Assessing Smart City Initiatives in Kowloon East

Cameron Currie

Rebecca Dall'Orso

Monineath Khun

Max Li

44-CXP-C154

Assessing Smart City Initiatives in Kowloon East

An Interactive Qualifying Project Report

submitted to the faculty of Worcester Polytechnic Institute

in partial fulfillment

for the degree of Bachelor of Science

Sponsoring Agency: Urban Design & Planning Consultants Limited

Submitted to:

On-Site Liaison: Dr. Sujata Govada, Managing Director

Project Advisor: Creighton Peet, WPI Professor

Project Co-Advisor: Jennifer McWeeny, WPI Professor

Submitted by:

Cameron Currie

Rebecca Dall'Orso

Monineath Khun

Max Li

Date submitted: 4 March 2016

Abstract

The area of Kowloon East is in need of redevelopment and a plan is in place to do so. Our project focused on evaluating the proposed plan and determining which parts encouraged Smart City growth. We chose to focus on connectivity throughout the area and identify ways that would improve upon the existing plan. Using observations, a survey and interviews we developed suggestions that can improve the connectivity of Kowloon East, and also community participation and the region's image.

Acknowledgements

We would like to thank everyone from the Urban Design and Planning International team that supported us: Dr. Sujata Govada, Timothy Rodgers, Frank Wong, and Widemar Spruijt. Without their assistance we would not have been able to be as successful as we were. Everyone was very supportive of us at every step of the process and allowed us to enjoy not only our project but Hong Kong as well.

We also would like to thank everyone at Energizing Kowloon East Office. They were very helpful and supportive throughout our time in Hong Kong. A special thanks to Tracy Wong and Winnie Ho for providing us with additional information through workshops and interviews. In addition, Eddy Lau from the Green Building Council of Hong Kong also gave us some of his time to conduct an interview and provided us with information we otherwise would not have been able to obtain. We would also like to thank Professor Nelson Chen, director of the Chinese University of Hong Kong School of Architecture, for providing us with a space where we could work and welcoming us to the school.

Lastly, we would like to thank our advisors, Professors Creighton Peet and Jennifer McWeeny, for guiding us through these two terms. This report would not have been what it was without their constant feedback and continuing support of our growth as students.

Authorship

Section of Report	Primary Author(s)
Abstract	Currie
Acknowledgements	Currie
Authorship	All
Table of Contents	Currie
Executive Summary	Currie
1.0 Introduction	Li
2.0 Background	All
2.1 Definition of a Smart City	Khun
2.2 Theory of Smart Cities	Dall'Orso
2.3 Smart City Implementations	Dall'Orso, Khun, Li
2.3.1 Barcelona	Khun
2.3.2 London	Li
2.3.3 New York	Dall'Orso
2.4 A History of Hong Kong	Li
2.5 Current Day Hong Kong	Currie
2.6 Summary	Khun
3.0 Methods	All
3.1 Research on Smart City Features	Currie, Dall'Orso, Khun
3.1.1 Environmentally Friendly Linkage System	Khun
3.1.2 Grade Separation	Dall'Orso
3.1.3 Interview with City Planner	Currie
3.1.4 Energizing Kowloon East Office Workshop	Currie
3.1.5 Briefing on Pedestrian Walkways	Currie
3.2 Potential Improvements to the Smart City Plan	Khun, Li
3.2.1 Observation of Areas with Heavy Pedestrian Traffic	Li
3.2.2 Looking at Crosswalks	Li
3.2.3 Public Environment	Khun
3.3 Obtain Opinions of the General Public	Dall'Orso
3.4 Summary	Dall'Orso
4.0 Results and Analysis	All
4.1 Identify Points of Concern in Current Plans	Dall'Orso, Khun
4.1.1 Environmentally Friendly Linkage System Analysis	Khun
4.1.2 Grade Separation Pedestrian System Analysis	Dall'Orso
4.2 Analysis of Pedestrian Traffic	Currie, Li
4.3 Improving Public Environment	Currie, Khun

4.4 Stakeholder Opinions of Regeneration Plans	Dall'Orso
4.5 Summary	Li
5.0 Conclusions and Recommendations	Dall'Orso, Li
References	All
Appendix A: Sponsor Description	Khun
Appendix B: Interview with Professor McCauley	Dall'Orso
Appendix C: Interview with Hong Kong Green Building Council	Khun
Appendix D: Interview with Energizing Kowloon East Office City Planner	Khun
Appendix E: Sample Survey Given	Dall'Orso, Li
Appendix F: Survey Data	Dall'Orso, Khun
Appendix G: Survey Charts and Results	Dall'Orso, Khun
Appendix H: Data Obtained From Following People Within Kwun Tong and Kowloon Bay	All
Appendix I: Crosswalks	All
Appendix J: Congestion	Currie, Khun, Li
Appendix K: Energizing Kowloon East Workshop Notes	Li
Appendix L: Elevated Walkway Workshop Notes	Khun

Table of Contents

Cover Page i
Title Page ii
Abstract iii
Acknowledgements iv
Authorship v
Table of Contents vii
Table of Figures x
Executive Summary xi
1.0 Introduction 1
2.0 Background 4
2.1 Definition of a Smart City 4
2.2 Theory of Smart Cities 5
2.2.1 Management and Organization 6
2.2.2 Technology 6
2.2.3 Governance 7
2.2.4 Policy Context 8
2.2.5 People and Communities 8
2.2.6 Economy 8
2.2.7 Existing Infrastructure 9
2.2.8 Natural Environment 10
2.3 Smart City Implementations 10
2.3.1 Barcelona 10
2.3.2 London 13
2.3.3 New York 15
2.4 A History of Hong Kong 18
2.4.1 Hong Kong 18
2.4.2 Kowloon East 20
2.5. Present Day Hong Kong 20
2.5.1 Hong Kong Smart City Implementations 21
2.5.2 Energizing Kowloon East Office's Proposed Plan 22
2.6 Summary 31

3.0 Methodology 33
3.1 Identify Smart City Features 33
3.1.1 Environmentally Friendly Linkage System 34
3.1.2 Grade Separation 34
3.1.3 Energizing Kowloon East Office City Planner 35
3.1.4 Energizing Kowloon East Office Workshop 35
3.1.5 Briefing on Pedestrian Walkways 36
3.2 Potential Improvements to Smart City Plans 36
3.2.1 Observations of Areas with Heavy Pedestrian Traffic 37
3.2.2 Identifying Needy Crosswalks 38
3.2.3 Improving Public Environment 41
3.3 Identifying Opinions of the General Public on the Regeneration Plan 41
3.4 Summary 42
4.0 Results and Analysis 43
4.1 Identify Points of Concern in Current Plans 43
4.1.1 Environmentally Friendly Linkage System Analysis 43
4.1.2 Determining Value of Elevated Walkways 47
4.2 Identifying Pedestrian Traffic Improvements 49
4.2.1 Congestion and Crosswalks 49
4.2.2 Improvements to Hoi Yuen Road 55
4.3 Improving Public Environment 60
4.4. Stakeholder Opinions of Regeneration Plans 66
4.5 Summary 71
5.0 Conclusions and Recommendations 73
5.1 Improving Connectivity and Image in Kowloon East 73
5.2 Recommendations 75
5.3 Further Research 77
References 78
Appendix A: Sponsor Description 82
Appendix B: Interview with Professor McCauley 83
Appendix C: Interview with Hong Kong Green Building Council 85
Appendix D: Interview with Energizing Kowloon East Office City Planner 87

Appendix E: Sample Survey Given 89
Appendix F: Survey Data 91
Kwun Tong Promenade Weekday Results 91
Kwun Tong Promenade Weekend Results 100
Kai Tak Runway Park Results 110
Appendix G: Survey Charts and Results 124
Weekday Results 124
Weekend Results 125
Overall Results 126
Kwun Tong Promenade Results 127
Kai Tak Runway Park Results 128
Appendix H: Data Obtained From Following People Within Kwun Tong and Kowloon Bay 129
Appendix I: Crosswalks 133
Crosswalks in Kowloon Bay: First Half of the Criteria 133
Crosswalks in Kowloon Bay: Second Half of the Criteria 136
Crosswalks in Kwun Tong: First Half of the Criteria 139
Crosswalks in Kwun Tong: Second Half of the Criteria 141
Appendix J: Congestion 144
Congestion in Kowloon Bay 144
Congestion in Kwun Tong 144
Appendix K: Energizing Kowloon East Workshop Notes 145
Appendix L: Elevated Walkway Workshop Notes 148

Table of Figures

Figure 2.1: LinkNYC Tablets in Use (Hawkins, 2016) 16
Figure 2.2: Smart Screen Concept Photo (Frazier and Touchet, 2012) 17
Figure 2.3: Conceptual Master Plan 4.0 (Ho, 2015) 23
Figure 2.4: Example of Beautified Alleyway 24
Figure 2.5: Kwun Tong Promenade 26
Figure 2.6: Tsun Yip Street Playground (Ho, 2015) 26
Figure 2.7: Concept Image of What the Tsui Ping River Will Look Like (Ho, 2015) 27
Figure 2.8: Picture of Kwun Tong Action Area currently (Ho, 2015) 28
Figure 2.9: Area of Kai Tak Being Redeveloped (Civil Engineering and Development Department, 2013) 31
Figure 3.1: Visited Intersections, Kowloon Bay 40
Figure 4.1: KTTL Alignment and Taxiway Bridge Options for the EFLS (Legislative Council Panel on Development, 2014) 44
Figure 4.2: Most Preferred Type of Pedestrian Crossing Facility (Designing Hong Kong, 2013) 48
Figure 4.3: Paths taken by people who were followed 50
Figure 4.4: Showing an example of yellow painted lines at Hoi Yuen Road 51
Figure 4.5: Showing an example of painted “Look Left” and “Look Right” 51
Figure 4.6: The intersection of Hing Yip Street and King Yip Street 52
Figure 4.7: The intersection of Hung To Road and King Yip Street 53
Figure 4.8: Crossing of Wang Kwong Road (Google Maps, 2011) 54
Figure 4.9: Intersection of Wang Kwong Road and Kai Lai Road (Google Maps, 2011) 54
Figure 4.10: Hoi Yuen Road around 11 AM 56
Figure 4.11: Hoi Yuen Road Intersection at Lunch time Pedestrian Peak 57
Figure 4.12: Multiple Cars Stopped on Hoi Yuen 59
Figure 4.13: Fully Beautified Alleyway 61
Figure 4.14: Alleyway In Kwun Tong with no signage 62
Figure 4.15: An Example of an alleyway with initial signage 63
Figure 4.16: Empty walls of Ngau Tau Kok underground walkway 65
Figure 4.17: How people reached the park 67
Figure 4.18: Percentage of people who have lived in Kowloon East for varying time periods 68
Figure 4.19: Percentage of people who have visited parks for varying periods of time 68
Figure 4.20: Are You Aware of the Initiatives of EKEO (Kwun Tong Promenade) 69
Figure 4.21: Are You Aware of the Initiatives of EKEO (Kai Tak Runway Park) 70
Figure 4.22: What Do You Want to See More Of (Kwun Tong Promenade) 71
Figure 4.23: What Do You Want to See More Of (Kai Tak Runway Park) 71

Executive Summary

The area of Kowloon East in Hong Kong had been a center of manufacturing in the past and had been able to support Hong Kong through the trade that had resulted from the export of the goods manufactured in that area. More recently, however, with a changed economy that no longer focused on manufacturing, the Hong Kong government believes that Kowloon East could be better used as a second business district to support and expand upon the service oriented economy that currently exists. This would replace the now stagnant manufacturing sector that had existed in Kowloon East since its inception.

In order to turn the area of Kowloon East into the second business district of Hong Kong, the government created a plan to rebrand the whole area. This plan was created with five different focuses in mind, one of which is to cultivate Smart City initiatives. A Smart City has many different goals: Kowloon East's Smart City wants to focus on using technology to enhance pedestrian and vehicular accessibility, manage the facilities of the district, circulate information digitally, and attract more businesses and tourists. Even though there are many benefits to having a Smart City, there are still many factors that need to be considered for this specific area, Kowloon East, in order to enable to become a Smart City zone.

The Energizing Kowloon East Office (EKEO) was founded to develop a plan that addresses all focuses of a Smart City. In addition, Urban Design & Planning Ltd. (UDP), a private urban design firm, had already been using the Kowloon East region as a case study of urban regeneration, looking at how the changes had and had not taken into account sustainability; considering environmental, economic, and sociocultural variables.

The goal for this project was to evaluate Smart City initiatives in Kowloon East by taking into account how well the plan has encouraged smart growth in the area. In order to accomplish

this goal, we focused on three main objectives. First, we identified features of the proposed plans that encouraged Smart City growth, by attending a workshop provided by EKEO. Using our own archival research as a supplement to this workshop, we determined which features of the plan encouraged Smart City growth, focusing our research on connectivity in terms of pedestrian walkways and public transportation, and community participation and the image of the area in terms the public's awareness of the area's future. Second, we determined potential modifications to the plan that would improve the quality of life in Kowloon East, using the information we gathered while researching the regeneration plan. Lastly, we surveyed pedestrians in Kowloon East to determine how they got to the waterfront park, what improvements they would like to see in the area, and their awareness on the EKEO redevelopment plans. In achieving these objectives, we focused on pedestrian connectivity within this area and well as the image of Kowloon East in the eyes of the public.

Based on our research, we have provided suggestions that should help with the connectivity, community participation and the imaging of EKEO's initiatives. We propose that at one of the main points of congestion in the Kwun Tong area of Kowloon East, at Hoi Yuen Road, the government should expand the sidewalks by removing a lane. In addition, we identified all crosswalks in Kowloon East that needed improvements and could be fixed quickly.. We also evaluated the proposed elevated walkways and concluded that elevated walkways are not desired by many pedestrians and would not result in less traffic on the streets. We recommend that more research be done to determine whether elevated walkways would improve the connectivity or would just hinder pedestrians. To improve the image of EKEO's initiatives and Kowloon East as a region, we suggest that Ngau Tau Kok MTR station subway should have a digital screen and artwork that shows the future vision of Kowloon East, thus improving the

image of the station and the area. In addition, there are many alleyways in the area, mainly in Kwun Tong, which can be improved to encourage more pedestrians to utilize them, helping reduce foot traffic on congested sidewalks.

Our recommendations are focused on improving the connectivity, community participation and imaging of the area. We believe that Kowloon East has the potential to become a great Smart City.

1.0 Introduction

Cities worldwide have an urgent need to become smarter in how they manage their resources and infrastructure in order to cater to the needs of existing and future residents (Naphade et al., 2011). In doing this, cities have taken into account up to eight different aspects of their identity: management and organization, use of technology, governance, policy context, people and communities, economy, existing infrastructure, and the natural environment (Chourabi et al., 2012). These eight aspects contribute to the concept of a Smart City, a city that focuses on capitalizing on new technologies and insights to transform and enhance the area (Central Policy Unity, 2015). Because no two cities are alike the implementation of the Smart City concept is usually adapted for specific cities. Hong Kong is no different.

Hong Kong is a large city with a population of 7.24 million, with each of its districts having various kinds and levels of activity (Hong Kong Government, 2015). The Kowloon East region of the city was developed primarily with industrial uses in mind. This has resulted in a district that is hard to travel through as a pedestrian. Ever since Hong Kong started shifting to a service-based economy, the physical structure of Kowloon East has become less appropriate. The government of Hong Kong was looking to address this problem and opened the Energizing Kowloon East Office (EKEO) in an attempt to regenerate the region.

EKEO has proposed a regeneration plan to turn Kowloon East into a Smart City with an emphasis on smart data/technology, low carbon green community, and walkability/mobility. Through these changes, they are attempting to make Kowloon East more attractive to visitors, workers, and residents.

Three comparable cities that have incorporated the Smart City concept into their operations already are New York City, USA (New York Mayor's Office of Tech & Innovation, 2015), London, England (Smart London Plan, 2015) and Barcelona, Spain (Laursen, 2014). In these three cities, Smart City development has been a site specific initiative, with high consideration put on certain characteristics over others depending on the unique requirements of each location.

The current plans to regenerate Kowloon East have been in progress for the last few years, with EKEO having been opened with the sole purpose of undertaking them. At the same time, Urban Design & Planning Ltd. (UDP), a private urban design firm, had been using the Kowloon East region as a case study of urban growth, looking at how the growth had and had not taken into account environmental, economical, and sociocultural features. Yet to date there had been no in-depth study of EKEO's plans to see if they were achieving sustainable growth in Kowloon East.

The purpose of this project was evaluate the current plans to regenerate Kowloon East into a Smart City that can serve as a secondary Central Business District, taking into consideration how the plans encourage smart growth. In order to achieve the purpose of our project, we had three objectives that we completed. Our three objectives were to research on Smart City features, determine potential improvements to the Smart City Plan, and obtain opinions and facts from the general public that relate to the regeneration plans in Kowloon East. We completed these objectives through archival research, interviews, direct observations, and a survey of the public. By completing these objectives, we were able to determine how far Kowloon East has progressed in its development to become a Smart City. We hope that our

research results will help EKEO to transform the region into a true Smart City, ushering in a new era of growth and development for Hong Kong.

2.0 Background

In this chapter we provide the background information needed to understand the Smart City concept. We define what a Smart City is and the characteristics that make up a Smart City. We discuss three other cities in other parts of the world: Barcelona, London, and New York, to explain what Smart City initiatives they already have or are going to implement as examples of how cities are becoming Smart.. Finally, we discuss Hong Kong and the Smart City initiatives being undertaken there, with a focus on what has been happening in Kowloon East.

2.1 Definition of a Smart City

The concept of a Smart City requires a city to make use of smart data technologies and information and communication technology (ICT) infrastructure to achieve a goal of improving the quality of services provided within the city (Cheng, 2015). The end goal of this concept is to encourage citizens to interact with the city in a smarter way with the use of technologies and databases. This is not a universal definition of a Smart City, but it summarizes the main idea. Many people, organizations and countries define a Smart City slightly differently, factoring in conditions within each region. Three different definitions of a Smart City are as follows:

(1) "The concept of a Smart City is not static, there is no absolute definition of a Smart City, no end point, but rather a process, or series of steps, by which cities become more 'livable' and resilient and, hence, able to respond quicker to new challenges" (U.K. Department of Business & Skills, 2013, p.1).

(2) "A Smart City brings together technology, government and society to enable the following characteristics: smart economy, smart mobility, a smart environment, smart people, smart

living, and smart governance" (Institute of Electrical and Electronics Engineers, 2015, p.1).

(3) "The identified eight key aspects that define a Smart City are: smart governance, smart energy, smart building, smart mobility, smart infrastructure, smart technology, smart healthcare and smart citizens" (Frost & Sullivan, 2014, paragraph 4).

The major ideas in these definitions overlap, but they are not exactly the same. Each has a different view of the elements that they think are more important. Therefore, defining a Smart City for Kowloon East in Hong Kong involves taking into the account the government's end goal and the most important factors on which the area needs to improve.

2.2 Theory of Smart Cities

In creating a smart city, eight major factors have to be taken into consideration (Chourabi et al., 2012). These factors include: Management and Organization, Technology, Governance, Policy Context, People and Communities, Economy, Existing Infrastructure, and the Natural Environment, which will be discussed below. A Smart City does not include eight distinct features that every current Smart City has, but rather it represents how a city combines these eight factors to make them work for that city.

The goal of a Smart City is to make better use of public resources, increase the quality of services offered to citizens, and reduce operational costs of the public administration (Miller & Safari Books, 2015). A Smart City should improve the quality of life of the citizens and enhance the city's sustainable growth as well as its competitiveness. It is believed that Smart Cities have become more popular in the last six years due to Generations Y and Z becoming adults. Being the first generation of creative young people who are always mobile, they need an environment that is attractive to them (Harrison & Donnelly, 2010). All eight factors mentioned above are

those that make cities attractive to the people of Generations Y and Z and improve the cities by providing the features that residents would want.

2.2.1 Management and Organization

One of the factors that a Smart City must possess to be successful is good management and organization. In the 18tthh century, less than five percent of the world's population lived in a city (Harrison & Donnelly, 2010). By contrast, it is estimated that around 66% of the world's population will be living in cities by 2050, which means that cities need to be able to accommodate larger populations as well as be able to satisfy their residents and make them want to be a part of the community and help sustain it (United Nations, 2014). Good communication among different city entities is needed within a smart city to ensure that all information that is needed by different agencies and organizations is shared among them effectively and in a logical manner.

2.2.2 Technology

When one hears the word "technology", one can often think of the word "smart". For example, a common everyday form of technology is a "smart-phone." Therefore, another factor that a smart city needs to possess is technology that is applied to its infrastructure and services (Chourabi et al., 2012). With Generations Y and Z being the first two generations to grow up always connected via mobile devices, they need a network to sustain this habit. Smart Cities implement high speed internet options such as fiber optic communication channels. They also provide public-access wireless points for citizens to connect to the internet (Nam & Pardo, 2011).

Internet connectivity is not the only form of technology that can be implemented to make a city "smart". In terms of using technology for infrastructure, cities add radio-frequency

identification (RFID) cards into their metro systems to allow quicker movement within the stations, they use EZ-PASS systems that allow for continuous movement of traffic on a toll road without needing to stop, as well as touch screens in subway stations to provide up-to-date information on the current status of trains (Metropolitan Transportation Authority, 2016).

Any form of technology that can be considered as aiding someone in their routine activities, such as: driving, using public transportation, making a phone call, and finding a place to eat can be used in the development of a Smart City in order to make it more "smart." There is an endless number of different technologies available in the world currently, and in a later section, we will discuss how some current Smart Cities have implemented technology.

2.2.3 Governance

Governance does not only refer to the government and how the government runs, but more specifically it includes all stakeholders invested in a Smart City. A Smart City is not reliant only on its government, but often times technology companies, power companies, transportation companies, and other specialized services will be involved in the smart city as well to aid the local government with the specialties that they can provide (Chourabi et al., 2012).

All stakeholders that work together in a Smart City need to take into account characteristics that bind them together as a community (Chourabi et al., 2012). The factors of governance that bind the stakeholders together are:

- Collaboration
- Leadership
- Participation
- Communication
- Data-exchange

- Service and Application Integration
- Accountability
- Transparency

The factors listed above are ones that all stakeholders in a Smart City should adhere to in order to ensure that collaboration, data exchange, service integration, and communication flow among them (Chourabi et al., 2012).

2.2.4 Policy Context

With new technological components and stakeholders invested in a Smart City, new policies need to be developed to meet the requirements of new initiatives that take place (Chourabi et al., 2012). Common policies that are adopted by smart cities are ones that deal with low carbon emissions, energy efficient building guidelines, and other policies related to a sustainable environment.

2.2.5 People and Communities

When conceptualizing a Smart City, one of the often overlooked factors is the actual people who will be living in it (Rios, 2012). A Smart City provides a re-birth to a city, which could in turn result in a better quality of life for local residents by providing them new opportunities. A better quality of life can also apply to providing better healthcare, education, and safety to the residents (Dirks & Keeling, 2009).

2.2.6 Economy

The economy is a major factor in any city, especially in Smart Cities, because the economy is what enables the initiatives to be realized. A Smart City needs to have a "smart economy" in which the economy is competitive, innovative, encourages entrepreneurship and integrates the national and global markets (Griffinger, 2008). What makes a Smart City's economy so different

from that of a normal city is that it provides central hubs to companies to bring competition and innovation together. Professor Stephen McCauley (personal communication, December 12, 2015), a professor in WPI's Interdisciplinary & Global Studies Division (IGSD), previously worked on helping to turn Worcester, Massachusetts, into a Smart City. One of the major factors he mentioned was the economy. He explained that within a Smart City economy is the hubs that Smart Cities provide for certain technologies. Prof. McCauley mentioned the example of Silicon Valley, California, where there is a hub of computer technology based companies that compete against one another, but at the same time they provide innovative ideas to one another. This provides for a thriving economy where hubs are located for job creation, business creation, workforce development, and improvements in productivity.

2.2.7 Existing Infrastructure

Existing infrastructure is the seventh of the eight factors that need to be taken into consideration for a Smart City to thrive (Chourabi et al., 2012). Currently, there is little literature that focuses on existing infrastructure in the development of smart cities. However, cities need to include their existing infrastructure in their Smart City plans, such as turning old rail tracks and areas underneath overpasses into parks, turning back alleys into art venues, and making WiFi available and free in public gathering spaces. Another feature of existing infrastructures that needs to be taken into consideration is the condition of the sidewalks. Sidewalks can deteriorate over time and are usually left untouched, which could lead to pedestrians having to struggle to walk through an area. Smart Cities include sidewalks that are easy to traverse and if need be, expanded upon to accommodate the amount of pedestrians that can use it.

2.2.8 Natural Environment

The natural environment also is a factor in a Smart City (Chourabi et al., 2012). If a city does not utilize renewable resources, the city will become extremely polluted and undesirable to live in. Prof. McCauley (personal communication, December 4, 2015) believes that initiatives such as using green energy like solar panels throughout cities would protect the environment and would further protect the natural resources of the area. Having a good environment within a city makes it more livable for the residents and thereby more enjoyable and attractive.

2.3 Smart City Implementations

The Smart City concept has been widely incorporated into the development of many areas (Chourabi et al., 2012). Most major international cities have used their own interpretation of the idea to improve the lives of their citizens. Each city places emphasis on different aspects of the Smart City concept, depending on their unique needs. In the following section, we discuss the Smart City implementations in three different cities, in order to provide a better understanding of the practical interpretations of a Smart City. We have selected Barcelona, London, and New York. These cities provide a wide range of interpretations of the Smart City idea.

2.3.1 Barcelona

With more than 2,000 years of history, Barcelona nowadays is known as the capital city of the autonomous region of Catalonia in Spain (Rodriguez, 2015). Barcelona is the second most populated city in Spain with a population of 1.6 million (World Population Review, 2015). It was founded as a Roman City and has continued to thrive as an important city and cultural center to the present day (Barcelona, 2015). Barcelona has always been characterized by its spirit of

innovation and enterprise, making it a prime example of the Smart City concept (BCN Smart City, 2015).

Barcelona's plans on becoming a Smart City were to improve the citizens' quality of life and motivate a new smart economy (Cisco, 2014). By smart economy, the planners envisioned reduced utility bills, growing city revenues, job creation, and a strategy of using new ICT technologies to change the city. Part of the solution that was proposed was to install citywide sensors that capture vital information. With the Smart City approach, the city should have annual savings of at least $100 million and at least 40,000 new jobs.

Today, Barcelona is considered to be the 1st Smart City in the Spanish state, the fourth in Europe, and the 10th in the world (BCN Smart City, 2015). It is known as the world mobile phone capital and the European capital of innovation. It wants to become a city that produces zero emissions and is self-sustainable, with neighborhoods that contribute to the welfare of the city. This vision includes projects from a wide range of areas working together and integrating technology and innovation, with the aim of ensuring that residents will benefit from both a higher quality of life and a growing economy. The Smart City initiatives in Barcelona focus specifically on these areas: public and social services, environment, infrastructure, mobility, companies and business, research and innovation, communications, tourism, citizen cooperation, and international projects.

The idea of public and social services includes open government, health and social services, education, and culture (BCN Smart City, 2015). The concept of an open government is to encourage public interaction with the government by making the procedures better and easier to access. Social care has also become one of the main government focuses, since Barcelona wants to be a city that is sensitive towards and supportive of people who need special care. As

for education and culture, they want knowledge to be easily accessible to anyone. The ability to share information will make a society more collaborative and inclusive.

In dealing with the environment, Barcelona has programs that look into smart rubbish collection, smart mobility, smart water, energy self-sufficiency, and urban transformation (BCN Smart City, 2015). Smart rubbish collection is the idea of optimizing resources by making smart treatment and management of waste, whereas Smart mobility ensures that the public is able to move around more easily. Smart water is leaning toward using tele-controlled watering and ornamental fountains to manage the city's hydrological resources. For energy self-sufficiency, the city has established a plan that will allow it to produce its own energy and as well as implementing a Smart Grid. For urban transformation, the goal is to remodel areas of the city to incorporate viable, sustainable, and efficient solutions.

Infrastructure takes into account smart lighting, and telecommunications networks (BCN Smart City, 2015). Smart lighting prioritizes illumination for pedestrian areas and improved lighting and energy efficiency levels. Telecommunication networks would incorporate new technologies into public areas in a natural way for the general public, allowing them to communicate and commute more effectively.

Mobility, companies and businesses, research and innovation, communications, tourism, citizen cooperation, and international projects are smaller focus areas (BCN Smart City, 2015). However, they do contribute and help to make Barcelona a successful Smart City. From these services and concepts, Barcelona has accomplished many initiatives that make the city live up to its Smart City name. A few examples that Barcelona has implemented include enabling a customer to pay for car parking using a mobile phone, free Wi-Fi throughout the city, and a smarter bus system that is easy to understand, intuitive, faster, and better connected. These

examples show that Barcelona has succeeded in terms of being a Smart City. The city has been able to make things more available and easier to utilize and access by the residents.

2.3.2 London

London is a truly international city (Wallace, 2015). As the capital of the United Kingdom, it serves as a global financial hub and has hosted events such as the 2012 Summer Olympics. In addition to all its current roles, London has a wide and varied history and culture, starting from its origins as a Roman merchant town (Ford, 2013). In modern times, London has been modernizing, incorporating Smart City characteristics while it does this, ensuring that the city develops in a manner that is beneficial to the various stakeholders, including the residents and local businesses. As a city with an established transportation system and footprint, the plans for growth focus on incorporating data and technology into the lives of all stakeholders.

London formally started Smart City development in 2013, when the mayor formed a Smart London Board (Smart London Board, 2013). This board was created in order to ensure that technological improvements enhanced the city not just on paper, but also for the residents. This organization generated a plan for London prioritizing initiatives that would handle the rapid growth of the city. The basis of this plan hinged on the involvement of the London residents. To reduce the number of people who cannot participate in the local government, the city created a strategy for reducing the number of residents who cannot access the internet, or who lack the technical literacy to use the internet effectively (Greater London Authority, 2015). One of the ways they have been doing this is by providing free Wi-Fi in public buildings, such as museums and libraries. In addition, they have encouraged the delivery of workshops to teach basic technology skills to those who do not have them. By connecting more people to the internet, the online services London provides can reach more of the city's residents.

Another feature that London is focusing on is providing open data about the operation of the city as a whole, adding transparency to the government (Smart London Board, 2013). To do this, they publish data on the London Datastore (Greater London Authority, 2016). In addition to providing data, the Mayor's Office has been working on displaying the data in a way that is easy to interpret. The office has also been working on gathering more information from individual boroughs and private organizations.

Many of the remaining initiatives focus on encouraging the technology industry already in London to introduce innovative ideas to the city. To do this, the Mayor's office has carried out a number of initiatives, including launching innovation competitions and rewarding companies for addressing major issues in the city (Smart London Board, 2013). One such example is the Smart Districts Challenge-Led Innovation Competition (Joy, 2015). The Mayor's office has also developed Smart London Innovation Networks (2015), which enable the connection of Smart City development companies to the developments that may utilize their services.

On top of facilitating open data and connecting technology companies to the developments that require them, the city of London has studied a variety of ways to make London into a greener city (Smart London Board, 2013). One of these studies was about reducing the amount of roadside emissions coming from small delivery vehicles through the rise of e-commerce. This study provided possible solutions for reducing numbers of deliveries by sharing loads, changing routes to avoid congestion, and promoting cooperation among delivery companies. This is one of many studies that London has conducted in the name of reducing its ecological impact.

London's Smart City development efforts have primarily focused on facilitating the interconnection of existing residents and businesses, whether to the government's public services for the former or to the regions of new development for the latter. The Mayor's office has also

provided the public with a wealth of data regarding the city, which makes decisions more informed. In addition, they have spearheaded studies on reducing London's environmental impact. These developments, on top of London's existing reputation as an international city, are what enable it to be a leading example of the Smart City initiative.

2.3.3 New York

New York has been one of the world's largest cities since the 17th century (Glaeser, 2005). Because the city is older, the city government is now constantly looking for new innovative approaches to make New York a more smart, more equitable, and more responsive city.

Starting in 2015, the New York City Mayor's Office of Technology & Innovation (2015) launched multiple projects in order to push New York to become a Smart City. In the field of Management and Organization, there is a pilot project called "IdeaScale". IdeaScale involves police precincts allowing residents in that precinct to submit quality of life issues that they want the police to address. This is an interactive program that allows residents to comment on and vote on issues they feel are the most important. This encourages communication among different neighborhoods that belong to the same police precinct as well as communication between the police and the neighborhoods.

The second project that the city government has started is the "Short Cycle Evaluation Challenge" in which teachers are matched with educational technology companies to test out new technology in classrooms (New York City Mayor's Office of Technology and Innovation, 2015). This aids the technology companies by getting their products tested more rigorously than they would have otherwise in random testing, and it aids the schools in New York City that don't

have many computers available by getting technology into classrooms, bringing their classes into the 21st century.

There has been a big push in technology in New York because the government wants to get people better connected, since everyone is always on their phones. There is a program called "LinkNYC" that would set up 7,500 posts across the city in high pedestrian traffic areas (New York City Mayor's Office of Technology and Innovation, 2015). These posts would provide Wi-Fi to anyone free of charge within 150 feet of the post. The posts would also allow free domestic calls to be made, in place of the old coin operated public telephones, and provide free charging stations as well. Around a dozen of the LinkNYC posts have Android tablets that are attached to the station (Hawkins, 2016). These tablets allow users to make phone calls, check their email, or find directions on Google Maps. They also provide USB outlets for a quick charge to one's phone through the Android tablets.

Figure 2.1: LinkNYC Tablets in Use (Hawkins, 2016)

LinkNYC is not the only pedestrian technology initiative within New York. Three entities: City24/7, Cisco, and the NYC Government are working in collaboration to bring City24/7 Smart Screens to life (Frazier and Touchet, 2012). City24/7 Smart Screens are replacing old public street infrastructure, such as coin operated public telephones, to bring up–to-date information and advertisements to pedestrians. The Smart Screens are interactive, allowing one to be able to find real time data on open government programs, neighborhood news, local events and programs, as well as nearby restaurants and shopping centers. The Smart Screens have not been implemented yet, as the City of New York needs to wait for the old payphone contracts to expire (Knell, 2012).

Figure 2.2: Smart Screen Concept Photo (Frazier and Touchet, 2012)

In order to make the residents of New York have a safe environment to live in, the Department of Health and Mental Hygiene and the City University of New York conduct a "Community Air Survey" (New York City Mayor's Office of Technology and Innovation, 2015).

This survey uses monitors set up throughout the city to study how pollutants from buildings, cars, and other sources affect the air quality. This information is used to see what health problems may arise as well as trying to reduce the pollutants.

2.4 A History of Hong Kong

In order to fully understand the environment in which the Hong Kong government is trying to implement a Smart City, we first discuss the history of the region. While ideally we would include separate histories for each of the districts within East Kowloon, there is not sufficient information on the individual districts to discuss them independently. Instead, this section will be split into two parts: a general history of manufacturing in Hong Kong as a whole and a history more specific to Kowloon East.

2.4.1 Hong Kong

Starting in 1842, Hong Kong functioned primarily as a trade city, making most of its income taxing imports and exports (Schenk, 2008). This can be attributed to its beneficial location, being a natural port for the Guangdong region of China. When the People's Republic of China gained power in 1949, Hong Kong became the primary avenue for trade between China and the outside world. The initial shift towards manufacturing in Hong Kong was caused by embargos placed on Hong Kong because of the Korean War. The UN had placed an embargo on strategic goods, and the US barred trading with China (Carroll, 2007). Now that there was essentially no trade occurring in Hong Kong, its economy was forced to shift. Hong Kong's colonial status assisted in this transformation. The relative stability of being a colony, combined with cheap labor flowing in from the People's Republic of China (PRC), helped foster the growth of a manufacturing sector. With the cheap labor came entrepreneurs and capital,

providing the perfect ground for developing an industrial economy. The factories initially were mainly textile-based, but as time went on electronics and plastics were manufactured as well (Schenk, 2008).

By the early 1960's, Hong Kong had earned a reputation in the world for its light industry, especially in the production of electronics (Carroll, 2007). However, during that time period there was also a large influx of people, with a population increase close to a million in the decade. The bulk of this growth came from refugees fleeing the Great Leap Forward in China. With this large population of working poor, there were many inequities, including wealth gaps and poor working conditions. By 1967, there were major riots motivated by a dispute over wages. The large disparities between the workers and the upper class as well as encouragement from politicians within the PRC served as major drivers behind these riots. However, near the end of 1967, the movement lost steam, and for the most part the government gained new popularity and legitimacy. However, the government officials realized that the government needed to become more accessible to the general population.

After this series of events, the Hong Kong economy picked up steam (Carroll, 2007). In 1973, Hong Kong's GDP rose by 117% over its value in 1968. With an increase in capital, Hong Kong started to form its own identity combining Chinese and Western cultures. With the establishment of Hong Kong Polytechnic and Chinese University, the Hong Kong population was getting more educated. As the 1970's progressed, more educated people were taking jobs locally. Around the same time, Deng Xiao-Ping's open door policy enabled Hong Kong to start a symbiotic relationship with Guangdong, utilizing the region's cheap labor and land for industrial purposes. With this new cooperation, Hong Kong shifted from being an industrial center into a financial and service based powerhouse. By the mid 1990's around 90% of Hong Kong factories

had relocated to the PRC. Although Hong Kong encountered a recession in 1997 (the same year it rejoined China), the service based economy that took hold is still in place today.

2.4.2 Kowloon East

The Kowloon East that we can recognize today originated with Kwun Tong around the early 1950's, after World War II (Mak, 2008). The government was looking into expansion of industrial land, and Kwun Tong was selected due to its advantageous geography. In embarking on this project, there were a small number of people who had to be relocated to Ngau Tau Kok. Through this development, Kwun Tong became a New Town. The government provided housing in the region in order to support industrial development. In 1961, there were about 100 factories and 15,000 workers in the Kowloon East area. As manufacturing picked up, the growth swelled until there were 7,000 factories and 200,000 workers in 1985. With this rapid expansion, labor was constantly in short supply. Because of this, factory owners often had to treat their employees well in order to retain them. In the beginning of the 1980's, the PRC became available to the operators of these factories, and many took the opportunity to relocate production to a cheaper labor market. This dropped interest in Kowloon East, and left many large industrial buildings that were zoned in a way that limited potential reuse. In 1998 the Kai Tak airport was relocated to Chek Lap Kok. This left the runway out of use and the area was left baron for many years. In recent years, many buildings have been rezoned to allow for other types of operations to move in (Cultural and Development Consultancy, LTD, 2014). There is now a renewed effort to transform Kowloon East into a vibrant region again.

2.5. Present Day Hong Kong

In this section we will talk about the state of Hong Kong currently as a whole and specifically the plans for Kowloon East. We will focus on what has already been accomplished

in Hong Kong and Kowloon East. In addition, as there are numerous features to the Conceptual Master Plan for Kowloon East, we will describe each one individually.

2.5.1 Hong Kong Smart City Implementations

Originally, Hong Kong lacked technology and connectivity when compared to other cities, but recently Hong Kong has become known as one of the most technologically savvy cities, and with its connections to mainland China and to the world, it has become a Smart City in the last few years (Cheng, 2015). The government has focused on technological innovations and collaboration among various fields to promote growth. The Hong Kong government defines a Smart City as a city that leverages on the information and communication technology infrastructure and uses innovative solutions to address city problems that relate to: governance, the economy, mobility, the environment, living and people.

The culture of Hong Kong is one of the leading factors that have contributed to the growth of the city (Brand, 2014). There are many activities that encourage innovation such as science competitions and exhibitions, and in 2014 Hong Kong hosted the International IT Fest, where ideas were showcased that proved how innovative Hong Kong is. In addition, another example of an initiative that promoted technology is The Cyberport of Hong Kong. It is a collection of 293 companies working together to exchange information and create new mobile apps. In 2014, Cyberport launched the Master Control Centre to support and fix problems in 4L content production.

Hong Kong is one of the most efficient cities in using RFID technology, utilizing it in the infrastructure of its public transportation system (Brand, 2014). Using a card called the “Octopus card” as personal identification, people can pay for public transport, shopping, and e-business transactions. Hong Kong has also enhanced the regional wireless network, with over 28,000

public Wi-Fi hotspots found throughout the city as of 2014. Not only is it easy to get around and stay connected, Hong Kong has utilized the available space is many different ways. These spaces are commonly referred to as mixed use spaces, and they usually are a combination of residential and business functions. There are many areas throughout all of Hong Kong that have mixed use spaces. Due to the various technological initiatives that have been implemented, Hong Kong has become known as one of the most innovative cities in the World.

One of the growing problems in Hong Kong is a shortage of space. A proposed solution is to turn run-down factories and warehouses into offices to fill the office space shortage in the city. By changing Kowloon East from industrial to business-centered, Hong Kong can address this issue. In addition, the current buildings are planned to be turned into green buildings. In Kowloon East and throughout all of Hong Kong there are already many buildings that have been BEAM certified according to the Green Building Council (2016). The idea of implementing Smart City Initiatives in this area would help turn this crowded district from an industrial area into a more efficient business area that is more suited for Hong Kong's future.

2.5.2 Energizing Kowloon East Office's Proposed Plan

Turning the area of Kowloon East into a Smart City so that it could become the second business district of Hong Kong has been in progress for many years (Ho, 2015). The first plan that EKEO proposed, Conceptual Master Plan 1.0, focused only on the connectivity of Kowloon East. It was a simple map of the area showing different paths with some trees representing greenery. The next rendition, Conceptual Master Plan 2.0, was much more elaborate than the original. The map was not only expanded, it also included certain buildings and what the uses of them would be. There were also ten main tasks EKEO was going to focus on in the area. In the next updated plan, Conceptual Master Plan 3.0, they cut their tasks down to four, and again the

map was expanded. There were even more details added to connectivity, and areas were being designated as to what they were going to become. In the most updated Conceptual Master Plan 4.0 there are five focuses, one of them being Smart City initiatives. The ten different features in Conceptual Master Plan 4.0 have focused on the rebranding of the district, connectivity, and reducing the carbon footprint, all of which we describe below. Figure 2.3 shows the most recent Conceptual Master Plan with the ten different features included.

Figure 2.3: Conceptual Master Plan 4.0 (Ho, 2015)

The first feature that is being focused on is the integration of an Environmentally Friendly Linkage System (EFLS) that would travel from Kowloon Bay Station on a set course through Kowloon East and connect to Kwun Tong Station. The EFLS would be a monorail that is raised above the surface and would make stops throughout Kowloon Bay and Kai Tak.

The second feature is increasing connectivity throughout the Kowloon Bay area. The goal is to increase the quality of the pedestrian environment in the Kowloon Bay Business Area and increase the accessibility to the Kai Tak area. Crosswalks were being looked at to see which ones needed improvement and where crosswalks could be added between Kai Tak and Kowloon Bay.

In addition, throughout the Kowloon Bay area locations are being identified where possible raised walkways could be introduced between existing business buildings. The walkways would have 24/7 access to the public and be accessible by all.

The third feature is increasing the connectivity through the Ngau Tau Kok area. The bulk of Ngau Tau Kok is located outside of what EKEO has determined to be Kowloon East. However, the part that is located in Kowloon East is being addressed. The MTR station at Ngau Tau Kok provides the closest access to the waterfront of the three MTR stations in Kowloon East. EKEO wants to make the paths to the waterfront more accessible to the public. In addition, there are alleyways located near Ngau Tau Kok that have been widened and have had the walls painted to make them more appealing to pedestrians to use. Figure 2.4 shows an example of an alleyway that has been decorated to make it more attractive.

Figure 2.4: Example of Beautified Alleyway

The fourth feature is increasing the connectivity through the Kwun Tong area. Increasing connectivity requires increasing the maneuverability for both pedestrians and vehicles in the area. To increase the mobility of the pedestrians, the EFLS will have stops in Kwun Tong connecting the Kowloon Bay MTR station to the Kwun Tong MTR Station. Another means that is proposed to increase the connectivity of the area is to lift the appeal of the alleyways throughout the area to promote usage and become possible shortcuts. There are some alleyways that have already undergone a facelift similar to the ones located in Ngau Tau Kok.

The fifth feature of the plan involved the transformation of Hoi Bun Road, which was already completed back in 2010. Now called The Kwun Tong Promenade, it used to be an area where shipping containers were dropped off and took up space alongside the waterfront (Ho, 2015). This promenade is 200m long with the total cost of the project being 18.6 million Hong Kong dollars. The development was completed in a year. Today the area next to the water has been transformed into a promenade that has many different activities for people to enjoy, with grassy areas added that are available for public use. The Kwun Tong Promenade has now become an iconic location within Kowloon East. Figure 2.5 shows what the Kwun Tong Promenade looks like today.

Figure 2.5: Kwun Tong Promenade

The sixth feature of the proposed plan involved changing the Tsun Yip Street Playground into an exhibition pavilion. This feature has already been completed as well and now it showcases the history of the area and has shipping containers that have been repurposed to house exhibits. The reconstruction of the whole area was completed in September 2014. There are also basketball and soccer courts available for anyone to use. In Figure 2.6 the repurposed shipping containers as well the newly developed area can be clearly seen.

Figure 2.6: Tsun Yip Street Playground (Ho, 2015)

The seventh feature focuses on the King Yip Street nullah, a stream located in the eastern edge of Kwun Tong. EKEO wants to change the King Yip Street nullah into a blue-green infrastructure named the Tsui Ping River (Ho, 2015). The plan is to increase the drainage capacity, provide a better riverside walkway, and improve the pedestrian facilities in the area. In addition, after renovations are completed, the next step is to connect the walkway with the already existing Kwun Tong promenade.

Figure 2.7: Concept Image of What the Tsui Ping River Will Look Like (Ho, 2015)

The eighth feature of the plan is focused on the Kowloon Bay Action Area. The plans would redevelop the Kowloon Bay Action Area and using stops from the EFLS to increase the flow and connectivity in the Kowloon Bay Action Area The plan is to take the available land and to create commercial/office floor space of .42 million m^2. Currently the plan to change the Kowloon Bay Action Area is still a study that will be completed in 2016.

The ninth feature of the plan is focused on the Kwun Tong Action Area. This includes the area surrounding the Kwun Tong pier located to the South East of the Kwun Tong promenade. Along with the Tsui Ping River and the Kwun Tong promenade, this would be another area that would connect the waterfront of Kwun Tong. The plan includes increasing the number of water routes that go through the Kwun Tong typhoon shelter. There would be plans to connect the tip of the Kai Tak runway with the Kwun Tong pier. Bicycle paths would be created through the area as well to promote mobility. At the Kwun Tong pier there would be an innovation garden that would be open to the public. The innovation garden would have an area for people to exercise, green spaces for activities, a boardwalk to walk along the waterfront, and the potential for restaurants being placed close to the boardwalk. The plan for the redevelopment of the Kwun Tong Action Area is part of the Kai Tak Fantasy. The Kai Tak Fantasy is the name of the plan for redeveloping specifically the Kwun Tong Action Area, the water in between the promenade and the runway, and the runway itself.

Figure 2.8: Picture of Kwun Tong Action Area currently (Ho, 2015)

The tenth and final feature of the plan is focused on the water between Kwun Tong and the Kai Tak runway. Like the Kwun Tong Action Area, the water is included in the Kai Tak

Fantasy. The plans for the water are to clean it enough that first contact water sports can be done. Currently only second contact sports are allowed due to the water contamination levels. The plan is to create what they call pods and islands throughout the water. The pods and islands would be used as biodiverse planted islands that would increase the aesthetic appeal of the water. There will be two additional channels that would allow for more water flow while keeping the overall calm waters for recreation. With more water flow through the enclosed space, more fresh seawater would be introduced.

Besides the features described in the Conceptual Master Plan 4.0 there have been other projects already completed in Kowloon East. In 2010 all industrial land in Kowloon East, specifically Kwun Tong and Kowloon Bay, were rezoned for business uses (Ho, 2015). The area was recognized by the government as underutilized, and the industrial buildings began to change into business offices or buildings for commercial use. In December of 2014, the government approved the conversion of 40 buildings in Kowloon East to be converted to offices, shops, and hotels. In addition, a government office will be built in Kai Tak where some government personnel will eventually be relocated.

EKEO developed a Green Map in 2013 to show the areas where green buildings will be located, in addition to other areas where more greenery will be added (Ho, 2015). The plan is available for anyone to see because the government felt it important that the people in the area should be able to see what the plans for the area they live in will be. Also located on the proposed map are green check points that are comprised of several green buildings. The buildings, whether business, commercial, or government, would all be encouraged to use as much eco-friendly features as possible to turn Kowloon East into a green district.

Besides the Kwun Tong Promenade and the Tsun Yip Street Playground there has also been much work done on the Kai Tak Runway (Ho, 2015). A cruise ship terminal was added at one end, and the surrounding area is changing with it. A park was built next to the cruise ship terminal and is open to the public. For the rest of the old runway EKEO has a vision included in the Kai Tak Fantasy to change the strip into a location with many different hotels built along the waterfront and behind them residential buildings.

Along with the redevelopment planned by EKEO for the Kai Tak runway there are many more plans in place for the area of Kai Tak. The area surrounding the Kai Tak spans over 320 hectares and is shown in Figure 2.9 (Civil Engineering and Development Department, 2013). The area will have many more high-rise residential buildings built with the height limit being removed. They will provide a cheap living space for the potential people that will move into the area. There are also plans that would increase the community environment throughout Kai Tak. The Kai Tak River will be improved on similar to the efforts that will be done on the King Yip Street Nullah. The river will lead into the water being worked on in between Kowloon Bay and the runway. A park named Metro Park that will be 24 hectares will be built in the beginning of the empty runway. The Kwun Tong Promenade and Kai Tak Cruise Terminal will also both be expanded upon. In order to increase the connectivity of Kowloon East and the rest of Hong Kong as a whole a MTR station will be built in Kai Tak that will be connected to the Shatin to Central link.

Figure 2.9: Area of Kai Tak Being Redeveloped (Civil Engineering and Development Department, 2013)

2.6 Summary

There are many different factors that have to be considered when thinking about changing an area into a Smart City. The Smart City concept has worked in many urban areas, such as Barcelona, London, and New York. Kowloon East has the potential to use Smart City initiatives to rebrand its image and become the second business district of Hong Kong. Kowloon East's development falls into two categories: new development in Kai Tak and regeneration in Kwun Tong and Kowloon Bay. Because the new development in Kai Tak is still primarily in planning stages, we will focus on the regeneration of Kwun Tong and Kowloon Bay. EKEO has focused this regeneration effort on two primary efforts: improving connectivity of Kowloon East and improving the public image of the region. Because of this, we decided to focus our project

on these two categories. In the next chapter, we will discuss how we carried out our research to contribute to this important process.

3.0 Methodology

The primary focus of our project was to evaluate the current plan to regenerate Kowloon East into a second Central Business District, taking into account how the plans encourage smart growth. To achieve this goal, we focused on three main objectives: identifying the features of the current plans that encourage Smart City growth, determining additional features of Smart City initiatives that could be added to improve quality of life in Kowloon East, and determining the public's opinion about the regeneration plans created by EKEO to seek what the public wants to see in the future as well as their awareness of the current initiatives. In this chapter, we will explain how each objective was achieved by describing our research methods.

3.1 Identify Smart City Features

In order to fully understand what a Smart City is and what Smart City features apply to the regeneration of Kowloon East, we conducted archival research and interviews, and also attended government briefings. These three tasks allowed us to dive deeper into what features of the plans to regenerate Kowloon East fall under Smart City initiatives, as well as how other cities around the world have utilized these Smart City initiatives. After looking at the Kowloon East conceptual master plan, it was clear that the EFLS is meant to be a major component in the regeneration of the region. The EFLS, as mentioned in Chapter 2, would be a monorail system that runs throughout the area. We conducted archival research on successful and unsuccessful monorails around the world to evaluate the status of the current plans to build a monorail in Kowloon East. The master plan also calls for Grade Separation Pedestrian Systems (GSPS), so we also used archival research to see how pedestrians feel about GSPS in general, as well as how effectively GSPS functions. In addition to the archival research, we interviewed Tracy Wong, a

city planner at EKEO, to gain insights into the Smart City initiatives that EKEO is enacting. The interview protocol for this interview can be found in Appendix D. Finally, we attended two workshops at EKEO to learn more details about the Smart City plans as a whole and the GSPS plans throughout the area.

3.1.1 Environmentally Friendly Linkage System

The EFLS is meant to play a major role in improving the connectivity of Kowloon East, since connectivity is an important feature of a successful Smart City. We first looked at the plan that EKEO has on connectivity for Kowloon East. To do this, we looked at CBD2 Conceptual Master Plan 4.0 and Stage 2 Public Engagement Digest for the Pedestrian Environment Improvement Scheme for Transformation of Kwun Tong Business Area publication that can be acquired from both EKEO and the EKEO website (Ho, 2015). We also found online documents from the Legislative Council's website on the EFLS for Kowloon East that explains the details of phase one of the monorail research.

We conducted archival research on monorails developed by others cities (The Monorail Society, 2003). There are many monorails implemented around the world. We focused on monorails that have failed and monorails that have been successful. We then compared these monorails to the plan that EKEO has for the monorail in Kowloon East (Legislative Council Panel on Development, 2014). From our research we were able to draw conclusions and make suggestions about the plan for the monorail.

3.1.2 Grade Separation

The plans for Kowloon East call for more pedestrian grade separation by adding more footbridges throughout the area to help reduce pedestrian traffic at the street level. We conducted archival research to see how GSPS has affected Hong Kong in the past. From reading past

reports done by researchers at different Hong Kong universities, we were able to see varying views on grade separation. We also looked through a presentation given by the Designing Hong Kong organization that looked at GSPS throughout Hong Kong, as well as the pedestrians' feelings about GSPS.

3.1.3 Energizing Kowloon East Office City Planner

Our group conducted a formal interview with a staff member of EKEO since we wanted to gather a city planner opinion of the plan. Getting the opinion of an employee knowledgeable in the development of Kowloon East who could give his/her honest thoughts on the plan was beneficial in terms of helping us with our evaluation and also informing us about any other plans that we might not be aware of. We contacted the city planner, Tracy Wong, for an interview. We met at a cafe in Kwun Tong to conduct the interview. Two members of our team headed the interview while the other two took notes on the interview. The questions that were asked and notes about the interview can be found in Appendix D.

3.1.4 Energizing Kowloon East Office Workshop

In order to gather the opinions of the various groups heavily involved with the regeneration plan, our team participated in a workshop hosted by EKEO. EKEO's proposed plan to re-energize Kowloon East is on their website and is available to anyone. Our team studied the plans presented on their website extensively, but in order to get a clearer understanding of the proposed plan and to understand how UDP viewed the plan, our team had a meeting with EKEO. The meeting was held at the headquarters of EKEO, which is located in Kowloon East near the Kwun Tong Promenade. In attendance were staff members of UDP, EKEO, our team, and students from Chinese University of Hong Kong. UDP studied Kowloon East as a case study for developing an area into a Smart City and presented their findings in a PowerPoint presentation.

After UDP presented their findings, EKEO made a presentation on the history of the area, what has already been done in the area, and what is being proposed for the future. Similar to UDP, EKEO presented their data in the form of a PowerPoint presentation. One of our team members recorded notes on both presentations to make sure no important information would be lost. After both presentations finished, the floor was open to questions addressed to UDP, EKEO, and our team. Notes on the workshop can be found in Appendix K.

3.1.5 Briefing on Pedestrian Walkways

Our group attended a briefing about the plans for the elevated walkways throughout Kowloon East in order to get a better understanding of how elevated walkways play into the regeneration plans of Kowloon East. A panel of four employees from EKEO and the Development Bureau of the Hong Kong Government were selected to run the workshop. The panel presented their information to an audience of about 100 people. The audience consisted of experts in urban design, architects, business owners from the area, and various other people involved in the development of Kowloon East, including us. The presentation was half an hour long, with time at the end for the audience to ask questions regarding the information presented. The questioning time lasted about an hour, and one team member took notes about the questions asked and answers given. The notes taken on the briefing can be found in Appendix L.

3.2 Potential Improvements to Smart City Plans

As part of assessing the ongoing Smart City initiatives in Kowloon East, we needed to come up with suggestions to improve the plans. In improving a city, there are many features that can be looked at or approached. Some of those features might have been overlooked, depending on the goal and objectives of the planning organization. From our archival research on the current regeneration plan that EKEO has proposed, we have determined that there is a focus on

the connectivity of the area and the improvement of the image of the area. In order to investigate possible improvements to the plan of EKEO, we looked into where there was heavy pedestrian traffic, the locations of crosswalks, and the current appearance of the area.

3.2.1 Observations of Areas with Heavy Pedestrian Traffic

In order to evaluate the connectivity of Kowloon East and identify locations for improvement, our team wanted to get an understanding of the routes that the pedestrians take while traveling in the region. To do this, we identified major points of attraction throughout Kowloon East. This included locations such as the MTR, malls, office buildings, and restaurants. In order to get information about the whole region's accessibility, we chose the three MTR stations within Kowloon East to be the first locations from where we followed people to see what routes they followed to get to their destinations. From that point, we chose notable locations based on the endpoint of the last pedestrian to act as a new origin location for identifying routes pedestrians took. In order to get a comprehensive understanding of the routes traveled in Kowloon East, we observed the region on both weekdays and weekends. This way, we were able to gather information from both the people who work in the area and the people who visit the area on their days off. We conducted our observations between 8 AM and 4 PM, to observe the pedestrian traffic during the morning and lunch rush hours, as well as during off-peak travel hours.

In order to track the paths of the pedestrians, we used a system of the Nike+ running smart phone application and manual note-taking to keep track of the path of the pedestrian being followed. This greatly limited the possibility of individual bias during the collection of the information, as most of the information was being collected automatically. At the points of attraction, a pedestrian was chosen to be observed. In choosing the subject, we picked people at random, so that we would not bias our choice of one population over another. Once the subject

was identified, two team members would follow the path that the person was taking. The observation of the pedestrian would continue until they either entered another building or left the boundaries of Kowloon East. By following people from the start to the end of their travels instead of from a convenient intersection, it was possible to gain a better understanding of the full journeys that were occurring in the region. Throughout the process, the team members would take notes on the start location and the finish location. In addition, Nike+ gave us other important information, such as distance walked, time walked, and speed of the walking. Using this method, we followed 45 different pedestrians. This information was then put into a spreadsheet. From this spreadsheet, we saw the commonly traveled streets, as well as streets that took longer to travel down. We used the result of most common streets travelled to identify streets that are more likely to have congestion issues.

3.2.2 Identifying Needy Crosswalks

A key component of connectivity is the quality of crosswalks in the region, and if they are easy for pedestrians to cross. To judge the quality of intersections and find points where improvements can be recommended, we conducted direct observation at all of the intersections in Kowloon East. In order to evaluate the intersections, we created a rubric based on potential pedestrian safety and congestion issues (New York Department of City Planning, 2000). The criteria we used to judge intersections are shown in Table 3.1.

Table 3.1: Crosswalk Quality Judgment Criteria

Street Intersection
Is there a painted crosswalk? Or enough visibility?
Are there crosswalk lights/noise makers?
Is anything obstructing the crosswalk?
Are there any protruding signs?
Are there uneven walking surfaces?
Number of lanes in "Vertical" Street:
Number of lanes in "Horizontal" Street:
Is there a middle island with additional lights for pedestrians?
Is there a middle island without additional lights for pedestrians?
Does the middle island have space for people?
Crossing Push Button?
Notes:

In addition to the criteria related to safety and congestion, we recorded the number of lanes in both streets at an intersection, to give an indicator of how big the intersection is. The team also included a space for notes about specific intersections. This provided us with an opportunity to include information that may not be already in the rubric.

The intersections of Kowloon East were split into the two major regions that currently exist: Kowloon Bay and Kwun Tong. In each of these regions, we evaluated a couple of intersections together. This way, it would be clear to each team member what each of the criteria means, reducing variability among team members. Then, the region was divided among the four team members. Each team member walked throughout his or her region, recording information for each crosswalk in the region. If the intersection had pedestrian safety or congestion problems, the team member would take a picture of the intersection, including the area that had the problem. In this way, all the intersections were evaluated. The intersections we observed are shown in Figures 3.1 and 3.2.

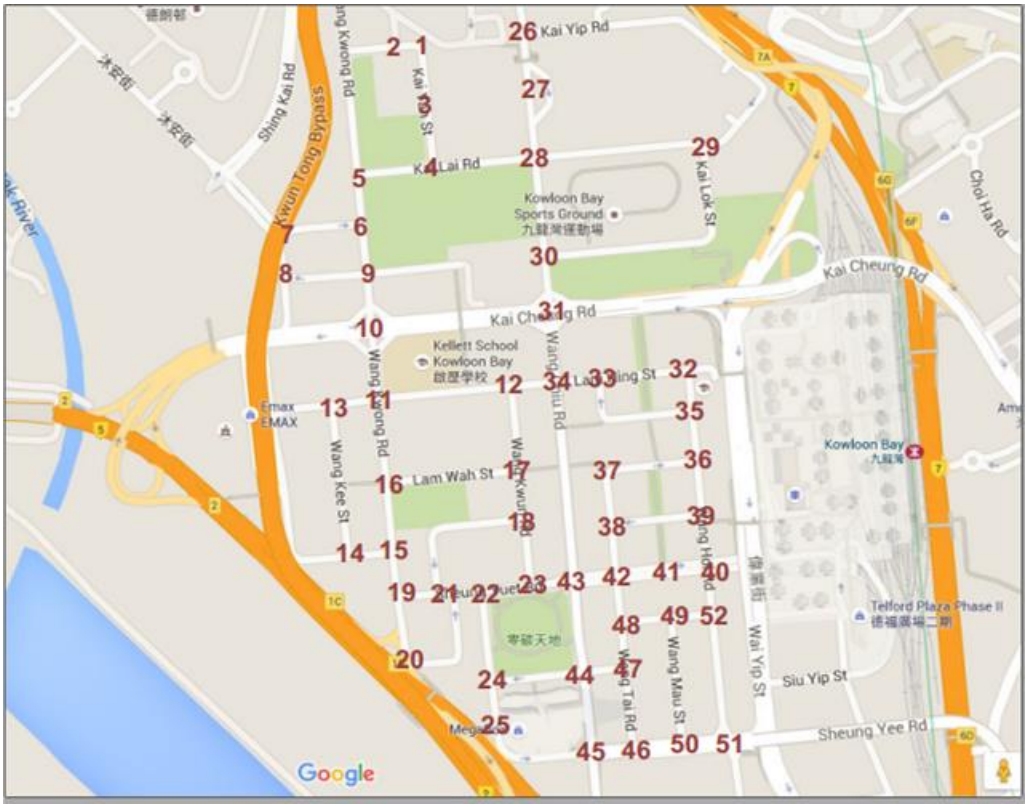


Figure 3.1: Visited Intersections, Kowloon Bay

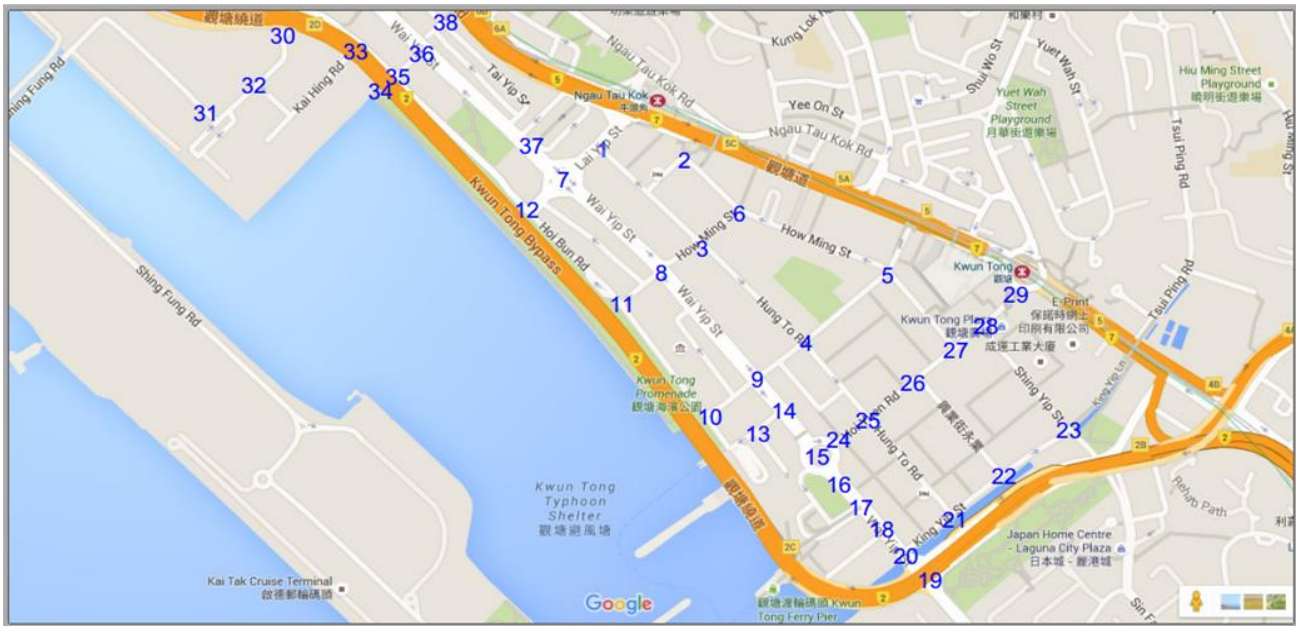


Figure 3.2: Visited Intersections, Kwun Tong

3.2.3 Improving Public Environment

Our group observed the overall quality of the pedestrian environment through direct observation. We looked at specific areas such as the appearance of the area and the convenience of walking around. Specific locations we targeted were areas where a lot of people passed such as the MTR stops or the alleyways throughout Kwun Tong. Upon identifying targeted areas, we spent time observing them, identifying popular locations that can be utilized better. From these observations, we determined potential improvements for these areas.

3.3 Identifying Opinions of the General Public on the Regeneration Plan

In order to see how the public view about the current changes that are taking place within Kowloon East, the team conducted a survey throughout the area. In total, 301 questionnaires were collected from people in the two main parks within the area: Kwun Tong Promenade and Kai Tak Runway Park. In total, eight trips were made to conduct the survey with six of them being at the Kwun Tong Promenade and two at the Kai Tak Runway Park.

For the Kwun Tong Promenade, we visited twice in the afternoon hours, 12PM-2PM. And we visited in the morning through afternoon once from 10AM-2PM. One night time survey was conducted at the park from 6:00PM-8:00PM. These four times all occurred during weekdays. The final two times were during the weekends, once on a Saturday and once on a Sunday from 12PM-6PM. For the Kai Tak Runway Park we visited twice during the weekends, the same times as that of the Kwun Tong Promenade. By choosing the times that we did, we were able to gain the opinions of employees that work in the area who were on their lunch break, as well as people who visited the park in their free time on the weekends.

When conducting the survey, the group randomly selected people to approach. We would approach the park goers and ask them to take the survey. With the skillsets of our team members, we were able to ask them in both English and Mandarin. Our survey also was made available in both English and Traditional Chinese for the readers to be able to take so we could get as many responses as possible. The survey questionnaire that was used can be found in Appendix E.

3.4 Summary

In order to evaluate the current plans to regenerate Kowloon East into a Smart City that can serve as a secondary Central Business District, We focused on identifying features of the current plans that encourage Smart City growth, determining additional Smart City initiatives that could be implemented in Kowloon East, and determining the public opinion on the plan created by EKEO. To identify key Smart City features in the current plan, we attended workshops hosted by EKEO, supplementing this information by conducting archival research on connectivity. We then determined potential improvements to the plan by observing areas with heavy pedestrian traffic, identifying problematic crosswalks, and identifying locations where the public environment can be improved. Finally, we conducted surveys in order to obtain the opinions of the general public about the plan to transform Kowloon East into a Smart City. In the following chapter, we will discuss the information we obtained from completing the methods described above.

4.0 Results and Analysis

In this chapter we present the results acquired through our data collection. In the first part of the chapter, we researched already existing examples of monorails and elevated walkways. We then compare these examples with the Kowloon East regeneration plan, using the advantages and deficits of the implementations to evaluate the plan. In the second part of the chapter, we present information from the direct observations we conducted, in order to determine potential improvements to the plan. In the final part of the chapter, we present the surveys collected on the opinions of the residents of Kowloon East.

4.1 Identify Points of Concern in Current Plans

In this section we compare and contrast proposed features of the plan that would improve connectivity. The EFLS is compared to similar monorail systems in other places in the world. By doing this, we identify the potential benefits and risk areas of a monorail system. In addition to studying monorails, we also analyze the proposed elevated walkways and compared them to elevated walkways in other areas of Hong Kong.

4.1.1 Environmentally Friendly Linkage System Analysis

EKEO has completed the first stage of their consultation with stakeholders and gathering the public's opinions on the EFLS (Civil Engineering and Development Department, 2013). The current proposed plan for the EFLS is a monorail that will be 9 kilometers long and have 23 stations. The path that the EFLS will take is mostly established, but there are a few details that are still under consideration. Some of these details include where the final leg of the monorail in Kwun Tong should be, as well as whether to favor the Kwun Tung Transportation Link (KTTL) Alignment or the Taxiway Bridge Option. Both options are shown in Figure 4.1 below. The KTTL Alignment is currently preferred, as it provides a simpler travel experience.

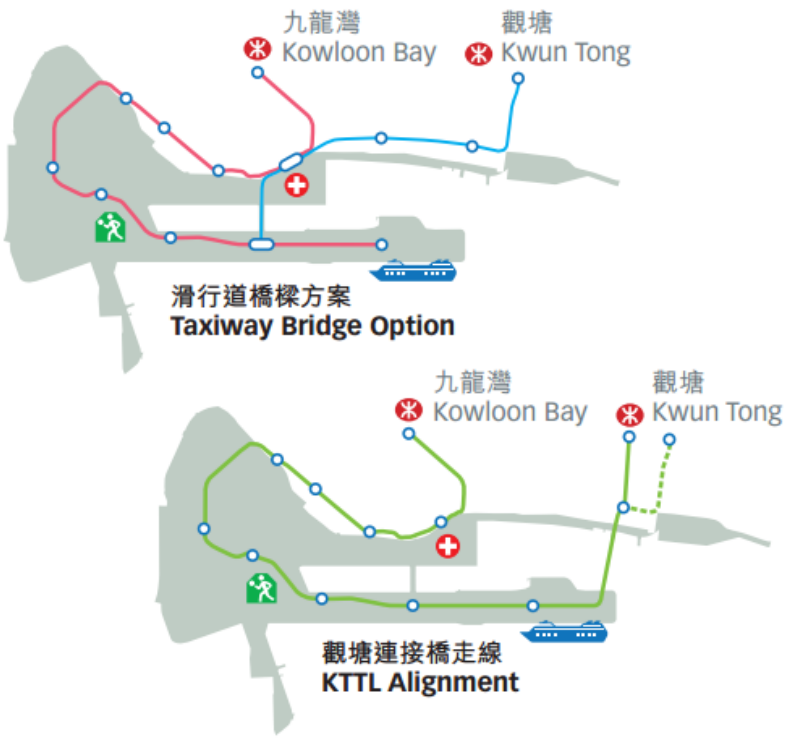


Figure 4.1: KTTL Alignment and Taxiway Bridge Options for the EFLS (Legislative Council Panel on Development, 2014)

The more specific details about the EFLS plans are finalized in the proposal, requiring an additional, more detailed study to be conducted (Legislative Council Panel on Development, 2014). This study will cost approximately 92 million HKD to conduct.

In the preliminary study, the government has developed criteria about why they would prefer using a monorail over trams and other ground-based transportation, despite the large cost disparity between the two types of systems. Because the Kowloon Bay and Kwun Tong MTR stations are elevated, the government's opinion is that a monorail would provide easier connectivity to the MTR stations than a ground-based transportation system. Another consideration is the additional space required for ground-based transportation. Since roads in Kwun Tong and Kowloon Bay are already busy, adding a tram system at the ground level will

not help, but instead add to the congestion on the roads. This would have a negative impact on the CBD development of Kowloon East.

The government also looked into the feasibility of building another underground system for the EFLS. There are existing underground structures, such as the Kai Tak Tunnel, the District Cooling System, the Central Kowloon Route, the Trunk Road T2 tunnel, and the large scale storm water box culverts that are located in the Kai Tak area. These structures are currently underground where the proposed lines would supposedly run, greatly increasing the complexity of an underground system. It would also be inconvenient since the Kwun Tong and Kowloon Bay MTR stations are elevated, so the connection between the EFLS and the MTR will require a large change of elevation. The downsides of such a change in elevation are discussed later in this chapter.

In addition to providing more safety, reducing pedestrian and traffic congestions, and having a more efficient link to the MTR, the government hopes that the monorail would be a new tourist attraction and as well as an integral part of a CBD. They predict that the view of Victoria Harbour, the futuristic look of the monorail, and the cruise terminal will work towards this goal. As for being an integral part of CBD, they said the monorail would help contribute to the regeneration of Kowloon East into a business, leisure and tourism center.

Aside from looking at what the government wants from the monorail, we looked at monorails in other cities to help determine the value of using a monorail in the regeneration plans of Kowloon East. There are a total of 54 multi-station monorails in the world, with Japan having ten operational lines, the most in the world (The Monorail Society, 2003). Two of these lines, the Tokyo and Shonan monorails, were created as full-scale prototypes of the monorail system (Demery, 2005). These lines are strong examples of successful monorails, with the Tokyo

monorail making a profit of $11,025,000 in the year of 2002. As successful as these monorails are, they are still a significant minority of all public travel. Over the year of 2003, the monorails in Japan had an average of 462 passengers per day. Even in Japan, only 5 out of their 10 active monorail lines made a profit in 2002.

Overall, there seems to be more dissatisfaction with monorail systems than satisfaction throughout the world. The Sydney monorail is an example of dissatisfaction among users. According to Jarrett Walker at Human Transit, the reason that the monorail failed is not because of the monorail or the technology, it is because of the line that is poorly designed (Dale, 2012). There was no fare transfers integrated from the monorail to the rest of the Sydney's public transit system. In addition to this, the monorail had a flat rate, and did not stop at locations that residents wanted. Another monorail that has struggled is the Mumbai monorail, which has not gotten good results during its Phase I operation (Hayden, 2014). For the first 3 months, it did not make any profit. In fact, the city was losing a quarter of a million USD a month, and the reason for this was the design of the line and the stations that it stopped at along the way. As a third example of possible errors, the Las Vegas Monorail Company filed bankruptcy only 6 years after its operation (Wattrick, 2012). The cause of the failure was that the system over-estimated the number of passengers who would use it, while at the same time the casinos were only interested in the monorail to transport people from casino to casino, rather than for the citizens of Las Vegas. In 2010, there were only 5.2 million riders and only 2 percent of those riders were local. This was widely different from the initial predictions of at least 20 million riders annually. The system generated much less revenue than the debt that it owed (Seymour, 2010).

Other organizations within Hong Kong have analyzed the EFLS plans as well. The Hong Kong Institute of Urban Design (HKIUD) has published a statement of their opinions of the

EFLS (Hong Kong Institute of Urban Design, 2012). In this statement, they outline more potential problems with the EFLS. HKIUD believes that a monorail would be detrimental to the natural lighting, ventilation, and noise levels of the Kowloon East region, specifically the Kai Tak development, the area most affected by the monorail. In addition, by using a monorail, cars are prioritized over pedestrians.

EKEO and the Hong Kong government should take a look at the results of the monorail development more closely, focusing on when it would be completed. They should also look at potential consequences, and other factors that may cause failure of the system. With this additional information, EKEO should weigh the risks and benefits of the monorail and decide whether the results would be worthwhile, or if it would better off to go with a different type of public transportation system.

4.1.2 Determining Value of Elevated Walkways

Within Hong Kong, one can see many subways and footbridges that take a pedestrian from one location to another. When looking at Kowloon East in particular, the plans call for a walkable city as a key goal in developing a Smart City. (Ho, 2015). However, within these plans there are calls for more footbridges throughout the area, meaning that a pedestrian would have to change his or her grade level in order to access the footbridge and the destination beyond it (Woo, 2011). There are three kinds of grade levels when looking at pedestrian crossings: below grade, at-grade, and above grade. Below grade is the underground subway, at-grade is the zebra crossing and signal-controlled crossings, and above grade is a footbridge linking buildings to one another or providing a crossing for large streets.

However, when looking at a Smart City, especially one with an emphasis on walkability, pedestrians should stay at-grade. Hong Kong has been built to accommodate vehicles, which

have been given priority over pedestrians, but to enhance walkability, a pedestrian-first approach to city planning is needed (Designing Hong Kong, 2013). In a 2003 survey done by Designing Hong Kong, they looked at making Hong Kong a more walkable and pedestrian friendly city. From a survey they conducted, they found that over 70% of those surveyed would prefer an at-grade crossing over subways and footbridges. See Figure 4.2 below for the breakdown of the survey responses.

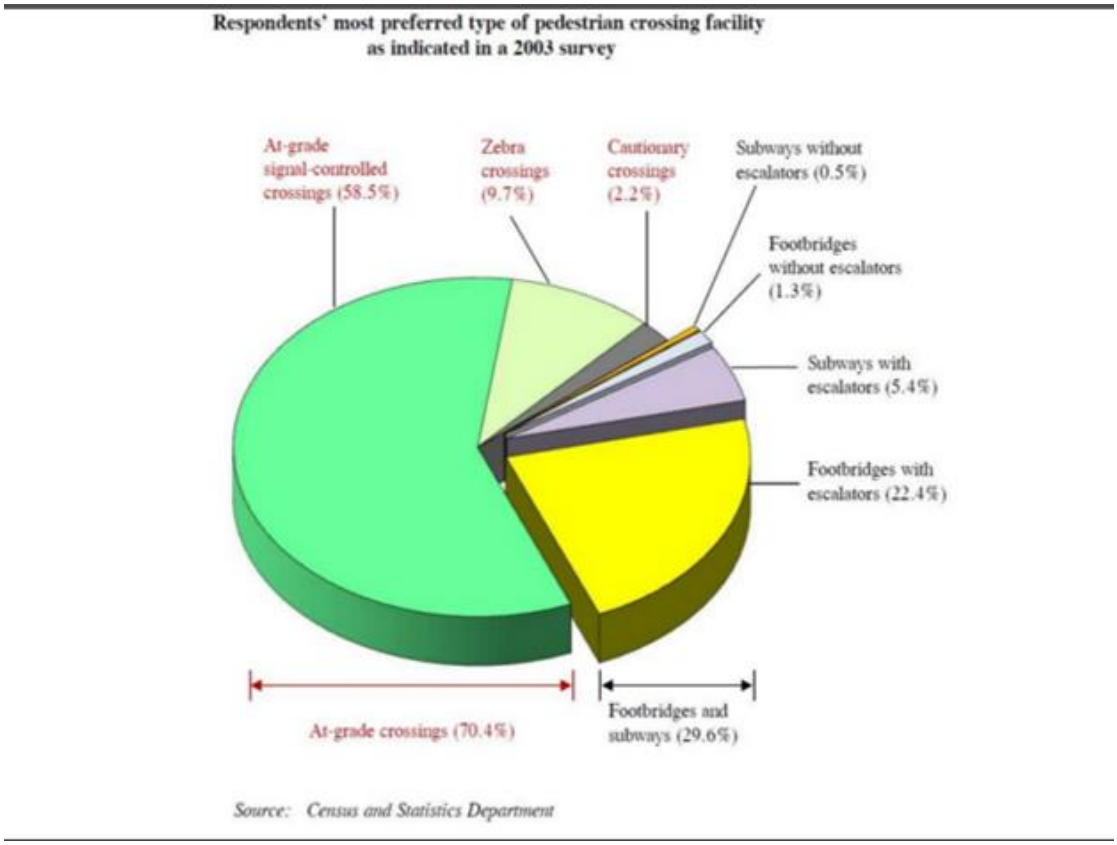


Figure 4.2: Most Preferred Type of Pedestrian Crossing Facility (Designing Hong Kong, 2013)

From the survey results, we can see that 70.4% would prefer at-grade crossings while 29.6% would prefer either below-grade or above-grade crossings. The Designing Hong Kong Study also found that many pedestrians do not like to use footbridges and subways because of the need to walk longer distances when you factor in the staircases and ramps needed for them.

From the research conducted by Designing Hong Kong and the plans that EKEO has in place, looked at what the regeneration plans have in respect to walkability. EKEO wants a more walkable Kowloon East, but by enhancing the footbridges already in existence and building more footbridges. Yet most pedestrians prefer to cross at-grade level and also prefer walking a shorter distance. By building more footbridges, EKEO will continue to follow the existing pattern that vehicles are more important than pedestrians at the street level, since the vehicles will be given priority at-grade, forcing pedestrians to use less favorable walking choices. We see from the research into above-grade elevated walkways that they result in vehicles being prioritized over pedestrians, contrary to the primary goal of better walkability in a Smart City. We identify ways to prioritize pedestrians over vehicles later in this chapter.

4.2 Identifying Pedestrian Traffic Improvements

Throughout the area of Kowloon East there are many crosswalks and points of congestion that need to be improved. In this section we detail our findings of all the crosswalks found in Kowloon East. Then we detail how one of the most congested areas can be improved to improve the pedestrian flow.

4.2.1 Congestion and Crosswalks

From the 45 people we observed on their daily routes in Kowloon East, we noticed paths that were commonly used. We started at major points of interest, such as MTR stops, commonly visited office buildings, and malls with a lot of pedestrian activity. The most common paths were direct routes from a MTR station to an office building or their office and vice versa, and from their office to an eating establishment and vice versa. The paths taken by residents differed depending on the day of the week. On the weekends there were many more people who traveled from the Kowloon Bay MTR stop to Megabox than any other location. On the weekdays, the

largest concentration of people went from a MTR stop to their respective office building on the most direct route, including Hoi Yuen Road. Hoi Yuen Road on most days and at most times sees a heavy amount of pedestrian traffic. When we followed people on Hoi Yuen Road, we found this was the area with the slowest walking speed. Because of the large number of pedestrians, poor lighting, and a narrow sidewalk area, there was no room for pedestrians to walk. Figure 4.3 shows the routes that were taken by people whom we observed by following to a destination. The thicker paths on the map are the ones that have been traveled more frequently.

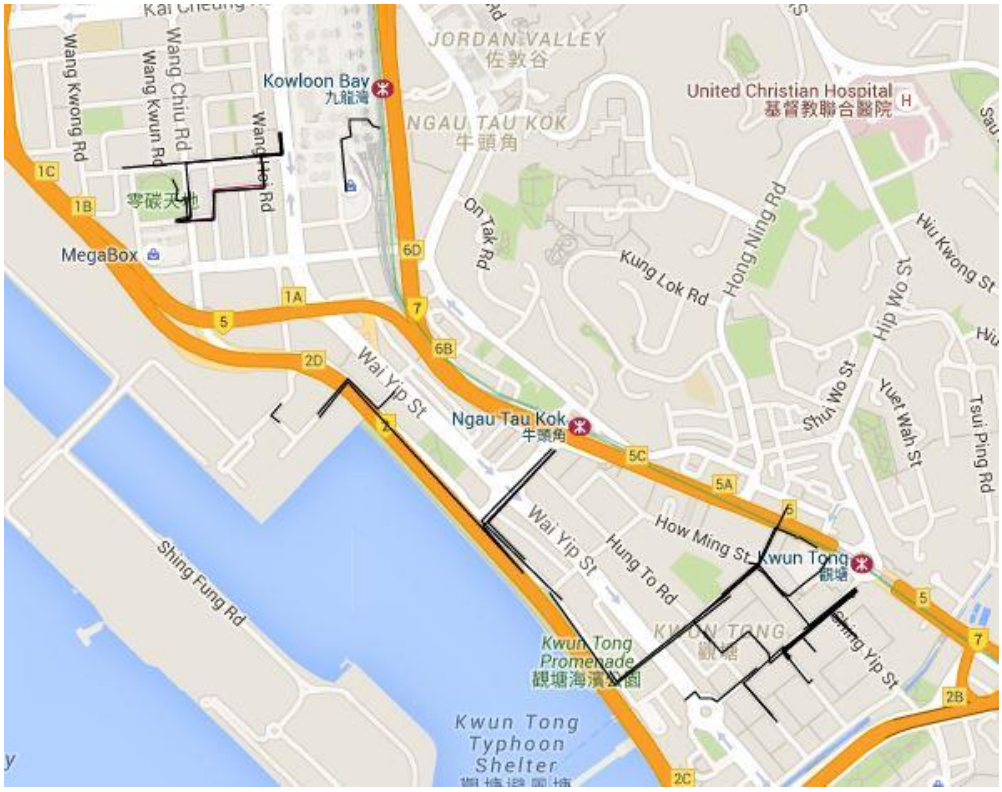


Figure 4.3: Paths taken by people who were followed

Throughout Kowloon Bay and Kwun Tong there are 90 crosswalks we identified. A map detailing the location of the crosswalks can be found at Appendix I. Of the 90, 61 are in the Kowloon Bay area and 33 are in the Kwun Tong area. We found that of the 90 crosswalks, 75 have painted lines indicating where to cross, whether that is the yellow painted lines or a visible

“Look Left” or “Look Right at the beginning of the crosswalk seen in Figure 4.4 and Figure 4.5 respectively.

Figure 4.4: Showing an example of yellow painted lines at Hoi Yuen Road

Figure 4.5: Showing an example of painted “Look Left” and “Look Right”

The remaining 19 of crosswalk locations do not have any indication where to cross, and are located at an intersection of roads where a crosswalk should have been located. A specific example of an intersection of roads without a crosswalk would be where Hing Yip Street meets King Yip Street as seen in Figure 4.6. Hing Yip Street is a 3 lane road that has no crosswalk until where Hing Yip Street meets Hoi Yuen Street.

Figure 4.6: The intersection of Hing Yip Street and King Yip Street

Similarly to the intersection of Hing Yip Street and King Yip Street at the intersection of Hung to Road and King Yip Street there is no crosswalk available as shown in Figure 4.7.

Figure 4.7: The intersection of Hung To Road and King Yip Street

Of the 90 crosswalks, we identified 35 of them that have a traffic light associated with the crosswalk. At the other 59 locations, there was no traffic signal to aid pedestrians. Not all locations require the aid of traffic signals, but there are locations where multiple lanes need to be crossed without assistance. At the intersection of Wang Kwong Road and Kai Yan Street, 2 lanes need to be crossed to get to the center island and then another 2 to get to the other side of Wang Kwun, all unassisted. There are also vehicles turning onto Kai Yan Street that do not have to stop for any traffic lights. Figure 4.8 shows the crossings of Wang Kwong Road.

Figure 4.8: Crossing of Wang Kwong Road (Google Maps, 2011)

Along Wang Kwong another instance of this can be seen in Figure 4.9 of the intersection of Wang Kwong Road and Kai Lai Road.

Figure 4.9: Intersection of Wang Kwong Road and Kai Lai Road (Google Maps, 2011)

Of the 35 crosswalks that had traffic lights, 26 had the option for pedestrians to indicate they wanted to cross with a button located by the crosswalk. At the crosswalk on Hoi Yuen Road there are always people waiting to use the crosswalk and very few cars on the road. If a button allowing pedestrians to cross was placed at this crossing, it would allow the pedestrians to cross more efficiently.

Most of the crosswalks in Kowloon East need to be reviewed to ensure that pedestrian flow is not prohibited. At locations where there is no indication where to cross, pedestrians have to wait for a break in the vehicles to cross. This can be time consuming and dangerous. The intersections that do not have any traffic light assistance can also cause problems and delay for pedestrians. Even though there may be paint indicating a crosswalk, at certain intersections there is a heavy flow of vehicle traffic that does not have to stop for pedestrians. This causes pedestrians to either have to wait until there is a break in the vehicle flow or cross the road when they see fit, which may not be at the crosswalk. The pedestrian flow is broken up at certain crosswalks and should be reviewed to focus on pedestrian safety and convenience.

4.2.2 Improvements to Hoi Yuen Road

Throughout the process of documenting the congestion in Kowloon East, Hoi Yuen Road stuck out as a notable example of pedestrian congestion. Hoi Yuen Road is a three-lane one-way road that runs through Kwun Tong from the MTR station to a roundabout close to the harbor front. The Kwun Tong MTR station has one exit, exit B that exits onto Hoi Yuen Road. There are four intersections along the Hoi Yuen Road, as well as one additional crossing between the start of the road and its intersection with Shing Yip Street. A picture of the road is shown in Figure 4.10

Figure 4.10: Hoi Yuen Road around 11 AM

As mentioned in section 4.2.1, there are a number of factors on Hoi Yuen Road that result in a suboptimal environment for both vehicles and pedestrians. The most significant factor is the pedestrian congestion during peak travel hours, such as the situation in Figure 4.10. By observing Hoi Yuen Road during the morning rush hour, at lunchtime, and at the evening rush hour, we were able to identify the pedestrian traffic patterns. During these peak times, pedestrian traffic is primarily focused in one direction, leaving a space the width of one person to move in the opposite direction. The direction of traffic is defined by the large population of workers, as well as the location of buildings in Kwun Tong. Close to the MTR, there are a number of different plazas and malls that contain restaurants, such as APM, E-Plaza, Crocodile Center and Kwun Tong Plaza. Further down Hoi Yuen Road are office buildings and industrial buildings. Morning pedestrian traffic along Hoi Yuen Road follows the direction of the vehicular traffic, moving from the MTR stop towards the office buildings. Evening pedestrian traffic along Hoi Yuen Road moves against the direction of vehicular traffic, moving from the office buildings

toward the MTR stop. The lunchtime pedestrian traffic is less simple to generalize, changing direction based on whether more people are going to lunch or leaving lunch.

We noticed a specific chokepoint at the crosswalk closest to the MTR exit, especially during the lunchtime pedestrian peak. This crosswalk was added by EKEO in order to improve the walkability of Kowloon East (Ho, 2015). During lunchtime pedestrian peak, the sidewalk next to this intersection gets filled with people waiting for the crosswalk, often leaving less than the width of two people for passing. This situation is shown in Figure 4.11.

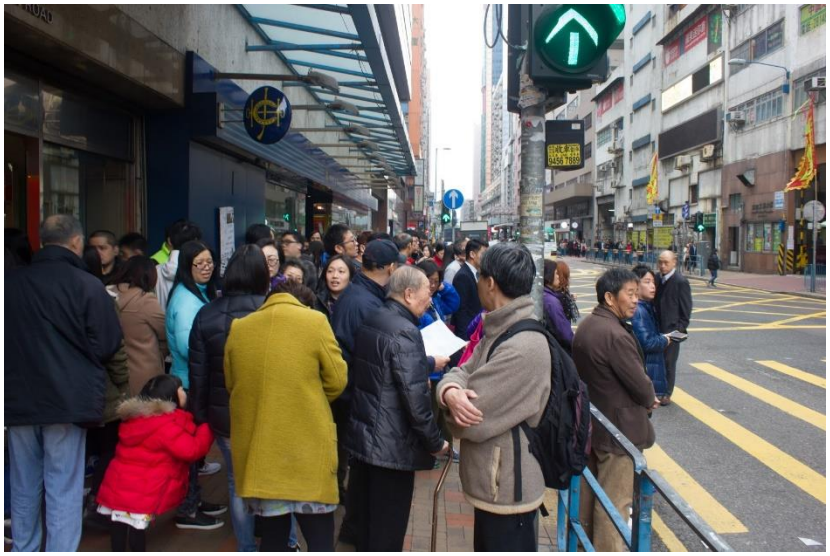


Figure 4.11: Hoi Yuen Road Intersection at Lunch time Pedestrian Peak

.

Vehicular traffic down Hoi Yuen Road encounters a different problem. Along the road, there are constantly cars and trucks stopped in the lanes. For example, in Figure 4.12, three out of four vehicles in the left lane are stopped. We found that between 11:30 AM and 1:00 PM, there was never a moment when there wasn't a vehicle obstructing at least one of the lanes, just looking at the area before the first crosswalk. In addition to the left lane being obstructed by loading and unloading vehicles, the right lane was occasionally blocked by cars waiting to get

into a car park. Addressing these two problems requires two different approaches. EKEO plans to have a phone application that will enable drivers to identify car parks that still have parking spots open, reducing the number of cars waiting to get into a full car park. In order to address the loading and unloading vehicles, the government will need to enforce regulations about loading and unloading in the illegal location by issuing fines. In a study of road traffic congestion in Hong Kong conducted by the Transport Advisory Committee (TAC), they state that one of the major sources of congestion is vehicles that stop along the side of the road, both legally and illegally (Transport Advisory Committee, 2014). In order to improve this problem, they suggest, among other things, an increase in the fines in order to restore a deterring effect that has been lost over time and increasing enforcement of these fines. In addition, in the longer run the TAC recommends encouraging on-street loading and unloading to occur at off-peak times. This way, the vehicles can carry out their vital role in the economy, without blocking traffic. By implementing these changes, the major vehicular problems of Hoi Yuen Road would be addressed.

Figure 4.12: Multiple Cars Stopped on Hoi Yuen

In order to address the pedestrian problems on Hoi Yuen Road, there are two major possibilities: create an elevated walkway to allow for the main pedestrian traffic to move in a larger space, or widen the sidewalks in order to provide more space for the pedestrian traffic. Currently, EKEO is planning on creating an elevated walkway, together with the EFLS. Our analysis of the grade separation that this plan utilizes is in section 4.1.2, where we found that it is preferable to keep pedestrians on the same grade, which is ground level for every structure along the road except the MTR. In addition to this, the proposed exit points from the raised walkway are at the Kwun Tong MTR station and the roundabout. Through our observation of the paths that people took in Kowloon East (detailed in Appendix J), we noticed that many people walking from the Kwun Tong MTR end up on Hung To Road. With only two of the four malls directly connected to the MTR, the elevated walkway would add unneeded complexity to the path of many pedestrians' lunch patterns.

The other possibility is to widen the sidewalks. The conventional way to widen a sidewalk is to incentivize new developments to use less of their footprint by building a taller building (Frank Wong, personal communication, 02/17/16). Since the buildings along Hoi Yuen Road are unlikely to be redeveloped soon, this isn't possible. Instead, we propose that half a lane should be removed from Hoi Yuen Road on both sides of the street, between the Kwun Tong MTR Exit B and its intersection with Hung To Road. The road lines should then be redrawn with two lanes. Then, the sidewalks on either side of the street should be widened. From our observations, much of the street is currently occupied by illegally stopped vehicles. By eliminating the illegally stopped vehicles as mentioned earlier, the removal of a lane in this area should result in a neutral effect on traffic. Bus stops along this stretch of road would be moved further down the route. These would effectively introduce a road diet to Hoi Yuen Road. While road diet usually refers to replacing a vehicle traffic lane with a bike lane, the concept is relevant to the removal of a lane as well. A prior study in Reno, Nevada established that in their case, it was possible to remove a lane with loss of no more than one Level of Service (Li and Tian, 2010). Since the effectiveness of a road diet is very much dependent on the particular road, additional studies would need to be conducted in order to confirm its feasibility. Nonetheless, we are optimistic that clearing the stopped vehicles would allow for the removal of a lane without a major impact on the traffic.

4.3 Improving Public Environment

Kowloon East was developed primarily to accommodate vehicular traffic. Because of this, the pedestrian environment within the region is underdeveloped in relation to the number of people who work and reside in Kowloon East today. In this section we will discuss ways that could improve the pedestrian environment and overall appeal of the area.

The alley way system in Kwun Tong is very confusing. There have been only four alleyways that EKEO has tried to beautify and another example of one is shown in Figure 4.13. They added artwork to the walls to make the alleyways more appealing to pedestrians and encourage them to be used.

Figure 4.13: Fully Beautified Alleyway

However, for three of the four alleyways that have been improved the welcoming artwork stops at just short of the halfway point and from there on it returns to being a regular alleyway. In addition, the alleyways that have been worked on are large and very straightforward. There are many other alleys throughout Kwun Tong, many which are completely unmarked, leading into the network of alleyways as seen in Figure 4.14.

Figure 4.14: Alleyway In Kwun Tong with no signage

There are a number of alleyways that are marked with the end destination of the alleyway shown in Figure 4.15. However, they have no further indications about which path to take, making it easy to get lost within the confusing alleyway network.

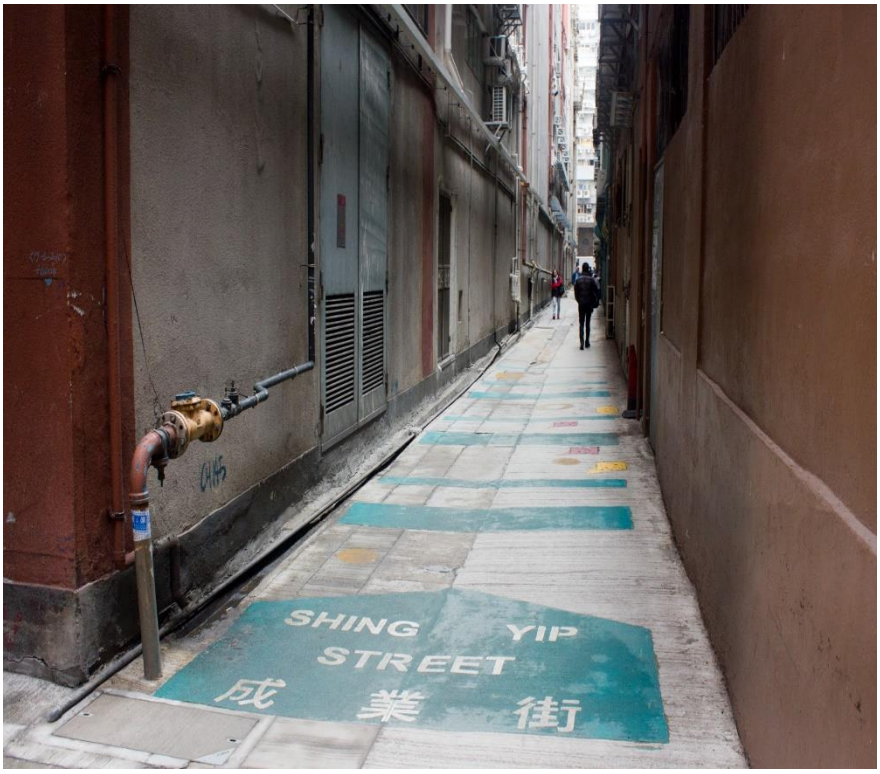


Figure 4.15: An Example of an alleyway with initial signage

In our interview with a City Planner from EKEO, she told us that most people take the route that they were most familiar with, which usually was centered around the main roads (Personal Communication, Tracy W, 2/26/16). Pedestrians currently avoid the alleyway system because it is unfamiliar and scary to them, since they have no way of knowing where the alleyways get out.

We thought that an indication of what path to take, such as a painted route that lead people to specific roads from major points of attraction could help encourage the pedestrian use of the alleyway network that is available in Kwun Tong. The painted path would start from common locations as far back as the MTR Stations, and would trace the fastest route to other destinations, like malls and parks. In Kowloon Bay this solution would be less applicable, as there are few alleyways and the roads are straightforward. However, these painted paths could

help the pedestrian flow in Kwun Tong. In addition, the beautification of alleyways should continue and not end at halfway through the alley. If more alleyways had artwork in them or lights placed in them, the quality of the pedestrian environment in Kowloon East would increase greatly. Pedestrians would be able to feel safe while enjoying artwork from local artists in any of the alleys.

In addition to improving the alleyway network, we believe that something should be done to make it easier for people who are not from the area to be able to identify major points of interest. Currently, there are not many people who come to Kowloon East during the weekday evening (Personal Communication, Tracy W, 2/26/16). By making it easier for people new to the area to identify points of interest, they will be more motivated to go to Kowloon East in their off time. To do this, information kiosks could be placed outside common areas for tourists to be. Initially this would be locations such as public parks and the MTR stations; the kiosks can be expanded to malls once the idea has been proven beneficial to tourists. At these kiosks, there would be a screen showing other points of interest, such as restaurants, malls, or other public parks. A pedestrian could go up to the kiosk, pick a destination, and then get directions for how to get there from the kiosk. The kiosk could then have NFC or could provide a QR code, with which the pedestrian can transfer the direction information to their phone for easier navigation. These kiosks would be similar to the ones that are proposed in New York City, as mentioned in the background chapter, but with the added feature to export data onto the user's mobile devices. By creating these kiosks throughout Kowloon East, the whole region should become easier to navigate for people who do not regularly visit.

We also noticed that when coming out of the Ngau Tau Kok MTR Station and going into the subway, there is a lot of wall space along the subway tunnel as shown in Figure 4.16.

Figure 4.16: Empty walls of Ngau Tau Kok underground walkway

To help with improving the atmosphere, those walls can be used to engage the public. To help encourage the technology-centric CBD environment within Kowloon East, a big screen or projection could be added to one of the walls. On the weekend, the screen could allow passersby to play short motion sensor games using the Xbox Kinect's technology or something similar. There would be a list of games and those games would rotate every weekend. On weekdays, the major populace of Kowloon East will be businessmen and office employees. During this time, the screen could show business news.

With the rest of the walls, artwork could be added. Artwork about the future vision of Kowloon East would help spread the awareness to the residents and workers in that area, and would liven up the subway. On these walls, artists could depict the rich history of the Kowloon East region, starting from the establishment of light industry and depicting the development of Kowloon East, including the future plans. By doing this, the public would be directly exposed to

the plans that EKEO has to regenerate Kowloon East into a CBD. It would also add more professionalism to the area in comparison to graffiti that blank walls encourage. Adding these kind of entertainment systems has the potential to increase pedestrian congestion, with people taking up space in the subway for a trivial activity. However, the only thing that we think may add more congestion is the gaming screen, as playing the games would take up a large space in the walkway. However, from our observations over our time here, there is no rush hour pedestrian traffic on weekends, therefore this would not be a problem.

4.4. Stakeholder Opinions of Regeneration Plans

From the 301 people that answered our survey throughout the Kwun Tong Promenade and the Kai Tak Runway various results were determined. The completed list of results from the survey is included in Appendix F. Of the people who responded to our survey, about 45% walked, 23% took the MTR, and 13% took a bus to reach the parks, as shown in Figure 4.17. The other methods that people used to reach the parks were mini-bus, taxi, driving oneself, and a ferry. It should be noted that some people who filled out the questionnaire checked more than one method, since people who checked the MTR would also need to walk some distance to reach the park.

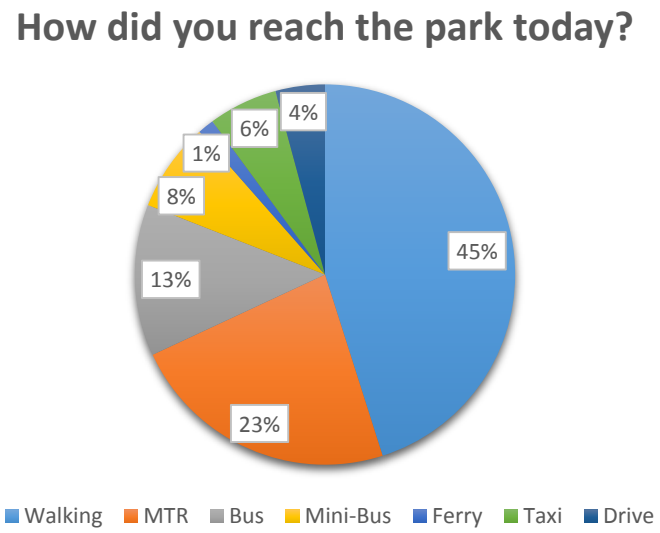


Figure 4.17: How people reached the park

We believe we were able to get a good spread of responses based upon how long those who were surveyed had lived in the area as well as how often those surveyed frequented the parks. Of the people who responded to our survey, 41% did not live within Kowloon East as seen in Figure 4.18 while 23% have lived there for over sixteen years. Having gotten at least 6% of the respondents in each of the categories of length of residence in Kowloon East, we believe we were able to get a representative sample of opinions. We also found that 29% of those surveyed visited the park rarely as seen in Figure 4.19, with an even bigger spread amongst all the responses. This allowed us to get opinions and facts from people who visit the park daily in contrast to people who were visiting the park for their first time.

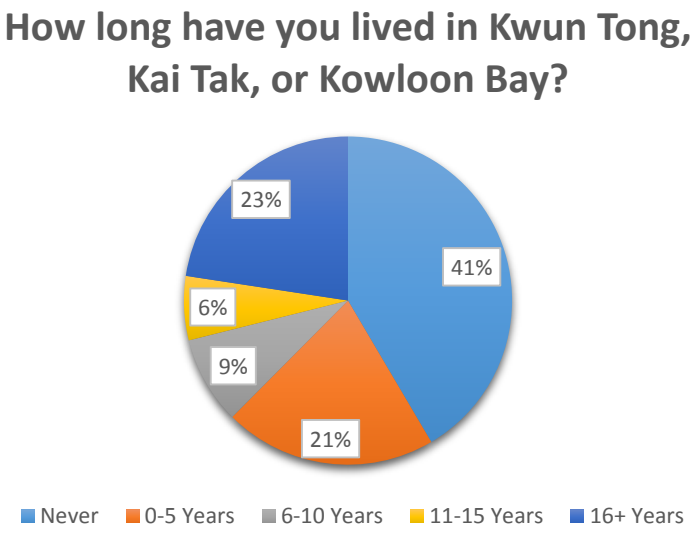


Figure 4.18: Percentage of people who have lived in Kowloon East for varying time periods

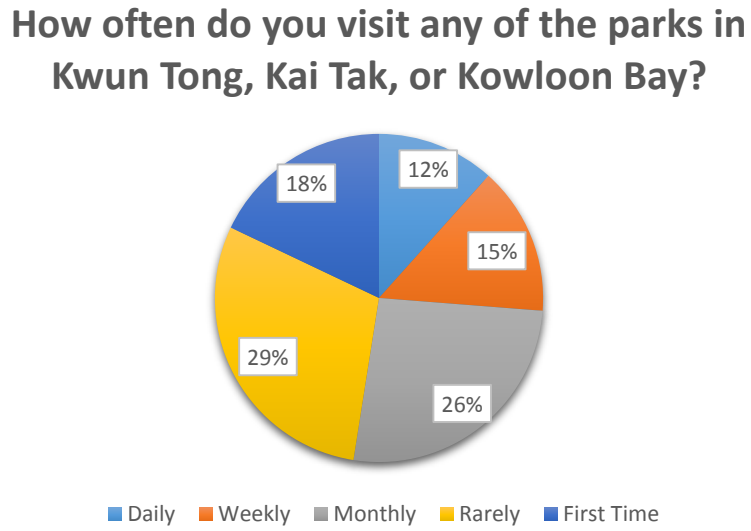


Figure 4.19: Percentage of people who have visited parks for varying periods of time

We wanted to see if these responses varied from the Weekday versus the Weekends as well as from the Kwun Tong Promenade Responses versus the Kai Tak Runway Park Responses. From the Weekday versus Weekend Responses, the types of responses were fairly similar so we

chose not to include those here, however you can see the breakdown of those responses in Appendix H. The rest of the responses are shown for Kwun Tong Promenade and Kai Tak Runway Park separately.

In order to see how aware the park visitors were about the EKEO regeneration plans, we first asked them if they were aware of the initiatives carried out by the EKEO. Of those surveyed at the Kwun Tong Promenade, 66% were not aware of EKEO, as seen in Figure 4.20. Then, we asked at the Kai Tak Runway Park, and we found that 70% were not aware of EKEO, as seen Figure 4.21. From these responses we were able to see that no matter the park, two thirds of those surveyed were not aware of EKEO. Part of EKEO's mission in developing a Smart City is to encourage a positive public image for the area, but if two thirds of those surveyed are unaware of the initiatives EKEO has undertaken, outreach and education among the public can be improved. We will focus more on the public image of Kowloon East later on in this chapter.

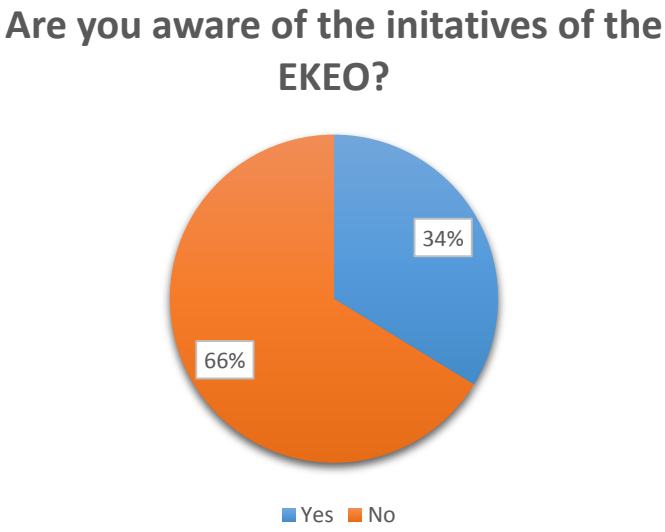


Figure 4.20: Are You Aware of the Initiatives of EKEO (Kwun Tong Promenade)

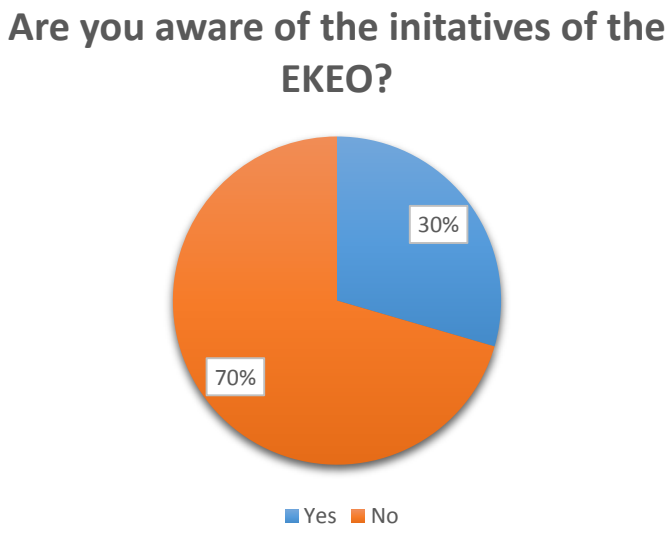


Figure 4.21: Are You Aware of the Initiatives of EKEO (Kai Tak Runway Park)

The other question that was asked on the survey that provided very strong results was "What Would You Want to See More of in Kowloon East?" The question had five pre-filled responses and then one section for "Other." From the "Other" category we got multiple responses saying waterfront eateries and cafes. When asked at the Kwun Tong Promenade, 29% of park goers wanted to see better transportation, as seen in Figure 4.22. More Water Activities as well as More Activities for Younger Children were close to the top as well. However, when this question was asked at the Kai Tak Runway Park, the response for better transportation jumped from 29% to 47%, as seen in Figure 4.23. But the responses for the four other choices stayed consistent with those at the Kwun Tong Promenade in respect to the order in which they appeared. From this survey question, we found that better transportation within the area is desired by residents. EKEO addresses these desires with the EFLS plan and improving walkability. These topics are discussed in other sections of this chapter.

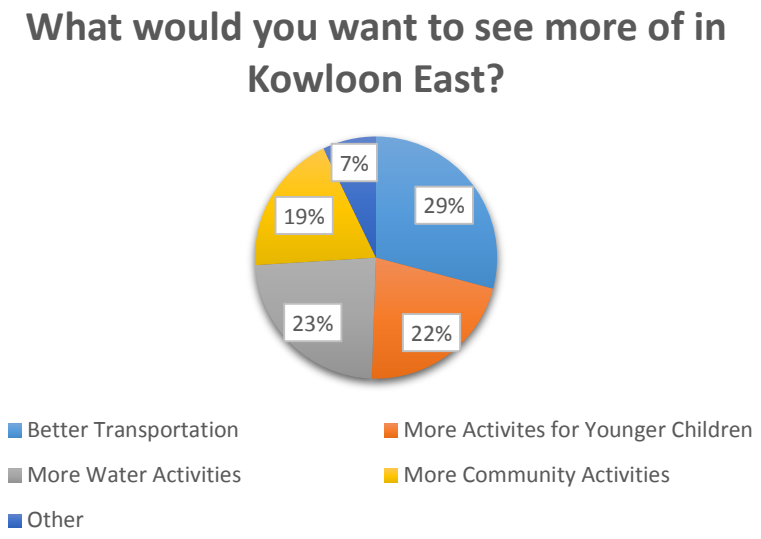


Figure 4.22: What Do You Want to See More Of (Kwun Tong Promenade)

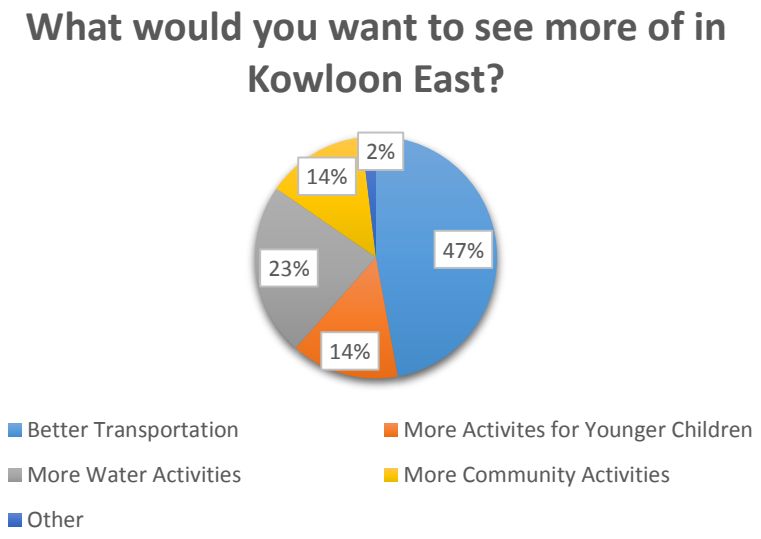


Figure 4.23: What Do You Want to See More Of (Kai Tak Runway Park)

4.5 Summary

Throughout this chapter, we have determined a number of significant results. We determined that while many of the crosswalks in Kowloon East have been improved, there are still crosswalks that have major problems, such as obstructions or a lack of indications of a

crossing. In addition to this, the EFLS and elevated walkways proposed in the plan place priority on vehicles, inconveniencing pedestrians. One current point of pedestrian inconvenience is Hoi Yuen Road, which frequently has pedestrian congestion. The alleyway network in Kwun Tong can improve this problem, but it requires improvement of the condition of the network. Finally, through our survey we noticed that a large number of residents of Kowloon East are unaware of the initiatives that EKEO are proposing, which makes it more difficult to regenerate the area. We will present recommendations for addressing these problems in the next chapter.

5.0 Conclusions and Recommendations

This section presents the conclusions of our research into the effectiveness of the Smart City development plans in the Kowloon East region of Hong Kong, focusing on the connectivity and regional branding components of the plans. To address the conclusions that we have reached in the report, we provide recommendations for the improvement of the Kowloon East regeneration plans. These recommendations are divided into connectivity-based recommendations and regional branding-based recommendations and are intended to be used as the basis for further research.

5.1 Improving Connectivity and Image in Kowloon East

The following seven conclusions are the ones that we have reached through our work on this project. The first five related to connectivity within the area and the last two relate to the image of Kowloon East.

1. **The crosswalks in Kowloon East have varying levels of quality.**

   While some crosswalks and intersections have been improved, of the 90 crosswalks, 19 crosswalks did not have adequate crossings, and 18 crosswalks had some form of obstruction, as described in section 4.3.1.

2. **The connectivity of the Kai Tak development is entirely dependent on the EFLS, and there are potential pitfalls in the design and economic viability of this project.**

   The EFLS would act as the primary source of public transportation along the Kai Tak Runway and throughout the Kai Tak region. In looking at historical implementations of monorails, the unsuccessful monorails have been ineffective because of planning details such as locations of stops and volume of passengers, as described in section 4.1.1.

3. **The plan is dependent on adding elevated walkways to reduce the pedestrian congestion, and this would go against the preferences of pedestrians.**

   There are walkways planned along the EFLS. As explained in Section 4.1.2, pedestrians prefer to stay at-grade when commuting, with above-grade travel often adding to the length and complexity of their commute. Moreover, universal accessibility for people with any kind of disability is much harder using elevated walkways or subways.

4. **Hoi Yuen Road is a particular area that requires better pedestrian navigation options and thus better connectivity.**

   Because of the pedestrian patterns within Kwun Tong, the current plan of using elevated walkways will inadequately address pedestrian congestion, as described in section 4.2.2. The pedestrian congestion limits connectivity, and the redesign of the road should be focused on addressing this problem.

5. **Alleyways offer unused pedestrian travel space that could ease pedestrian congestion, but they are difficult to get around.**

   EKEO has worked on beautifying alleyways to encourage their use and to improve the ambiance of Kowloon East. Still, most of the alleyways are untouched, and as such are seldom used by pedestrians. Some alleyways have markers about which street they lead to, but indications are only placed at the beginning of an alleyway.

6. **The Public does not know much about EKEO, making achieving a Smart City much more difficult, as a Smart City involves good community participation in decision-making.**

   Of the people that we surveyed, less than one third were aware of the initiatives that EKEO has been proposing for the regeneration of Kowloon East.

7. **A new form of technology that has not been thought of in the current master plan needs to be introduced as a potential addition.**

   Through our interview with Tracy Wong, it was made clear that a new addition to the Smart City plan is something our team needed to consider. The addition would have to focus on a new kind of technology that can be added in the region and add to the Smart City initiatives.

5.2 Recommendations

- **Review all crosswalks in Kowloon East and implement quick fixes to create short-term improvements in quality of pedestrian travel.**

  While the regeneration plans of Kowloon East include plans to reduce pedestrian use of many of these streets, it is important to improve on these roads on a short-term basis, in order to improve the pedestrian connectivity. Moreover, pedestrians prefer on-grade street crossing, so they would prefer to use crosswalks rather than elevated walkways or subways.

- **Carefully review EFLS plans to make sure that they have been thoroughly vetted, including getting community feedback on the plans, to insure longer-term viability.**

  The development of the EFLS is a large capital investment, and our research has shown that there are a number of possible pitfalls in using a monorail if the route is implemented poorly or if the rider count is overestimated. The details of the EFLS plans should be reassessed to make sure they are reaching desired locations, as well as looking at the impact on pedestrian walkability, both above-grade and at-grade.

- **Seriously consider the option of removing a lane on Hoi Yuen Road.**

During peak pedestrian traffic times, Hoi Yuen Road becomes difficult to traverse. Especially during the lunch time rush, the amount of vehicular traffic is disproportionate to the amount of pedestrian traffic. In order to alleviate the pedestrian congestion, half a lane of Hoi Yuen Road should be removed on both sides of the street, with the lanes redrawn so that there are only two lanes. The space should instead be used as for increasing the size of sidewalks.

- **Make it easier to travel throughout the alleyways that have already been beautified or marked as useful routes to major destinations.**

  Especially in Kwun Tong, the network of alleyways provides a way to reduce pedestrian congestion on the major streets. In order to attract more people to using these alleyways, the alleyways need to be easier to travel through. This includes adding lighting along these connections, as well as providing a line drawn on the ground or other signage that indicates the path from one major street to another.

- **Beautify subway by Ngau Tau Kok MTR Station**

  The Ngau Tau Kok MTR station is connected to Kowloon East through an extensive subway tunnel which is currently a standard subway. By adding interactivity to the subway and creating art or other decor along it, the public would be more engaged with the area, improving the atmosphere and image of Kowloon East as an interesting place to be.

- **Introduce Information Kiosks in highly visited locations to better inform the public on happenings within Kowloon East.**

  By adding kiosks with touch screen capabilities in highly populated areas, such as MTR stops and the public parks, the public could become more aware of initiatives sought after

by EKEO. The kiosks would also provide information such as nearby restaurants and events happening within the area in real time data so one can find more activities to do in Kowloon East. By utilizing NFC and QR Codes, pedestrians would be able to reach their desired locations by downloading directions to their phones.

5.3 Further Research

In the process of conducting our research, we narrowed the scope of our project to focus on pedestrian connectivity and community image. There are other aspects of Smart City initiatives that remain to be addressed due to the time limit of our project. In order to have a more complete evaluation of the regeneration of Kowloon East in regards to the Smart City, more research can be conducted to be focused in on the other features of a Smart City.

References

Barcelona. (2015). Welcome to Barcelona. Retrieved from http://www.barcelona.com/barcelona

Barcelona Smart City, Smart City Areas. Retrieved from http://smartcity.bcn.cat/en/smart-city-areas.html

Bowerman, B., Braverman, J., Taylor, J., Todosow, H., & Von Wimmersperg, U. (2000). The vision of a smart city. *2nd International Life Extension Technology Workshop, Paris, 28*.

Brand Hong Kong (2014). Smart City. Retrieved from http://www.brandhk.gov.hk/en/facts/factsheets/pdf/10_smart_city_en.pdf

Carroll, J. M. (2007). *A Concise History of Hong Kong*. Lanham, Maryland: Rowman & Littlefield Publishers, Inc.

Chan, E. H. W., & Lee, G. K. L. (2008). Contribution of urban design to economic sustainability of urban renewal projects in Hong Kong. *Sustainable Development, 16*(6), 353-364. doi:10.1002/sd.350

Cheng, I. (2015). What is a "Smart City"? Retrieved from http://www.legco.gov.hk/research-publications/english/essentials-1415ise08-what-is-a-smart-city.htm

China Tour Online (2015). Brief Information on Central. Retrieved from http://www.chinatouronline.com/china-travel/hong-kong/hong-kong-attractions/Central_275.html

Chourabi, H., Nam, T., Walker, S., Gil-Garcia, J. R., Mellouli, S., Nahon, K., . . . Scholl, H. J. (2012). *Understanding smart cities: An integrative framework.* Paper presented at the 45th Hawaii International Conference on System Science (HICSS) Hawaii.

Civil Engineering and Development Department (2013). Environmentally Friendly Linkage System Overview. Retrieved from http://www.ktd.gov.hk/efls/en/overview.htm

Cohen, B. (2012). 6 Key Components for Smart Cities. Retrieved from http://www.ubmfuturecities.com/author.asp?section_id=219&doc_id=524053

Cultural and Development Consultancy, Ltd. (2014). *Study on Industrial Heritage of Kowloon East and its*
Potential for Public Art/ Urban Design. Retrieved from https://www.ekeo.gov.hk/filemanager/content/whatsnew/IHS_executive_summary_eng.pdf

Dale, S. (2012). What the Death of the Sydney Monorail Teaches us About Techno-zealotry. Retrieved from http://gondolaproject.com/2012/03/27/what-the-death-of-the-sydney-monorail-teaches-us-about-techno-zealotry/

Demery, L. (2005). *Monorails in Japan: an Overview*. Retrieved from www.publictransit.us: http://www.publictransit.us/ptlibrary/specialreports/sr9.JapanMonorails.pdf

Dirks, S., & Keeling, M. (2009). *A vision of smarter cities: How cities can lead the way into a prosperous and sustainable future*. Retrieved from

Ford, D. N. (2013). London History. Retrieved from http://britannia.com/history/londonhistory/

Frazier, J., & Touchet, T. (2012). *Transforming the City of New York*. Retrieved from http://www.cisco.com/c/dam/en_us/about/ac79/docs/ps/motm/City-24x7_PoV.pdf

Giffinger, R., Fertner, C., Kramar, H., Kalasek, R., Pichler-Milanovic, N., & Meijers, E. (2007). *Smart cities-Ranking of European medium-sized cities*. Retrieved from http://www.smart-cities.eu/download/smart_cities_final_report.pdf

Glaeser, E. L. (2005). *Urban Colossus: Why is New York America's Largest City?* Retrieved from FRB New York - Economic Policy Review: http://www.nber.org/papers/w11398

Greater London Authority (2015). A Digital Inclusion Strategy for London [Press release]. Retrieved from https://www.london.gov.uk/sites/default/files/a_digital_inclusion_strategy_for_london.pdf

Harrison, C., & Donnelly, I. A. (2011, 2011). *A theory of smart cities.* Paper presented at the ISSS, Hull, UK.

Harter, S. (2000). Hong Kong's Dirty Little Secret. *Journal of Urban History, 27*(1), 92-110. doi:10.1177/009614420002700106

Hawkins, A. J. (2016). New York's Public Wi-Fi Hubs Now Have Android Tablets. Retrieved from http://www.theverge.com/2016/2/18/11047124/nyc-linknyc-android-tablet-public-wifi

Hayden, M. E. (2014). Mumbai's Monorail Cost $450 Million, so why is it Losing a Quarter Million a Month? Retrieved from http://www.zdnet.com/article/mumbais-monorail-cost-450-million-so-why-is-it-losing-a-quarter-million-a-month/

Ho, W. (2015). Smart City Initiative in Kowloon East [Press release]. Retrieved from http://ekeo.gov.hk/filemanager/content/speeches_and_presentations/en/Smart_City_Initiative_in_Kowloon_East_Final_lo.pdf

Hong Kong Government (2015). *Population*. Retrieved from http://www.gov.hk/en/about/abouthk/factsheets/docs/population.pdf

Hong Kong Green Building Council (2016). Hong Kong Green Building Council | Beam Plus Project Directory. Retrieved from https://www.hkgbc.org.hk/eng/BeamPlusdirectory.aspx

Hong Kong Institute of Urban Design (2012). *HKIUD Position Paper on the Proposed Environmentally Friendly Linkage System*. Retrieved from http://www.hkiud.org/en/whats-new/announcement/101-hkiud-position-paper-on-the-proposed-environmentally-friendly-linkage-system-eflsjuly-2012

Hong Kong Legislative Council Panel on Development (2014). *65TR - Detailed Feasibility Study for Environmentally Friendly Linkage System for Kowloon East*. Retrieved from http://www.legco.gov.hk/yr13-14/english/panels/dev/papers/dev0527cb1-1456-4-e.pdf

Hui, E. C.-m., Ng, I. M.-h., & Lo, K.-k. (2011). Analysis of the Viability of an Urban Renewal Project under a Risk-Based Option Pricing Framework. *Journal of Urban Planning and Development, 137*(2), 101-111. doi:10.1061/(ASCE)UP.1943-5444.0000047

Hwang, J.-S., & Choe, Y. H. (2013). *Smart Cities Seoul: A Case Study*. Retrieved from ITU-T Technology Watch Report: http://www.itu.int/dms_pub/itu-t/oth/23/01/T23010000190001PDFE.pdf

Institute of Electrical and Electronics Engineers (2015). IEEE Smart Cities. Retrieved from http://smartcities.ieee.org/about.html

Jang, M., & Suh, S.-T. (2010). *U-City: New Trends of Urban Planning in Korea Based on Pervasive and Ubiquitous Geotechnology and Geoinformation.* Paper presented at the ICCSA, Fukuoka, Japan. Retrieved from: http://iurc.uos.ac.kr/activities/files/U-City%20New%20Trends%20of%20Urban%20Planning%20in%20Korea%20based%20on%20Pervasive%20and%20Ubiquitous%20Geotechnology%20and%20Geoinformation.pdf

Joy, E. (2015). Smart London Districts Challenge-led Innovation Competition [Press release]. Retrieved from http://www.instituteforsustainability.co.uk/uploads/File/Smart%20Wayfinding%20Competition%20Information%20pack%202015.pdf

Kennedy, M. (2009). *Introducing geographic information systems with ARCGIS: a workbook approach to learning GIS* (Vol. 2nd). Hoboken, N.J: John Wiley & Sons.

Knell, N. (2012). Smart Screens Coming to NYC Phone Booths. *Emerging and Sustainable Technology*. Retrieved from http://www.govtech.com/technology/Smart-Screens-NYC-Phone-Booths.html

Laursen, L. (2014). Barcelona's Smart City Ecosystem. *Cities Get Smarter.* Retrieved from http://www.technologyreview.com/news/532511/barcelonas-smart-city-ecosystem/

Lee, J. H., Hancock, M. G., & Hu, M.-C. (2014). Towards an effective framework for building smart cities: Lessons from Seoul and San Francisco. *Technological Forecasting and Social Change, 89*, 80-99. doi:http://dx.doi.org/10.1016/j.techfore.2013.08.033

Li, H., & Tian, Z. (2010). *Feasibility Evaluation of Road Diet Projects – A Case Study in Reno, NV*. Retrieved from San Francisco: http://westernite.org/annualmeetings/sanfran10/Papers/Poster%20Papers/ITE%20Paper_Poster-Li.pdf

Mak, A. (2008). Kwun Tong History *A Map of Our Own: Kwun Tong Culture and Histories.* Retrieved from http://www.kwuntongculture.hk/en/home.php?op=history

Metropolitan Transportation Authority (2016). How E-Zpass Works. Retrieved from http://web.mta.info/bandt/ezpass/how-it-works.html

Miller, M. (2015). *Internet of Things: How Smart TVs, Smart Cars, Smart Homes, and Smart Cities Are Changing the World*: Que Publishing.

The Monorail Society (2003). Monorails of the World. Retrieved from http://www.monorails.org/tMspages/Where.html

Nam, T., & Pardo, T. A. (2011). *Conceptualizing smart city with dimensions of technology, people, and institutions.* Paper presented at the Proceedings of the 12th Annual International Digital Government Research Conference: Digital Government Innovation in Challenging Times.

Naphade, M., Banavar, G., Harrison, C., Paraszczak, J., & Morris, R. (2011). Smarter cities and their innovation challenges. *Computer, 44*(6), 32-39.

New York City Mayor's Office of Technology and Innovation (2015). Innovative Projects. Retrieved from http://www1.nyc.gov/site/forward/innovations/projects.page

NYC & Company, Inc (2016). Wifi Map: Downtown Manhattan. Retrieved from http://www.nycgo.com/articles/wifi-map-downtown-manhattan

Ove Arup & Partners, Ltd (October 2013). The Smart City Market: Opportunities for the UK. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/249423/bis-13-1217-smart-city-market-opportunties-uk.pdf

Rios, P. (2012). *Creating "The Smart City"*. (Arcitecture), University of Detroit, Mercy.

Rodriguez, V. (2015). Catalonia *Enclopedia Britannica*.

Schenk, C. R. (2008). Economic History of Hong Kong. Retrieved from https://eh.net/encyclopedia/economic-history-of-hong-kong/

Seymour, D. (2010). Las Vegas Monorail is a Mess. Retrieved from http://www.bondbuyer.com/issues/119_252/las-vegas-monorail-problems-1005715-1.html

SmartCitiesCouncil India (2014). Draft concept note on smart city scheme. Retrieved from http://india.smartcitiescouncil.com/system/tdf/india/public_resources/Concept-Note-on-Smart-City-Scheme_0.pdf?file=1&type=node&id=2229

Smart London Board. (2013). Smart London Plan [Press release]. Retrieved from http://www.london.gov.uk/sites/default/files/smart_london_plan.pdf

Sullivan, F., & Singh, S. (2014). Smart Cities -- A $1.5 Trillion Market Opportunity. Retrieved from http://www.forbes.com/sites/sarwantsingh/2014/06/19/smart-cities-a-1-5-trillion-market-opportunity/

UDP International (2015). UDP International RSS. Retrieved from http://udpcltd.com/

United Nations, Secretariat (2014). *World Urbanization Prospects: The 2014 Revision. Highlights;2014 IIS 3080-S21;ST/ESA/SER.A/352;ISBN 978-92-1-151517-6 (Paper);ISBN 978-92-1-123195-3 (Internet)*. Retrieved from http://esa.un.org/unpd/wup/highlights/wup2014-highlights.pdf

Wallace, T. (2015). Rule Britannia: London overtakes New York as the world's best financial centre. Retrieved from http://www.telegraph.co.uk/finance/newsbysector/banksandfinance/11884783/Rule-Britannia-London-overtakes-New-York-as-the-worlds-best-financial-centre.html

Wattrick, J. T. (2012). Bus Rapid Transit:why buses succeed and rail failed in Las Vegas. Retrieved from http://www.mlive.com/news/detroit/index.ssf/2012/02/bus_rapid_transit_why_buses_su.html

Wong, K. (2013). Hong Kong's Office Shortage Spurs Makeovers of Factories. Retrieved from http://www.bloomberg.com/news/articles/2013-08-12/hong-kong-s-office-shortage-spurs-makeovers-of-factories

Wong, O. (2015). Planners outline their 'smart city' vision for Kowloon East. Retrieved from http://www.scmp.com/news/hong-kong/article/1698700/planners-outline-their-smart-city-vision-kowloon-east

World Population Review (2015). Barcelona Population 2015. Retrieved from http://worldpopulationreview.com/world-cities/barcelona-population/

Zubizarreta, I., Seravalli, A., & Arrizabalaga, S. (2015). Smart City Concept: What It Is and What It Should Be. *Journal of Urban Planning and Development*. doi:UPENG-1066

Appendix A: Sponsor Description

UDP International (2015) was founded by Dr. Sujata S. Govada with the concept of shaping better cities through the context and pedestrian-sensitive design and planning. It was founded in Southern California in 1994, and then relocated to Hong Kong in 1994, which is when official operation actually began. It has expanded to India and San Francisco, California. The company consists of a team of 12 full time employees, with management, finance, projects, operations, business strategy, architecture, hospitality, planning and design divisions. Although a small firm, UDP International has completed various projects in Hong Kong, China, Philippines, India, United States and more.

The firm had completed 24 projects in total, as of December 2015, with site area ranging from 15ha to 110,333ha. Few examples of the award winning projects that has been completed are Graham Street Market, Harbourfront Connectivity Study, and Emerald Necklace (UDP International, 2015). The Graham Street Market proposal goal was to renovate the area while at the same time ensure to maintain the memory and the culture of the street. Harbourfront Connectivity Study project was to help resolve issues of the continuity prevention along the Harbourfront in Hong Kong from being achieved. As for the Emerald Necklace, their goal was to 'bring the city to the harbour and the harbour to the city'. As for collaborations, RTKL International Limited, Masterplan Limited & Scott Wilson Limited, and Oren Tatcher are the few associations that UDP had with while completing these project.

UDP's mission is to meet the stakeholder requirements and to provide win-win solutions that will deliver long-term environmental, economic, and social sustainability (UDP International, 2015). They provide many services, including: strategic & master planning, urban design & placemaking, planning applications & development feasibility, community outreach & public engagement, place branding & marketing, design review & guidelines, and impact assessments. In addition, they also work in architectural, interior & landscape design. In relation to our Smart City project, the urban design & placemaking would be the most relevant, however, the majority of the available services can also be utilized to accomplish the goal of the project.

Dr. Sujata Govada is also a founding member of Institute for Sustainable Urbanization (ISU), which is a non-profit organization to promote sustainable urbanization in emerging countries and the developed world to help create new effective ways to ensure more liveable, walkable, and sustainable communities and cities worldwide.

Appendix B: Interview with Professor McCauley

Date: December 4th, 2015
Time: 10AM
Location: WPI Project Center
Team Members in Attendance: Cameron Currie, Rebecca Dall'Orso, Monineath Khun, Max Li
Guests in Attendance: Professor Stephen McCauley

The following information below is summary notes written on the interview that the UDP team conducted with Professor McCauley. Rebecca was the team member recording the notes and Cameron, Monineath, and Max were the team members leading the discussion. After the interview, the team followed up with Professor McCauley and he allowed the information said in the interview to be shared in this report. Professor Stephen McCauley is currently a professor at Worcester Polytechnic Institute (WPI) teaching in the Interdisciplinary and Global Studies Division and currently teaches the course "ID2050" which is the course students at WPI take prior to completing their IQP project.

The team started off by asking Prof.McCauley what his research has been on Smart City and Urban Planning. He told us he worked on developing an eco-city in the Ping Di region of China. Ping Di used to be a farming area until the late 1970's when the main city area of Ping Di began to get wealthy and develop from a farming area into a city. The outskirts of Ping Di area remained farming during this change. Some aspects that Prof.McCauley dealt with during this research was that the Chinese government was really interested in ideas proposed to turn the outskirts of Ping Di into an eco-city but the government also was very closed on sharing data with the researchers and sharing information that the government had on the plans going forward. Something that was also introduced for Ping Di was the "Internet of Things." The "Internet of Things" means that everything in our lives can have an IP address and be monitored in real time. This would be helpful in research management and a smart grid. But some questions that arise from the "Internet of Things" are privacy issues as well as EMF exposure. Some urban planning that was looked at for Ping Di was land use planning, such as developing transportation nodes where city attractions would be planned around a central transportation node; this would encourage public transit use and allow walkability between areas to be increased. Prof.McCauley provided us with the company he worked with, Next Generation InfoStructure, which is another consulting firm for city planning that is similar to our sponsor.

Next, Prof.McCauley discussed with us his work in developing Worcester, Massachusetts into a Smart City. He worked on this project from 2010-2014 and the goal was to attract firms interested in green energy initiatives to make Worcester a hub of green energy. Attracting a hub business central allows for high tech innovation, introduces tax breaks to these companies that specialize in green energy initiatives, and allows for helpful communication between the companies since they focus in similar areas. Part of this project also looked into introducing a smart grid in Worcester, currently some Worcester families are piloting this project.

For Prof.McCauley's PhD he looked at smart growth in the Greater Boston Area between the 1990s-early 2000s. One of the problems that came from that was seeing tension between the state's vision and tension between the town's visions. Since these were two different levels of government, the town's government sometimes felt that the state government was pushing ideas

and initiatives onto them that they did not believe would work. During this research, Prof.McCauley help meetings at the state level with the Department of Environmental Protection and at the town level with town planners.

Prof.McCauley finished the interview by providing our team with some suggestions on what we can do when we complete our project. He suggested that we use the snowball effect when interviewing experts so we know we will be talking to someone who has information that will be good for our team to use. He also suggested looking at possibly videotaping interviews and focus groups so we can compile a short video to show at our final presentation in Hong Kong that shows the various opinions on Kowloon East and that work that has been done and the work that is planned to be finished.

At the conclusion of the interview, Prof.McCauley provided our team with multiple files of projects he was worked on in Urban Planning that would be helpful references when completing our project.

Appendix C: Interview with Hong Kong Green Building Council

Project: Assessing Smart City Initiatives in Kowloon East
Date: February 5th 2016
Time: 1pm
Location: Jockey Club Environmental Building

Interviewer: Cameron Currie
Interviewee: Eddy Lau
Recorders: Rebecca Dall'Orso, Max Li

Purpose of research:
To gain more information on the initiatives that have/are going to take place in Kowloon East to develop it into a Smart City as well as gain insights on the BEAM Certified Buildings in the area.

Notes to Interviewee:
Thank you for your participation in our interview. We are third year students from Worcester Polytechnic Institute (WPI) and currently working with Urban Design & Planning (UDP) consulting firm on the Smart City Initiative in Kowloon East. We believe your input will be valuable to our project. One of our team members will be asking you the questions we have prepared and the rest will be taking notes on what is said and possibly asking follow-up questions.

Approximate length of interview: 30 minutes.

I. What do you know about the Kowloon East Smart City project?
   As there are many new buildings being built in the Kowloon East area many of them are need to get a BEAM provisional certification for approval. The new buildings have been doing so in Kowloon East so there has been much involvement with the development plan and the Green Building Council.

II. What is the state of BEAM certification in Hong Kong in general?
   From 2009 there have been 700 new buildings that have been BEAM certified as opposed to the 12 old buildings that have been certified. It is very difficult for old buildings to go through the process of getting BEAM certified and that is the reason why there have been so few old buildings.

III. What is your opinion on how having a lot of BEAM certified buildings will help improve the project?
   Having BEAM certified buildings would improve the area, but the problem being the area is comprised mostly of old existing buildings so it would be very difficult to have many certified.

IV. How many buildings do you think are going to be BEAM certified in the next 10 years in Kowloon East?
For Kowloon East unless there are more incentives for existing buildings to get BEAM certified there would most likely not be that much of an increase in the existing buildings in the area. The amount of different business owners coming together in one building is not impossible, just very difficult.

V. Do you think that a high number of BEAM certified buildings would attract more businesses to Kowloon East?
The business owners of Hong Kong have a very commercial mindset. They do things that would make their business more profitable and if there is an office space available where they could do so they would take the opportunity. Whether the office was in a green building or not does not really come into the mindset of business owners in the area.

Thank you so much for your time! We really appreciate you taking time out of your day to answer our questions and being able to help us in our project which is assessing the Smart City initiatives in Kowloon East. If you have any further questions you can reach us at our team email hk-udp@wpi.edu. We value the information you have shared with us and will use it in our final project report.

Appendix D: Interview with Energizing Kowloon East Office City Planner

Project: Assessing Smart City Initiatives in Kowloon East
Date 2/26/2016
Time 12:45PM
Location TusPark, Kwun Tong
Interviewer: Cameron Currie, Rebecca Dall'Orso
Interviewee __EKEO City Planner, Tracy Wong___
Recorders: Monineath Khun, Max Li

Purpose of research:
To gain more information on the initiatives that have/are going to take place in Kowloon East to develop it into a Smart City as well as gain insights and personal perspective from the knowledgeable person's specialty related to the project.

Notes to Interviewee:
Thank you for your participation in our interview. We are third year students from Worcester Polytechnic Institute (WPI) and currently working with Urban Design & Planning (UDP) consulting firm on the Smart City Initiative in Kowloon East. We believe your input will be valuable to our project. One of our team members will be asking you the questions we have prepared and the rest will be taking notes on what is said and possibly asking follow-up questions.

Approximate length of interview: 45 minutes.

I. What is your position where you are employed and how long have you been in this position?
   Tracy is the Place Making Manager for EKEO and has been in this position since November 2015. Prior to working at EKEO, she still worked for the government as a City Planner for the past five years in another department.

II. What do you believe has been the public's reception for this project?
   Smart Cities are a very popular concept currently and those aware of the initiatives really back them. The Innovation and Technology Bureau of the Hong Kong Government have been also contributing to Kowloon East becoming a Smart City. In the last three-five years a lot of tech startup companies have been attracted to the area due to the initiatives.

III. Since a lot of industry has moved out of Kowloon East, have any industrial buildings been converted to office space instead?
   There are very few heavy industry buildings remaining within Kowloon East, the main one being the Flour Mill located on Hoi Bun Road. From 2010 and now through March 2016, the government has waived the premium fee of transforming old industrial

buildings to office spaces. Since that is only a few days away, most buildings that are or are going to be transformed have been already.

IV. In Kwun Tong there were the initiatives of beautifying select alleyways in order to improve the image of the area. Are any other similar plans being suggested or implemented?
A lot of people are still unaware of alleyways and where they go to. A lot of pedestrians just use the street and walk straight from the MTR on the sidewalks to their office buildings since that is familiar to them. Some people may be scared to use the alleyway system because they don't know what they would lead to. Tracy suggested that we come up with a way to improve the alleyway systems to possible encourage more to use them since this can help relieve pedestrian congestion potentially.

V. We noticed that during our visit during weeknight, Kowloon East can be very empty, is there a reason why?
Not a lot of people stay in the region late at night, currently they just go to work in the area and then leave to go straight home after. That is why there is the Kowloon Bay Action Area and the Kwun Tong Action Area that will have studies on them in the future since they want to attract tourists as well as shoppers during the other times.

VI. How do you envision Kowloon East in when the project is scheduled to be completed?
When the project is scheduled to complete, Tracy sees a very big population introduced in the Kai Tak area due to the residential buildings that have already been approved as well as the coming of the MTR stop to the Kai Tak region. Kai Tak will have a very big physical change since it will be all new development as well as be able to attract more tourists to the area. Kwun Tong and Kowloon Bay won't have as big of a drastic change but the area will have been improved and be a Smart City.

Thank you so much for your time! We really appreciate you taking time out of your day to answer our questions and being able to help us in our project which is assessing the Smart City initiatives in Kowloon East. If you have any further questions you can reach us at our team email hk-udp@wpi.edu. We value the information you have shared with us and will use it in our final project report.

Appendix E: Sample Survey Given

九龍東調查

We are four university students from America doing research for credit on the recent changes occurring in Kowloon East. The purpose of this survey is to gather the publics' opinion on the recent changes that have occurred in the past four years in Kowloon East as well as to gain any insight on what the public wants to see happen in Kowloon East in the future.

我們是 4 位來自美國的大學生，正在進行關於九龍東近年變化的研究。本調查的目的在於收集公眾對於九龍東過去 4 年所發生的變化之意見，及對九龍東未來發展的展望。

How long have you lived in Kwun Tong, Kai Tak, or Kowloon Bay?

您在觀塘，啟德或九龍灣居住生活工作多少年？

☐Have never lived in these areas 從 未在此區域居住

☐0-5 Years ☐6-10 Years ☐11-15 Years ☐16+ Years

Are you aware of the initiatives of the Energizing Kowloon East Office (EKEO)?

您有無留意過「起動九龍東」的政策措施？

☐Yes 有☐No 無

How often do you visit any of the parks in Kwun Tong, Kai Tak, or Kowloon Bay?

您使用觀塘、啟德或九龍灣的任一公園的頻率是？

☐Daily 每日☐Weekly 每星期☐Monthly 每月☐Rarely 很少

☐This is my first time 今次是第一次

How did you reach the park today? Check all that apply.

您今日使用何種交通方式來到這個公園？（多選）

☐Walking 步行☐MTR 地鐵☐Bus 巴士☐Mini-Bus 小巴

☐Ferry 輪渡☐Taxi 的士

What activities do you use the park for? Check all that apply.

您在此公園會進行以下哪些活動？（多選）

☐Walking 散步 ☐Eating Box Lunch 野餐 ☐Running 跑步

☐Ball Playing 打波 ☐Using Park Equipment 使用公園設施

☐Other 其他: _____

Have you ever attended an event at "Fly the Flyover"?

您有無參加過「反轉天橋底」的活動？

☐Never 從未 ☐Once 一次 ☐Twice 兩次

☐Three Times 三次☐4+ Times 四次以上

☐I’ve never heard of “Fly the Flyover” 從未聽過這個活動

What kinds of activities/locations would you most like to see in Kowloon East?

您最希望九龍東改進以下哪些方面？

☐Better Transportation 完善交通條件

☐More Activities for Younger Children 更多青少年活動

☐More Water Activities 更多濱水活動

☐More Community Activities 更多社區活動

☐ Other 其他:

_____

_____

_____

Thank you so much for completing this survey. Your opinions and feedback are appreciated!

非常感謝您參與今次調查，感謝您寶貴的意見

Appendix F: Survey Data

Kwun Tong Promenade Weekday Results

How long have you lived in Kwun Tong, Kai Tak, or Kowloon Bay?	Are you aware of the Initiatives of the EKEO?	How often do you visit any of the parks in Kwun Tong, Kai Tak, or Kowloon Bay?	How did you reach the park today?	What activities do you use the park for?	Have you ever attended an event at "Fly the Flyover"?	What would you want to see more of in Kowloon East?
Never	No	Rarely	Bus	Other	Never	Better Transportation
Zero-Five	No	Rarely	Walking	Walking	Never	Better Transportation
Zero-Five	Yes	Weekly	Walking	Walking	Never	Better Transportation
Never	No	This is my first time	Walking	Walking	I've never heard of "Fly the Flyover"	Better Transportation; More Activities for Younger Children
Sixteen+	No	Monthly	Walking	Walking; Using Park Equipment	I've never heard of "Fly the Flyover"	Better Transportation; More Community Activities
Never	Yes	Rarely	Walking	Walking	Never	Better Transportation; More Community Activities
Zero-Five	Yes	Daily	Walking	Walking	Never	More Activities for Younger Children
Sixteen+	Yes	Monthly	Walking	Walking	Never	More Activities for Younger Children

Zero-Five	No	Weekly	MTR	Walking	I've never heard of "Fly the Flyover"	More Community Activities
Never	No	Weekly	MTR	Using Park Equipment	Never	More Community Activities
Zero-Five	Yes	Weekly	Walking	Walking; Using Park Equipment	Never	More Community Activities
Zero-Five	No	Daily	MTR	Walking	Never	More Water Activities
Six-Ten	Yes	Monthly	Walking	Walking	Never	More Water Activities; More Community Activities
Never	No	This is my first time	Walking	Walking	I've never heard of "Fly the Flyover"	
Never	No	Monthly	Bus	Walking	Never	Better Transportation
Never	No	Weekly	MTR; Bus	Walking	Never	Better Transportation
Never	No	Rarely	Walking	Walking	Never	Better Transportation
16+ Years	Yes	Rarely	Walking	Walking	Never	Better Transportation
Never	Yes	Daily	Walking; MTR; Mini-Bus	Walking; Eating Box Lunch	Once	Better Transportation
16+ Years	No	Daily	Walking	Walking	Twice	Better Transportation
Never	No	Weekly	Walking	Walking	Never	Better Transportation; More Activities for Younger Children; More Water Activities
Never	No	Weekly	MTR	Walking; Running;	Never	Better Transportation;

				Using Park Equipment		More Activities for Younger Children; More Water Activities; More Community Activities
Never	Yes	This is my First Time	Walking	Walking	Never	Better Transportation; More Community Activities
Never	No	Daily	Walking	Walking	I've Never Heard of "Fly the Flyover"	Better Transportation; More Water Activities
Never	Yes	Monthly	Bus	Walking	Never	Better Transportation; More Water Activities
0-5 Years	Yes	Rarely	Walking	Walking	Never	Better Transportation; More Water Activities
Never	No	Weekly	Walking	Walking	Never	Better Transportation; More Water Activities
0-5 Years	No	This is my First Time	Walking	Walking	Never	Better Transportation; More Water Activities; More Community Activities
6-10 Years	Yes	Daily	Walking	Walking	I've Never Heard of "Fly the Flyover"	More Activites for Younger Children; More Water Activities; More Community Activities

6-10 Years	Yes	Daily	Walking	Walking	I've Never Heard of "Fly the Flyover"	More Activites for Younger Children; More Water Activities; More Community Activities
Never	Yes	Daily	Walking	Walking	I've Never Heard of "Fly the Flyover"	More Activities for Younger Children
16+ Years	No	Rarely	MTR	Walking	Never	More Activities for Younger Children
Never	Yes	Daily	Walking	Walking	Never	More Activities for Younger Children
Never	No	Monthly	Walking	Walking	Once	More Activities for Younger Children
Never	No	Daily	Walking	Walking	Never	More Activities for Younger Children
Never	No	Daily	Walking	Walking	Never	More Activities for Younger Children
Never	No	Rarely	Taxi	Walking	Never	More Activities for Younger Children; More Community Activities
16+ Years	Yes	Daily	Walking	Walking	Never	More Activities for Younger Children; More Water Activities
0-5 Years	No	Weekly	Walking	Walking	Never	More Activities for Younger Children; More Water Activities
Never	No	Weekly	Walking	Walking	Never	More Activities for Younger

						Children; More Water Activities
Never	No	Monthly	Walking	Walking; Eating Box Lunch	Never	More Activities for Younger Children; More Water Activities; More Restaurants and Cafes
11-15 Years	Yes	Daily	Walking; MTR	Walking; Eating Box Lunch	Never	More Activities for Younger Children; More Water Activities; Music Concerts
0-5 Years	No	Monthly	Bus	Walking	Never	More Community Activities
Never	No	This is my First Time	MTR	Walking	Never	More Community Activities
Never	No	Daily	Walking	Walking	Never	More Community Activities
Never	Yes	Rarely	Walking	Walking	Never	More Community Activities
Never	No	Weekly	Walking	Walking	Never	More Community Activities
16+ Years	Yes	Weekly	Walking	Walking	Never	More Community Activities
Never	No	Weekly	Walking	Walking	I've Never Heard of "Fly the Flyover"	More Plants
Never	No	Monthly	Walking	Hanging out	Never	
Never	No	Rarely	MTR	Walking	Never	Better Transportation
0-5 Years	Yes	Daily	Walking	Walking	Never	Better Transportation

0-5 Years	No	Weekly	Walking	Walking; Eating Box Lunch	Twice	Better Transportation
Never	Yes	Monthly	Walking	Exercise	Never	More Activities for Younger Children; More Community Activities
Never	No	Weekly	Walking	Walking; Praying	Never	More Activities for Younger Children; More Community Activities
Never	No	Rarely	Walking; MTR	Walking; Photography	Never	More Community Activities
6-10 Years	No	Monthly	Walking	Walking; Photography	Never	More Water Activities; Extreme Sports
0-5 Years	No	Daily	Bus	Walking	Never	More Water Activities
Never	Yes	Daily	MTR	Walking	Never	Better Restaurants
6-10 Years	Yes	Weekly	Walking	Walking	I've never heard of fly the flyover	Better Transportation
16+ Years	Yes	Weekly	Walking	Running	Never	Better Transportation
Never	Yes	Monthly	Walking	Using Park Equipment	Never	Better Transportation
11-15 Years	Yes	Weekly	Bus	Walking	Never	Better Transportation
16+ Years	No	Weekly	Mini-Bus	Walking	Never	Better Transportation
0-5 Years	No	Weekly	Walking	Walking	Never	Better Transportation
Never	No	Monthly	Walking; MTR	Walking	Never	Better Transportation
Never	Yes	Monthly	Walking; MTR; Mini-Bus	Walking	Never	Better Transportation

0-5 Years	Yes	Daily	MTR	Walking; Using Park Equipment	Never	Better Transportation
16+ Years	Yes	Rarely	MTR	Using Park Equipment	Once	Better Transportation
Never	Yes	Monthly	Drive	Walking; Eating Box Lunch; Running; Using Park Equipment	Never	Better Transportation; More Activities for Younger Children
16+ Years	Yes	Monthly	Walking	Walking	Never	Better Transportation; More Activities for Younger Children; More Water Activities
16+ Years	Yes	Monthly	Walking	Running	Never	Better Transportation; More Activities for Younger Children; More Water Activities; More Community Activities
Never	No	Daily	MTR	Waling	I've never heard of fly the flyover	Better Transportation; More Community Activities
Never	No	Rarely	Walking	Walking	Never	Better Transportation; More Community Activities
0-5 Years	Yes	Daily	Walking; MTR	Walking	Never	Better Transportation; More Community Activities

0-5 Years	No	Rarely	Mini-Bus	Walking	Never	Better Transportation; More Water Activities
16+ Years	Yes	Monthly	Walking	Walking	Never	Better Transportation; More Water Activities
Never	Yes	Weekly	Walking	Walking	Never	Better Transportation; More Water Activities
16+ Years	No	Monthly	Walking	Walking	Never	Better Transportation; More Water Activities; More Community Activities
16+ Years	No	Monthly	Walking	Walking	Never	More Activites for Younger Children
16+ Years	No	Monthly	Walking	Walking	Never	More Activities for Younger Children
Never	No	This is my first time	Bus	Walking; Eating Box Lunch; Using Park Equipment	Never	More Activites for Younger Children
16+ Years	No	Daily	Walking	Walking	Twice	More Activites for Younger Children
16+ Years	No	This is my first time	Drive	Using Park Equipment	I've never heard of fly the flyover	More Activites for Younger Children; More Water Activities; More Kids Facilities
16+ Years	No	Rarely	Walking	Walking	Never	More Community Activities

16+ Years	Yes	Weekly	Walking	Walking	Once	More Community Activities
6-10 Years	Yes	Monthly	Bus	Walking; Using Park Equipment	Three	More Community Activities
Never	No	This is my first time	Walking	Walking	I've never heard of fly the flyover	More Water Acitivies; Coffee Bars; Cafes at the water front
0-5 Years	No	Rarely	Walking	Walking	Never	More Water Activities
Never	No	Rarely	Walking	Walking	Never	More Water Activities
Never	No	Rarely	Walking; Bus	Walking	Never	More Water Activities
0-5 Years	Yes	Rarely	MTR	Eating Box Lunch	Once	More Water Activities
16+ Years	Yes	Rarely	MTR	Using Park Equipment	Once	More Water Activities
Never	No	This is my first time	Walking	Walking	I've never heard of fly the flyover	More Water Activities; Cafes at the waterfront; coffee bars
11-15 Years	Yes	Weekly	Walking	Walking	Never	More Water Activities; More Community Activities
Never	Yes	Weekly	Walking	Walking	Never	More Water Activities; More Community Activities
0-5 Years	Yes	Weekly	MTR; Ferry; Taxi	Waiting for people	Once	Rent to be cheaper
16+ Years	No	Rarely	Mini-Bus	Walking	I've never heard of fly the flyover	

16+ Years	No	Weekly	Drive	Radio Car Drifting	Never	
Never	No	This is my first time	Waling	Walking	Never	

Kwun Tong Promenade Weekend Results

How long have you lived in Kwun Tong, Kai Tak, or Kowloon Bay?	Are you aware of the Initiatives of the EKEO?	How often do you visit any of the parks in Kwun Tong, Kai Tak, or Kowloon Bay?	How did you reach the park today?	What activities do you use the park for?	Have you ever attended an event at "Fly the Flyover"?	What would you want to see more of in Kowloon East?
Never	No	Rarely	Bus	Other	Never	Better Transportation
Zero-Five	No	Rarely	Walking	Walking	Never	Better Transportation
Zero-Five	Yes	Weekly	Walking	Walking	Never	Better Transportation
Never	No	This is my first time	Walking	Walking	I've never heard of "Fly the Flyover"	Better Transportation; More Activities for Younger Children
Sixteen+	No	Monthly	Walking	Walking; Using Park Equipment	I've never heard of "Fly the Flyover"	Better Transportation; More Community Activities
Never	Yes	Rarely	Walking	Walking	Never	Better Transportation; More Community Activities
Zero-Five	Yes	Daily	Walking	Walking	Never	More Activities for Younger Children

Sixteen+	Yes	Monthly	Walking	Walking	Never	More Activities for Younger Children
Zero-Five	No	Weekly	MTR	Walking	I've never heard of "Fly the Flyover"	More Community Activities
Never	No	Weekly	MTR	Using Park Equipment	Never	More Community Activities
Zero-Five	Yes	Weekly	Walking	Walking; Using Park Equipment	Never	More Community Activities
Zero-Five	No	Daily	MTR	Walking	Never	More Water Activities
Six-Ten	Yes	Monthly	Walking	Walking	Never	More Water Activities; More Community Activities
Never	No	This is my first time	Walking	Walking	I've never heard of "Fly the Flyover"	
Never	No	Monthly	Bus	Walking	Never	Better Transportation
Never	No	Weekly	MTR; Bus	Walking	Never	Better Transportation
Never	No	Rarely	Walking	Walking	Never	Better Transportation
16+ Years	Yes	Rarely	Walking	Walking	Never	Better Transportation
Never	Yes	Daily	Walking; MTR; Mini-Bus	Walking; Eating Box Lunch	Once	Better Transportation
16+ Years	No	Daily	Walking	Walking	Twice	Better Transportation
Never	No	Weekly	Walking	Walking	Never	Better Transportation; More Activities for Younger Children; More

						Water Activities
Never	No	Weekly	MTR	Walking; Running; Using Park Equipment	Never	Better Transportation; More Activities for Younger Children; More Water Activities; More Community Activities
Never	Yes	This is my First Time	Walking	Walking	Never	Better Transportation; More Community Activities
Never	No	Daily	Walking	Walking	I've Never Heard of "Fly the Flyover"	Better Transportation; More Water Activities
Never	Yes	Monthly	Bus	Walking	Never	Better Transportation; More Water Activities
0-5 Years	Yes	Rarely	Walking	Walking	Never	Better Transportation; More Water Activities
Never	No	Weekly	Walking	Walking	Never	Better Transportation; More Water Activities
0-5 Years	No	This is my First Time	Walking	Walking	Never	Better Transportation; More Water Activities; More Community Activities
6-10 Years	Yes	Daily	Walking	Walking	I've Never Heard of "Fly the Flyover"	More Activites for Younger Children; More Water

						Activities; More Community Activities
6-10 Years	Yes	Daily	Walking	Walking	I've Never Heard of "Fly the Flyover"	More Activities for Younger Children; More Water Activities; More Community Activities
Never	Yes	Daily	Walking	Walking	I've Never Heard of "Fly the Flyover"	More Activities for Younger Children
16+ Years	No	Rarely	MTR	Walking	Never	More Activities for Younger Children
Never	Yes	Daily	Walking	Walking	Never	More Activities for Younger Children
Never	No	Monthly	Walking	Walking	Once	More Activities for Younger Children
Never	No	Daily	Walking	Walking	Never	More Activities for Younger Children
Never	No	Daily	Walking	Walking	Never	More Activities for Younger Children
Never	No	Rarely	Taxi	Walking	Never	More Activities for Younger Children; More Community Activities
16+ Years	Yes	Daily	Walking	Walking	Never	More Activities for Younger Children; More Water Activities
0-5 Years	No	Weekly	Walking	Walking	Never	More Activities for Younger Children; More

						Water Activities
Never	No	Weekly	Walking	Walking	Never	More Activities for Younger Children; More Water Activities
Never	No	Monthly	Walking	Walking; Eating Box Lunch	Never	More Activities for Younger Children; More Water Activities; More Restaurants and Cafes
11-15 Years	Yes	Daily	Walking; MTR	Walking; Eating Box Lunch	Never	More Activities for Younger Children; More Water Activities; Music Concerts
0-5 Years	No	Monthly	Bus	Walking	Never	More Community Activities
Never	No	This is my First Time	MTR	Walking	Never	More Community Activities
Never	No	Daily	Walking	Walking	Never	More Community Activities
Never	Yes	Rarely	Walking	Walking	Never	More Community Activities
Never	No	Weekly	Walking	Walking	Never	More Community Activities
16+ Years	Yes	Weekly	Walking	Walking	Never	More Community Activities
Never	No	Weekly	Walking	Walking	I've Never Heard of "Fly the Flyover"	More Plants
Never	No	Monthly	Walking	Hanging out	Never	

Never	No	Rarely	MTR	Walking	Never	Better Transportation
0-5 Years	Yes	Daily	Walking	Walking	Never	Better Transportation
0-5 Years	No	Weekly	Walking	Walking; Eating Box Lunch	Twice	Better Transportation
Never	Yes	Monthly	Walking	Exercise	Never	More Activities for Younger Children; More Community Activities
Never	No	Weekly	Walking	Walking; Praying	Never	More Activities for Younger Children; More Community Activities
Never	No	Rarely	Walking; MTR	Walking; Photography	Never	More Community Activities
6-10 Years	No	Monthly	Walking	Walking; Photography	Never	More Water Activities; Extreme Sports
0-5 Years	No	Daily	Bus	Walking	Never	More Water Activities
Never	Yes	Daily	MTR	Walking	Never	Better Restaurants
6-10 Years	Yes	Weekly	Walking	Walking	I've never heard of fly the flyover	Better Transportation
16+ Years	Yes	Weekly	Walking	Running	Never	Better Transportation
Never	Yes	Monthly	Walking	Using Park Equipment	Never	Better Transportation
11-15 Years	Yes	Weekly	Bus	Walking	Never	Better Transportation
16+ Years	No	Weekly	Mini-Bus	Walking	Never	Better Transportation
0-5 Years	No	Weekly	Walking	Walking	Never	Better Transportation
Never	No	Monthly	Walking; MTR	Walking	Never	Better Transportation

Never	Yes	Monthly	Walking; MTR; Mini-Bus	Walking	Never	Better Transportation
0-5 Years	Yes	Daily	MTR	Walking; Using Park Equipment	Never	Better Transportation
16+ Years	Yes	Rarely	MTR	Using Park Equipment	Once	Better Transportation
Never	Yes	Monthly	Drive	Walking; Eating Box Lunch; Running; Using Park Equipment	Never	Better Transportation; More Activities for Younger Children
16+ Years	Yes	Monthly	Walking	Walking	Never	Better Transportation; More Activities for Younger Children; More Water Activities
16+ Years	Yes	Monthly	Walking	Running	Never	Better Transportation; More Activities for Younger Children; More Water Activities; More Community Activities
Never	No	Daily	MTR	Waling	I've never heard of fly the flyover	Better Transportation; More Community Activities
Never	No	Rarely	Walking	Walking	Never	Better Transportation; More Community Activities
0-5 Years	Yes	Daily	Walking; MTR	Walking	Never	Better Transportation;

						More Community Activities
0-5 Years	No	Rarely	Mini-Bus	Walking	Never	Better Transportation; More Water Activities
16+ Years	Yes	Monthly	Walking	Walking	Never	Better Transportation; More Water Activities
Never	Yes	Weekly	Walking	Walking	Never	Better Transportation; More Water Activities
16+ Years	No	Monthly	Walking	Walking	Never	Better Transportation; More Water Activities; More Community Activities
16+ Years	No	Monthly	Walking	Walking	Never	More Activities for Younger Children
16+ Years	No	Monthly	Walking	Walking	Never	More Activities for Younger Children
Never	No	This is my first time	Bus	Walking; Eating Box Lunch; Using Park Equipment	Never	More Activities for Younger Children
16+ Years	No	Daily	Walking	Walking	Twice	More Activities for Younger Children
16+ Years	No	This is my first time	Drive	Using Park Equipment	I've never heard of fly the flyover	More Activities for Younger Children; More Water Activities; More Kids Facilities

16+ Years	No	Rarely	Walking	Walking	Never	More Community Activities
16+ Years	Yes	Weekly	Walking	Walking	Once	More Community Activities
6-10 Years	Yes	Monthly	Bus	Walking; Using Park Equipment	Three	More Community Activities
Never	No	This is my first time	Walking	Walking	I've never heard of fly the flyover	More Water Activities; Coffee Bars; Cafes at the waterfront
0-5 Years	No	Rarely	Walking	Walking	Never	More Water Activities
Never	No	Rarely	Walking	Walking	Never	More Water Activities
Never	No	Rarely	Walking; Bus	Walking	Never	More Water Activities
0-5 Years	Yes	Rarely	MTR	Eating Box Lunch	Once	More Water Activities
16+ Years	Yes	Rarely	MTR	Using Park Equipment	Once	More Water Activities
Never	No	This is my first time	Walking	Walking	I've never heard of fly the flyover	More Water Activities; Cafes at the waterfront; coffee bars
11-15 Years	Yes	Weekly	Walking	Walking	Never	More Water Activities; More Community Activities
Never	Yes	Weekly	Walking	Walking	Never	More Water Activities; More Community Activities
0-5 Years	Yes	Weekly	MTR; Ferry; Taxi	Waiting for people	Once	Rent to be cheaper
16+ Years	No	Rarely	Mini-Bus	Walking	I've never heard of	

					fly the flyover	
16+ Years	No	Weekly	Drive	Radio Car Drifting	Never	
Never	No	This is my first time	Waling	Walking	Never	

Kai Tak Runway Park Results

How long have you lived in Kwun Tong, Kai Tak, or Kowloon Bay?	Are you aware of the Initiatives of the EKEO?	How often do you visit any of the parks in Kwun Tong, Kai Tak, or Kowloon Bay?	How did you reach the park today?	What activities do you use the park for?	Have you ever attended an event at "Fly the Flyover"?	What would you want to see more of in Kowloon East?
16+ Years	No	Monthly	Walking; MTR	Walking	I've Never Heard of Fly the "Fly the Flyover"	Better Transportation
6-10 Years	No	Monthly	Walking	Walking; Eating Box Lunch; Using Park Equipment	I've Never Heard of Fly the "Fly the Flyover"	Better Transportation
Never	No	Monthly	Taxi	Eating Box Lunch; Using Park Equipment	Never	Better Transportation
11-15 Years	Yes	This is my first time	Bus	Using Park Equipment; Ball Playing; Other	Never	Better Transportation
16+ Years	Yes	Monthly	Mini-Bus	Walking	Never	Better Transportation
6-10 Years	No	Rarely	MTR	Walking	Never	Better Transportation
Never	No	Rarely	MTR	Walking	Never	Better Transportation
16+ Years	No	Monthly	Walking	Walking	Never	Better Transportation
6-10 Years	Yes	Monthly	Walking	Walking	Never	Better Transportation
Never	Yes	Rarely	Walking; Bus	Walking; Other	Never	Better Transportation

6-10 Years	Yes	Monthly	Walking; MTR	Walking; Other	Never	Better Transportation
6-10 Years	Yes	Monthly	Walking	Walking; Using Park Equipment	Never	Better Transportation
0-5 Years	No	Rarely	Walking; MTR	Walking; Using Park Equipment; Other	Never	Better Transportation
16+ Years	No	Rarely	MTR	Walking; Using Park Equipment	Never	Better Transportation; More Activities for Younger Children
Never	No	This is my first time	Walking	Walking; Using Park Equipment	Never	Better Transportation; More Activities for Younger Children
16+ Years	Yes	Rarely	Walking	Walking	I've Never Heard of Fly the "Fly the Flyover"	Better Transportation; More Activities for Younger Children; More Water Activities
11-15 Years	Yes	Rarely	Drive	Walking; Using Park Equipment	I've Never Heard of Fly the "Fly the Flyover"	Better Transportation; More Activities for Younger Children; More Water Activities
Never	No	Rarely	Drive	Walking; Eating Box Lunch; Ball Playing; Using Park Equipment; Other	Never	Better Transportation; More Activities for Younger Children; More Water Activities
0-5 Years	No	Monthly	Walking; MTR; Bus	Walking; Running; Using Park Equipment; Other	Never	Better Transportation; More Activities for Younger Children; More Water Activities

0-5 Years	Yes	Weekly	Walking	Walking; Eating Box Lunch; Running	Three Times	Better Transportation; More Activities for Younger Children; More Water Activities
Never	Yes	Rarely	MTR	Walking; Using Park Equipment	I've Never Heard of Fly the "Fly the Flyover"	Better Transportation; More Activities for Younger Children; More Water Activities; More Community Activities
Never	No	Monthly	Drive	Walking	Never	Better Transportation; More Activities for Younger Children; More Water Activities; More Community Activities
11-15 Years	No	Monthly	MTR	Walking	Never	Better Transportation; More Activities for Younger Children; More Water Activities; More Community Activities
Never	No	Rarely	MTR	Walking	I've Never Heard of Fly the "Fly the Flyover"	Better Transportation; More Community Activities
16+ Years	No	This is my first time	Walking; MTR	Walking; Using Park Equipment	I've Never Heard of Fly the "Fly the Flyover"	Better Transportation; More Community Activities

6-10 Years	No	Monthly	Drive	Walking	Never	Better Transportation; More Community Activities
Never	No	Rarely	Walking	Walking	Never	Better Transportation; More Community Activities
Never	No	This is my first time	Walking; MTR	Walking	Never	Better Transportation; More Community Activities
Never	No	Monthly	Walking	Walking; Eating Box Lunch	Never	Better Transportation; More Community Activities
6-10 Years	No	Monthly	Walking; MTR	Walking; Eating Box Lunch; Using Park Equipment	Never	Better Transportation; More Community Activities
0-5 Years	Yes	Monthly	Taxi	Walking; Using Park Equipment	Never	Better Transportation; More Community Activities
Never	No	Monthly	Taxi	Walking; Eating Box Lunch; Using Park Equipment	I've Never Heard of Fly the "Fly the Flyover"	Better Transportation; More Water Activities
11-15 Years	No	Weekly	Walking	Walking; Eating Box Lunch; Ball Playing; Using Park Equipment	I've Never Heard of Fly the "Fly the Flyover"	Better Transportation; More Water Activities; More Community Activities
Never	No	Rarely	MTR	Walking	Never	More Activities for Younger Children

6-10 Years	No	Rarely	Walking; MTR	Other	I've Never Heard of Fly the "Fly the Flyover"	More Activities for Younger Children
16+ Years	No	Rarely	Walking	Walking	I've Never Heard of Fly the "Fly the Flyover"	More Activities for Younger Children
11-15 Years	No	Monthly	Walking	Walking; Eating Box Lunch	I've Never Heard of Fly the "Fly the Flyover"	More Activities for Younger Children
16+ Years	No	Rarely	Bus	Walking	Never	More Activities for Younger Children
16+ Years	No	Monthly	Walking	Walking	Never	More Activities for Younger Children
Never	No	This is my first time	Walking	Walking	Never	More Activities for Younger Children
Never	No	Monthly	Walking; MTR	Walking; Eating Box Lunch	Never	More Activities for Younger Children
0-5 Years	No	Weekly	Walking	Walking; Running	Never	More Activities for Younger Children
0-5 Years	No	Monthly	MTR	Walking; Using Park Equipment	Never	More Activities for Younger Children
16+ Years	No	Daily	Walking	Walking	Twice	More Activities for Younger Children
Never	Yes	This is my first time	Walking; MTR; Bus	Walking	I've Never Heard of Fly the "Fly the Flyover"	More Activities for Younger Children; More Water Activities
Never	No	Rarely	MTR	Walking	Never	More Activities for Younger

						Children; More Water Activities
Never	No	This is my first time	Ferry	Walking; Using Park Equipment	Never	More Activities for Younger Children; More Water Activities
16+ Years	Yes	Weekly	Walking	Walking; Using Park Equipment; Other	Never	More Activities for Younger Children; More Water Activities
16+ Years	Yes	Rarely	Drive	Walking; Running; Using Park Equipment	I've Never Heard of Fly the "Fly the Flyover"	More Activities for Younger Children; More Water Activities
Never	No	This is my first time	MTR	Walking; Using Park Equipment;	I've Never Heard of Fly the "Fly the Flyover"	More Activities for Younger Children; More Water Activities
Never	Yes	Weekly	MTR	Walking	Never	More Activities for Younger Children; More Water Activities; More Community Activities
6-10 Years	Yes	This is my first time	Walking	Walking; Using Park Equipment	Never	More Activities for Younger Children; More Water Activities; More Community Activities
0-5 Years	No	Weekly	Walking	Walking; Running	Never	More Activities for Younger Children; More Water Activities; Other
Never	No	Monthly	Walking; MTR	Walking	I've Never Heard of Fly the	More Community Activities

					"Fly the Flyover"	
0-5 Years	No	Monthly	Walking	Other	Never	More Community Activities
0-5 Years	No	Monthly	Walking	Other	Never	More Community Activities
Never	No	This is my first time	Walking	Other	Never	More Community Activities
11-15 Years	Yes	Monthly	Walking	Walking	Never	More Community Activities
16+ Years	No	Monthly	Walking; MTR	Walking	Never	More Community Activities
0-5 Years	No	Monthly	Walking	Walking; Eating Box Lunch	Never	More Community Activities
0-5 Years	No	Rarely	Walking	Walking; Other	Never	More Community Activities
Never	Yes	Rarely	MTR	Walking; Using Park Equipment	Never	More Community Activities
11-15 Years	No	Monthly	Walking	Walking; Eating Box Lunch; Using Park Equipment	Never	More Water Activities; Other
Never	No	Rarely	Bus	Walking; Other	I've Never Heard of Fly the "Fly the Flyover"	More Water Activities
16+ Years	No	Daily	Walking	Other	I've Never Heard of Fly the "Fly the Flyover"	More Water Activities
16+ Years	No	Daily	Walking	Other	I've Never Heard of Fly the	More Water Activities

					"Fly the Flyover"	
16+ Years	No	Daily	Walking	Other	I've Never Heard of Fly the "Fly the Flyover"	More Water Activities
0-5 Years	Yes	Daily	Drive	Walking	I've Never Heard of Fly the "Fly the Flyover"	More Water Activities
16+ Years	No	Monthly	Walking; Bus	Walking	I've Never Heard of Fly the "Fly the Flyover"	More Water Activities
Never	No	Rarely	Bus	Walking; Other	I've Never Heard of Fly the "Fly the Flyover"	More Water Activities
16+ Years	Yes	Monthly	MTR; Bus	Walking; Running; Using Park Equipment	I've Never Heard of Fly the "Fly the Flyover"	More Water Activities
Never	No	Monthly	Walking	Walking	Never	More Water Activities
Never	No	Rarely	Walking	Walking	Never	More Water Activities
11-15 Years	Yes	Rarely	Walking	Walking	Never	More Water Activities
Never	No	This is my first time	Walking	Walking	Never	More Water Activities
0-5 Years	No	Monthly	Taxi	Walking; Eating Box Lunch	Never	More Water Activities
6-10 Years	No	Monthly	Walking; Taxi	Walking; Eating Box Lunch; Running; Ball	Never	More Water Activities

				Playing; Using Park Equipment; Other		
11-15 Years	No	Rarely	Walking	Walking; Eating Box Lunch; Running; Using Park Equipment; Other	Never	More Water Activities
Never	No	This is my first time	Walking	Walking; Eating Box Lunch; Running; Using Park Equipment; Other	Never	More Water Activities
16+ Years	No	Monthly	Walking; MTR	Walking; Eating Box Lunch; Using Park Equipment	Never	More Water Activities
0-5 Years	No	Monthly	Walking; MTR	Walking; Other	Never	More Water Activities
Never	No	This is my first time	Walking; MTR	Walking; Other	Never	More Water Activities
16+ Years	No	Weekly	Walking; MTR; Bus	Walking; Running	Never	More Water Activities; More Community Activities
6-10 Years	No	Weekly	Walking	Walking; Running	I've Never Heard of Fly the "Fly the Flyover"	More Water Activities; Other
Never	No	Rarely	Bus	Walking; Eating Box Lunch	Never	More Water Activities; Other
16+ Years	Yes	Rarely	MTR	Walking	I've Never Heard of Fly the	Other

					"Fly the Flyover"	
16+ Years	No	Rarely	Mini-Bus	Walking; Running	I've Never Heard of Fly the "Fly the Flyover"	Other
Never	Yes	Rarely	Walking; MTR	Walking; Eating Box Lunch; Running	Never	Other
0-5 Years	No	Monthly	Walking	Walking; Running	Never	Other
Never	No	Rarely	Bus	Walking	I've Never heard of fly the flyover	Better Transportation
16+ Years	No	Monthly	Walking	Walking; Using Park Equipment	I've Never heard of fly the flyover	Better transportation
16+ Years	Yes	Monthly	MTR	Other	Never	Better Transportation
16+ Years	No	Rarely	Taxi	Other	Never	Better Transportation
0-5 Years	Yes	Monthly	Walking	Running	Never	Better Transportation
11-15 Years	No	Rarely	MTR	Walking	Never	Better Transportation
0-5 Years	No	Monthly	MTR; Bus	Walking	Never	Better Transportation
11-15 Years	No	Daily	Walking	Walking	Never	Better Transportation
0-5 Years	No	Monthly	Walking	Walking	Never	Better Transportation
16+ Years	No	Monthly	Walking	Walking	Never	Better Transportation
0-5 Years	No	Weekly	Walking	Walking; Eating Box Lunch	Never	Better Transportation
Never	No	This is my first time	Bus	Walking; Eating Box Lunch; Ball Playing;	Never	Better Transportation

				Using Park Equipment		
6-10 Years	No	Rarely	Walking	Walking; Using Park Equipment	Never	Better Transportation; More Activities for Younger Children
Never	Yes	Rarely	Walking	Walking; Using Park Equipment	Never	Better Transportation; More Activities for Younger Children
0-5 Years	No	Rarely	Bus	Walking; Eating Box Lunch	Never	Better Transportation; More Activities for Younger Children; More Community Activities
Never	Yes	Rarely	Bus	Walking	Never	Better Transportation; More Activities for Younger Children; More Water Activities; More Community Activities; Other
Never	No	Weekly	Walking; MTR; Mini-Bus; Ferry; Taxi	Walking; Eating Box Lunch; Running; Other	Once	Better Transportation; More Activities for Younger Children; More Water Activities; More Community Activities; Other
11-15 Years	No	Weekly	Walking	Running; Using Park Equipment	Never	Better Transportation; More Water Activities

16+ Years	No	Monthly	Bus	Walking	Never	Better Transportation; More Water Activities
6-10 Years	No	Daily	Walking	Walking	Never	Better Transportation; More Water Activities
0-5 Years	No	Rarely	Mini-Bus	Walking; Other	Never	Better Transportation; More Water Activities
0-5 Years	No	Weekly	Walking	Walking; Other	Never	Better Transportation; More Water Activities
16+ Years	Yes	Rarely	Walking; Ferry	Walking	Once	Better Transportation; More Water Activities
0-5 Years	Yes	Daily	MTR	Walking; Using Park Equipment	Never	Better Transportation; Other
16+ Years	No	Monthly	MTR	Walking	Never	Better Transportation; More Activities for Younger Children
16+ Years	No	Monthly	Walking	Walking; Using Park Equipment	Never	Better Transportation; More Activities for Younger Children; More Water Activities
0-5 Years	No	Monthly	MTR	Walking	Never	More Activities for Younger Children
Never	No	Monthly	MTR	Walking	Never	More Activities for Younger Children
16+ Years	No	Rarely	MTR	Walking	Never	More Activities for Younger Children

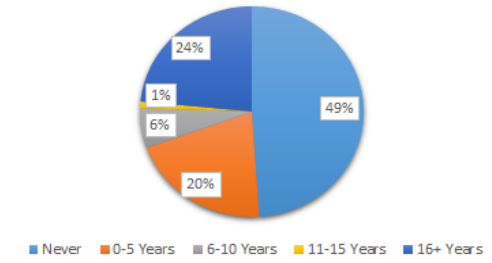
16+ Years	No	Monthly	Walking	Walking	Never	More Activities for Younger Children
11-15 Years	Yes	Monthly	Bus	Walking; Eating Box Lunch	Never	More Activities for Younger Children
0-5 Years	No	Rarely	Walking	Walking; Using Park Equipment	Never	More Activities for Younger Children
Never	No	This is my first time	Walking; MTR	Walking	Never	More Activities for Younger Children; More Community Activities
16+ Years	No	Rarely	Walking	Walking; Using Park Equipment	Never	More Activities for Younger Children; More Community Activities
0-5 Years	No	Monthly	MTR	Eating Box Lunch; Other	I've Never heard of fly the flyover	More Activities for Younger Children; More Water Activities; More Community Activities; Other
6-10 Years	Yes	Weekly	Walking; MTR	Other	Never	More Community Activities
0-5 Years	Yes	Daily	Walking	Running	Never	More Community Activities
16+ Years	No	Rarely	Walking	Walking; Other	Never	More Community Activities
Never	Yes	This is my first time	Walking	Walking; Other	Never	More Community Activities
Never	No	Monthly	Bus	Walking; Using Park Equipment	Never	More Community Activities

6-10 Years	No	Weekly	Walking; Bus	Walking; Using Park Equipment	Once	More Community Activities
Never	Yes	Rarely	Ferry	Walking	4+ Times	More Water Activities
6-10 Years	Yes	Monthly	Walking; Mini-Bus	Eating Box Lunch; Ball Playing' Using Park Equipment	Never	More Water Activities
16+ Years	Yes	Rarely	MTR	Walking	Never	More Water Activities; More Community Activities; Other
16+ Years	No	Monthly	Walking	Walking	I've Never heard of fly the flyover	Other
0-5 Years	Yes	This is my first time	MTR	Running	Never	Other
Never	No	This is my first time	MTR	Walking	Never	Other
Never	No	This is my first time	MTR	Walking	Never	Other
0-5 Years	No	Monthly	MTR	Walking; Eating Box Lunch	Never	Other
16+ Years	Yes	Monthly	MTR	Walking; Using Park Equipment	Never	Other
Never	Yes	This is my first time	Drive	Walking	Never	

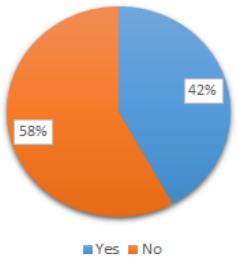
Appendix G: Survey Charts and Results

Weekday Results

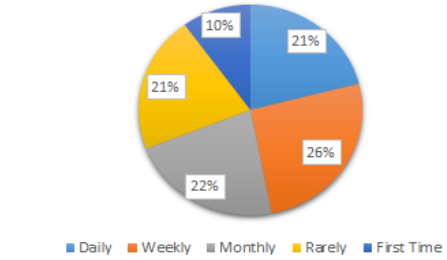
How long have you lived in Kwun Tong, Kai Tak, or Kowloon Bay?



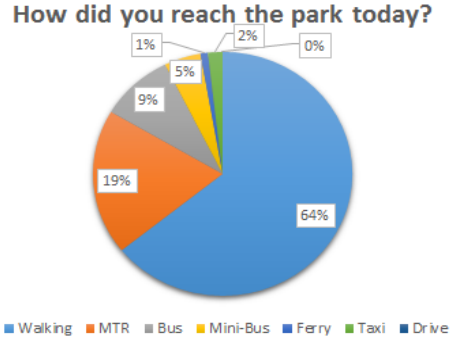
Are you aware of the initatives of the EKEO?



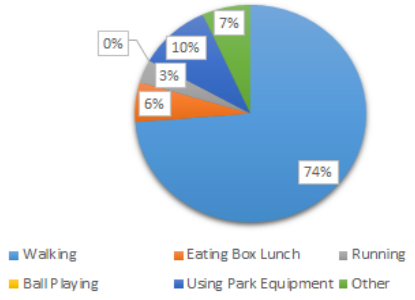
How often do you visit any of the parks in Kwun Tong, Kai Tak, or Kowloon Bay?



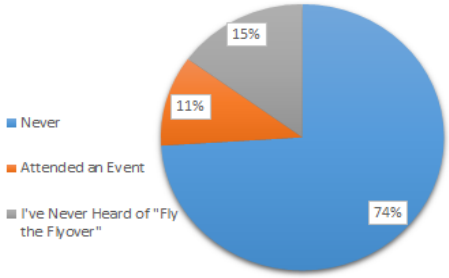
How did you reach the park today?



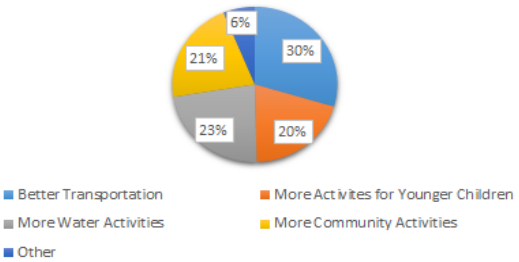
What activities do you use the park for?



Have You Ever Attended an Event at "Fly the Flyover"?

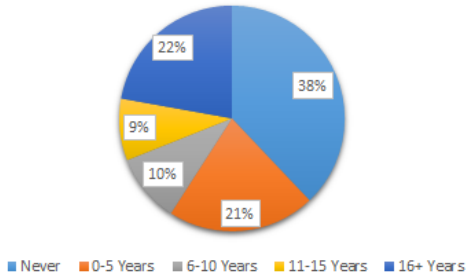


What would you want to see more of in Kowloon East?

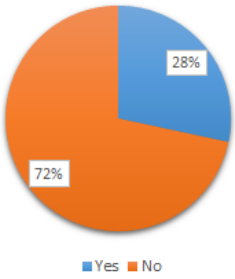


Weekend Results

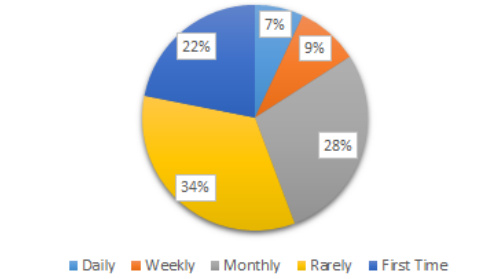
How long have you lived in Kwun Tong, Kai Tak, or Kowloon Bay?



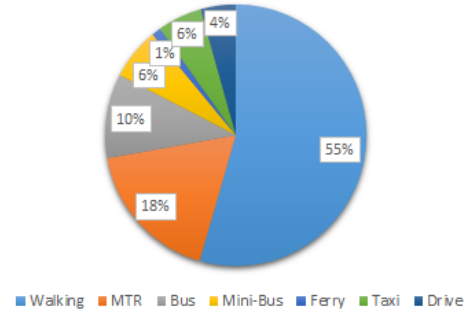
Are you aware of the initatives of the EKEO?



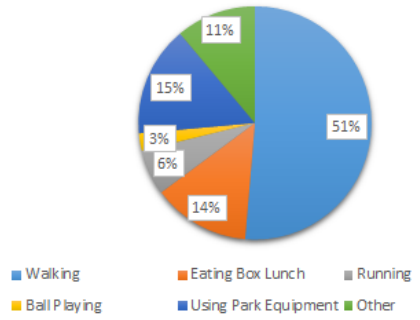
How often do you visit any of the parks in Kwun Tong, Kai Tak, or Kowloon Bay?



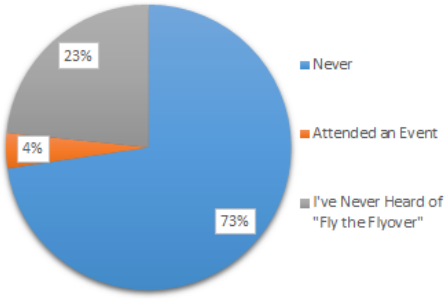
How did you reach the park today?



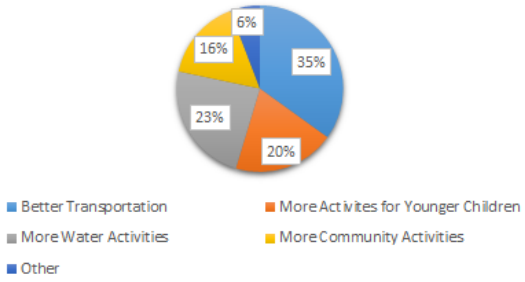
What activities do you use the park for?



Have You Ever Attended an Event at "Fly the Flyover"?

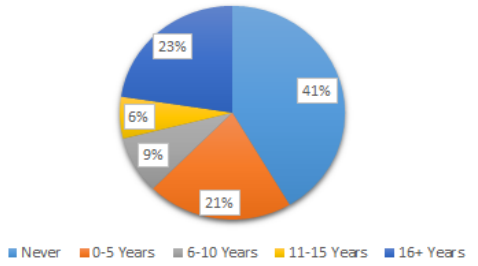


What would you want to see more of in Kowloon East?

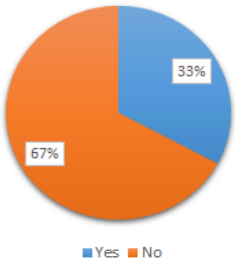


Overall Results

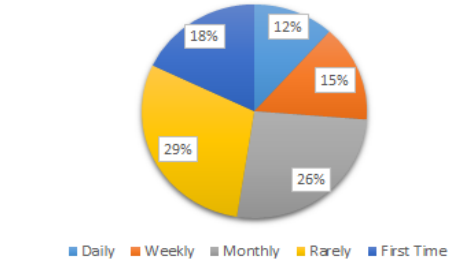
How long have you lived in Kwun Tong, Kai Tak, or Kowloon Bay?



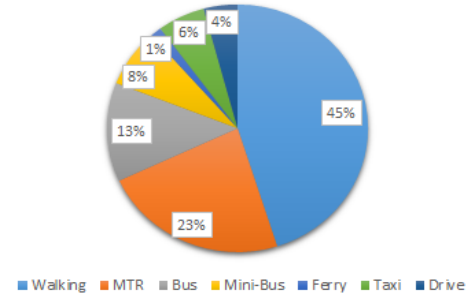
Are you aware of the initatives of the EKEO?



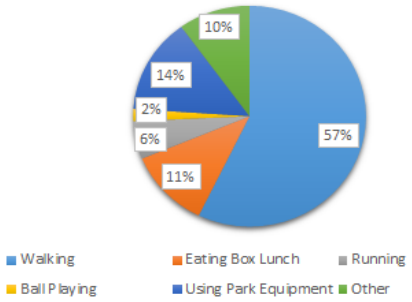
How often do you visit any of the parks in Kwun Tong, Kai Tak, or Kowloon Bay?



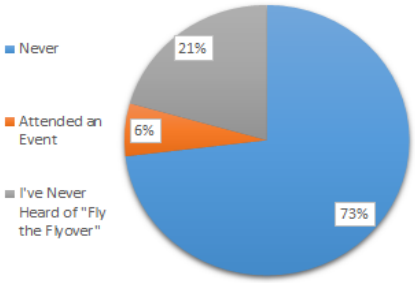
How did you reach the park today?



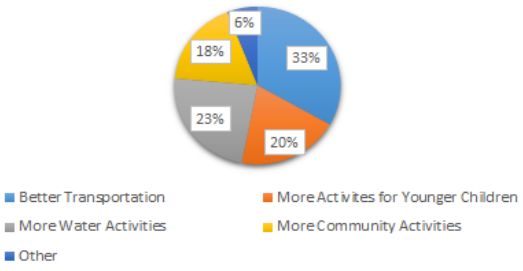
What activities do you use the park for?



Have You Ever Attended an Event at "Fly the Flyover"?

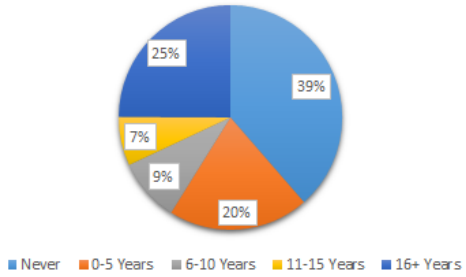


What would you want to see more of in Kowloon East?

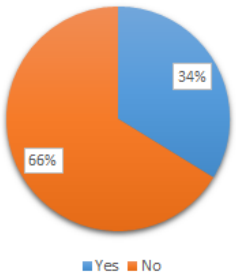


Kwun Tong Promenade Results

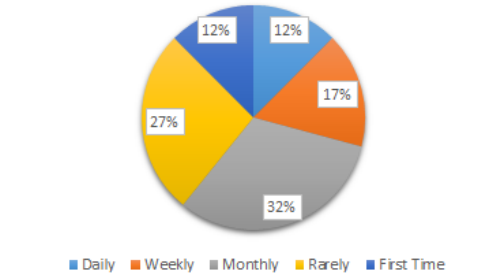
How long have you lived in Kwun Tong, Kai Tak, or Kowloon Bay?



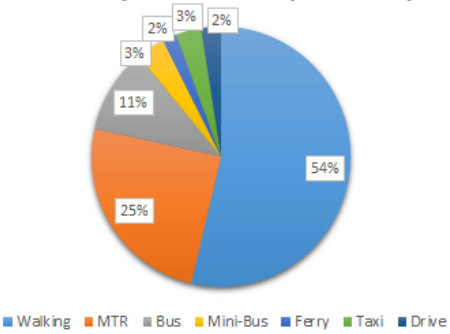
Are you aware of the initatives of the EKEO?



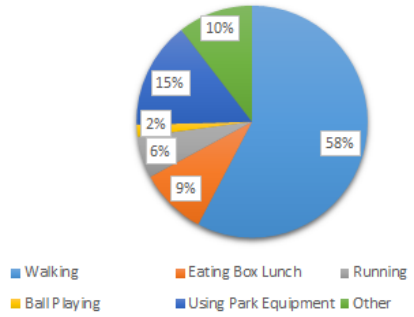
How often do you visit any of the parks in Kwun Tong, Kai Tak, or Kowloon Bay?



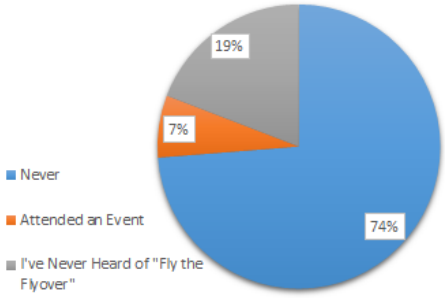
How did you reach the park today?



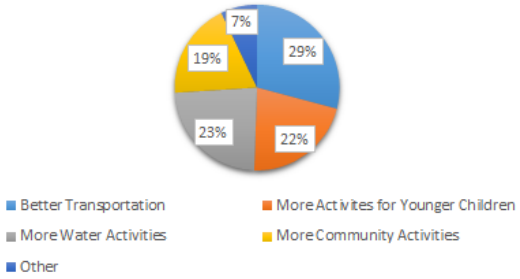
What activities do you use the park for?



Have You Ever Attended an Event at "Fly the Flyover"?

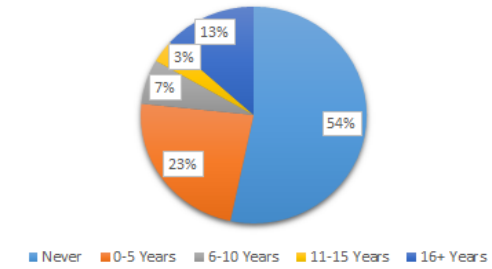


What would you want to see more of in Kowloon East?

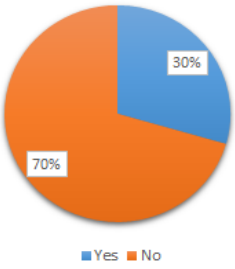


Kai Tak Runway Park Results

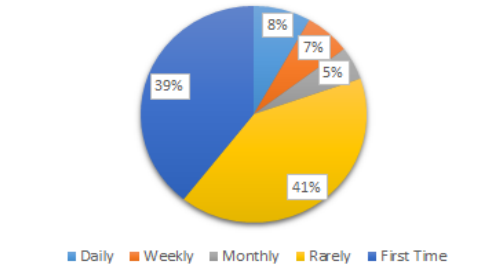
How long have you lived in Kwun Tong, Kai Tak, or Kowloon Bay?



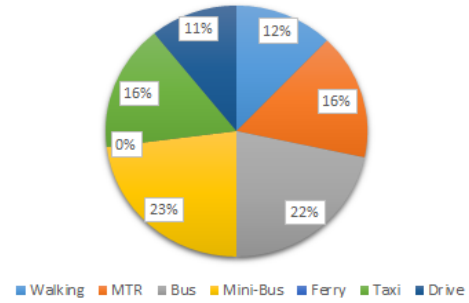
Are you aware of the initatives of the EKEO?



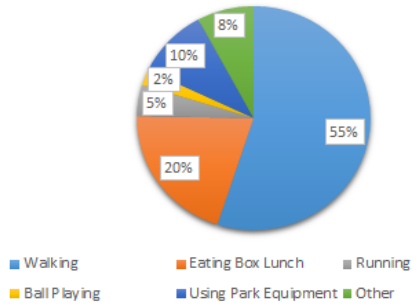
How often do you visit any of the parks in Kwun Tong, Kai Tak, or Kowloon Bay?



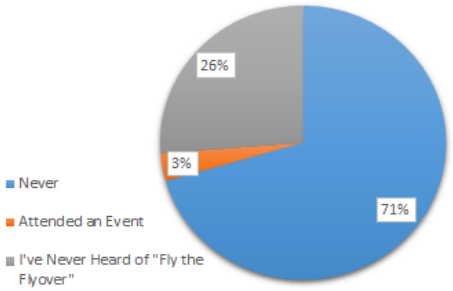
How did you reach the park today?



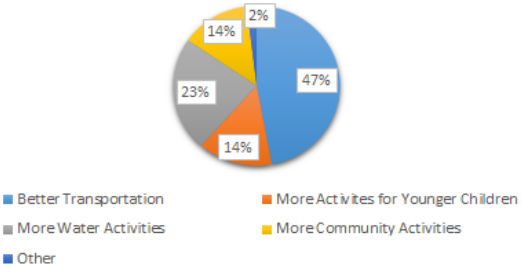
What activities do you use the park for?



Have You Ever Attended an Event at "Fly the Flyover"?



What would you want to see more of in Kowloon East?



Appendix H: Data Obtained From Following People Within Kwun Tong and Kowloon Bay

Date	Time Started	Distance Walked	Time Walked	Start Point	End Point	Streets Covered	Slowest Street
2/12/2016	8:17 AM	0.57 km	6:38	MTR	Office	Lai Yip, Hoi Bun	Lai Yip
2/12/2016	8:26 AM	0.35 km	3:29	MTR	McDonald's	Hoi Yuen	Hoi Yuen
2/12/2016	8:29 AM	0.23 km	2:56	McDonald's	Office	Hoi Yuen, Hung To	Hung to
2/12/2016	8:29 AM	1.01 km	11:14	MTR	Office	Lai Yip, KT Promenade, Kai Hing	Lai Yip
2/12/2016	8:41 AM	0.53 km	5:12	MTR	Office	Hoi Yuen, Nameless alley	Hoi Yuen
2/12/2016	8:50 AM	0.34 km	4:22	Bakery	Office	Shun Yip, Hoi Bun, Kai Hing	Kai Hing
2/12/2016	8:51 AM	0.26 km	2:19	Bakery	Office	Hung To	Hung To
2/12/2016	8:58 AM	0.15 km	2:05	Office	Office	Cheung Yip, Lam Chak	Lam Chak
2/12/2016	8:58 AM	0.42 km	3:51	Bus Stop	Office Building	Hoi Yuen, Hung To	Hoi Yuen
2/12/2016	9:17 AM	0.24 km	2:19	MTR	Office	Kwun Tong, Alley, Hung To	Hung To
2/12/2016	9:24 AM	0.24 km	2:32	MTR	Shop	Mall, Entrepot center,	How Ming

						How Ming	
2/12/2016	9:28 AM	0.42 km	3:48	MTR	McDonald's	Kwun Tong, How Ming	How Ming
2/12/2016	9:29 AM	0.064 km	1:20	Mall	Office	How Ming	How Ming
2/12/2016	11:58 AM	0.48 km	3:26	Office	Food	Hoi Bun, How Ming, Hung To	How Ming
2/12/2016	12:05 PM	0.69 km	6:09	Office	Mall	Tsun Yip, How Ming, Hoi Yuen	Tsun Yip
2/12/2016	12:13 PM	0.3 km	2:48	Office	Food	Hoi Yuen	Hoi Yuen
2/12/2016	12:21 PM	0.17 km	1:25	Office	Mall	Tsun Yip, Hung To	Hung To
2/12/2016	12:24 PM	0.42 km	5:11	Office	Mall	Tsun Yip, Kwun Tong	Tsun Yip
2/12/2016	12:33 PM	0.1 km	1:02	Mall	Mall	Kwun Tong	Kwun Tong
2/12/2016	12:40 PM	0.06 km	1:02	MTR	Mall	MTR Pass	
2/12/2016	12:50 PM	0.21 km	2:37	Mall	Bank	Hoi Yuen	Hoi Yuen
2/12/2016	1:07 PM	0.62 km	7:08	Office	Mall	Hung To, Hoi Yuen	Hoi Yuen
2/12/2016	1:16 PM	0.24 km	2:54	Mall	KE Border	Shing Yip	Shing Yip
2/13/2016	12:38 PM	0.53 km	5:49	MTR	Megabox	Wang Hoi, Wang Yuen, Wang Tai, Lam Fung, Wang Chiu	Lam Fung / Wang Chiu

2/13/2016	12:47 PM	0.53 km	6:10	MTR	Megabox	Wai Yip, Wang Yuen, Wang Chiu	Wang Chiu
2/13/2016	1:00 PM	0.40 km	4:32	MTR	Megabox	Wai Yip, Wang hoi, Wang Yuen, Wang Tai, Lam Fung	Lam Fung / Wang Chiu
2/13/2016	1:12 PM	0.25 km	3:18	MTR	Mall near MTR	Through Bus Terminal	N/a
2/13/2016	1:26 PM	0.80 km	8:57	MTR	Residential	Wai Yip, Sheung Yuet,	Sheung Yuet
Date	Time Started	Distance Walked	Time Walked	Start Point	End Point	Streets Covered	Slowest Street
2/13/2016	1:54 PM	0.61 km	5:36	Megabox	MTR	Wai Yip, Sheung Yuet, Wang Chiu	Sheung Yuet
2/13/2016	2:09 PM	0.14 km	1:32	Megabox	Truck	Wang Tai	Probably not useful
2/13/2016	2:18 PM	0.11 km	1:25	Megabox	Residential	Wang Chiu	Wang Chiu
2/13/2016	2:22 PM	0.097 km	1:07	Park	Megabox	Wang Chiu	Wang Chiu
2/13/2016	4:06 PM	0.13 km	1:53	Gym	MTR	Hoi Yuen	Hoi Yuen
2/13/2016	4:09 PM	0.11 km	1:12	Mall	Bank	Hoi Yuen	Hoi Yuen
2/13/2016	4:14 PM	0.31 km	2:53	Car park	Mall/indoor country club	Hoi Yuen, Wai Yip	Wai Yip
2/13/2016	4:23 PM	0.31 km	3:57	KT Promenade	Restaurant	Tsun Yip	Tsun Yip
2/13/2016	4:29 PM	0.25 km	3:53	Tsun Yip park	Border KE	Tsun Yip	Tsun Yip

2/13/2016	4:39 PM	0.42 km	4:52	MTR	Shop	Hoi Yuen, Alleyway	Cross of Hoi Yuen and Alley
2/13/2016	5:02 PM	0.16 km	1:31	Factory	McDonald's	Hoi Yuen	Hoi Yuen
2/13/2016	5:17 PM	0.26 km	2:15	MTR	Mall	Hoi Yuen	Hoi Yuen
2/13/2016	5:21 PM	0.08 km	1:11	Mall	Mall	Shing Yip, Hoi Yuen	Shing Yip
2/13/2016	5:23 PM	0.21 km	2:13	Mall	McDonald's	Hoi Yuen	Hoi Yuen
2/13/2016	5:38 PM	0.61 km	8:59	KT Promenade	Restaurant	Hoi Bun, Tsun Yip	Tsun Yip
2/13/2016	5:48 PM	0.37 km	3:57	Tsun Yip Park	Car	Tsun Yip, How Ming	Tsun Yip

Appendix I: Crosswalks

Crosswalks in Kowloon Bay: First Half of the Criteria

	Street Intersection	Is there a painted crosswalk?	Are there crosswalk lights/noise makers?	Is anything obstructing the crosswalk?	Are there any protruding signs?	Are there uneven walking surfaces?
1	Wong Kwong x Kai Yan	Yes	No	Car	No	No
2	Kai Yan x Unnamed	Yes	No	No	No	No
3	Kai Yan Middle	Yes	No	No	No	No
4	Kai Yan x Kai Lai	Yes	No	No	No	No
5	Kai Lai x Wang Kwong	Yes	No	No	No	No
6	Kai Wah x Wang Kwong	Yes	Yes	No	No	No
7	Kai Wah x Bypass	Yes	Yes	No	No	No
8	Kai Shun x Kai Shing	Yes	No	No	No	No
9	Kai Shun x Wang Kwong	Yes	No	No	No	No
10	Wang Kwong x Kai Cheung	Yes	Yes	No	No	No
11	Wang Kwun x Lam Hing	No	No	Car	No	No
12	Lam Hing x Wang Kwong	Yes	Yes	No	No	No
13	Wang Kee x Lam Hing	Yes	No	No	No	No
14	Wang Kee x Wang Chin	No	Not a Crosswalk	No	No	No Slope
15	Wang Chin x Wang Kwong	No	No	No	No	Yes
16	Lam Wah x Wang Kwong	Yes	No	No	No	No

17	Lam Wah x Wang Kwun	Yes	No	Picture of some cinder block, light post in the crosswalk and a car	Yes	No
18	Lam Lok x Wang Kwun	No	No	All the cars at every section	No	No
19	Wang Kwong x Sheung Yuet	Yes	Yes	No	No	No
20	Wang Kwong x Wang Tung	Yes	No	No	No	No
21	Sheung Yuet x Lam Lok x Sheung Yee	Yes	No	No	No	No
22	Sheung Yuet x Sheung Yee	Yes	No	No	No	No
23	Sheung Yuet x Wang Kwun	Yes	No	No	No	No
24	Lam Fun x Sheung Yee	Yes	No	No	No	No
25	Sheung Yee behind Megabox	Yes	No	No	No	No
26	Kai Yip x Wang Chiu	Yes	Yes	No	No	No
27	Kai Yip Bus Terminal	Yes	No	No	No	No
28	Wang Chiu x Kai Lok	Yes	Yes	No	No	No
29	Kai Lok x Kai Yip	Yes	No	No	Yes?	No
30	Kai Lok x Wang Chiu	Yes	No	No	No	No
31	Wang Chiu x Kai Cheung	Yes	Yes	No	No	No
32	Lam Hing x Wang Hoi	Yes	No	Yes	No	
33	Lam Hing x Lam Lee	On Lam Lee	No	On Lam Lee	No	No

34	Lam Hing x Wang Chiu	Yes	Yes	No	No	No
35	Lam Lee x Wang Hoi	No	No	No	No	No
36	Wang Hoi x Wang Tai	No	No	No	No	No
37	Wang Tai cross street	No	No	No	No	No
38	Wang Tai x Lam Fook	Yes	No	Yes	No	No
39	Wang Hoi x Lam Fook	Yes	No	No	No	No
40	Wang Hoi x Sheung Yuet	Yes	Yes	No	No	No
41	Sheung Yuet	No	No	No	No	No
42	Sheung Yuet x Wang Tai	Yes	No	No	No	No
43	Sheung Yuet x Wang Chiu	Yes	Yes	No	No	No
44	Wang Chiu x Lam Fung	Yes	Yes	No	No	No
45	Wang Chiu x Sheung Yee	Yes	Yes	No	No	No
46	Sheung Yee x Wang Tai	Yes	No	No	No	No
47	Lam Fung x Wang Tai	Yes	No	No	No	No
48	Wang Tai x Wang Yuen	On Wang Yuen	No	No	No	No
49	Wang Yuen x Wang Mau	On Wang Mau	No	No	No	No
50	Wang Mau x Sheung Yee	On Wang Mau	No	No	No	No
51	Wang Hoi x Sheung Yee	On Wang Hoi	No	No	No	No
52	Wang Yuen x Wang Hoi	On Wang Yuen	No	Yes	No	On Wang Hoi

Crosswalks in Kowloon Bay: Second Half of the Criteria

	Street Intersection	Number of lanes in "Vertical " street:	Number of lanes in "Horizontal " street:	Is there a middle island with additional lights for pedestrians?	Is there a middle island without additional lights for pedestrians?	Does the middle island have space for people?	Crossing Push Button
1	Wong Kwong x Kai Yan	4	2	No	On Wong Kwong	Small	No
2	Kai Yan x Unnamed	2	2	No	On Kai Yan	Small	No
3	Kai Yan Middle	2	0	No	Yes	Small	No
4	Kai Yan x Kai Lai	2	2	No	Yes	Small	No
5	Kai Lai x Wang Kwong	4	2	No	Yes	Small	No
6	Kai Wah x Wang Kwong	4	3	Yes	No	Small	Yes
7	Kai Wah x Bypass	1	3	Yes	No	Small	Yes
8	Kai Shun x Kai Shing	1	2	No	Yes	Medium	No
9	Kai Shun x Wang Kwong	4	2	No	On Wang Kwong	Small	No
10	Wang Kwong x Kai Cheung	4	8	Yes	No	Small and Large	No
11	Wang Kwun x Lam Hing	2	2	No	No	No	No
12	Lam Hing x Wang Kwong	4	2	On Lam Hing	No	Small	Yes
13	Wang Kee x Lam Hing	2	2	No	No	No	No
14	Wang Kee x Wang Chin	2	2	No	No	No	No

15	Wong Chin x Wang Kwong	4	2	No	No	No	No
16	Lam Wah x Wang Kwong	4	2	No	Yes	Small	No
17	Lam Wah x Wang Kwun	2	2	No	No	No	No
18	Lam Lok x Wang Kwun	2	2	No	No	No	No
19	Wang Kwong x Sheung Yip	4	3	Yes	No	Small	Yes
20	Wang Kwong x Wang Tong	4	N/A	No	Yes	Medium	No
21	Sheung Yuet x Lam Lok x Sheung Yee	2 and 2	3	No	On Lam Lok	Small	No
22	Sheung Yuet x Sheung Yee	2	3	No	On Sheung Yee	Small	No Crosswalk on Sheung Yip but there are nearby Crosswalks
23	Sheung Yuet x Wang Kwun	2	4	No	Yes	Small	No
24	Lam Fun x Sheung Yee	4	2	No	No	No	No
25	Sheung Yee behind Megabox	2	N/A	No	No	No	No
26	Kai Yip x Wang Chiu	4	1	Yes, Big	No	Small	Yes
27	Kai Yip Bus Terminal	1	N/A	No	No	N/A	No
28	Wang Chiu x Kai Lok	4	2	Yes	No	Small	Yes

29	Kai Lok x Kai Yip	1	1	No	No	N/A	No
30	Kai Look x Wang Chiu	4	2	No	No	N/A	No
31	Wang Chiu x Kai Cheung	6	6	Yes	No	2 Big, 1 Small across Wang Chiu, 3 Large across Kai Cheung	No
32	Lam Hing x Wang Hoi	N/A	N/A	N/A	N/A	N/A	N/A
33	Lam Hing x Lam Lee	2	1	No	No	No	No
34	Lam Hing x Wang Chiu	4	2	Yes	No	Small	Yes
35	Lam Lee x Wang Hoi	2	1	No	No	No	No
36	Wang Hoi x Wang Tai	2	2	No	Yes	Small	No
37	Wang Tai cross street	1	N/A	No	No	N/A	No
38	Wang Tai x Lam Fook	1	2	No	No	N/A	No
39	Wang Hoi x Lam Fook	2	1	No	Yes	Small, Cross Wang Hoi	No
40	Wang Hoi x Sheung Yuet	2	4	Yes	No	Small Cross Wang Hoi, Medium Cross Sheung Yuet	Yes
41	Sheung Yuet x Sheung Yip	4	N/A	No	Yes	Medium	No
42	Sheung Yuet x Wang Tai	2	2	No	Yes	Medium	No

43	Sheung Yuet x Wang Chiu	4	4	Yes	No	Medium Cross Sheung Yuet, Small Cross Wang Chiu	Yes
44	Wang Chiu x Lam Fung	4	2	On Wang Chiu	No	Small	Yes
45	Wang Chiu x Sheung Yee	5	4	Yes	No	Big Across Both	Yes
46	Sheung Yee x Wang Tai	2	5	No	On Wang Tai	Small/ Medium	No
47	Lam Fung x Wang Tai	2	2	No	On Wang tai	Medium	No
48	Wang Tai x Wang Yuen	2	2	No	On Wang Yuen	Small	No
49	Wang Yuen x Wang Mau	1	2	No	No	N/A	No
50	Wang Mau x Sheung Yee	1	6	No	No	N/A	No
51	Wang Hoi x Sheung Yee	2	6	No	Yes	Large	No
52	Wang Yuen x Wang Hoi	2	2	No	No	N/A	No
53	Tai Yip x Alley	1	1	No	No	N/A	No

Crosswalks in Kwun Tong: First Half of the Criteria

	Street Intersection	**Is there a painted crosswalk?**	**Are there crosswalk lights/noise makers?**	**Is anything obstructing the crosswalk?**	**Are there any protruding signs?**	**Are there uneven walking surfaces?**
1	Hung To x Lai Yip	Yes	Yes	No	No	No
2	Hung To x Chung Yip	No	No	No	No	No
3	Hung To x How Ming	Yes	Yes	On Hung To	No	No
4	Hung To x Tsun Yip	No	No	No	Drawing on Road Sign	No

5	How Ming x Tsun Yip	some part are erased	Yes	No	Drawing on Road Sign	No
6	How Ming x Chong Yip	On Chong Yip	On Chong Yip	No	No	No
7	Lai Yip x Wai Yip	Yes	Yes	No	No	No
8	How Ming x Wai Yip	Yes	Yes	No	No	No
9	Tsun Yip x Wai Yip	Yes	Yes	No	No	No
10	Tsun Yip x Hoi Bun	No	No	No	No	No
11	How Ming x Hoi Bun	No	No	No	No	No
12	Hoi Bun x Lai Yip	Yes	Yes	No	No	No
13	Kei Yip x Kei Yip	No	No	No	No	No
14	Wai Yip x Kei Yip	No	No	No	No	No
15	Hoi Yuen x Wai Yip Roundabout	No	No	Yes	No	No
16	Wai Yip x Bus Terminal Exit	No	No	Truck	No	No
17	Wai Yip	Yes	Yes	No	No	No
18	Wai Yip x Wing Yip	No	No	A Car	No	No
19	Wai Yip x Kwun Tong Bypass	Yes and No	Yes and No	Yes	No	No
20	Wai Yip x King Yip	No	No	No	No	No
21	Hung To x King Yip	No	No	Cars	No	No
22	Hing Yip x King Yip	No	No	Cars	No	No
23	Shing Yip x King Yip	Yes	Yes	No	No	Yes
24	Wai Yip x Hoi Yuen	Yes	Yes	No	No	No
25	Hung To x Hoi Yuen	Yes	Yes	No	No	No
26	Hing Yip x Hoi Yuen	No	No	No	No	No
27	How Ming x Hoi Yuen	Yes	Yes	No	Yes	No
28	Shing Yip x Hoi Yuen	Yes	Yes	No	No	No

29	Hoi Yuen right outside MTR exit B2	Yes	Yes	No	No	No
30	Cheung Yip x Hoi Bun	Yes	Yes	Taxis	No	No
31	Cheung Yip x Shing Cheong	Yes	No	No	No	No
32	Cheung Yip x Lam Chak	Yes and No on Lam Chak	No	No	No	No on cheung yip you are unable to cross but people are
33	Lam Chak x Kai Hing x Hoi Bun	No	No	Cars and Palettes	No	yes no lip across kai hing
34	Hoi Bun x Shun Yip	No	Yes	No	No	No
35	Hoi Bun x Shun Yip	Yes	Yes	No	No	No
36	Shun Yip x Wai Yip	Yes	Yes	No	No	No
37	Wai Yip x Hang Yip	Yes	No	No	No	No
38	Tai Yip x Alley	No	No	Cars	No	Yes

Crosswalks in Kwun Tong: Second Half of the Criteria

	Street Intersection	**Number of lanes in "Vertical" street:**	**Number of lanes in "Horizontal" street:**	**Is there a middle island with additional lights for pedestrians?**	**Is there a middle island without additional lights for pedestrians?**	**Does the middle island have space for people?**	**Crossing Push Button**
1	Hung To x Lai Yip	3	6	No	Not for Pedestrians	No	Yes
2	Hung To x Chung Yip	4, two on the sides used for parking	3, one on the right used for parking	No	Yes	Yes	No
3	Hung To x How Ming	2 then 1	2 then 1	On hung to	No	Small	Yes
4	Hung To x Tsun Yip	2 then 1	2 then 1	No	No	No	No
5	How Ming x Tsun Yip	2	1	No	No	No	Yes
6	How Ming x Chong Yip	2	1	No	No	No	Yes
7	Lai Yip x Wai Yip	6	6	Yes	No	2 Small, 1	Yes

						Medium, 1 Large	
8	How Ming x Wai Yip	6	2	On Wai Yip	No	Small	On Wai Yip
9	Tsun Yip x Wai Yip	6, 2 on sides use as parking	3 then 2	On Wai Yip	No	Small	Yes
10	Tsun Yip x Hoi Bun	2	3, 1 for parking	No	Yes	Yes	No
11	How Ming x Hoi Bun	2	2	No	Yes	Small	No
12	Hoi Bun x Lai Yip	2	6	Yes	Yes	Yes	Yes
13	Kei Yip x Kei Yip	2 one being used for parking	3, 2 being used for parking	No	No	N/A	No
14	Wai Yip x Kei Yip	3	3, 2 being used for parking	No	No	N/A	No
15	Hoi Yuen x Wai Yip Roundabout	4?	2	No	Yes	Medium	No
16	Wai Yip x Bus Terminal Exit	3	6?	No	Yes	Medium	No
17	Wai Yip	4	N/A	Yes	No	Medium	Yes
18	Wai Yip x Wing Yip	2	2	No	No	N/A	No
19	Wai Yip x Kwun Tong Bypass	8	8	Yes	Yes	5 Larges	y and n
20	Wai Yip x King Yip	3	2	No	No	N/A	No
21	Hung To x King Yip	like 3	2	No	No	N/A	No
22	Hing Yip x King Yip	3	2	No	No	N/A	No
23	Shing Yip x King Yip	2 to 3	turned into 4	Yes	No	Medium	No
24	Wai Yip x Hoi Yuen	3	3	No	No	N/A	No
25	Hung To x Hoi Yuen	2	3	No	No	N/A	No
26	Hing Yip x Hoi Yuen	3	3	No	No	N/A	No
27	How Ming x Hoi Yuen	3	3	No	No	N/A	y but its hidden

28	Shing Yip x Hoi Yuen	3	3	No	No	N/A	No
29	Hoi Yuen right outside MTR exit B2	N/A	3	No	No	N/A	No
30	Cheung Yip x Hoi Bun	4	5	Yes	No	Small, Medium, Large	Yes
31	Cheung Yip x Shing Cheong	2	2	No	No	Na	No
32	Cheung Yip x Lam Chak	2	2	No	No	N/A	No
33	Lam Chak x Kai Hing x Hoi Bun	2	2	No	No	N/A	No
34	Hoi Bun x Sheun Yip	4	2	No	On Wai Yip	Large	No
35	Hoi Bun x Sheun Yip	2	3	On Hoi Bun	No	Small	Yes
36	Shun Yip x Wai Wip	6	3	On Wai Yip	No	Medium	Yes
37	Wai Yip x Yang Yip x Hang Yip	6	2	No	Yes	Medium	No
38	Tai Yip x Alley	1	1	No	No	N/A	No

Appendix J: Congestion

Congestion in Kowloon Bay

Crosswalks	Are pedestrians crossing somewhere other than the crossing?	Is there an overflow at the crosswalk?	Cars blocking traffic?	Cars blocking pedestrian walkway?
Wang Chiu x Kai Cheung	No	No	No	No
Wang Chiu x Lam Hing	Yes	No	No	No
Sheung Yet x Wang Chiu	Yes	No	No	No
Sheung Yet x Wang Kwun	Yes	No	No	Yes
Wang Kwong x Kai Cheung	No	No	No	No
Wang Hoi x Sheun Yuet	Yes	Yes	No	No
Wang Chiu x Lam Fung	Yes	No	Yes	Yes
Sheung Yet X Wang Tai	Yes	Yes	Yes	Yes
Lam Hing X Wang Kwong	No	Yes	No	No

Congestion in Kwun Tong

Crosswalks	Are pedestrians crossing somewhere other than the crossing?	Is there an overflow at the crosswalk?	Cars blocking traffic?	Cars blocking pedestrian walkway?	Pedestrian Level of Service?
Hung Yo x Lai Yip	No	Yes	No	No	320
Lai Yip x Wai Yip	No	On the Island	No	No	280
How Ming x How Ming	Yes	Yes	Once Every Red Light	No	800+
Cheung Yip x Hoi Bun	No	No	Yes	Yes	N/A
Hoi Bun x Shun Yip	Yes, there is no proper sidewalk at this location as well	No	No	No	67
Hoi Yuen at MTR exit B1	No	Yes	No	No	N/A

Appendix K: Energizing Kowloon East Workshop Notes

1/12/16 10-12pm
Dr. Sujata Govada (Research) Presentation: Towards Sustainable Smart Cities

- Smart City and Smart Economy, sustainable
- Introduction of UDP's mission
- Institute for Sustainable Urbanization (ISU)
    - Set up by Govada at the Chinese University of Hong Kong
- Existing Smart city concept
    - Try not to focus too much on just the advance technology
- Smart city indicator
    - Tech innovation
    - Transport
    - Mobility
    - Intelligent energy management
    - Green building
    - Open platform
- Songdo City, South Korea
    - Successful? Walkable, accessibility?
- Pangyo, South Korea
    - Bad: Over-dimension road discourage walking, cycling, private car use
- Measure sustainable city
- Toward a Smart and Sustainable City
    - Social, environmental, economic
- How smart are cities
    - Plot and compare to other city
        - In terms of demographic area and sustainability
- Hong Kong
    - Pro: building (mass infrastructure, density, technology, transparency (less corruption), green building
    - Cons: air pollution, waste and water management, walkability, discouraging motorized traffic
- Boyd Cohen's Smart City Framework
- UDP (Govada's idea of smart city)
    - Smart People
    - Smart Thinking
    - Smart Place
    - Smart Planet
    - Smart Economy
    - Smart Mobility
    - Smart Infrastructure
    - Smart Living
    - Smart Environment

- Smart Governance

Winnie's Presentation: The Making of Hong Kong's CBD2

- Introduce how it change to industrial and now want to business area(Max wrote it down)
- The old airport locate in the heart of the city and it is available for bettering the city
    - This why the idea of EKEO comes from
    - KE area total 488hs
        - Kai Tak Development 320ha
        - Kwun Tong Business area 77ha
        - Kowloon Bay business area 91ha
    - Consolidation and Decentralization
        - Find sites within CBD
        - Relocate government offices outside CBD
        - Office Nodes outside CBD
        - Office: move away from existing because of the high cost and limited land/space
        - Today is the Policy Background
            - From last year (2015) policy address: "KE is a pilot area to explore the feasibility of devolving a smart city."
                - Winnie said Hong Kong people very smart, picked up and interested technology and product
- What is going to come in the future of KE
    - Art, promenade, open space, grass area close to Victoria harbor for picnic
- Conceptual Master Plan
    - version 2.0
        - 10 points to focus on
    - Version 3.0
        - Added Kai Tak Fantasy
    - Version 4.0
        - 10 Main Tasks and 5 Key Focuses
            - Walkable KE
            - Green CBD
            - Smart City
    - There will be more Version in the future
- Category 01: Enhance Connectivity
    - EKEO strategy is to work on small things and then move on to big things
        - All traffic signs changed from Industrial area to Business area
        - Identify things that can make a greener environment
        - Move the crosswalk to a more convenience location
- Category 02: Improve Environment
    - Removing the fence, widening the path, will be making it more walkable in the future
    - Adding Promenade, suggesting existing building adding plants instead of using gates

        - Kwun Tong Promenade
        - Tsui Ping River Transformation project
            - Longer harder project
            - Currently polluted, illegal connection
- Kai Tak Development
    - Transportation Network
    - Kai Tak River
- Category 03: Kowloon Bay Action Area
- Kai Tak Fantasy
    - Urban planning and designing project
    - Winning proposed: Healthy Lift-Off
    - Tourism Node
        - EOI
        - Formulation
        - Tender
- The Spirit of Creation: Industrial Culture Study on Kowloon East
    - The idea of every building have a story to tell eventually it'll be like a walking Museum
    - Back Alley Project: Urban Design Elements
    - Switch box art work transformation
- Smart City announced last year
    - Also referring to Boyd Cohen's Framework
    - ICT & Smart Data
        - Tools:
            - such as finding car park, Megabox too jammed
            - openrice
    - Walkability & Mobility
        - Real-time monitoring
        - Dissemination of real time parking availability
        - Real-time bus Scheduling
        - Green Transportation mode
- Things they collect: results, new technology, the budget
- Fly the flyover: EKEO provide the place
    - Music, Dance, can be as noisy as they want since there are no residential around
    - Night time: outdoor movie, cycling, running
    - Family events, sport events, fashion shows, water sports (next year)
- Public Engagement

Appendix L: Elevated Walkway Workshop Notes

- Not a good walking environment
- Central is a good example of working elevated walkway
- Existing Policy:
    - If all the foot bridges area built by the government street space will be lost because it needs to meet the requirements of the government
    - Forecast pedestrian flows <- main thing thought about when thinking of a walkway
        - Road Safety
        - Alternate walkways
        - Cost effectiveness
        - Public Opinion
- What is being thought of?
    - If the walkways are made with private sectors the elevators that would need to be built could be in buildings
- Existing mechanism: private sector
    - Application for additional pedestrian links
    - Gazetting and authorization
    - Lease modification application
    - Payment of land Premium
    - Constructed by private sector
    - Have the foot bridge for use
- New policy being proposed
    - Landowner to submit lease modification application to LandsD with proposal for provision of pedestrian link
    - Is the proposal in line with the alignment shown on the relevant ODP?
        - Yes
            - LandsD to process the application
            - Approved by LandsD
        - Generally in line but with minor adjustments
            - LandsD to contribute comments from relevant department
        - New additions or major changes to the relevant ODP
            - LandsD refers the case to EKEO
            - EKEO to coordinate comments from relevant departments
            - Start application process
    - Landowners have good proposals with justifies support by a comprehensive pedestrian traffic study
        - Proposals will be considered on a case-by-case basis
- Kowloon Bay Business Area Study (this is in report)
    - This is still a study and will be wrapped up in Q1 2016
- Stage two has just been conducted and there will be a stage 3 and 4 in Q4 2016
    - Finalize the comprehensive pedestrian network in KE incorporate into relevant outline development plan

- Management and Maintenance Issues
- One-off payment up to the expiry of lease/government has to bail them out
- Govt. decides what to do.
- Approval or rejection by Govt.

Q and A

Q 1: Concern with the new lease policy
A: If there is a connection to the proposed lease plan the process for the application of the lease to the government can be done. If there is no obvious connection with any part of the proposed plan then a new addition can be applied for and EKEO will work with it.

Q 1 part 2: Lease is 5 years of no lease modifications. Will that be affected by new policy?
A: It is standard practice to leave the lease for 5 years however for very specific cases where there is proper justification the government may be allowed to change lease agreements within the 5 years.

Q 2: One of Hong Kong's strong points is the highly dense population and there are more and more cars being introduced. There are more and more air pollution and rent is very high. Considers Kwun Tong and Kowloon Bay area are walkable and straightforward. The "dead area" in between is very confusing. Where do we stop in the separation of foot traffic to pedestrian traffic? Interaction between people and cars keeps it interesting and people shouldn't be separated completely. There is a major highway that focuses on cars why not the people?
A: The basic idea of Hong Kong is that people and cars react with each other. Need to think more efficiently when considering a new area. There is a trend in the world where there are more pedestrian focused streets. Not saying separate all the pedestrians from the cars just want to make a good walking environment. The connection in KBBA studied shows there are certain spots in KBBA on the ground that can be improved and will be improved, however, there are spots that show that it would be more efficient to separate the people from the cars. Pedestrian studies are very important and are using it in the study to concentrate on certain parts like the Kowloon Bay MTR station

Q 3: Separation of people and cars is not good. Focus on the people instead of the motorized traffic like closing a road. Best to prioritize foot traffic instead of cars.
A: Right now they don't think that they can close roads and want to focus on the connectivity.

Q 4: People have to walk up and down to walk on the raised and lowered walkways, but there has to be an interest to pull the people to go up or down. There are certain districts that agree that need work but there has already been work done on the ground. Is there any way that the government could work with the process of applying for walkways
A: There is a comprehensive plan being made and there may be room for improvement in the future for other locations. They will consolidate information daily to see if improvements can be made on the plan

Q 5: The footbridges are not aligned with the online development plan. There is a lot of work that needs to be done for the private sectors to get approved for the walkway. Do you think the process can be skipped (ODP) to speed up the process.
A: Need to go through the ODP because it is required to get approval to make sure the walkways are correct and pay fees. The ODP process should by estimation take a few months and the whole process of building the walkway will take up to 3 years.

Q 5 part 2: If there is a proposal with public interest it is important to do it quickly. The application is controlled by the government and if the ODP revision process is that important would the government have a limit for the revision of the ODP plan? If it takes months to go through the ODP it would take time?
A: If the network was launched through ODP it would be very good. Most of the applications will fall into the green or blue boxes (in PowerPoint) there will be time saved if everyone just follows the idea.

Q 6: Good point to make walkways. Is there any plan to expand this to other areas around KE?
A: Right now the policy is only focused on KE and in time there will be expansions in the surrounding area. If there are businesses in the area that aren't in KE then that would be a case-by-case situation. There needs to be a study done in order to see the applications of the process.

Q 7: Separated district. ODP have a lot of setback lines which encourage setback to provide improvement to pedestrian environment. In some cases there are still uncertainties whether they get the bonus or not. In general the great setback to encourage improvement pedestrian environment or whether it is just going to get the bonus. Will there be any clarification that would limit who gets the bonus.
A: The subject is another topic that is addressed by another day.

Q 8: See the benefits of the improving the walkways there has been talk of improving connectivity for the last 5 years. Because it is old it is hard to do things because of the many owners of the buildings. KBBA study is proposed to focus on people to allow better walking. Talk more with the local people and stakeholders to make a possible connection between many buildings to make a whole network between businesses. Current footbridge is congested. Will the government promote usage of new walkways? Supports the proposal but wants the network to be more comprehensive.
A: The suggestions of making a connected walkway will take some time. There are times when the connected walkway does not focus on the walkability of the people. There are already a lot of incentives to build the walkway so there would not be any more bonuses. The study was done based on the existing buildings. The ups would have to allow 24/7 access to the walkways with lifts.

Q 9: Share more about the entry requirement for owners that would want to apply to the walkway. Such as one owner or building age.
A: No specifications so one owner or multiple owners as long as they all agree it's all good. Age of the building does not matter either as long as it helps with the connection

Q 9 part 2: If there are multiple owners but some could not pay but want to will there be any help from the government?
A: Comes down to the owners to come together and make a proposal. The government does not interfere with the creation of the proposal. Some buildings such as existing industrial buildings that are owned by hundreds of businesses would be hard. And also finding space for a 24/7 walkway could be hard.

Q 10: The walkability that is being encouraged is good news. The working population is very important now. First for walkability there was mention of open space how will the walkways be connected to the open space? In other cities the raised walkways are already on the same level as business. The walkways should be expanded and made more interesting such as fashion shows on the walkway. The 24/7 walkway would be tough because if the building is a grade A office there would be someone standing there at any time so the businesses would be closed, but there would still need to be light provided for them and the people could affect the businesses. Security could become a problem.
A: Making the walkway wide would be a possibility. The 24/7 is a central part of the connectivity. The problem of security is a problem and will be thought about. The security could be addressed by the signage of the path that would prevent people from getting lost and keep them on the same course. When planning for the KB walkways the plan focuses on the open spaces anyway. It would increase the accessibility to the parks. Welcome events in KE whether they are hosted by the EKEO or if the people come up with their own ideas. There would be no real need to hold events on the walkway because the open spaces are part of the connection.

Q 11: Providing a choice for the people to take but 24/7 seems to limit choice.
A: The 24/7 access promotes choice. It allows people to take the raised walkway if they choose or the underground walkway.

Q 12: Comment on the previous question. The 24/7 access would be able to walk through buildings there would be a premium for the buildings. The design for the walkways is important. How would the people with the proposal apply for the design of the walkway? In very rare cases in the people that need to talk to someone for the compensation is it the government that talks or who?
A: The government will eventually talk to the person in the rare case and see the objections or questions addressed by the person. Today there is a senior facilitation manager that will talk to the people applying for the walkway at any time. The design of the walkway is important and will be considered by EKEO.

NOTE: They keep emphasizing CBD not mentioning residential or KT Fantasy where they would get the people who cannot leave grade because of disabilities.