดเหล่านี้นอกเหนือไปจากการใช้งานในปัจจุบันอย่างไรบ้างคะ/ครับ?

Issues in Khlong Toei
17. In Khlong Toei, how safe do you feel during the day? How safe do you feel during the night?
อยากถามความเห็นส่วนตัวของท่านว่าท่านรู้สึกปลอดภัยมากน้อยแค่ไหนในบริเวณนี้?
ความปลอดภัยตอนกลางวันและกลางคืนเหมือนกันไหมคะ/ครับ?

18. Where in Khlong Toei do you feel least safe? Most safe? And why?
คุณคิดว่าบริเวณไหนในชุมชนคลองเตยที่อันตราย? บริเวณที่ปลอดภัย? ทำไมคุณถึงคิดเช่นนี้?

19. Have you ever experienced a fire and/or crime in Khlong Toei? Can you share your experience?
คุณเคยเผชิญกับไฟไหม้ในสลัม หรืออาชญากรรมในสลัมบ้างไหมคะ/ครับ? กรุณาเล่ารายละเอียดได้ไหมคะ/ครับ?

20. Can you tell us about a time you experienced a medical emergency in Khlong Toei? If so, did the authorities respond fast enough?
คุณเคยเผชิญกับอุบัติเหตุและต้องการความช่วยเหลือด่วนหรือไม่?กรุณาเล่ารายละเอียดได้ไหมคะ/ครับ?

21. Is it hard to alert authorities of an emergency? Why?
หากเกิดอุบัติเหตุหรือมีเหตุในชุมชนนี้คุณทราบไหมว่าจะติดต่อขอรับความช่วยเหลือที่ไหน? อย่างไร?

22. Would you like to see a change in the local government's involvement in Khlong Toei? If so, in what way?
คุณอยากให้ภาครัฐเข้ามามีส่วนร่วมหรือสร้างกิจกรรมใหม่ๆเพื่อช่วยเสริมสร้างความร่วมมือระหว่างภาครัฐและชุมชนคลองเตยหรือไม่? ช่วยเสนอข้อคิดเห็นด้วยค่ะ/ครับ?

Wrap Up
23. Is there anything else that you would like us to know?
คุณมีข้อเสนอแนะหรืออยากแสดงความคิดเห็นเพิ่มเติมนอกเหนือจากที่ได้กล่าวมาแล้วหรือไม่คะ/ครับ?

Appendix A.2.3 Resident Interview Questions

Who are you? (Warm up)
1. How old are you?
   คุณอายุเท่าไหร่แล้วคะ/ครับ?

2. How long have you been living in Khlong Toei?
   คุณและครอบครัวอยู่ที่คลองเตยมานานเท่าไหร่แล้วคะ/ครับ?

How do you feel about CCTVs?
3. Why do you think there are cameras in the community?
   คุณคิดว่าคนที่นำกล้องมาติดมีจุดประสงค์อะไร?

4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
   คุณรู้สึกไม่สบายใจกับกล้องวงจรปิดไหมคะ/ครับช่นรู้สึกว่าคุณถูกลุกล้ำสิทธิส่วนบุคคลไหม?

5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?

6. Would you like there to be more cameras or fewer cameras?

7. How would you feel if you were allowed to see the camera feeds?
   คุณอยากดูภาพที่ถ่ายผ่านกล้องวงจรปิดไหมคะ/ครับ?

Issues in Khlong Toei
8. What places in your community do you think are dangerous?

9. Is it hard to get help from the authorities? Why?

Wrap Up
10. Is there anything else that you would like us to know?
    คุณมีข้อเสนอแนะหรืออยากแสดงความคิดเห็นเพิ่มเติมนอกเหนือจากที่ได้กล่าวมาแล้วหรือไม่คะ/ครับ?

Examples of CCTV cameras installed in the Khlong Toei community

Appendix A.3: Khlong Toei Community Leaders
Interviewer(s): Chavanvit Srisaranukrom, Papatsorn Thammaprasit, Raphael Walcott
Interviewee: 5 Khlong Toei Community Leaders from Lock 1-2-3, Lock 4-5-6 and 70 Rai

Date: February 7th, 2013
Time: 9:00 a.m.
Location: Duang Prateep Foundation

1. How old are you?
   คุณอายุเท่าไหร่หรือครับ/คะ?

2. How long have you been living in Khlong Toei?
   คุณอาศัยที่คลองเตยนานแค่ไหนแล้วหรือครับ/คะ?

3. What are some of the major issues the Khlong Toei residents come across?
   คุณคิดว่าปัญหาหลักของชุมชนคลองเตยคืออะไรครับ/คะ?

4. Have the authorities been helping to solve these issues?
   เจ้าหน้าที่ของรัฐได้เข้ามาช่วยเหลือแก้ไขปัญหาหรือไม่ครับ/คะ?

5. Do the residents know who to contact in case of an emergency?
   ประชาชนในชุมชนทราบหรือไม่ว่าจะติดต่อใครหากเกิดสถานการณ์ฉุกเฉิน?

6. Do you think the CCTV cameras have helped reduce the crime rate and drug traffic in the community?
   คุณคิดว่ากล้องวงจรปิดช่วยลดปัญหาอาชญากรรมและปัญหายาเสพติดมากน้อยแค่ไหนครับ/คะ?

7. Do you believe the residents like having all the CCTV cameras?
   คุณคิดว่าคนในชุมชนคลองเตยรู้สึกดีขึ้นหลังจากการติดตั้งกล้องวงจรปิดในเขตชุมชนหรือไม่ครับ/คะ?

8. Do they know what they are used for?
   ทราบจุดประสงค์ของการติดตั้งกล้องวงจรปิดเหล่านี้ไหมครับ/คะ?

9. Do you think they want more or fewer cameras in the community?
   เกี่ยวกับจำนวนกล้องที่ติดตั้งอยู่แล้วในปัจจุบัน ท่านคิดว่าชาวชุมชนมีความเห็นอย่างไร? ดีแล้ว? เพิ่มอีกหน่อยก็จะยิ่งดี?
   เยอะไป อยากให้ลดลงบ้าง?

10. Do the residents know who/where/how to contact in case they want to see a camera feed?
    คุณคิดว่าชาวชุมชนทราบหรือไม่ว่าจะไปขอดูภาพจากกล้องวงจรปิดได้ที่ไหน? หรือต้องไปติดต่อใคร? อย่างไร?

11. Do you know of any cases when CCTV cameras were helpful to the residents?
    คุณเคยได้ยินเรื่องราว/เหตุการณ์ที่แสดงถึงประโยชน์ของกล้องวงจรปิดในชุมชนบ้างไหม? กรุณาเล่าหน่อยนะครับ/คะ?

12. Is there anything else you would like us to know in regard to the installation of CCTV in this community? You suggestion and recommendation will be greatly appreciate and will make our research more complete and beneficial.

คุณมีประเด็นสำคัญอื่นๆที่เกี่ยวข้องกับกล้องวงจรปิดในชุมชนที่อยากให้เราศึกษาเพิ่มเติมไหมครับ/คะ?

หรือท่านอาจมีข้อเสนอแนะเพื่อช่วยให้งานวิจัยของเราสมบูรณ์ขึ้นและเป็นประโยชน์ต่อชุมชนคลองเตย

Appendix A.4: Khlong Toei Local Drug Prevention Expert

Interviewer(s): Chavanvit Srisaranukrom, Papatsorn Thammaprasit, Raphael Walcott
Interviewee: Khlong Toei Anti-Drug Campaign Representative

Date: February 7th, 2013
Time: 11:00 a.m.
Location: In front of the Khlong Toei ONCB Command Center

1. Why do you think people start doing drugs in Khlong Toei?
    คุณคิดว่าทำไมคนในชุมชนคลองเตยถึงเสพยาหรือครับ/คะ?

2. Has the number of drug offenders changed since the cameras were installed?
    หลังจากมีการติดตั้งกล้องวงจรปิด คุณคิดว่าจำนวนคนเสพยาเสพติดเปลี่ยนไปหรือไม่ เช่น มากขึ้น น้อยลง คงที่ หรือครับ/คะ

3. Do you think the cameras have any negative consequences on drug trafficking?
    คุณคิดว่าการติดตั้งกล้องวงจรปิดมีผลกระทบด้านลบต่อการจับกุมผู้ค้าสิ่งเสพติดหรือไม่ครับ/คะ?

4. Can you think of any negative consequences of CCTV cameras installed for drug trafficking purposes to the community?
    คุณคิดว่าการติดตั้งกล้องวงจรปิดเพื่อการปราบปรามยาเสพติดมีผลเสีย (ผลด้านลบ ผลกระทบ) ต่อชุมชนบ้างหรือไม่

5. Do you think that there should be more cameras or fewer cameras?
    คุณคิดว่าควรจะมีการติดกล้องวงจรปิดเพิ่มขึ้นหรือน้อยลงหรือไม่ครับ/คะ?

6. What is your opinion on the number and location of the currently installed cameras? Appropriate or not? Any comments or suggestions?
    ขอทราบความเห็นของท่านเกี่ยวกับการนำกล้องวงจรปิดมาติดตั้งในชุมชนด้วย
    ท่านคิดว่าระบบปัจจุบันดีอยู่แล้วหรือควรปรับปรุงอย่างไรบ้างในแง่ของจำนวนและตำแหน่งของกล้องครับ/คะ?

7. What else do you believe keeps people from selling and using drugs in Khlong Toei?
    คุณคิดว่าอะไรทำให้ผู้เสพยาเสพติดไม่ยอมเลิกเสพและผู้ค้าไม่ยอมเลิกค้าในชุมชนคลองเตยครับ/คะ?

8. What places in your community are drugs used the most?
    คุณคิดว่ามีที่ไหนที่เป็นแหล่งที่มีการเสพยาเสพติดมากที่สุดในชุมชนครับ/คะ?

9. Do you think the authorities respond well to drug issues in Khlong Toei?
คุณคิดว่าเจ้าหน้าที่แก้ไขปัญหายาเสพติดได้ดีแค่ไหนในชุมชนคลองเตยหรือครับ/คะ?

10. Do you think Khlong Toei residents know who to contact if they need help with a drug problem?
คุณคิดว่าคนในชุมชนคลองเตยรู้หรือไม่ว่าต้องติดต่อใครเมื่อเขาต้องการความช่วยเหลือด้านปัญหาของยาเสพติดครับ/คะ?

11. Is there anything else that you would like us to know so that our research can be beneficial to the KT community?
คุณมีข้อเสนอแนะหรืออยากแสดงความคิดเห็นเพิ่มเติมนอกเหนือจากที่ได้กล่าวมาแล้วหรือไม่ครับ/คะ

ทั้งนี้เพื่อช่วยให้เราได้ข้อมูลวิจัยที่เป็นประโยชน์แก่ชุมชนของท่าน

Interviewer(s): Chavanvit Srisaranukrom, Papatsorn Thammaprasit, Raphael Walcott
Interviewees: Khlong Toei Firefighter, Khlong Toei Resident Coordinator

Date: February 7th, 2013
Time: 11:30 a.m.
Location: In front of the Khlong Toei ONCB Command Center

1. What is your name and position in the Khlong Toei Fire Fighting agency?
    คุณชื่ออะไร และ เกี่ยวข้องอะไรกับสถานีดับเพลิงใขเขตชุมชนคลองเตย

2. What are some of the major causes of fire in Khlong Toei?
    อะไรเป็นสาเหตุหลักที่ทำให้เกิดไฟไหม้

3. How often is there a fire in Khlong Toei?
    เกิดไฟไหม้บ่อยแค่ไหน ในชุมชนคลองเตย

4. What is necessary for firefighters to respond quickly to fire?
    ช่วยระบุสิ่งที่ช่วยให้นักดับเพลิงเข้าไปถึงจุดเกิดเหตุได้เร็วที่สุด

5. What is necessary for firefighters to fight the fire effectively?
    อะไรคือสิ่งจำเป็นที่จะช่วยให้นักดับเพลิงสามารถดับไฟได้อย่างมีประสิทธิภาพ

6. What is necessary for firefighters to evacuate people quickly from the fire area?
    อะไรคือสิ่งสำคัญที่จะช่วยให้นักดับเพลิงอพยพผู้คนออกจากที่เกิดเหตุได้เร็วที่สุด

7. *If necessary, ask the following questions:*
    a. What prevents or hinders quick response to fire in Khlong Toei?
        อะไรคือสิ่งขัดขวางหรือเป็นปัญหาในการทำงานของนักดับเพลิงแบบทันท่วงที และ ทำให้เข้ายังที่เกิดเหตุช้าเกินไป
    b. What prevents or hinders effective fighting of the fire in Khlong Toei?
        ในความเห็นของท่าน อะไรคือสิ่งกีดขวางการในการทำงานของเจ้าหน้าที่ ที่จะทำให้การดับไฟด้อยประสิทธิภาพ
    c. What prevents or hinders quick evacuation of people from the fire area in Khlong Toei?
        ในความเห็นของท่านอะไรคือสิ่งกีดขวางในการทำงานของการทำงานของเจ้าหน้าที่ในการอพยพคนออกจากพื้นที่ไฟไหม้และพื้นที่ใกล้เคียง

8. Are there fire prone areas that cannot be accessed easily by firefighters?
    ท่านพอจะคิดถึงพื้นที่ที่มีความเสี่ยงสูงในการเกิดเพลิงไหม้ในชุมชน และยังเข้าถึงได้ยาก

9. Have the cameras ever been used to help assist fighting fires in Khlong Toei?
   สถานีดับเพลิงเคยใช้ประโยชน์จากกล้องวงจะปิดในการช่วยดับไฟหรือไม่

10. Do the firefighters work with the police officers?
    มีการประสานงานระหว่างสถานีดับเพลิงกับตำรวจหรือไม่

11. Do you think the police would allow the firefighters to somehow use the CCTV cameras in order to help fight fires in Khlong Toei? In your opinion, will this be beneficial to the community? How?
    คุณคิดว่าตำรวจจะยอมให้สถานีดับเพลิงใช้ข้อมูลจากกล้องวงจรปิดในการป้องกันไฟในชุมชนหรือไม่?
    ถ้าความร่วมมือนี้เป็นไปได้ คุณคิดว่าจะมีประโยชน์ด้านการป้องกันไฟในชุมชนไหม? อย่างไร?

Appendix B: Interview Reponses

Appendix B.1: Bangkok Metropolitan

1. We have learned that the main purpose of your CCTV cameras is to aid in traffic control. Do your current cameras have any other purposes in Khlong Toei?
    CCTVs are installed divided into 2 responsibilities. The first one is for traffic. The second one is for safety purposes. For traffic purposes, we emphasize on the main road which have very traffic and overcrowd. For the safety purposes, CCTV are spread over many places especially in residents' area, in front of school, the intersection of the roads, connect point of the roads and bus stop. The positions we installed the cameras mostly requested from the residents. But in Khlong Toei, all over the area, CCTV was installed by safety purposes. AS I can remember, all over the area already had CCTV belongs to the residents. Those cameras were installed in front of school area. But for us, Traffic and Transportation Department, we focus on the residents together with school. We care the safety of the students too. We have the poles belong to our organization not on the electric poles. In Khlong Toei community, cameras own by ONCB and BMA. Cameras belong to ONCB were on electric poles. They have command room there.

2. How much did it cost to implement the CCTV system in Khlong Toei?
    We don't know exactly because we installed all over Bangkok. For example, installed 1500 cameras, it went over Bangkok so we can't tell all over budgets we spent for CCTV in Khlong Toei. For the specification of the cameras, we need time to look for that because each area in Bangkok are so different, thus the position analysis of the camaras and the amounts of the cameras are different too. But I can give you a rough estimation. For example, BMA has 15 cameras in Lock1-2-3, Lock4-5-6 and 70 Rai. Khlong Toei some cameras are not connect to the server (stand-alone) and some of them are waiting for connection through systems, the different of the components inside those cameras cause us unpredictable budgets. 15 cameras are spread randomly at in front of school, occupational center, in front of command room of ONCB, along main road in community. One pole, it's possible to had three cameras.

3. Were there particular camera installment specifications for the places where they were installed? For example, was there a specific number of cameras meant to be put on a single pole, or was there to be a specific distance between each camera?
    For marking the position, the authority normally looks at the real site. We're not sure that there are 8-9 cameras installed at in front of occupation center. The numbers of the cameras were installed according to the size of school. There are 3 sets, 6,8,9 cameras per pole. If small school, it should have 6 cameras and we focus on the real site we saw more than the distance between them. Authorities will make a survey for the cameras position mostly an intersection point like the exit way and entrance specifically on safety.

4. Can you tell us about the capabilities of the cameras, for example, how good the video quality is, and if they could be used with pattern recognition software?
    CCTV cameras 5,000,000 pixels but it's not enough space to save it, the recorder can't support that so we choose 400000 pixels instead because the digital video recorder (DVR) can support. But we plan for near future to link the feeds to every district. Now, we managed that already and we expect to finish at the end of this year. From this plan, we will have new recorder at every district and we can be able to record at 5,000,000 pixels. Every brand of the cameras all can use with software. Now, Software is not that intelligent. It can't detect people faces. Detecting people faces need databases from the police and it's too hard to get because we are different organization. Detecting people faces technology on crime are not suitable for using in open area because we need high

quality cameras to do that and it's hard to use in the real situation. Close area are OK, the area are specific. For car license, we're never do that cause in some case the criminals use the fake one.

5. Do you record the camera feeds? If the data is recorded, how long are camera feeds saved?
    We record the camera feed. The time we kept it depends on each campaign in our department. The very old campaign we kept it for 7 days and the pervious one we kept it for 15 days and now, the one under an installation can last to 30 days.

6. Who has access to the camera feeds?
    Is it possible for the public or other government agency to get access to the camera feeds if they need to, for example, to get evidence of an assault?
    If people want to see the feeds, we let only the complainant see it. And they can see if
        i.   *They already report to the polices*
        ii.   *Bring the copy of the report paper to us at near district(Khlong Toei), Local police(Taruea police station) and here at Traffic and Transportation Department. But we can see the feed only with the connected cameras to the main center and if the complainants really want to see it, we will hire the technician to take the feeds out.*
    As I say, in that area if the cameras already connected, we can check from there. If it wasn't connected, we will send technician out but the complainant should be able to tell the time(the range of time). It's like DVD disc. And when we gave out the DVD or the evidences, complainant should have certificate from the police to get this evidence.

7. How have the cameras helped with traffic?
    CCTV is an eyes for polices. For the traffic, we have Traffic Control and Command Center working on this. Polices are working on each person's area. The connection between each police station always has problem so the Traffic Control and Command Center is the great significant. They don't know other area out of their area. The feeds from CCTV from each area will be sent to the Traffic Control and Command Center. The center will analyze in the whole picture of the traffic which area should lessen (ventilate the car) and vice versa. For cameras used for safety, since we connect the software to local police and the district office, they help us a lot otherwise we have to let inspectors drive out. For example, in front of seven eleven, etc. For crime&drugs statistic, police officers will do this. For traffic, It's very hard for us to compare since now Bangkok have lots of cars according to new policy from the government (people who buy the first car will get tax reducing, so it increase the density on the road).

9. Have you assessed the possibility that the presence of these cameras may have negative consequences on the community? If so, what do you believe these negative consequences are?
    We have never conducted research on that. We installed the cameras follow by the residents requested because we don't know all 50 districts and people who lives there are the best person who knows what had happen in their area. We will make a list and if we have the budgets, we will continue on installation cameras. In Khlong Toei, it's very hard to install the cameras because of low roof in soi and some zone are personal area. It is violate people right. We definitely can install in public area.

10. Are there any plans to install additional cameras in Khlong Toei? *If so:*

    a. Where would they be placed and why?
    b. What would the budget for this be?

    Do you think there is a possibility of collaboration with the Khlong Toei community to come up with a plan to further benefit the residents through additional ways of using the CCTV in Khlong Toei?

When we install the cameras, we never divide how many of them went to which area, how many of them went to each community. We need to check first and we can't answer right now that we will install cameras more or not. Install or not are mainly depend on the community and if people aren't ask for more cameras, it's impossible for us to know. If people want to ask for installation, they can call 1555 (hotline number of BMA) or tell the district office then they will pass the information to us. After that we will consider on it.

Every time we send the authority there, we always inform the residents or the community leader but some condition are against us from doing that เช่นพื้นที่ไม่เหมาะสม. In that case, we always inform them why. For example, people ask the authority to install cameras in personal area and we can't get in so we will inform them the reason. Moreover, the problem on electrical from Metropolitan Electricity Authority(MEA), they said that they won't give the electric if CCTV installed area are not public area.

11. Do you think collaboration with another public department (such as perhaps the Fire Department) on the CCTV system would be possible if deemed helpful to the Khlong Toei community?
    For fire department(the bigger one), they're cooperate with us so I think the signal connection between them and us are not the problem at all but we don't have a plan to connect to the local fire fighter in Khlong Toei area because Khlong Toei area are so big if it really happens we need to look for that.

12. We would like to make an informative pamphlet or audio clip for the radio that would inform residents of the uses of CCTV in Khlong Toei, the locations of the cameras, the controllers of the cameras, and contact information for the respective authorities. We would appreciate working with you on developing this pamphlet as well, should you be interested. Do you think this is a good idea?
    We're OK with pamphlet and the numbers of authority are good to put in. As I inform, if people have any problems just go to district office because it's the most nearest place that people can go. For the future, the district office will see what we see from cameras. Here we can see all 50 districts so it's sure that the district office could do that too.
    For the leaflet, people don't know which cameras belong to whom and they start to think that why it's too much even though the authority install for different purposes. For example, cameras that install in front of occupation center, the main purpose is for children safety because all the incident and assault always happen outside. For school, we install cameras at the front which the resident will get the benefits on that too because cameras span to their area. For crime, I think ONCB know the place to install very well but we don't know that deep into details like them. We normally focus on normal things happened. When we went to the site, some of students come to us and said "Be careful" so we concluded that drugs are the great problems not only in Khlong Toei but every place over Bangkok. For several places, schools are near the community, drug dealers sell some drug to them. After CCTV was installed, they moved to other area. But anyway, it's not a good way to solve because we solve at the end result. It's just the way to make them feel uncomfortable enough to perform any bad thing. And about dummy cameras that we ever had a problems with (long time ago some people notice that CCTV cameras own by BMA had only the cover), we confess that we ever had that but we did it on purposes and since it's interfere with politics issues, it become useless. So, now we take it off and no more any dummy cameras since people know everything. Dummy cameras provide very useful benefits just like the real one but with more cheaper price and we can save lots of money from that and since people know it, we had to take it off.
    So many years in the past, CCTV cameras are belonging to BMA only and mainly work for publics. Then, we installed more 20000 cameras over Bangkok and this year we plan to install more 27000 cameras in this year relate to the budgets we have.

AUM: Resident #1

1. How old are you?
   37 (male)
2. How long have you been living in Khlong Toei?
   Since he was born
3. Why do you think there are cameras in the community?
   For safety around and to catch the thief

4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
   Feel a lot better after cameras were installed
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
   Never happened to him but it happened to somebody else and did ask for help about the video feeds
6. Would you like there to be more cameras or fewer cameras?
   Want more cameras in soi and flat13,14
7. How would you feel if you were allowed to see the camera feeds?
   Feel better if it is not a fake one.
8. What places in your community do you think are dangerous?
   In Sois are not safe…not usually happened in the main road
9. Is it hard to get help from the authorities? Why?
   The officers did help really well
10. Is there anything else that you would like us to know?
    Want more cameras at the risky spot, temple near by

AUM: Resident #2

1. How old are you?
   30 (female)
2. How long have you been living in Khlong Toei?
   3 years
3. Why do you think there are cameras in the community?
   See general things. She didn't know much. She pretty much stays in the store
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
   Feels safer after the cameras were installed…fewer thieves
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
   Never asked for video feed because bad things never happened to her
6. Would you like there to be more cameras or fewer cameras?
   Want camera in front of my store
7. How would you feel if you were allowed to see the camera feeds?
   It would be better if its work for her when she has some problems.
8. What places in your community do you think are dangerous?
   most of the area in there are scary, not safe
9. Is it hard to get help from the authorities? Why?
   She said the police never help her when the problem comes up.
10. Is there anything else that you would like us to know?
    -

AUM: Resident #3

1. How old are you?
   46 (male)
2. How long have you been living in Khlong Toei?
   since he was born.
3. Why do you think there are cameras in the community?
   Drugs and for safety around… thief and fire too
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
   Feel good with the CCTVs…more safe
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
   Never happened to him but happened to his neighbor and ask help from the command post and they did help a lot
6. Would you like there to be more cameras or fewer cameras?
   Somewhere where there aren't already cameras
7. How would you feel if you were allowed to see the camera feeds?
   So so
8. What places in your community do you think are dangerous?
   Hua-kong and around the school…he said something about "school of thief", lots of bad kids and thieves like to hang out there at night , no light at night.
9. Is it hard to get help from the authorities? Why?
   The officers did help really well
10. Is there anything else that you would like us to know?
    Want more cameras at little intersection and soi

AUM: Resident #4

1. How old are you?
   34 (female)
2. How long have you been living in Khlong Toei?
   since she was born.
3. Why do you think there are cameras in the community?
   Drugs but why when things happen the video feeds didn't really help they did ask for the video feeds but they did not let them see
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
   Feel bad because when she has the problems and no one can help. The police said CCTV doesn't work and try to deny them.
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
   Never help us. It is a fake CCTV.
6. Would you like there to be more cameras or fewer cameras?
   Want more cameras in front of the school
7. How would you feel if you were allowed to see the camera feeds?
   Don't want to see.
8. What places in your community do you think are dangerous?
   Everywhere.
9. Is it hard to get help from the authorities? Why?
   The officers didn't really help but the police in the command post helped she said the police said that the camera was fake, can't really be used
10. Is there anything else that you would like us to know?

AUM: Resident #5

1. How old are you?
   50 *(female)*
2. How long have you been living in Khlong Toei?
   since she was born.
3. Why do you think there are cameras in the community?
   To prevent the drugs, crimes, and fires.
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
   Feel bad because when she has the problems and no one can help. The police said CCTV doesn't work and try to deny them.
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
   Never help them. She said it is a fake CCTV.
6. Would you like there to be more cameras or fewer cameras?
   Enough because if we put more its not going to work anyways.
7. How would you feel if you were allowed to see the camera feeds?
   Nothing.
8. What places in your community do you think are dangerous?
   Little soi.
9. Is it hard to get help from the authorities? Why?
   Never.
10. Is there anything else that you would like us to know?
    No.

BLW: Resident #1

1. How old are you?
   46 years old (female)
2. How long have you been living in Khlong Toei?
   Living in klongtoei for 46 years
3. Why do you think there are cameras in the community?
   The purposes of installing the CCTV are for monitoring crimes and drugs
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
   She feels good about the CCTV because she doesn't do anything that are against the law

5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
   She has no experience about it.
6. Would you like there to be more cameras or fewer cameras?
   She want the authorities to install more cameras at the very inside of the klongtoei slum.
7. How would you feel if you were allowed to see the camera feeds?
   She'd love to see the video from the CCTV but she has no time.
8. What places in your community do you think are dangerous?
   Many places in klongtoei slum are dangerous for her. Especially, the very inside of the community.
9. Is it hard to get help from the authorities? Why?
   She hasn't tried because when others try to get help from them they just didn't come.
10. Is there anything else that you would like us to know?
    She wants the government to get rid of all drugs in klongtoei area.

BLW: Resident #2

1. How old are you?
   50 years old (male)
2. How long have you been living in Khlong Toei?
   Living there for 50 years
3. Why do you think there are cameras in the community?
   He think the CCTVs are for monitoring drugs
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
   He doesn't feel bad that all CCTVs are all over the place but he's just wondering if the CCTV can really be used.
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
   Yes, 2 weeks before the interview, One motorcycle was stolen but when he went to the CCTV center in the community. The police said that the CCTV doesn't work.
6. Would you like there to be more cameras or fewer cameras?
   He wants the authorities to install more cameras. In addition, he said the government should know better than this where they should put on CCTVs

7. How would you feel if you were allowed to see the camera feeds?
   He doesn't believe the CCTVs really work
8. What places in your community do you think are dangerous?
   Nowhere is dangerous for him
9. Is it hard to get help from the authorities? Why?
   It's easy to get help from the local police but the big police station and the district office are really hard to ask for help. It takes forever to get help
10. Is there anything else that you would like us to know?
    Please install more "real" CCTVs and put on some more street light. And lastly, please choose a good people to come monitor the CCTVs.

BLW: Resident #3

1. How old are you?
   53 years old (male)
2. How long have you been living in Khlong Toei?
   Living there for 20 years
3. Why do you think there are cameras in the community?
   The purposes are to monitor crimes and drugs
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
   He doesn't feel bad about CCTVs but actually want more
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
   No, not at all
6. Would you like there to be more cameras or fewer cameras?
   He said CCTVs should be placed more at the very inside of the klongtoei slum
7. How would you feel if you were allowed to see the camera feeds?
   He feels so so…
8. What places in your community do you think are dangerous?
   Lock 1-6 are not safe for him to go at night time
9. Is it hard to get help from the authorities? Why?
   It's not hard to get help from the police

10. Is there anything else that you would like us to know?
    Please install more and more cameras

BLW: Resident #4

1. How old are you?
    58years old (male)
2. How long have you been living in Khlong Toei?
    Living there for 51 years
3. Why do you think there are cameras in the community?
    The purpose is to be used as an evidence when bad things happened

4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
    He like the CCTVs
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
    Never
6. Would you like there to be more cameras or fewer cameras?
    It's good to install more CCTVs. Especially, the very inside of the community
7. How would you feel if you were allowed to see the camera feeds?
    He would love to see the video from the CCTVs
8. What places in your community do you think are dangerous?
    Nowhere is dangerous for him
9. Is it hard to get help from the authorities? Why?
    Police didn't care much about them but they are better now
10. Is there anything else that you would like us to know?
    Nothing added

BLW: Resident #5

1. How old are you?
    38 years old (female)
2. How long have you been living in Khlong Toei?
    Living there for 20 years
3. Why do you think there are cameras in the community?
    The purposes of installing the CCTVs are to monitor crime, drugs and accident
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
    She doesn't feel uncomfortable about CCTVs but she's just wondering if CCTVs can really be used
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
    Yes but the CCTVs didn't work
6. Would you like there to be more cameras or fewer cameras?
    She doesn't want more CCTVs. It's already too much
7. How would you feel if you were allowed to see the camera feeds?
    She would love to
8. What places in your community do you think are dangerous?
    Soi 1-10 because it's too dark at night and the soi next to seven eleven.
9. Is it hard to get help from the authorities? Why?
    No, never
10. Is there anything else that you would like us to know?
    She wants more light and some of those plainclothes policeman

JAE: Resident #1

1. How old are you?
   55 Years old (female)
2. How long have you been living in Khlong Toei?
   Since 7 years old
3. Why do you think there are cameras in the community?
   I think they installed cameras to look out the criminals
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
   No, I'm ok with that. I think it's good for cameras to see all people in communities like all the bad and good.
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
   I'd like to say that the cameras can see if people do goods. And for the experience on fire, normally people will help each other and fire always happen at lock 6 and 1.
6. Would you like there to be more cameras or fewer cameras?
   Yes, I want authorities install more cameras at side-street and foot way.
7. How would you feel if you were allowed to see the camera feeds?
   I really want to see the cameras. I want to know who is criminal.
8. What places in your community do you think are dangerous?
   I think it's very dangerous on side-street. Lock 4-5-6 are better than lock 1.
9. Is it hard to get help from the authorities? Why?
   Yes, sometimes authorities are late when people need help but I think an ambulance is quite fast.
10. Is there anything else that you would like us to know?
    Actually, I don't think CCTV cameras are really help because in the case of drug dealer, they still can buy and sell in their house or even outside if they disguise themselves in a police uniform, and police won't be able to catch or even suspect them. In some case, criminals get some help trade with money from the bad police officers.

JAE: Resident #2

1. How old are you?
   42 Years old (male)
2. How long have you been living in Khlong Toei?
   7 years
3. Why do you think there are cameras in the community?
   I think the government installed the cameras to solve drugs problem and crimes.
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
   No, this is great since Khlong Toei has problems about drugs and instead of hire more authorities, to have lots of cameras are very good. For my privacy, I don't really serious about that. It's very trifle for me. I want to decrease the social problems and beyond.
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
   Yes, first I think cameras help a lot and criminals aren't dare to do bad things. Previously, in here has lots of thieves but since cameras installed people are afraid to break the laws.
6. Would you like there to be more cameras or fewer cameras?
   I want to have more cameras at the community playground and at car park. If possible, I need them to installed all 22 soi around here.
7. How would you feel if you were allowed to see the camera feeds?
   Good. If people did good, they would feel proud and it's easy to track the criminals.
8. What places in your community do you think are dangerous?

It's equal for every area in Khlong Toei.

9. Is it hard to get help from the authorities? Why?
    Not at all. Just call 1966.
10. Is there anything else that you would like us to know?
    I think people here need help more on mind and social. And children are aggressive. It's like transmit through generations. I want children to be the power of nation more than continued their cycle like this.

JAE: Resident #3

1. How old are you?
    55 Years old (male)
2. How long have you been living in Khlong Toei?
    50 years
3. Why do you think there are cameras in the community?
    I think they installed cameras to look out for the criminals
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
    No, I feel good to have cameras around.
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
    I heard from everybody that it's OK.
6. Would you like there to be more cameras or fewer cameras?
    I want more cameras because lots of thieves here and I'm feel unsafe.
7. How would you feel if you were allowed to see the camera feeds?
    Yes, I want to see it and here in Khlong Toei had it already so if people have lost something, they can ask for permission to watch cameras.
8. What places in your community do you think are dangerous?
    It's dangerous everywhere.
9. Is it hard to get help from the authorities? Why?
    When I called the police sometime they came so late and I think maybe it's because of the distances.
10. Is there anything else that you would like us to know?
    There are lots of bad people here. Children are bad these days because the way their parents treat them is bad. Parents are careless. It's cause trouble a lot for people living nearby.

JAE: Resident #4

1. How old are you?
    34 Years old (male)
2. How long have you been living in Khlong Toei?
    20 years
3. Why do you think there are cameras in the community?
    I think they installed cameras for convenient and to look out for the criminals and bad things.
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
    No, I didn't do anything wrong so no need to be afraid.
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
    I think it helps a lot and also I have experience taking care of CCTV cameras.
6. Would you like there to be more cameras or fewer cameras?
    I want more cameras for many blind spots here. There are lots of drunkards and gluers and it's possible for them to meet or gather for unlawful purposes.
7. How would you feel if you were allowed to see the camera feeds?

Yes, good. I want to know the informations.
8. What places in your community do you think are dangerous?
   I think it's Lock 1-2-3.
9. Is it hard to get help from the authorities? Why?
   No, I don't think it's hard. For my case, I will call Ruamkatanyu foundation.
10. Is there anything else that you would like us to know?
   I want anyone to come and solve social problems and also the place to live.

JAE: Resident #5

1. How old are you?
   33 Years old (female)
2. How long have you been living in Khlong Toei?
   Since I was born.
3. Why do you think there are cameras in the community?
   I think they installed cameras to look after people and take care of security in communities.
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
   No, if it install only the road but if install in my house, I would say yes, it's bothering me.
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
   It helps.
6. Would you like there to be more cameras or fewer cameras?
   I want more cameras because lots of thieves here and I'm feel unsafe.
7. How would you feel if you were allowed to see the camera feeds?
   Yes, I want to see it.
8. What places in your community do you think are dangerous?
   As long as I lived here, it's OK.

9. Is it hard to get help from the authorities? Why?
   Not that hard.
10. Is there anything else that you would like us to know?
   I want to get rid of all drugs in communities.

JAE: Resident #6

1. How old are you?
   12 Years old (female)
2. How long have you been living in Khlong Toei?
   Since I was born.
3. Why do you think there are cameras in the community?
   There are lots of drug dealer here.
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
   No, I feel good to have cameras around because it has an abuse on woman in communities.
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
   Yes, when fire occurred, people in communities will help each other first.
6. Would you like there to be more cameras or fewer cameras?
   I want more cameras in everywhere.
7. How would you feel if you were allowed to see the camera feeds?
   Yes, I want to see it.
8. What places in your community do you think are dangerous?

I think it's 70 Rai.

9. Is it hard to get help from the authorities? Why?
    When I called the police sometime they came so late and normally people will help each other first.
10. Is there anything else that you would like us to know?
    I need border patrol police come here and walk around communities more so criminals aren't dare to do bad things.

JAE: Resident #7

1. How old are you?
    23 Years old (female)
2. How long have you been living in Khlong Toei?
    about 2 years
3. Why do you think there are cameras in the community?
    Because there are lots of drugs and thieves in communities.
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
    No, I feel better than before. The prime minister is very care about us. She came here so often
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
    Yes, before CCTV installation, it's hard to track the criminals but if we have CCTV, we can tell the appearance and face of criminals.
6. Would you like there to be more cameras or fewer cameras?
    In dark spot I suggest to install more cameras.
7. How would you feel if you were allowed to see the camera feeds?
    Yes, and I also want to know the position of CCTVs
8. What places in your community do you think are dangerous?
    I think every locks are dangerous.
9. Is it hard to get help from the authorities? Why?
    It's hard because lots of communities and normally children won't avoid moving cars.
10. Is there anything else that you would like us to know?
    In this community, people have unity but I want any organization to focus more on an education and drugs. Children are lack of chance to study.

GRP: Resident #1

1. How old are you?
    14 (male)
2. How long have you been living in Khlong Toei?
    Since he was born
3. Why do you think there are cameras in the community?
    For drugs prevention.
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
    Feel ok with CCTV
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
    No experiences with CCTV in the community.
6. Would you like there to be more cameras or fewer cameras?
    Yes, put more in the little area or soi.
7. How would you feel if you were allowed to see the camera feeds?
    It would be nice if he can check the record up when he has a problem.

8. What places in your community do you think are dangerous?
   Soi and little space
9. Is it hard to get help from the authorities? Why?
   Don't know because he never got a problem before.
10. Is there anything else that you would like us to know?
    -

GRP: Resident #2

1. How old are you?
   21 *(male)*
2. How long have you been living in Khlong Toei?
   Since when he was born.
3. Why do you think there are cameras in the community?
   To prevent the drugs and crimes.
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
   Yes, he feels uncomfortable being monitored by the cameras. He thinks there are too many cameras and it would be nice if they take them off.
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
   No
6. Would you like there to be more cameras or fewer cameras?
   Take all of cameras off.
7. How would you feel if you were allowed to see the camera feeds?
   No.
8. What places in your community do you think are dangerous?
   Not telling
9. Is it hard to get help from the authorities? Why?
   Don't know.
10. Is there anything else that you would like us to know?
    -

GRP: Resident #3

1. How old are you?
   20 *(female)*
2. How long have you been living in Khlong Toei?
   since he was born.
3. Why do you think there are cameras in the community?
   To see what's going on.
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
   Feel OK to live with the CCTV.
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
   No.
6. Would you like there to be more cameras or fewer cameras?
   Put more or some where that doesn't exist the CCTV.
7. How would you feel if you were allowed to see the camera feeds?
   So so
8. What places in your community do you think are dangerous?

Block 1,2,3.
9. Is it hard to get help from the authorities? Why?
   Never asked for help.
10. Is there anything else that you would like us to know?
    -

GRP: Resident #4

1. How old are you?
   15 (male)
2. How long have you been living in Khlong Toei?
   since he was born.
3. Why do you think there are cameras in the community?
   To check or to see who trying to do something wrong.
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
   No.
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
   No.
6. Would you like there to be more cameras or fewer cameras?
   Enough for now.
7. How would you feel if you were allowed to see the camera feeds?
   Good if he can check it up when he got the problem.
8. What places in your community do you think are dangerous?
   Little area or soi.
9. Is it hard to get help from the authorities? Why?
   Never.
10. Is there anything else that you would like us to know?
    -

GRP: Resident #5

1. How old are you?
   20 *(women)*
2. How long have you been living in Khlong Toei?
   Less than one year.
3. Why do you think there are cameras in the community?
   To see the theft.
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
   No, it is better than before because there are less of theft or drugs peoples.
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
   No.
6. Would you like there to be more cameras or fewer cameras?
   Put a lot more.
7. How would you feel if you were allowed to see the camera feeds?
   Nothing.
8. What places in your community do you think are dangerous?
   Little soi.
9. Is it hard to get help from the authorities? Why?
   Never.
10. Is there anything else that you would like us to know?

No.

GRP: Resident #6

1. How old are you?
    16 *(female)*
2. How long have you been living in Khlong Toei?
    Since she was born.
3. Why do you think there are cameras in the community?
    To check what's going on in the community.
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
    No.
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
    No.
6. Would you like there to be more cameras or fewer cameras?
    Put a lot more.
7. How would you feel if you were allowed to see the camera feeds?
    Nothing.
8. What places in your community do you think are dangerous?
    Around 70 rai.
9. Is it hard to get help from the authorities? Why?
    Never.
10. Is there anything else that you would like us to know?
    No.

GRP: Resident #7

1. How old are you?
    15 *(male)*
2. How long have you been living in Khlong Toei?
    About 10 years.
3. Why do you think there are cameras in the community?
    To check what's going on in the community. Also crimes and drugs prevention.
4. Do you feel uncomfortable being monitored by the cameras during everyday activities?
    No.
5. Have you or someone you know ever had an experience where the cameras could have been used to help? Were they helpful?
    No.
6. Would you like there to be more cameras or fewer cameras?
    Put a lot more in the little area and soi.
7. How would you feel if you were allowed to see the camera feeds?
    Nothing.

8. What places in your community do you think are dangerous?
    Everywhere.
9. Is it hard to get help from the authorities? Why?
    Never.
10. Is there anything else that you would like us to know?
    The police should check up on peoples in the community all the times.

Community Leader #1

1. How old are you?
    20
2. How long have you been living in Khlong Toei?
    Since when he was born.
3. What are some of the major issues the Khlong Toei residents come across?
    The major issue is to looking for drugs and crimes.
4. Have the authorities been helping to solve these issues?
    The authorities help them a lot to solve all the problems. They always walk through the little soi every morning and evening.
5. Do the residents know who to contact in case of an emergency?
    Some peoples in the residence probably don't know exactly who to contact, but they only know that they need to contact the head of the community when they have some problem.
6. Do you think the CCTV cameras have helped reduce the crime rate and drug traffic in the community?
    yes, the CCTV have helped them a lot. For exanple, thief will be scared and afraid of CCTV when they steal something.
7. Do you believe the residents like having all the CCTV cameras?
    Yes, they like it.
8. Do they know what they are used for?
    They only know that all the CCTV are monitoring the thief.
9. Do you think they want more or fewer cameras in the community?
    yes, they do want to have more CCTV on each little soi and some dangerous spot.
10. Do the residents know who/where/how to contact in case they want to see a camera feed?
    They just know that they need to contact the command post or KhlongToei district.
11. Do you know of any cases when CCTV cameras were helpful to the residents?
    yes, there is a guy who got shot and they go check the CCTV then that guy can be able to catch the people who shot him.
12. Is there anything else you would like us to know in regard to the installation of CCTV in this community? You suggestion and recommendation will be grately appreciate and will make our research more complete and beneficial.
    put more CCTV all around in each soi in the slum.

Community Leader #2

1. How old are you?
    49
2. How long have you been living in Khlong Toei?
    Since when he was born.
3. What are some of the major issues the Khlong Toei residents come across?
    The major issue is to looking for drugs.
4. Have the authorities been helping to solve these issues?
    The authorities try to help them and solve all the problems. But peoples who drugs just know when the authorities will come and check them, so drugs peoples try to trick the authorities by hiding or move to somewhere else.
5. Do the residents know who to contact in case of an emergency?
    People know who to contact but the officers never come and help them on time.

6. Do you think the CCTV cameras have helped reduce the crime rate and drug traffic in the community?
yes, the CCTV have helped them a lot. For exanple, thief will be scared and afraid of CCTV when they steal something.
7. Do you believe the residents like having all the CCTV cameras?
For peoples who never done something bad, they will like it. For those peoples who try drugs will not like it.
8. Do they know what they are used for?
They probably don't know the reason why they installed the CCTV.
9. Do you think they want more or fewer cameras in the community?
yes, they do want to have more CCTV on each little soi and some dangerous spot.
10. Do the residents know who/where/how to contact in case they want to see a camera feed?
No.
11. Do you know of any cases when CCTV cameras were helpful to the residents?
No.
12. Is there anything else you would like us to know in regard to the installation of CCTV in this community? You suggestion and recommendation will be grately appreciate and will make our research more complete and beneficial.
Put more CCTV all around in each soi in the slum.

Community Leader #3
1. How old are you?
56
2. How long have you been living in Khlong Toei?
About 40 years.
3. What are some of the major issues the Khlong Toei residents come across?
The major issue is to looking for drugs.
4. Have the authorities been helping to solve these issues?
The authorities from ThaRuea Police Station and KhlongToei District help them a lot to solve all the problems.
5. Do the residents know who to contact in case of an emergency?
yes, they all know who to contact. They have all the emergency number post at the Board Center and they radio to announce when they want to spread the word.
6. Do you think the CCTV cameras have helped reduce the crime rate and drug traffic in the community?
yes, the CCTV have helped them a lot. The crime has reduce and less of thief since they have CCTV in the communities.
7. Do you believe the residents like having all the CCTV cameras?
Yes, they like it. They feel safe.
8. Do they know what they are used for?
To reduce the crimes.
9. Do you think they want more or fewer cameras in the community?
yes, they do want to have more CCTV on each little soi and some dangerous spot.
10. Do the residents know who/where/how to contact in case they want to see a camera feed?
They just know that they need to contact the head of the community, then the head of each community will help them out when peoples want to see a camera feed.
11. Do you know of any cases when CCTV cameras were helpful to the residents?
no.

Community Leader #4

1. How old are you?
   65 years old.
2. How long have you been living in Khlong Toei?
   Living in Khlongtoey for 47 years.
3. What are some of the major issues the Khlong Toei residents come across?
   The main problems are drugs and unemployed residents.
4. Have the authorities been helping to solve these issues?
   The officers don't really help. The residents pretty help each other when things happen.
5. Do the residents know who to contact in case of an emergency?
   Most of them don't know where to contact but they have learned to take care of themselves.
6. Do you think the CCTV cameras have helped reduce the crime rate and drug traffic in the community?
   The CCTVs really do help a lot. Crimes rate and drugs have decreased a lot.
7. Do you believe the residents like having all the CCTV cameras?
   The residents feel good about CCTVs. They are 16 CCTVs that were installed by One foundation named Mercy.
8. Do they know what they are used for?
   They actually don't know the purpose of installing those CCTVs.
9. Do you think they want more or fewer camerass in the community?
   There are enough CCTVs to be used right now but he wants the authorities to be seriously monitoring the CCTVs.
10. Do the residents know who/where/how to contact in case they want to see a camera feed?
    Yes the residents do know where to go get the video feeds.
11. Do you know of any cases when CCTV cameras were helpful to the residents?
    Lots of residents have been involved with the problem that needs to use the data from the CCTVs.
12. Is there anything else you would like us to know in regard to the installation of CCTV in this community? You suggestion and recommendation will be grately appreciate and will make our research more complete and beneficial.
    He said he doesn't want to ask for anything because the government or authorities never actually help.

Community Leader #5

1. How old are you?
   58 years old
2. How long have you been living in Khlong Toei?
   Living there for 27 years
3. What are some of the major issues the Khlong Toei residents come across?
   Drugs and a little crimes
4. Have the authorities been helping to solve these issues?
   The authorities don't help at all
5. Do the residents know who to contact in case of an emergency?
   The residents don't know where to contact. They pretty much come to the head of the community first.
6. Do you think the CCTV cameras have helped reduce the crime rate and drug traffic in the community?
   He said there should be installed at the very inside of the community, some blind spot.
7. Do you believe the residents like having all the CCTV cameras?
   The residents feel good.
8. Do they know what they are used for?
   They don't know why the CCTVs are there.

9. Do you think they want more or fewer camerass in the community?
   Not enough. Want more in all Soi, football field and parking lot.
10. Do the residents know who/where/how to contact in case they want to see a camera feed?
    Yes but they actually want a monitor room which belongs to the residents.
11. Do you know of any cases when CCTV cameras were helpful to the residents?
    No.
12. Is there anything else you would like us to know in regard to the installation of CCTV in this community? You suggestion and recommendation will be grately appreciate and will make our research more complete and beneficial.
    No.

Appendix B.4: Khlong Toei Local Drug Prevention Expert

1. Why do you think people start doing drugs in Khlong Toei?
   Lazy to work or get a job. To sell the drugs is the easiest way for them to get money.
2. Has the number of drug offenders changed since the cameras were installed?
   yes, there is much better than before. Less of drugs.
3. Do you think the cameras have any negative consequences on drug trafficking?
   No.
4. Can you think of any negative consequences of CCTV cameras installed for drug trafficking purposes to the community?
   No.
5. Do you think that there should be more cameras or fewer cameras?
   Its depend on ONCB, it would be nice if they want to put more CCTV.
6. What is your opinion on the number and location of the currently installed cameras? Appropriate or not? Any comments or suggestions?
   Its depend on ONCB. She thinks that if they put more CCTV, drugs peoples always try to hide and move away.
7. What else do you believe keeps people from selling and using drugs in Khlong Toei?
   Because of polices are not do the work constantly, so it will be a gap of the time.
8. What places in your community are drugs used the most?
   All around.
9. Do you think the authorities respond well to drug issues in Khlong Toei?
   It will be more effective if the police come up with a good plan.
10. Do you think Khlong Toei residents know who to contact if they need help with a drug problem?
    Yes, they know who they need to contact. They can have a little consult with the ONCB.
11. Is there anything else that you would like us to know so that our research can be beneficial to the KT community?
    All of authorities don't need to do this much of works, if the police and peoples in the communities try to help each other.

Appendix B.5: Khlong Toei Local Fire Experts

Appendix B.5.1 Fire Fighter

1. What is your name and position in the Khlong Toei Fire Fighting agency?
   My name is Damrong. My position as a firefighter and help people. I want to mention that in the year of 1992, when fire happened in Khlong Toei, people will help and take care of each other first. At that time, there're no authorities or officers come help. My family once ever had an experience on that too, with fire. Moreover, the government authorities were late in helping people and they didn't know this area as much as local people did. I think the main detriment is upon us anyway so we'd better took care of each other. Also, we got 5 fire trucks contributed by Japan. Firstly, we started use only 2 fire trucks but then we enrolled more people and dedicated the left over fire trucks to communities. When the network was expanded, we'd done something like this with 200 communities all over Bangkok now.
2. What are some of the major causes of fire in Khlong Toei?
   I think it's because of the fuel from the place where people lived, old woods, bad environment, crowded people and garbage.
3. How often is there a fire in Khlong Toei?
   It occurs very frequent. 1 year can cause 4-5 times fire. Some year had like 10 times. And sometimes fire damaged more around 400-500 communities depends.
4. What is necessary for firefighters to respond quickly to fire?
   None of it helps. As I said, local people take care of each other. They can be able to response to the situation more quickly.
5. What is necessary for firefighters to fight the fire effectively?
   We always find the new easy techniques but not technologies. I mean techniques that can be able to apply in real situation. Technology is bad for things like this.
6. What is necessary for firefighters to evacuate people quickly from the fire area?
   I believe some of local people known the area very well. They know the exit. They know how to use the shortcut ways. They know each zone. Maybe it's harder to let the outsiders get in so just let them out themselves.
7. *If necessary, ask the following questions:*
   a. What prevents or hinders quick response to fire in Khlong Toei?
      -
   b. What prevents or hinders effective fighting of the fire in Khlong Toei?
      -
   c. What prevents or hinders quick evacuation of people from the fire area in Khlong Toei?
      -
8. Are there fire prone areas that cannot be accessed easily by firefighters?
   First, I think because of houses and crowded creature of buildings cause them risk. For example, 70 Rai are very risk. The construction were very dense so it's easy to catch fire. Moreover, the different sizes of each community, the bigger one, the smaller one make them risk to catch fire too.

9. Have the cameras ever been used to help assist fighting fires in Khlong Toei?
   Well, CCTV just came in not many years ago. At first, as I told, people help each other. But after CCTV installed, fire is decrease. Anyway, help each other is the way best.
10. Do the firefighters work with the police officers?
    Polices and firefighter work in different part, different duties so I would say that there's not much help.
11. Do you think the police would allow the firefighters to somehow use the CCTV cameras in order to help fight fires in Khlong Toei? In your opinion, will this be beneficial to the community? How?
    I think for fire we should use the cameras from higher view point not the main we saw at the street because the cameras from high above will be able to detect the smoke from fire and also can detect the people when they get hasten(congestion).

Appendix B.5.2 Resident Coordinator

1. What is your name and position in the Khlong Toei Fire Fighting agency?
   Not a firefighter just one resident who help the community.
2. What are some of the major causes of fire in Khlong Toei?
   Electric short.
3. How often is there a fire in Khlong Toei?
   3-4 times a year.
4. What is necessary for firefighters to respond quickly to fire?
   -
5. What is necessary for firefighters to fight the fire effectively?
   Some kind of smoking machine.
6. What is necessary for firefighters to evacuate people quickly from the fire area?
   -
7. *He just said that the houses are all too close together so, it's hard to get to the very inside when there's a fire*
8. Are there fire prone areas that cannot be accessed easily by firefighters?
   Lock 1-2-3 are the most risky area that fire can happen because the houses are made of wood and they are all too close together.
9. Have the cameras ever been used to help assist fighting fires in Khlong Toei?
   CCTVs can't really help about fire.
10. Do the firefighters work with the police officers?
    Never.
11. Do you think the police would allow the firefighters to somehow use the CCTV cameras in order to help fight fires in Khlong Toei? In your opinion, will this be beneficial to the community? How?
    There's no useful cameras to be used for helping the fire.

Appendix C: Khlong Toei Resident Interview Data

Table 1: Resident Responses for Uses of CCTV Cameras

Resident Response	Number of Responses
Crime	18
General Surveillance	4
Bad Occurrences	3
Safety	3
Fire	2
Traffic Accidents	1

Table 2: Resident Responses for Types of Crime the CCTV Cameras are used to Address

Resident Response	Number of Responses
Drug Use/Dealing	13
Theft	4
Crime in General	10

Table 3: Resident Responses for Attitudes toward the Presence of the CCTV Cameras

Resident Response	Number of Responses
Positive Attitude	12
Negative Attitude	3
Not Uncomfortable/General Indifference	8

Table 4: Resident Responses for Preference of Number of CCTV Cameras

Resident Response	Number of Responses
More Cameras	19
Enough Cameras	3
Less Cameras	1

Table 5: Residents Responses for Dangerous Places in the Khlong Toei Slum

Location to Install More Cameras	Number of Responses
Everywhere	7
Sois/Side Streets	6
Locks 1, 2, 3	4
70 Rai	2
Locks 4, 5, 6	1
School	1

Table 6: Locations Recommended by Residents for CCTV Camera Installation

Location to Install More Cameras	Number of Responses
Sois/Side Streets	4
The Inside of the Slum	3
Risky/Blind/Dark Spots	3
Little Area	2
Where there are No Cameras	2
Car Park	1
Community Playground	1
Everywhere	1
Flat 13	1
Flat 14	1
Footway	1
In Front of Resident's Store	1
School	1
Temple	1

Table 7: Resident Responses for Viewing the CCTV Camera Feeds

Resident Response	Number of Responses
Would Want to See Feeds	12
Would Not Want to See Feeds	2
Would Not Care About Seeing Camera Feeds	7

Table 8: Resident Responses for Helpfulness of the CCTV Camera Feeds

Resident Response	Number of Responses
Helpful	2
Heard they were Helpful	3
Not Helpful	5

Table 9: Resident Reponses for Helpfulness of Authorities

Resident Response	Number of Responses
Not Hard to Get Help From	7
Hard to get Help From/Not Helpful	4
Helpful	3
Show Up Late	3
Some Authorities More Helpful Than Others	2

Appendix D: Crime Statistics from the ONCB

Table 10: Occurrences of Crime in "Safe and Warm House" Community, Khlong Toei Community

| Allegation | # of Cases | # of Offenders | Warm and Safe House | | | | | | | |
| | | | 70 Rai | | Lock 1-2-3 | | Lock 4-5-6 | | Other Communities | |
			# of Cases	# of Offenders	# of Cases	# of Offenders	# of Cases	# of Offenders	# of Cases	# of Offenders
Child abuse	1	1	0	0	0	0	0	0	1	1
Drunk driving	3	3	0	0	0	0	0	0	3	3
Mischief	1	1	0	0	0	0	0	0	1	1
Attempted murder	2	3	0	0	0	0	0	0	2	3
Owning guns without a permit	1	1	0	0	0	0	0	0	1	1
Stealing	1	1	0	0	0	0	0	0	1	1
Gambling	9	13	1	1	0	0	0	0	8	12
Snatch and run	7	24	1	1	1	3	1	5	4	15
Carrying weapons in public	2	2	0	0	0	0	0	0	2	2
Attempted suicide	2	9	0	0	0	0	0	0	2	9
Battery & assault	1	1	0	0	0	0	0	0	1	1
Selling pirated goods	1	1	0	0	0	0	0	0	1	1
Recklessly driving a motorcycle	1	1	1	1	0	0	0	0	0	0
Total:	32	61	3	3	1	3	1	5	27	50

Table 11: Frequency of CCTV Camera Feed Requests

| Allegation	Year			
	2008	**2009**	**2010**	**2011**
Accident	0	42	109	378
Theft	0	64	73	99
Assault	0	35	35	21
Other	0	13	29	22
Total:		154	246	520

Appendix E: Khlong Toei CCTV Camera Maps
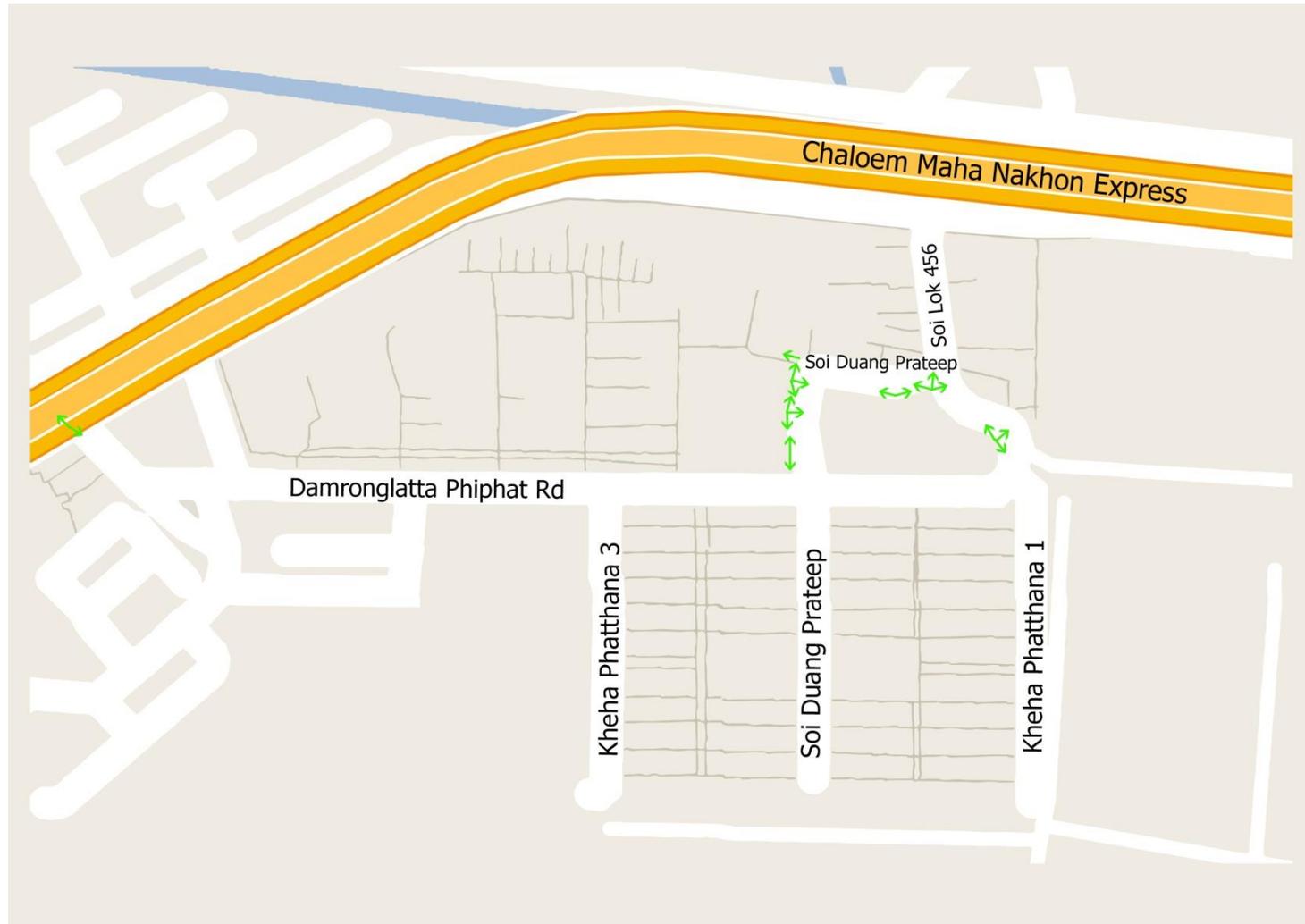
**Figure 27: Khlong Toei Bangkok Metropolitan Administration CCTV Camera Locations**
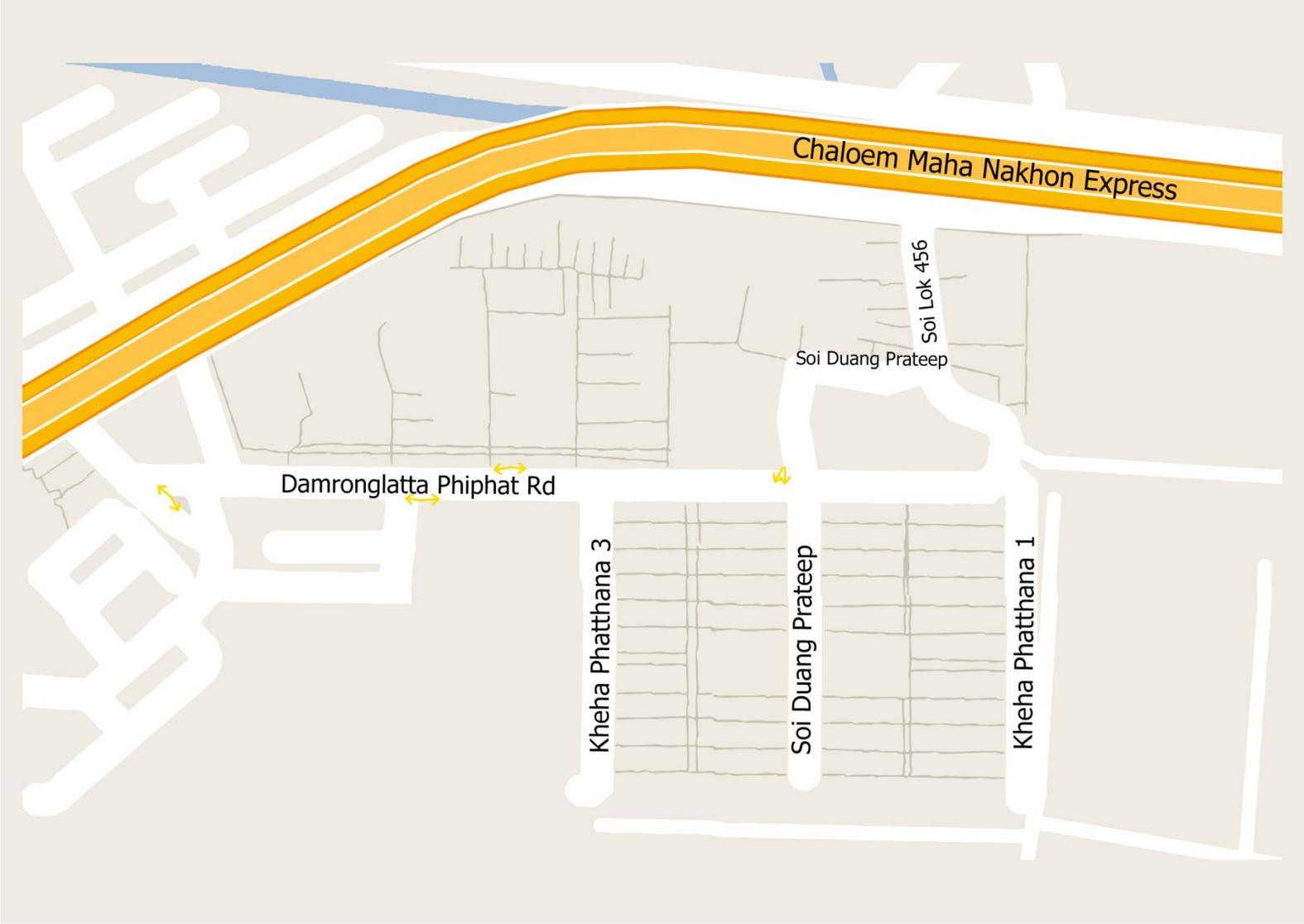
**Figure 28: Khlong Toei CAT Telecom CCTV Camera Locations**
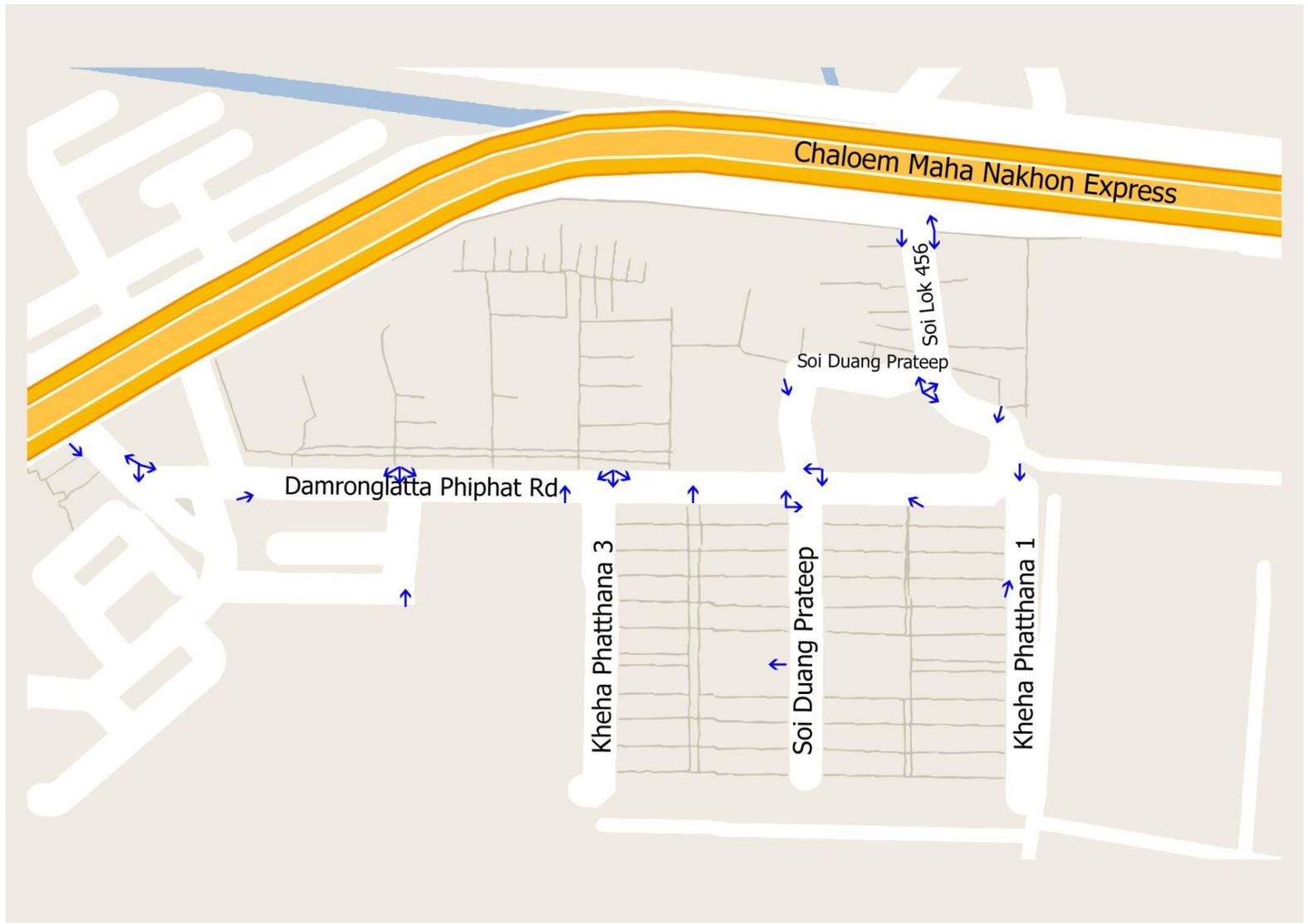
Figure 29: Khlong Toei Office of Narcotics Board CCTV Camera Locations
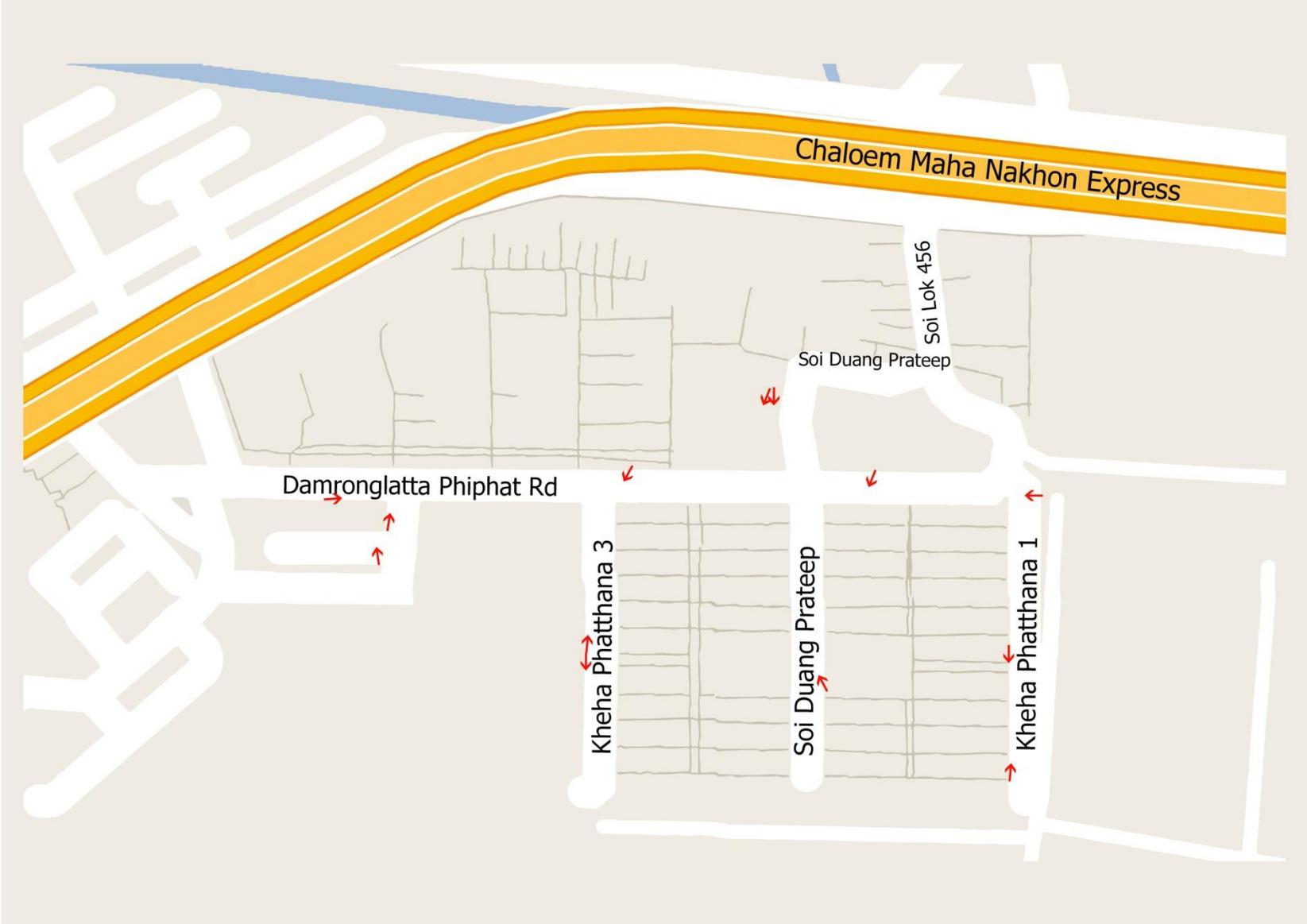
Figure 30: Khlong Toei Unknown Owner CCTV Camera Locations
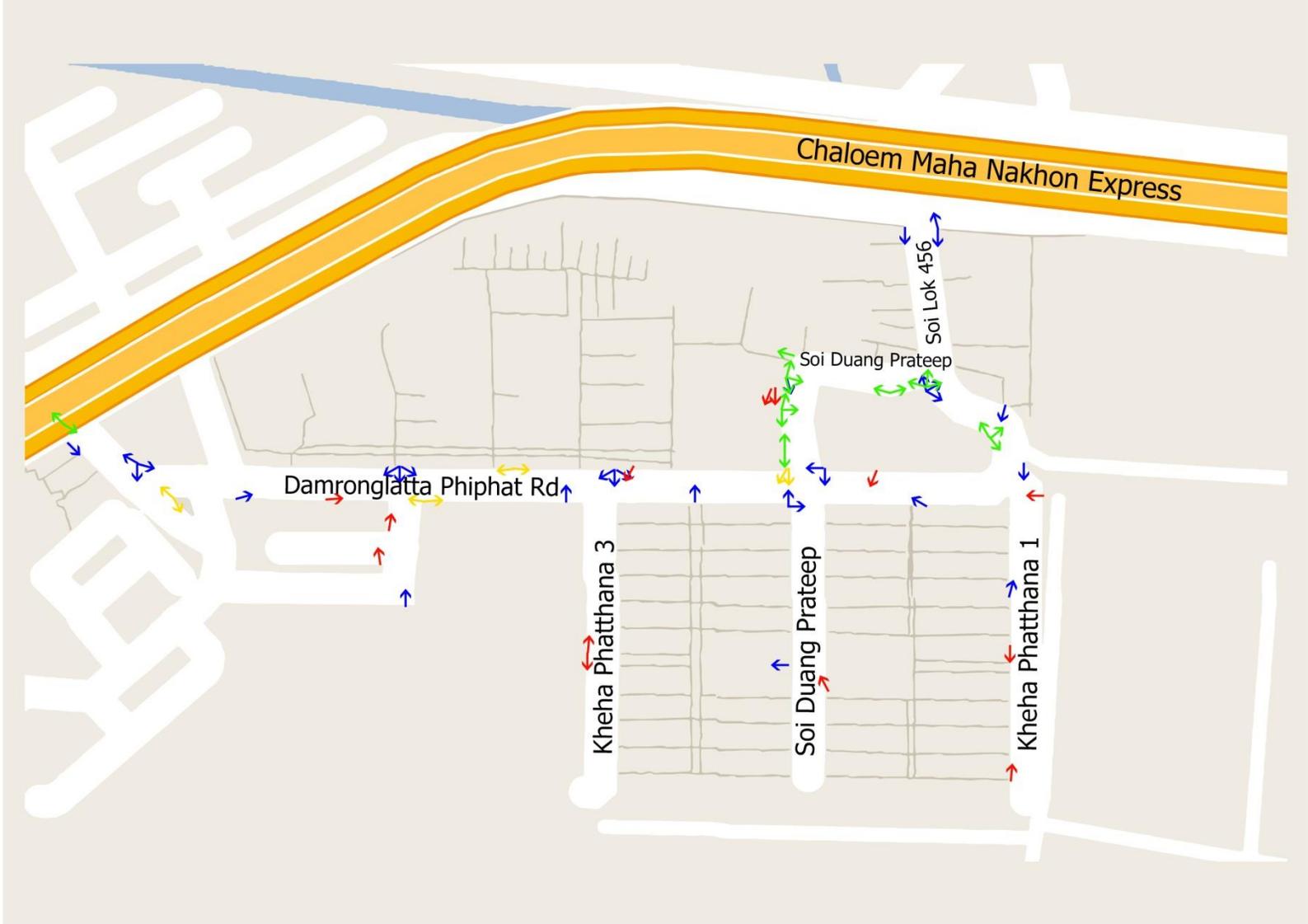
Figure 31: All Recorded Khlong Toei CCTV Camera Locations

Appendix F: Informative Media

Appendix F.1: English Pamphlet

Instructions On How To Get Camera Feeds

1. Go to the police by yourself or with a community leader and fill out a police report with the details of the crime that occurred.
2. Bring the report to the local ONCB office in Khlong Toei (Warm and Safe House Program) or the BMA office in the Sao ChingCha district.
** You should immediately perform the first and second step because some of the feeds are only stored for 7 days.
3. Report the details of the incident as specifically as possible, especially the date, time, and location to the police officers of local ONCB or BMA in order to look through the feeds.
4. After the right video is found, the authorities will send the feeds to the police station that you first reported the incident to.
5. The police will then contact you or the community leader that you went with to let you know that you can access the video. They will then start trying to find the criminal and prosecute them if possible.

Contact Information

BMA Camera   ONCB Camera

Telephone: 02-671-4045
Email: dpffound@ksc.th.com
Website: dpf.or.th
Facebook: facebook.com/dpffound

มูลนิธิดวงประทีป
DUANG PRATEEP FOUNDATION

Bangkok Metroplotin Administration
Telephone: 02-354-1204

Office of Narcotics Control Board
Telephone: 1386
Warm House Project:
Telephone: 02-3503136-8

Khlong Toei Police Station
Telephone: 02-249-8888-90
Email: info@tharueapolice.com
Website: tharueapolice.com

No doubt...

Who owns the cameras?

Who to contact?

มูลนิธิดวงประทีป
DUANG PRATEEP FOUNDATION

WPI

**Figure 32: Informational side of English pamphlet**
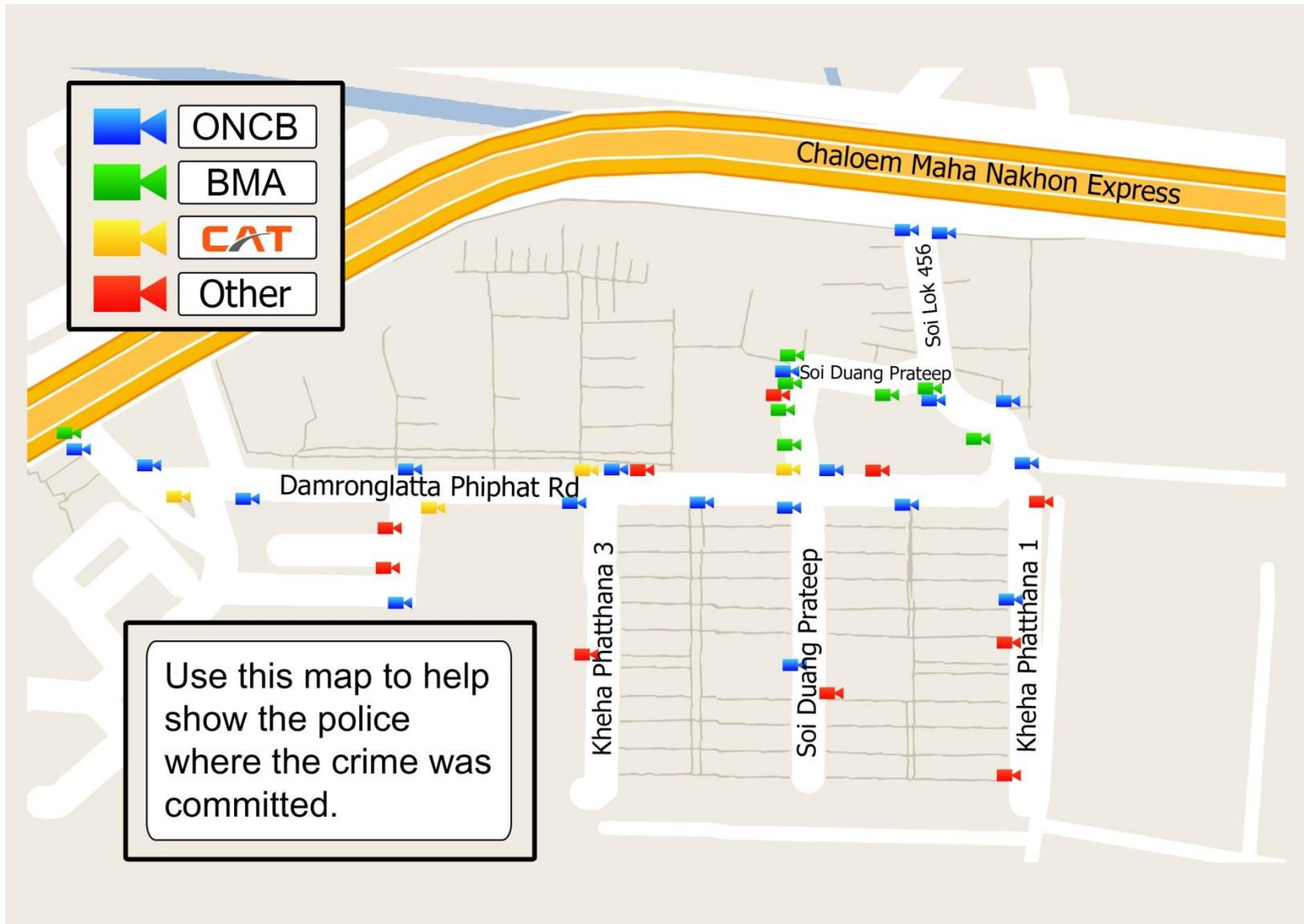
Figure 33: Map side of English pamphlet

Appendix F.2: Thai Pamphlet

Figure 34: Informational side of Thai pamphlet

Figure 35: Map side of Thai pamphlet

Appendix F.3: Interactive Map
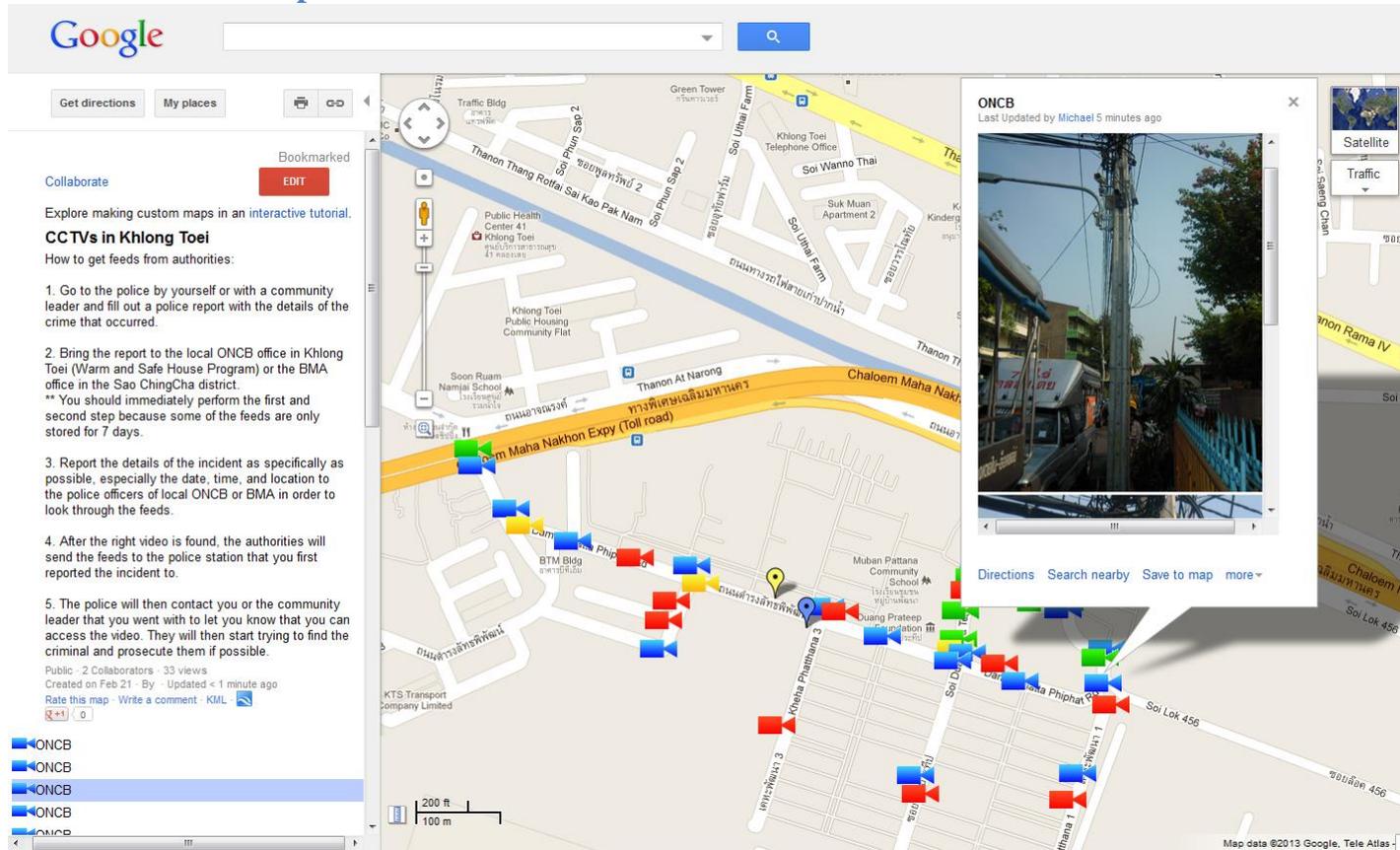
Figure 36: Interactive map. This can be found and interacted with online here.