smartcharge digital streetscape

Integrating mobile phones more urbanistically through streetscape interventions

by
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A 120 point thesis submitted
in fulfilment of the requirements for the degree of
Masters of Landscape Architecture

at

Victoria University of Wellington
February, 2014

acknowledgements

Firstly I would like to acknowledge my supervisors Penny Allen and Peter Connolly for their continuing support and critique for the duration of my thesis research.

To the 'Landcrew' for their friendship and tolerance, for the coffee dates, lunches and wines, for the laughs and also for the long, stressful caffeine induced nights we spent together. It's been a great four years and I wouldn't have wanted to be with anyone else.

A special mention to Jaime, James and Laura, for they encouraged, critiqued and were always open for discussion about my research. It was just the extra support I needed to keep chugging along, and I am sincerely thankful for all your help.

And lastly to Sean and my family, for their patience and support, it has been greatly appreciated over the years.

abstract

Mobile phone technology is rapidly changing our world, how we interact with one another, and our built environment. This thesis investigates *how we can integrate mobile phone technology more urbanistically*.

There is a tendency for designs of this kind to be a short-term artistic gesture that do not interact with their surrounding environment in either a long term or meaningful way. This thesis argues that the ability of a design to outwardly impact its environment should be considered; rather than sustaining the common belief that design installations only act as a momentary or disposable implementation. It will examine how design can reinvigorate a space and be absorbed into a city's everyday routine, in a way that it allows it to become permanent and valuable to the streetscape and the community.

This thesis focuses on our dependency on mobile phones by exploring how these devices can overlap with the urban environment through a streetscape intervention. Choosing to test the design of a recharge station across different sites will allow the investigation of the design's ability to be adapted into different city environments. These stations will be developed with the intention of creating social hotspots that could have a positive outward effect which impacts their urban setting and surroundings. Ultimately these installations will allow us to become digitally and physically connected with society and our city.

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introduction

Background

Everyday life now consists of a variety of apps to awake, amuse, and organize ourselves and others. They also allow us to digitally interact with our fellow peers. However, the act of verbal conversation and environmental awareness is diminishing as people focus on the small screen in their hand rather than the people and places around them.

This thesis will focus on the rapid evolution of technology and argue that it should influence, and converge with, the medium of landscape architecture. Accordingly an examination of technology's ability to connect with a new generation through social media and smartphone use will provide an insight as to how to address new forms of social public space. This thesis will investigate social-environmental design techniques that could provide people with the ability to interact with one another comfortably in urban environments. It will also examine how small-scale design can influence a site by allowing it to become a catalyst that precipitates positive change that enriches life within the city.

This thesis seeks to develop a charging station design that is capable of interacting with the user and their devices while including the surrounding urban context in a way that can enhance and enliven the streetscape within our cities. Selected sites in tactically positioned locations around Wellington city will be used to carry out and test this design experimentation. This strategy and analysis of it, will allow us to understand how our mobile phones can provide a catalyst for direction, interaction, and environmental awareness when coupled with streetscape design.

Research Intention

This study intends to investigate the feasibility of including digital devices within the scope of landscape architecture and urban design. For the purpose of this thesis this will involve designing through three '*scales*', these include: the digital (*interface*), physical (*social/ bodily*) and environmental (*urban context*). These terms will be used throughout the thesis and are illustrated in figure 1. These scales have been derived from mobile devices: digital interface and app design, and merged with landscape and urban design methods; social, physical and urban environments. This approach allows the exploration of spatial and digital realms as design platforms. The individual consideration of each '*scale*' allows the conceptualisation of how these components interrelate, and contribute to the greater overall picture. By designing and investigating each of the different scales this study aims to identify a unique interconnectivity that enhances the overall design of the charging station.

This thesis aims to:

Challenge issues relating to device dependence (i.e. need to re-charge the device frequently, social isolation).

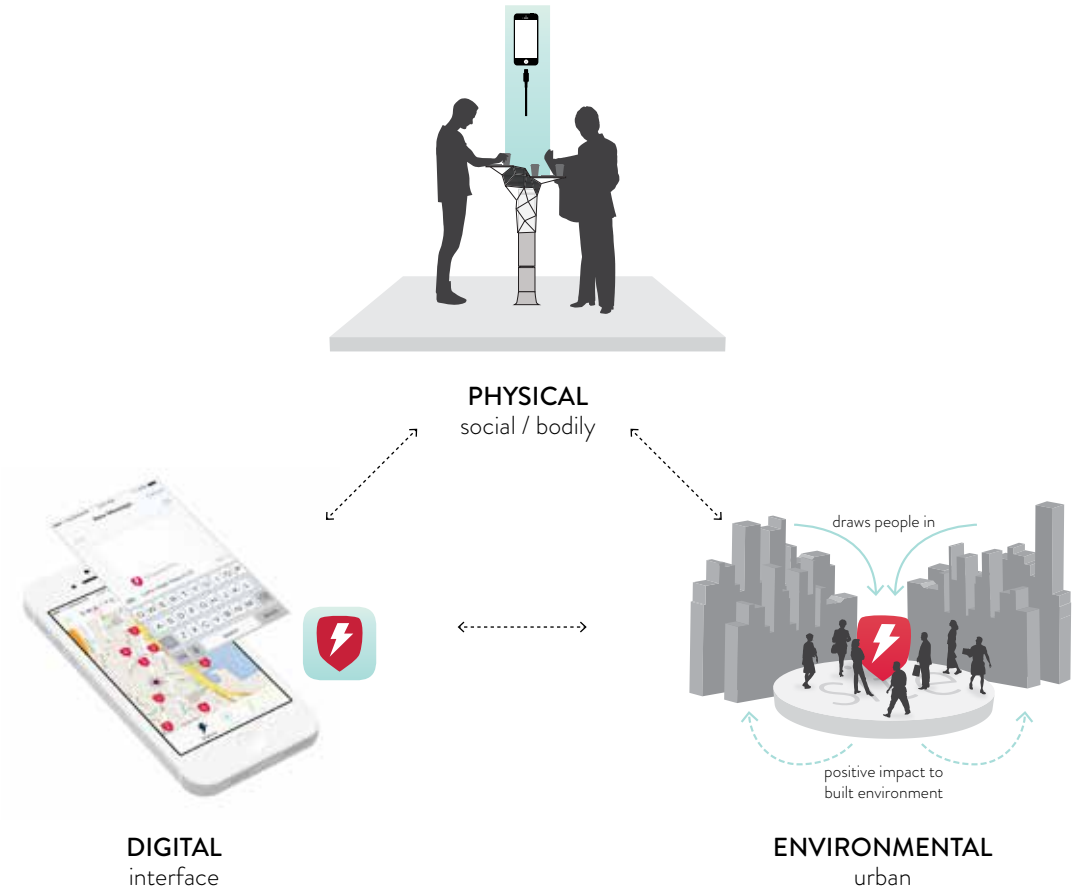
Identify how urban interventions can provide greater social spaces that integrate the device and subsequently its user.

Identify how to integrate new streetscape interventions that coincide with existing infrastructure to enable faster adaption by the public.

Investigate the benefit of app design when considering an urban context and how that app can be applied through street furniture interventions.

Challenge, instigate and inform change by using intervention design to address urban issues.

Identify the outward impact on an urban environment that intervention design can have. This will include analysis of how the intervention can potentially address urban issues, and inform change.



▲ **Fig 1:** Diagram depicting the different '*scales*' and how they interrelate. These will be investigated in further detail and used as platforms for design and research in this thesis.

Research Approach

Chapter Two: Theoretical Overview

Provides insight on the topic by examining literature that contributes to the construction of this thesis' key argument. It investigates, and identifies, examples of the impact of personal devices within both social and environmental constructs. It will also examine talk-space environments and the use of design as a catalyst.

Chapter Three: Case Studies

Investigates and critiques existing or past designs similar to this study in order to identify opportunities and constraints that relate to this thesis' premise. A particular focus of this will be the investigation of digital integration (interventions that integrate devices with the public realm), and retrofit and adaptive design interventions (design that has the ability to adapt and insert into the current urban fabric of the city).

Chapter Four: Site Assessment

This chapter identifies the site context of this study – Wellington City, New Zealand and the city's main characteristics. It will focus on features relevant to this study such as; components of its history, open space location, and pedestrian accessibility. It will also introduce the bollard infrastructure that will be used for design installation, and the location of the design experimentations.

Chapter Five: Design Investigation

Explores bodily and digital mediums and how they are transformed into a design that acknowledges different levels of technological and social engagement. This chapter will be divided into the following sections: Social Ergonomics, Solar Power, Recharge Station Design, SmartCharge, SmartCharge App Design and Urban Influence.

Chapter Six: Site Application

The site locations for this study were chosen because they were believed to be sites in which the chosen design will have an impact on the urban environment. This chapter will examine these locations to prove this by identifying and investigating pre-site conditions and comparing them to the identifiable effects of initial installation and any urban environmental change.

Chapter Seven: Discussion + Conclusion

Will examine the design conclusions for each of the different site applications. These conclusions are extracted in relation to the theory and analysis derived from previous chapters. It will illustrate the similarities and differences of design types and identify how a consistent design installation can transform different parts of the city.

Scope of Research

The installations designed within this thesis will be applied to locations within the physical context of Wellington City's central precinct. However, it is intended that the design experimentation and conclusions from this research will be able to be applied to other city centres on a global scale.

The research in this thesis focuses on creating a social, digital, and environmental connection which can be translated to any part of the globe. However, the limitations of the catalytic impact of the design research on the outward environment are site, and culturally, specific to the context of Wellington City. The overall strategy of this thesis is to act upon problem sites within the urban environment with small-scale interventions, in order to benefit the pedestrian-urban experience.

theoretical framework

The theoretical basis of this design thesis explores the social issues associated with personal digital devices. To achieve this it focuses on investigating ideas relating to the creation of social interaction in an urban environment and how design can provide an outward catalytic influence that can shape and form the cities that we live in.

The main areas of focus will be: *the dependence, the potential, the talkscape*, and *the urban catalyst*.

This research will provide insights which will help develop findings that allow for the creation of a design that seeks to acknowledge the social, and urban issues, that have emerged recently due to increased digital device dependence.

The Dependence

"*The cities of today and tomorrow only exist within the twisted relations between the physical community and its network counterpart. We should think of it as a soft landscape that is constantly being updated by its users*" – Akira Suzuki

The rapid evolution of technology is transforming the way in which we communicate and behave in our public environment. With approximately 4.1 billion mobile phone subscribers in the world, these devices are fast becoming the vital tool for business and communication (Mejias, 2013).

This dependency on electronic devices was evident during the event of Hurricane Sandy in New York, 2012. As a result of the hurricane, the lower half of Manhattan remained without power for 10 days (NY1 News, 2012). Consequently "…the lack of power after the storm left New Yorkers desperately searching for somewhere to charge their phones and contact friends and loved ones" (McKernan, 2013). In response, unaffected businesses and residents that still had power connected multi-board outlets in areas accessible from a public space (pavements) to allow other people to charge their phones off their own electricity, as illustrated in figure 2. This response created a multitude of spaces, which provided platforms for social interaction, community, and a sense of connection to the greater world.

The newly found fear Nomophobia; a term conceived only five years ago, also acknowledges user dependence. Nomophobia is described as a condition where individuals are affected by, "the fear of losing signal, running out of battery or losing sight of their phone" (Merz, 2013). Other issues associated with device-use include: antisocial behaviors

such as Phubbing; the act of snubbing someone in a social setting by looking at your phone instead of paying attention (Chatfield, 2013); as individuals now focus on their screen interfaces rather than interacting within the physical and social surroundings they inhabit.

▸ **Fig 2:** Photos depicting the mass of electrical outputs that were placed outside of homes and spare internal spaces, these gatherings were found throughout New York City during the event of Hurricane Sandy.

left: Timothy A. Clary, Getty Images. http://www.usatoday.com/picture-gallery/tech/2012/10/31/searching-for-power-after-hurricane-sandy/1671917/ (sourced June 2013)

right: Hurricane Sandy in NYC: Mobile Telephone Charging Service, Antonio Vidigal. http://www.flickr.com/photos/antoniovi/8338108111/in/photostream/ (sourced June 2013)

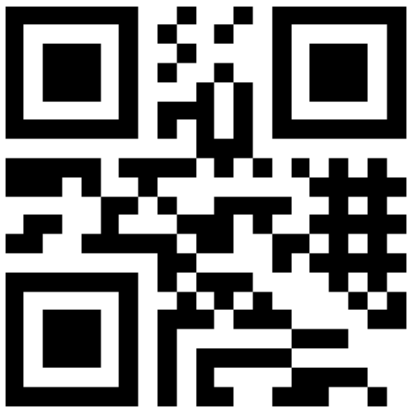
bottom: Andrew Burton, Getty Images. http://edition.cnn.com/2012/10/31/living/sandy-color-nyc/ (sourced June 2013)

The Potential

"*A discussion about 'social media and architecture' is still more likely to consider how architects can use Facebook –or Architizer –to market their work, rather than how social media changes our experience of it.*" – Andrew Blum

The fact that landscape architects and urban designers are still stuck in the beginning phase of understanding the capabilities of this technological infrastructure is likely to be the reason it has not been fully incorporated more thoroughly in design. In contrast computer programmers and industrial and product designers are pushing this boundary through small interventions and app design. These interventions illustrate the potential for the integration of digital devices or wireless technologies within the public environment. Examples of this include; the Geocaching app which allows an individual to use their city as a real-world treasure-hunting site through the use of their GPS-enabled device (Groundspeak, 2013). Using the app individuals can discover a city in a new light through another individual's interpretation of the same space. Quick Response barcodes (QR codes), a barcoded image that can be scanned with a mobile phone application for individuals to pull up information that might be associated with an advertisement, or stimulate stories, that facilitate movement throughout the city. An example of this is STQRY, an interactive tour guide for individuals to follow with their phone through QR coded images found around supported sites, such as the Wellington Zoo in New Zealand. STQRY connects people with additional information about the animals and enhances the visitor's experience (Wellington Zoo, 2013).

Mobile phone technology is expanding and developing rapidly. Therefore it is important to investigate to what extent it has influenced our public space environment in the past. The influx of smart phone technology and our ability to be wirelessly connected are technological developments that have not only changed our perception of the cities we live in, but also our understanding of public space, and our behavior within these environments. Hampton, Livio and Sessions Goulet (2010) investigated the impact of wireless Internet in public spaces around Canada and the United States. Their findings concluded that public spaces in these countries benefit from the technological infrastructure upgrade, and depending on the location, access to wireless internet has the potential to revitalize and repopulate public space (Hampton et al, 2010).



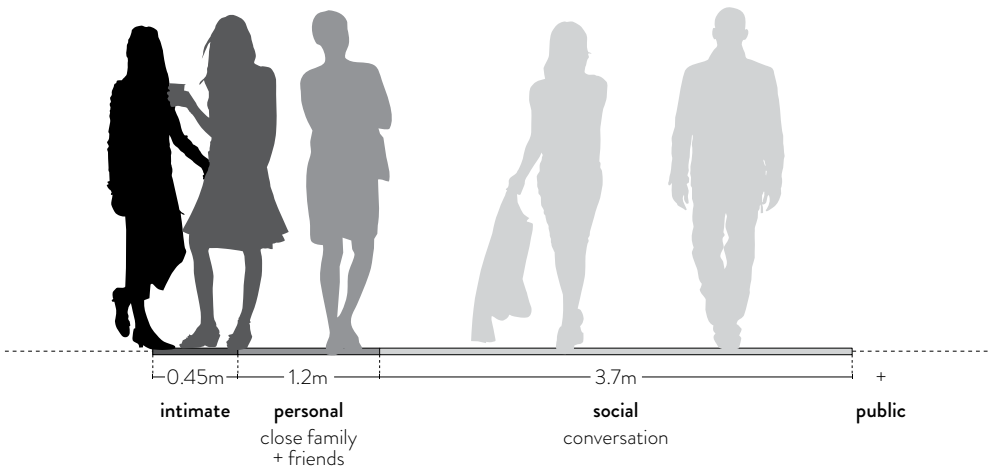
▲ **Fig 3:** Example of a generated Quick Response (QR) Code.

The Talkscape

"*City furniture can make a valuable contribution to meetings in urban space*." – Jan Gehl

In order to design a publicly and socially engaging atmosphere, there are particular elements required of a site that enable and encourage social activities. Ensuring the site in question is placed near or on a busy pedestrian route that is both physically and visually accessible, plus has the aid of environmental comforts; which include seating, sun, wind and shelter, contributes to the success of creating a busy social space (Carmona, 2003). "What attracts people is other people, and the life and activity they bring" (Whyte, 1980). The ability to provide a choice for people that can either directly or indirectly engage with their social surroundings makes for the creation of a successful social-public space.

Jan Gehl (2010) states that "…working with the human scale means providing good city spaces for pedestrians that take into account the possibilities and limitations dictated by the human body." Physical and social comforts are important factors to investigate when designing at a small scale. For the purpose of this study it is important to refine the design at the 1:1 scale. This will ensure a sense of human proportion, level of physical engagement with the individual, and the design's recharging capabilities. It also requires acknowledging the interaction between the individual and the design, and how others can engage; while still providing enough space to feel comfortable for all individuals. This can be seen in figure 4, which illustrates the proximity dimensions



▲ **Fig 4:** Social comfort, as described by Jan Gehl.

of social comfort between individuals as suggested by Jan Gehl (2010). These measurements provide a basis for how much space individuals require when conversing or sharing space with others. This measure of space and proximity is also associated with moveable chairs in public space. This flexibility allows individuals to personalize their seating arrangement to suit their needs within the space, whether it is proximity to other people, or orientation towards the sun (Gehl, 2010). An example of this is Federation Square in Melbourne, Australia. A range of sun loungers and cushions are provided to use and move around daily by the public as seen in figure 5. It provides each individual with a sense of ownership of the space and overall comfort within the site.

To describe the process of attempting to encourage direct interaction between individuals, William H. Whyte (1980) defined the term Triangulation as; "the process by which some external stimulus provides a linkage between people and prompts strangers to talk to each other as though they were not." Whyte's example of this phenomenon was predominantly a temporary event of a mime. This study argues that design, often temporary in nature, can also facilitate this event of individuals conversing through a stimulus in a public space.

◂ **Fig 5:** Images of the moveable seating and cushions for the public found throughout Federation Square, Melbourne.

top: Image by Russel. http://www.fedsquare.com/?attachment_id=63107 (sourced December 2013)

bottom: Image from http://www.createawards.com.au/2013-shortlists/federation-square-comfort-zones/ (sourced December 2013)

Temporary urbanism is a prime example of designers evoking and addressing contemporary issues, whether political or urban, by providing interventions that surprise and stimulate conversation amongst individuals. Once the project has run its course, the location of the temporal use still remains a permanent space that can be re-appropriated by new projects (Haydn & Temel, 2006). This is evident on Cuba Street in Wellington. The street is a pedestrian thoroughfare which holds large pockets of space that serve as areas for buskers, installations and petitioners with stalls. These spaces are frequently re-appropriated, and encourage and enable people to come together as strangers, who subsequently become a community of people within the space through a common experience.

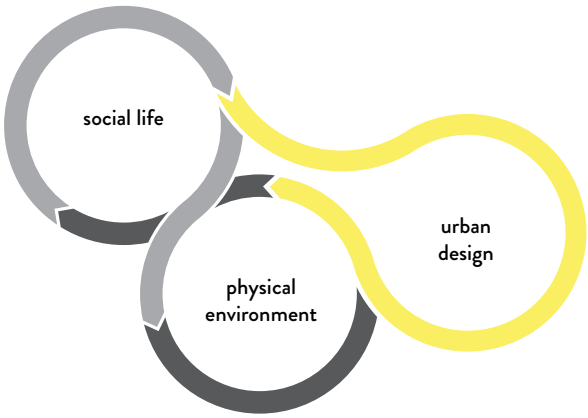
The Urban Catalyst

A catalyst is identified as something that precipitates an event or change (Stevenson, 2010). When relating this to urban environments designers see their interventions and developments as a new way of thinking or engaging with particular elements specific to their discipline. Other than just considering the theoretical or practical applications of these designs as they unfold; we should be looking at how the design will impact the surrounding urban environments.

Urban design interventions are catalytic installations within the public environment; when a design is placed into a public space it provokes ideas and opinions. Reviewing the effect the installation has allows us to determine what is successful or not, in terms of public space design, engagement, and the effect it had on forming and molding the public environment over time.

Figure 6 illustrates the potential cycle of influence an installation could have, and how "by shaping the urban environment urban designers influence the patterns of human activity and thus of social life" (Carmona, 2003).

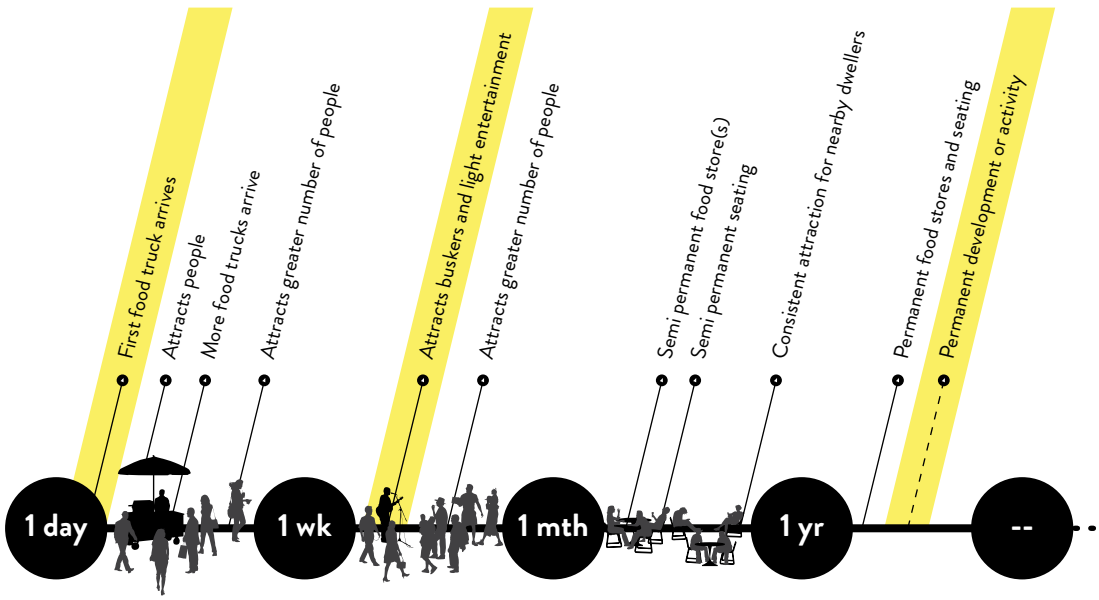
Temporary urban design seeks to provoke a short-term action with long-term change. It can be used as a vehicle for generating public interest, and it tests the public by creating something that allows identifiable reactions to a change in their environment. This trial and error tactic allows for an iterative design process until a successful outcome is produced. The success of the installation, and the level of temporality of the intervention, contributes to determining if the site gets re-appropriated by another designer once its initial installation has expired, or if it will remain and affect the site on a grander scale. Whyte's description of a food truck in a square illustrates a consistent turn of events which is shown in figure 7. The truck's placement, amenity, the time of day and other factors involved resulted in this food truck creating a hot spot of social activity over the duration of its lifespan in the square. Not only that but the location and size of the site allows this activity to reoccur throughout the week, which potentially attracts other types of people to the space through initial chance encounter, or established word of mouth.



◂ **Fig 6:** By shaping the urban environment urban designers influence patterns of human activity and thus of social life. Diagram illustrating the influence of the urban designer

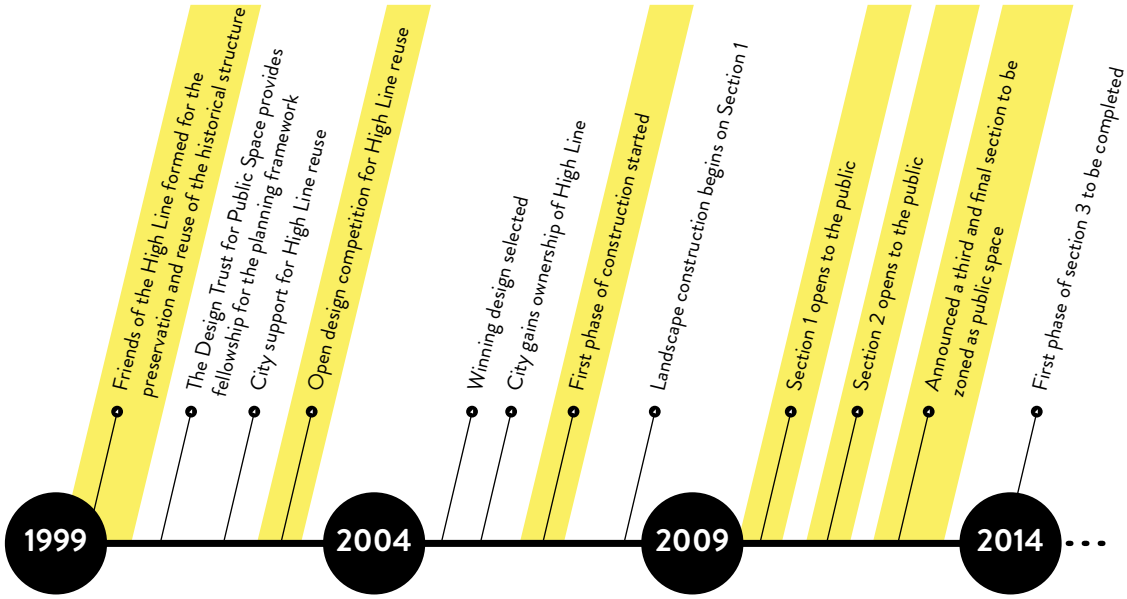
x x x x x

▾ **Fig 7:** Diagram illustrating the catalytic impact a successful food truck can have in a public space environment, as suggested by William H Whyte.



Other examples of designs acting as a catalyst can be identified in the chain of events that followed installations on the High Line, the raised linear park in New York, and at the Times Square Plaza in New York. As seen in figures 8 and 9, these provide insight as to the time frame and what external factors are required in order for a sense of permanence to occur. The High Line was divided into different sections, and the success and reaction from the public was the main driver for the continuation of the project with other sections being approved and constructed. This post-industrial infrastructural upgrade also generated a rapid gentrified shift, as new apartment buildings, galleries and restaurants opened up around the High Line project (Moss, 2012). Comparatively the Times Square Plaza example slowly addressed the issues that arose from the site by testing tactically implemented temporary interventions which, over time, were permanently introduced, and eventually transformed the site. Times Square also continues to hold temporary installations created by local artists throughout the year.

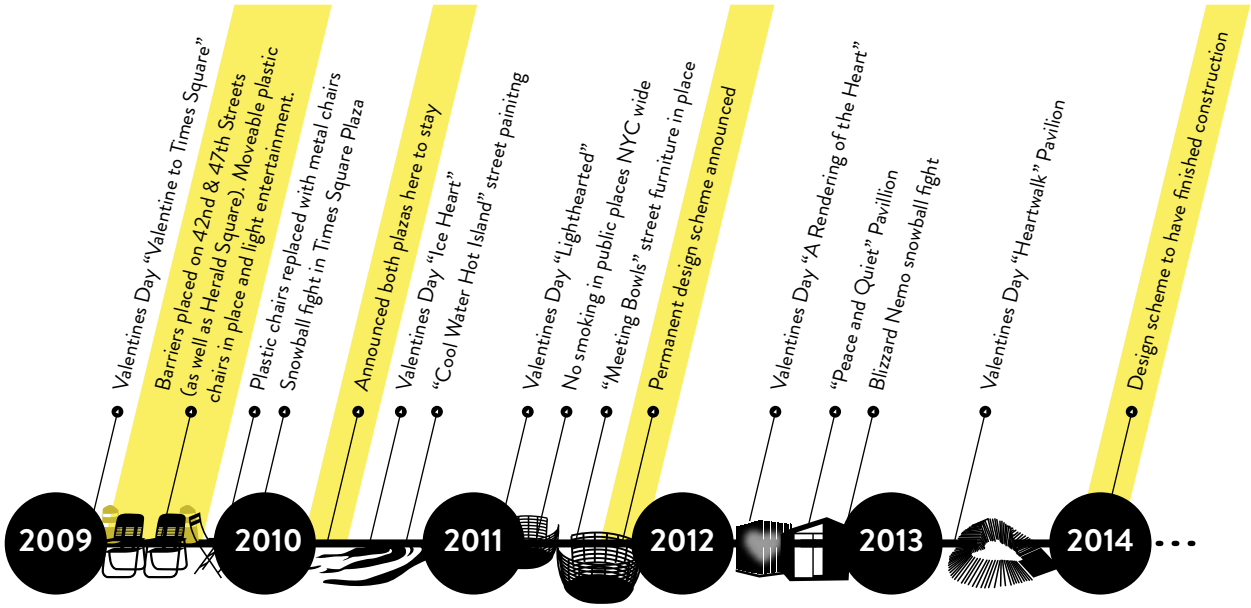
These examples illustrate the way in which the public and urban environment can respond to different modes of urban change. The Times Square example illustrates a successful response to change that was directly impacting the social and urban environment with small and temporary notion testing for the re-adaption of space. Whereas the High Line provided a new space in the city out of an environment that was otherwise deemed useless.



▲ **Fig 8:** Example of the progression of events created as a result from the High Line design over a period of time.

× × × × ×

▼ **Fig 9:** Example of the progression of events created as a result from the Times Square Plaza design over a period of time.



Conclusion

As a relatively new topic within the discipline, the ideas and examples within this chapter clearly illustrate the feasibility of integrating digital technology within the landscape and urban design. By integrating this new medium within design it has the ability to enhance people's association and experience with their urban environment. Through the right application, and insertion, as illustrated by Whyte's examples, the strategy to renew the streetscape environment with the addition of digital devices is achievable.

The key ideas presented throughout this chapter have identified a framework in which to engage with each of the different '*scales*' (digital, physical and environmental). By focusing on the creation of interrelationships between our devices and surrounding environments it has the potential to provide a different sense of engagement with our social and physical surroundings. Through the insertion of a simple amenity that uses our dependence with digital devices, this design feature will become a testing ground to determine the full potential of a site's functions, as seen from Whyte's food truck example.

case studies

This chapter explores a series of past examples that seek to provide solutions to a variety of complex social-urban issues through design installations. These designs will be analyzed in respect to their ability to facilitate social interaction; and the level of engagement they had within their surrounding environment.

The main headings include; *digital integration and retrofit*, and *adaptive design*.

In particular this chapter seeks to identify, and critique, past designs to identify potential opportunities and constraints within these designs. The conclusions from this analysis will inform and influence the final design outcome of this thesis.

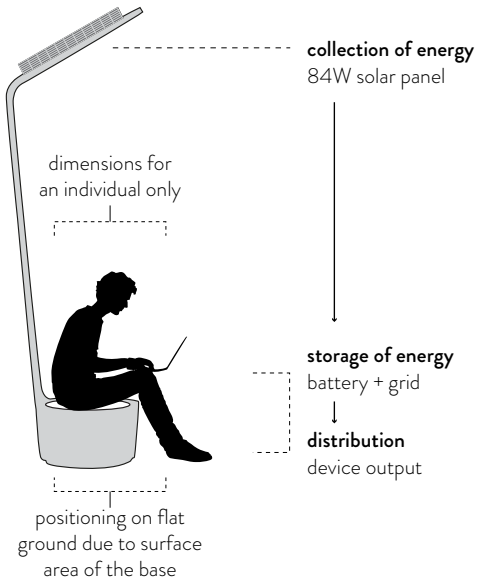
Digital Integration

This section predominantly investigates existing examples of recharging stations. It will analyze the technological build of the design, as well as its ability to respond to the social and environmental settings in which the design has been situated. Other design criteria include: how many people it can support, the design's ability to enable sociability, and consideration of how many devices it can charge at one time. These criteria will be investigated through diagrams and a summary table comparing these features.

SUN STATION

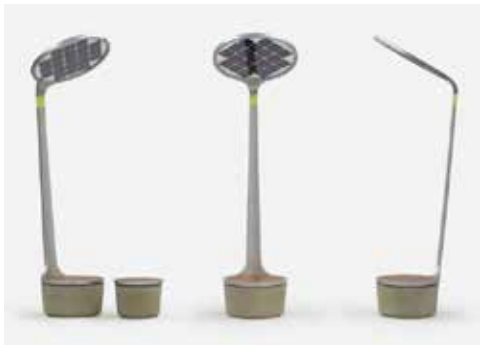
Designer: Julene Bielschowsky
Location: Prototype never implemented, Germany.
Year: 2008

This slim-line prototype design is a very individualistic installation, as it only directly engages with a singular person through one outlet port. The physical engagement is low to the ground providing a relatively relaxed environment. It is a relatively small stand-alone intervention that has the ability to be placed into different sites. However due to the type of physical interaction required by this intervention it would be better suited to park-like environments.



▲ **Fig 10:** Diagram illustrating the different elements of the Sun Station, in relation to the electrical outputs and sociaibility.

x x x x x



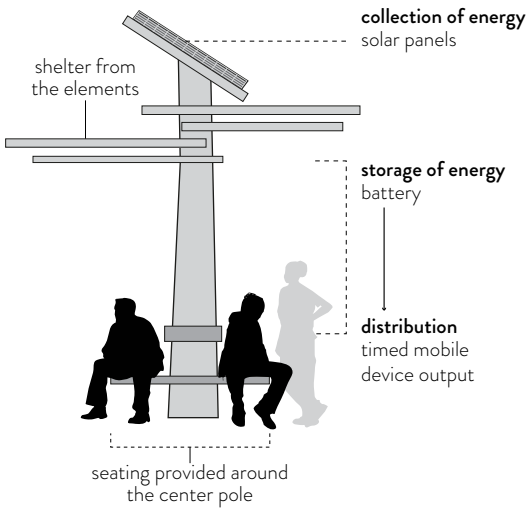
Images from http://www.julene.de/index.php/product-design/sun-station/ (sourced June 2013)

▶ **Fig 11:** Images of the imagined Sun Station and how people would engage with the intervention.

STRAWBERRY TREE

Designer: Miloš Milisavljević
Location: First installation found in Obrenovac, Serbia
Year: 2010

Responding to the prevalence of smart phones, this intervention seeks to provide a free charging amenity within the urban environment where it would typically be difficult to find. These are introduced as permanent installations within public spaces. They provide seating for comfort, and are larger in size to accommodate multiple people at a time. Unfortunately the design of the central core of the stations hinders the ability for people to naturally engage with each other comfortably around the seating platform; as groups of three or more people will have to stand in order to engage with each other.



▲ **Fig 12:** Diagram illustrating the different elements of the Strawberry Tree, in relation to its electrical and social inputs.

x x x x x

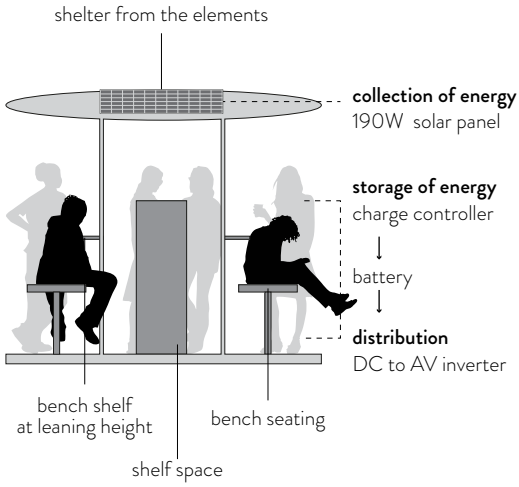
Images from http://senergy.rs/ (sourced June 2013)

▶ **Fig 13:** Images of the Strawberry Tree illustrating people's use and particular features of the design.

SOLAR PUMP CHARGING STATION

Designer: Sol Design Lab
Location: Used for events in and around California, USA.
Year: 2010

Typically positioned at festivals and events, these provide amenity to situations where a charging station would not typically be found. The introduction of these stations in the aforementioned environments often results in the creation of hubs of social activity where people can directly or indirectly engage with their counterparts' collective need for electrical power. Due to the nature of its placement these designs are larger installations and often provide shelter, seating, and shelves for people to use. This design proves the capacity for sociability that these installations can facilitate. However because of its size it would not be able to be easily adapted into the urban environment without sufficient space.



▲ **Fig 14:** Diagram illustrating the different elements of the Solar Pump Station, in relation to its electrical and social inputs.

× × × × ×

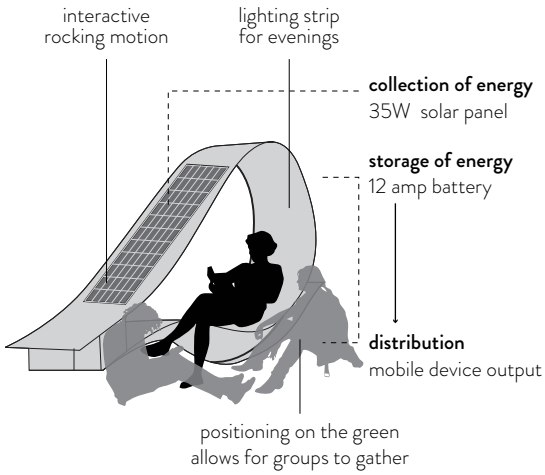
▶ **Fig 15:** Images of the Solar Pump Station illustrating how people engage the intervention on site installations.

Images from http://soldesignlab.com/ (sourced June 2013)

SOFTROCKERS

Designer: M.I.T University Team
Location: M.I.T. Campus Massachusetts, USA.
Year: 2011

This model is designed by architecture and engineering students and directly responds to the environment in which it is placed, and the type of users that would engage with it at the time of installation. The campus green provides the intervention with the ability to adapt to group activity because of its relaxed field environment. Added lighting also enables the intervention to be used at any time, day or night. The intervention provides three outlets for devices, but the size of the seat and design intention of integrating balance only allows for one individual to directly engage with it.



▲ **Fig 16:** Diagram illustrating the different elements of the Softrocker, in relation to its electrical and social inputs.

x x x x x

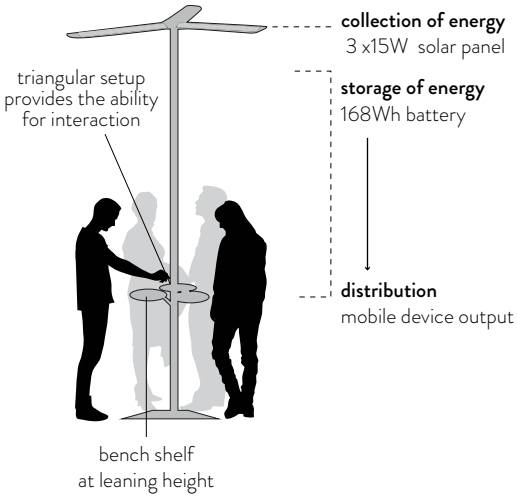
Images by Philip Ropert. http://www.designboom.com/design/mit-soft-rocker-solar-powered-sun-lounger/ (sourced June 2013)

► **Fig 17:** Images of the Softrocker illustrating its use and also elements specific to this design.

STREET CHARGE

Designer: Pensa, Goal Zero and AT&T
Location: Found in Union Squar, Central Park, Forte Greene Park, NYC, USA.
Year: 2013

Is a design-type that emerged as a response to Hurricane Sandy (as mentioned page 8). This intervention provides six charge outlets with small bench space for resting. The small benches are arranged in a triangular position that enables individuals to interact with one another without the central vertical structure impacting the view. Positioned in parks around New York City, these slim interventions have the ability to be used effectively within the urban environment. The site placements in New York have been chosen with the intention of testing the amount of use these designs can generate. The design has the potential to be placed more directly within the dense urban streets but these designs are yet to be positioned in alternative locations.



▲ **Fig 18:** Diagram illustrating the different elements of the Street Charge, in relation to its electrical and social inputs.

x x x x x

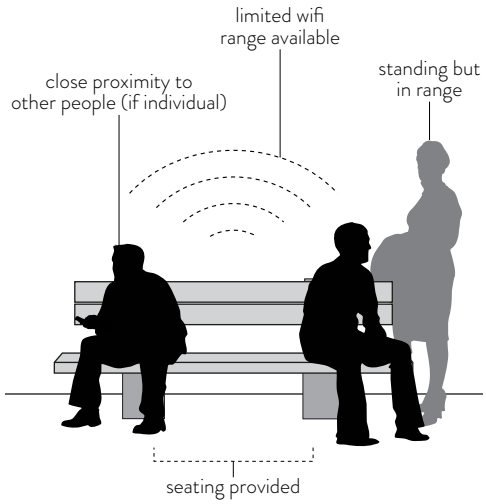
▶ **Fig 19:** Images of the Street Charge installation illustrating how people interact with the intervention.

Images from http://www.fastcodesign.com/1672835/nyc-to-install-free-cellphone-charging-stations#11 (sourced June 2013)

WIFI ENABLED PARK BENCHES

Designer: UM London, Rapport & Ministry of Experience
Location: London and Birmingham Parks
Year: 2013

Originally a promotional advertisement for Microsoft this intervention adopts an existing feature found throughout the public space environment - the park bench, and attaches an additional amenity; wireless internet. This provides users with the ability to be able to connect to the greater world through their wireless enabled devices. The park bench design is relatively restrictive in terms of social comfort.



▲ **Fig 20:** Diagram illustrating the public and social use of the Wifi Park Benches, in relation to the wifi element.

x x x x x

▶ **Fig 21:** Images of the Wifi Park Benche illustrating its use, location and the Microsoft branding.

Images from http://creativestarlearning.co.uk/urban/park-benches-and-staring-at-screens/ (sourced June 2013)

Scale	Seating #	Seating Height	Digital Output	# of Outputs
Sun Station				
small scaled street amenity	seating for 1	low seating, close to the ground	charging for mobile, tablet and laptop devices	1 x electrical socket
The Strawberry Tree				
permanent small scale urban installation	seating for ~8 people	low seating (normal chair height)	charging for multiple devices: mobile, tablet and camera	16 cords for differnet mobile devices
Solar Pump Charging Station				
removable small-medium scaled street amenity	seating for 4 people	midi height seating	charging for multiple devices: mobile, tablet and laptops	multiple electrical and usb sockets can charge up to 100 devices at one time
Softrockers				
removable small scaled street amenity	seating for 1 inside the rocker	low seating, close to the ground	charging for mobile device and lighting	3 usb charge outlets
Street Charge				
small scale removable interventions	3 leaning benches provided	n/a seating benches at leaning height	charging for mobile devices and lighting	6 charging cord outlets for usb and micro usb
Wifi Enabled Park Benches				
small scale retrofitted street amenity	seating up to 4	low seating (normal chair height)	free wifi connectivity	wireless connectivity limited to proximity to park bench

▲ **Fig 22:** Table comparing the different scales, sociability and digital output of the digital integration examples.

Retrofit and Adaptive Design

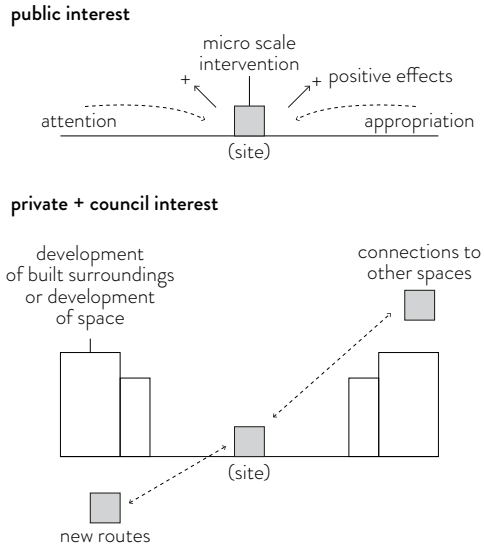
The series of examples above investigate a design's ability to adapt into a variety of different urban conditions. Through component design or parasitic injection (parasitic urbanism is defined as a temporary use exploits an existing long-term use by operating on or next to it (Oswalt, 2013)) into the site, these installations enable the designer to evoke and address contemporary issues in the urban environment. These designs are typically temporary installations as site conditions change over time. The iterative process allows for a trial and error approach which enables the design to refine itself while also accommodating for short term use. Strategies developed for these designs allow the installation to appropriate, and re-engage the public with the same site in an alternative way. They will be critiqued on their form of adaptability, sociability, and how the design influences the urban environment. These criteria will be investigated through diagrams and a summary table comparing these features.

OBJECTS OF DESIRE

Designer: OKRA
Location: Sretenka, Moscow

Year: 2011

Composed of two pieces; this design is visually simplistic but its different levels allow for diverse appropriations such as seating, a table, or play. These pieces can be rearranged, extended and repositioned in a variety of different ways that allow them to change slightly through different site installations, and therefore their use. Choosing to re-arrange the design for each site gives new insight as to how this design can transform the public space environment (Holmes, 2011).



▲ **Fig 23:** Diagram illustrating the catalyst intention that OKRA suggests the micro scale intervention could achieve.

x x x x x

▶ **Fig 24:** Images of the Objects of Desire and how people engage with the intervention.

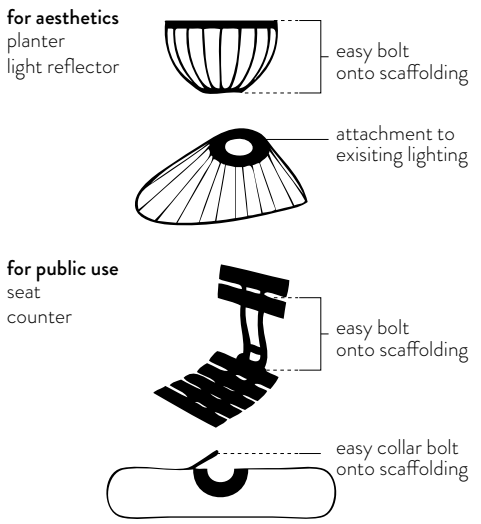
Images by OKRA. http://worldlandscapearchitect.com/okra-realizes-architectonic-intervention-moscow-sretenka-design-week/ (sourced June 2013)

SOFTWALKS

Designer: Howard Chambers + Bland Hoke
Location: New York City, USA

Year: 2012

A "kit of parts": planter, chair, counter, and light reflector (Softwalks, 2013). This design adapts to the consistent condition of scaffolding found throughout New York City. By providing simple aesthetic and amenity to an environment that is underutilized and seen as neglected space. The composition of the different 'parts' provide small pockets of social inhabitancy that responds to the size and environmental surroundings.



▲ **Fig 25:** Diagram showing the different components of Softwalk 'kit of parts' and how they are attached to the scaffolding.

x x x x x

▶ **Fig 26:** Images of the different Softwalk components and people engaging with these elements.

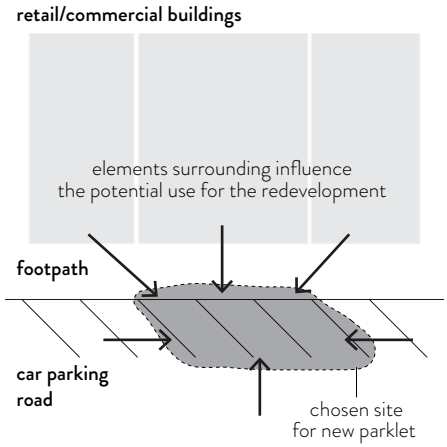
Images from http://citysoftwalks.com/ (sourced June 2013)

PAVEMENTS TO PARKS

Designer: Assorted Designers
Location: San Francisco, USA.

Year: 2005 - Ongoing

The reclamation of pocket spaces by transforming them into 'pocket parks' has occurred across San Francisco in order to reinvigorate and transform streets into highly social environments. Typically positioned close to retail outlets and cafes each pocket park responds to the local issue or requirements of each site, no two are the same. Since the first installation in 2005, numerous parks have popped up across the city. These installations have been a mixture of permanent or temporary in nature, used as testing grounds for site renewal and re-appropriation of public space.



▲ **Fig 27:** Diagram illustrating the context to which the parklet design considerations are to be incorporated.

x x x x x

▶ **Fig 28:** Images of 3 different parklet redevelopments, each different but responding to similar needs for their micro-communities.

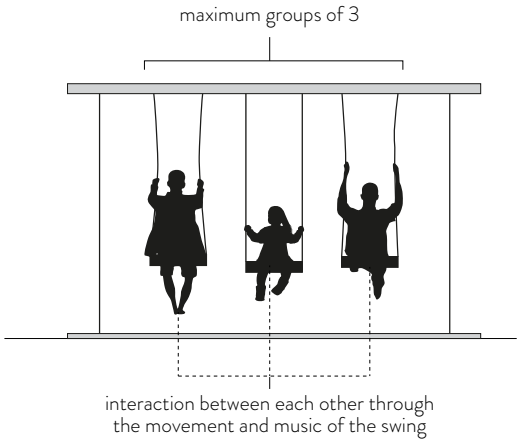
Images by San Francisco Planning Department. http://sfpavementtoparks.sfplanning.org/parklet_photos.html (sourced June 2013)

21 BALANÇOIRES

Designer: Daily Tous Les Jours
Location: Montreal, Canada

Year: 2011 - 2012

This interactive installation of seven sets of three musical swings is placed within the heart of Montreal. As one swings, tones are produced encouraging individuals to work collectively to create harmonious melodies. It facilitates play and reengages people of all ages and backgrounds within the space. This installation has run during certain periods of each year since 2011, and its success indicates that if something is successful enough within the public environment its temporarily can transform into permanence.



▲ **Fig 29:** Diagram illustrating the social situation presented by the 21 Balançoires installation.

x x x x x

Images by Olivier Blouin. http://www.dailytouslesjours.com/project/21-balancoires/ (sourced June 2013)

▶ **Fig 30:** Images of the imagined 21 Balançoires, and how people would engage with the intervention.

Scale	Longevity	Adaptability	Urban Response	Urban Influence
Objects of Desire				
small scale urban intervention	semi-permanent	streetscape amenity 2 component design	appropriable amenity	greater connectivity and appropriation of space
Softwalks				
small scaled street amenity	semi-permanent	streetscape amenity 5 component design	addressing an issue specific to NYC; design can be easily installed at each new scaffolding site	revitalisation of derelict city conditions
Pavements to Parks				
small to medium scale urban interventions	semi-permanent and fixed permanence	additional streetscape amenity specific to site needs	reclaiming pockets of underutilised spaces and transforming them to street amenity	revitalisation through improved aesthetics and additional amenity for the community
21 Balançoires				
street size removable installation	semi-permanent	removable and easily installed musical swing sets	creating play for all ages within the city centre during the winter months	increases inner city activity and encourages socialisation through interaction with the design

▲ **Fig 31:** Table comparing the different scales, adaptability and environmental awareness of the retrofit and adaptive design examples.

Conclusion

The importance of these examples lies in their ability to convey and determine the success of the installation in terms of use, and its capacity to facilitate adaption to change based on an existing cultural or social aspect in the community (King, 2012).

Many of the digital integration examples focus primarily on the technological functions of the workings of the design and lack in the environmental appropriation. Some however, do give a comfortable social arrangement, such as the Street Charge; which allows individuals to acknowledge and potentially engage with one another due to the outlet arrangement providing a unique and socially interactive environment.

Comparatively the adaptive designs have a tendency to provoke and provide humor within the urban environment. They successfully revitalized public space through small insertions that are able to merge cohesively with the current context. As multi-use designs they help to provide life in the city, rather than just providing a particular amenity.

Noticeably, with each of these examples, is the correlation between the length of time the individual is likely to use the intervention based on the design features of the installation, such as height, or lack of seating. In most circumstances, seating encourages the user to stay for an extended period of time. Whereas the interventions without, or with limited seating capacity provide an on-the-go short-term use. These different options provide these spaces different public-social settings.

site assessment

This chapter introduces Wellington City as the location that will test this thesis's research. As a city that is relatively densely composed, with issues in relation to the quality of public space, but also has good connectivity, it serves as an ideal site for design experimentation. This chapter provides the context for the chosen environment and the infrastructure that will be crucial to the design development and placement; identifying the opportunities and constraints that this environment presents.

The key components of this analysis include the Golden Mile pedestrian route, and the bollard infrastructure; both of which will be crucial to the development of the design process.

With intentions to create spaces that are popular for the pedestrian, this design thesis suggests implementing a design that generates a catalytic change within the environment in order to develop a permanent solution that will have sufficient support.

Starting as a temporary installation, the design will test particular sites of Wellington where pedestrians stop for extended periods. It aims to create a better sense of connection within the inner city and generate social atmospheres whilst responding to the need of recharging mobile phone devices. The success of this would encourage further support for these pocket spaces to expand, and generate larger urban design schemes that would have significant long-term benefits for pedestrians, and their ability to move around the city center.

Wellington

Wellington, New Zealand is a small capital city with a population of 197,000, holding 5% of the nation's population (*Key Facts*, 2013). The waterfront is the main feature of this city, and due to its popularity it therefore holds priority over the internal public areas. Currently internal spaces in the city are upgraded on significantly smaller budgets in comparison to the waterfront, which could compromise final design implementations. Gehl (2004) refers to Wellington's urban environment when he suggests that:

> "*unappealing litter bins, poorly designed signs and items placed randomly on footpaths are all signals to people visiting the city about the lack of care and concern for city quality. Poor and carelessly placed pieces of street furniture destroy the visual urban quality of cities at eye level.*"

The lack of cohesion within the urban center of Wellington needs attention in order to create an aesthetically pleasing and better functioning streetscape environment. Therefore the insertion of the design will attach itself to a mono-functional infrastructure found throughout the city, providing a non-invasive addition to the current streetscape environment.

► **Fig 32:** Clutters of street furniture and store signs found throughout Wellington narrow the footpath. Also small spaces found along Wellington's Golden Mile are typically delt to by putting in a seat as a way of dealing with pocket spaces.

Cuba Street

Courtenay Place

Lambton Quay

Lambton Quay

Willis Street

Lambton Quay and Hunter Street


Kelburn Park


Midland Park


Postoffice Square


Civic Square


Glover Park


Kumutoto Wharf


Queens Wharf


Frank Kitts Park


Te Aro Park


Cobblestone Park


Waitangi Park


Wellington Waterfront

▶ **Fig 33:** Map of Wellington indicating the predominant public spaces and city to sea connections.

x x x x x

◀ **Fig 34:** Photographs illustrating the differnt the open spaces of Wellington.

Westpac Stadium 1
Railway Station 2
Parliament 3
Botanical Gardens 4
Midland Park 5
Post Office Square 6
TSB Arena 7
Kelburn Park 8
Frank Kitts Park 9
Civic Centre 10
Te Papa 11
Waitangi Park 12
Te Aro Park 13
Glover Park 14
Cobblestone Park 15
City to Sea Connections
Waterfront Promenade
Golden Mile
Public Open Spaces
Sports Fields


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
N
0
500m

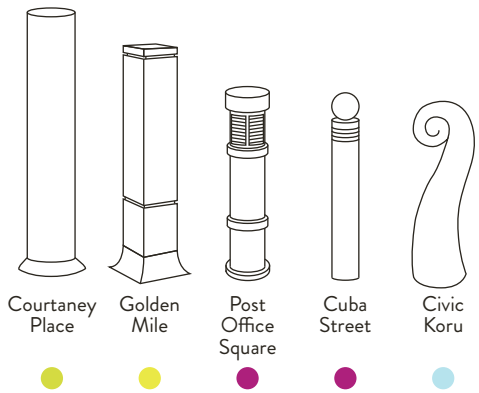
The Golden Mile

The Golden Mile is the main pedestrian and retail route that connects people to each ending landmark that is characteristic of the city: The Embassy Theatre at one end and Parliamentary buildings at the other. This route runs almost parallel to the current waterfront edge. The route is also parallel to the location of a previous shoreline dating back to the 1840's until the land was uplifted in the 1855 earthquake (Kelly, 1996). With historic significance, and the busiest retail path for the pedestrian, it serves as an ideal site to find target spots that would benefit from design installation that could in turn facilitate, and encourage, connectivity and use of public spaces in the inner city.

▲ **Fig 35:** Historical maps of Wellington illustrating the location of the Golden Mile in relation to the shore line.

Bollards of Wellington

A constant infrastructure found throughout this route is the Golden Mile Bollard. The bollard is a short vertical post that helps to control or direct vehicular traffic. In Wellington alone there are more than six different types as illustrated in figure 37. Fulfilling a singular requirement, the Golden Mile Bollard is the ideal shape, height, and location. It also has the tendency to blend in within the urban environment, and its uniformity allows the repetition of the design to cover a large portion of the city.



▲ **Fig 37:** Bollard types found in Wellington city center area.

x x x x x

▶ **Fig 36:** Map of Wellington indicating the different types of bollards and where they are located.

FB10 Golden Mile
FB20 Courtenay Place
FB30 Newtown
FB40 Civic Koru
FB50 City Standard
Other


N
0
500m

Site Selection

Three sites have been selected for the purpose of this study. Each has different working logics but all present the issue of a lack of attention to pedestrian experience, and engagement, with the surrounding environment due to the dominance of vehicular traffic.

Site 1: Lambton Quay and Hunter Street

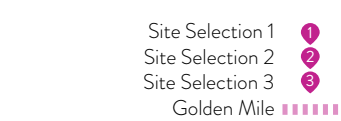
Serves as a transition space that is cut in half with a one-lane bus route. Some restricted movement due to the traffic light signals.

Site 2: Bond and Willis Street

Recently paved over due to the new Manners Mall bus route, this pocket space serves as an eddy within the predominant flow of foot traffic, however there are no facilities for lingerers.

Site 3: Lower Courtenay Place Bus Station

Is a site that is constantly in a state of flux with people moving around the city, where it has peak stages of use throughout the day, night, and week.



▶ **Fig 38:** Map of Wellington site selection for design implementation.


1
2
3
N
0
300m

design investigation

This chapter will utilize findings from the analysis of the theoretical overview, case studies, and site assessment in order to develop and inform the design of a device charging station. This design will investigate each of the different scales in depth, developing concepts that will seek to provide a deeper connection through the digital, social and urban scales.

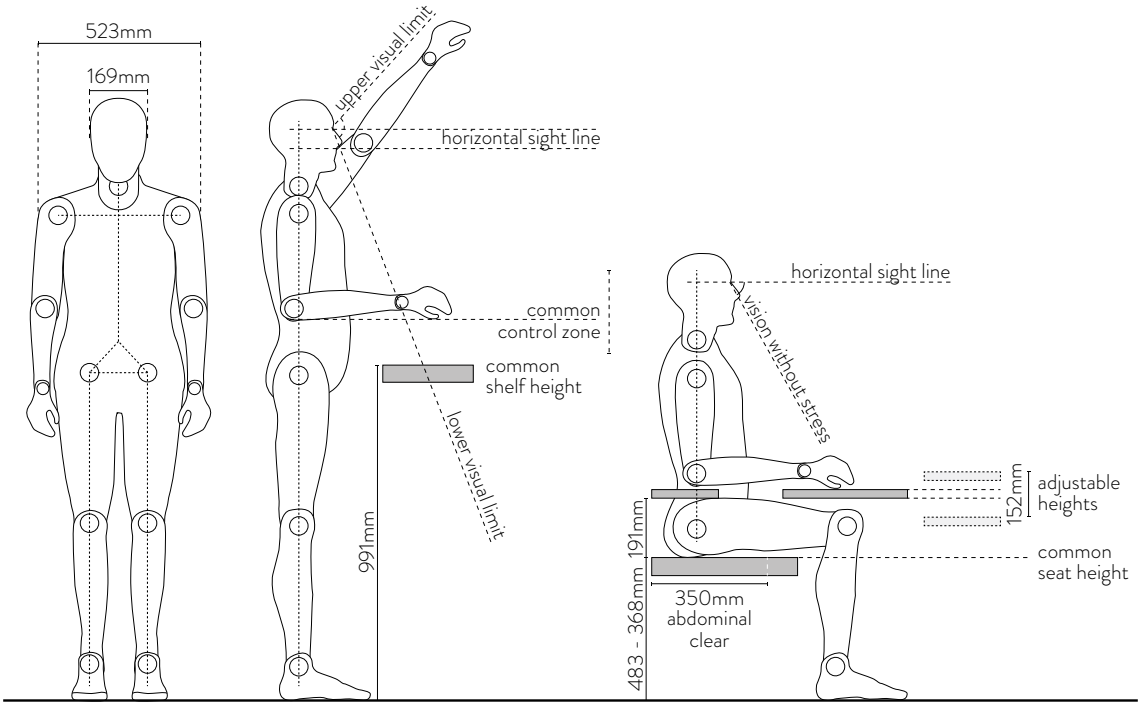
It will investigate more specifically social ergonomics (*social/bodily*), solar power, induction technologies, and interface design (*digital*). The inter-relationship of these components will result in the generation of an intervention design that has the potential to enliven the pedestrian-urban experience that can be later applied to the selected sites.

Social Ergonomics

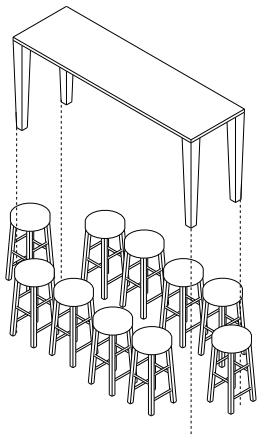
The underlying infrastructure that the design will attach to has already been identified. Therefore, the focus changes to the proportions and scale of the user and opportunities and constraints for developing the design. This part of the investigation is important as the intervention needs to respond to both the amenity it provides the user, but also its ability to connect to individuals, whether it be through mutual acknowledgement, or the possibility of interaction.

Figure 39 illustrates the particular ergonomical measurements that were investigated. The importance of these measurements is that they aim to provide physical comfort for the greater user; as they provide a design that is relatively proportional in scale to the user. Reviewing case studies identified a series of examples that used a leaning or elbow-height intervention. By providing this height-user engagement it creates a sense of on the go use; therefore providing a larger number of people with the opportunity to use these interventions.

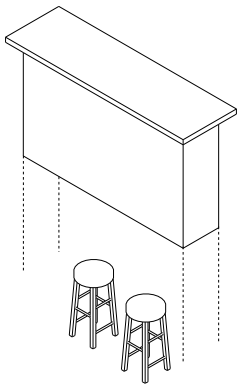
The following pages will visually illustrate the different bench types that are found within our internal and external environments, and suggest the most appropriate height condition for this design experimentation. These will also be examined in relation to sociability, and the general connotations associated with the bench and seating heights.



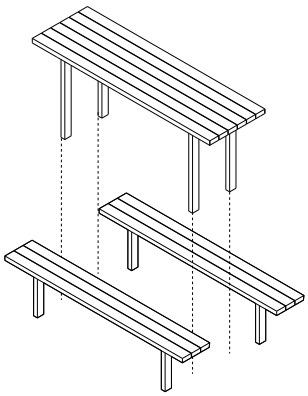
▲ **Fig 39:** Diagram of the ergonomic measurements used in this research. Measurements derived from Henry Dreyfuss Associates (2002).



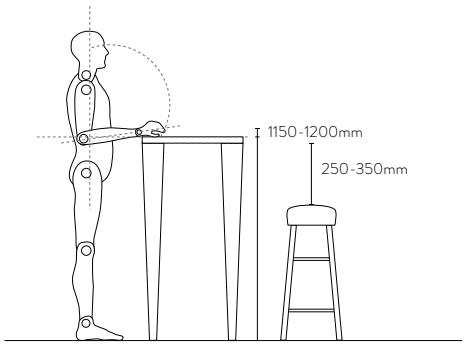
high bench scape
found in cafes and bars
allows multiple social groups
to use the bench at one time



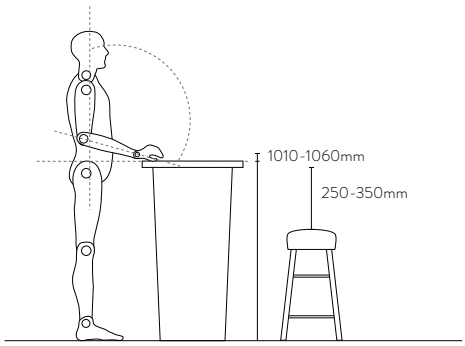
midi bench scape
found in bars and homes
good height for resting elbows
ideal for lots of individuals
some seating provided



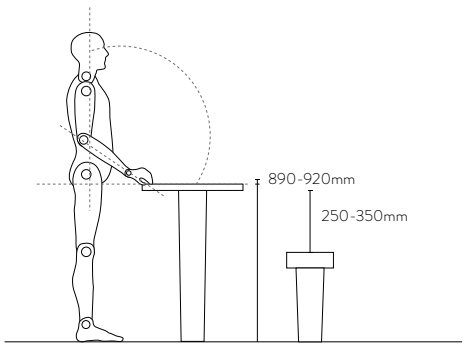
low bench scape
found in parks and beaches
easy for small children
usually restricted to one group
too low for leaning comfort



high bench scape
high leaning easier
easy high elbow height
seating would be required for people
that stay for longer periods of time



midi bench scape
flush at elbow height or just under
ideal for leaning against
good for coffee resting height for
short periods of time



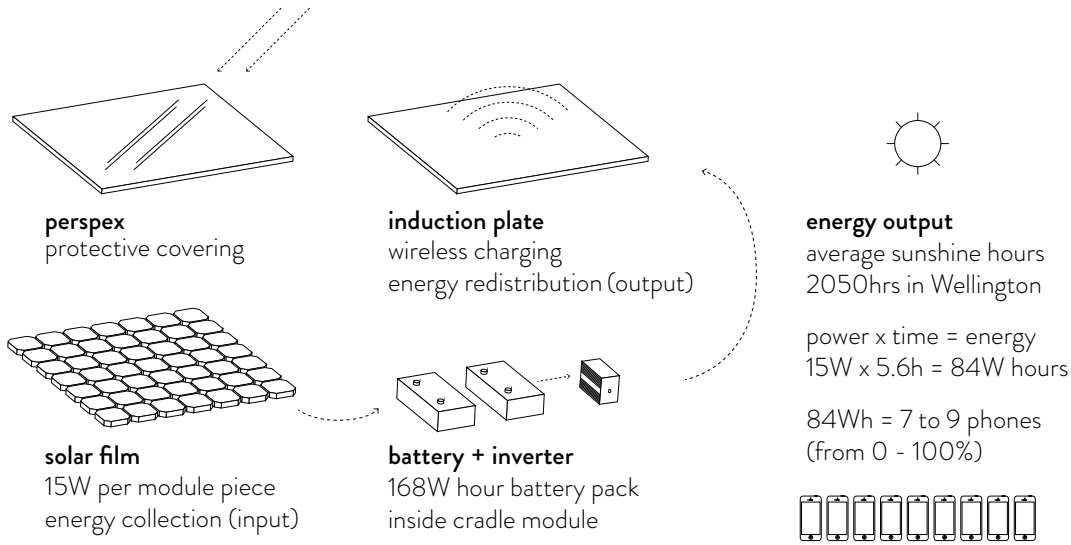
low bench scape
flush at base hand height
just out of leaning comfort
seats are necessary to sit down
therefore ideal for long periods of time

Solar Power + Induction Technology

Many of the electrical components chosen for this case study have been chosen based on their use in other case studies. Analysis of the case studies contributed to the process of determining which type of solar power generation and battery size would fit the size and type of use proposed for this intervention. For the functionality of this installation these would need to be reduced in size to fit the criteria of this compact for the streetscape environment. This will also require further investigation of solar panel construction and alternative charging systems.

By choosing to have solar power technology for the designed intervention it allows the design to be self sustaining and reliant, while also providing the visual connection to emphasize the realization of where the power is coming from. This also allows the installation of the design on site, to be more streamlined avoiding possible technical and monetary issues such as having to connect it to a grid and the issue of who would pay for the 'free' electricity. Solar panel technology is not only more affordable, but it also comes in a variety of different shapes and sizes. The type chosen for this particular investigation is the solar film: thin, lightweight, flexible and durable (Harris, 2008). Choosing to add a battery to the design will also allow storage of the generated power. This will enable the intervention's power supply to last for longer periods of time at night and during periods of bad weather.

Each of the recharge station examples identified in the case studies chapter provided an electrical outlet or cable to charge devices. With the development of induction technology (wireless charging), it provides a new foundation for a model design where the cable power outlets will no longer be required. The intervention will not have to cater for the



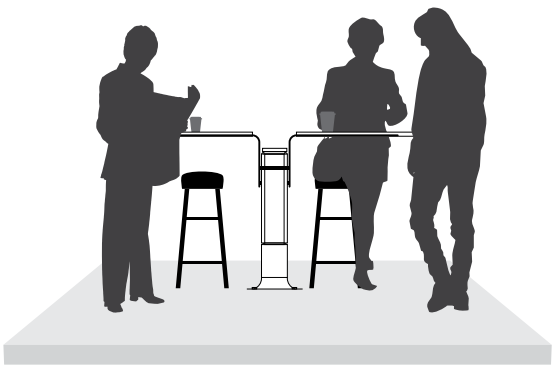
▲ **Fig 40:** Image illustrating the component makeup of the solar panel design with supporting solar panel analysis.

extensive maintenance that would be required if cords were needed. Induction technology is becoming increasingly more affordable as the technology develops. There are already induction-enabling attachments for mobile phones, as well as mobile phone battery technology development that have integrated the wireless charging system, therefore validating this design feature (T., 2013).

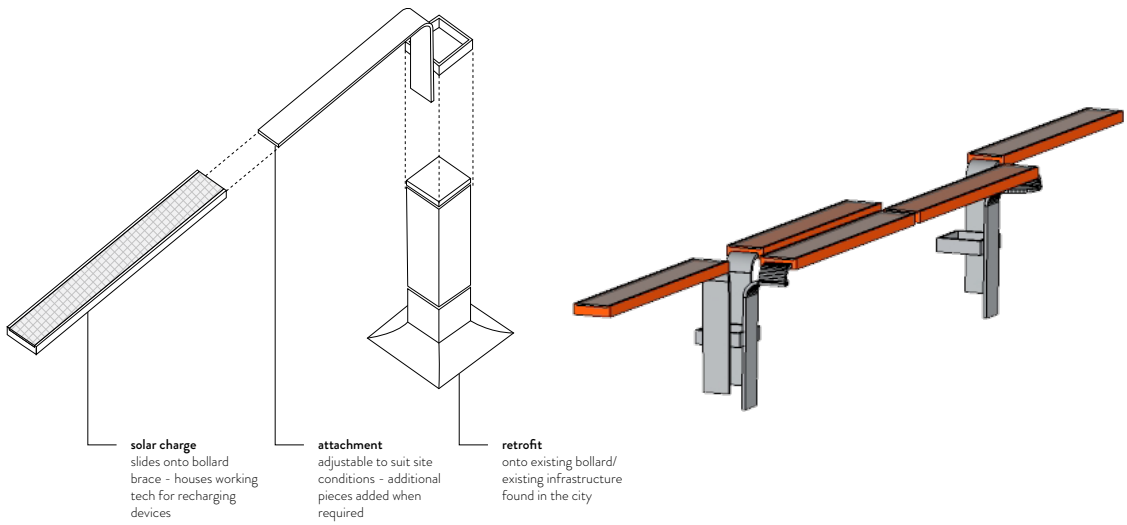
Recharge Station Design

This study has investigated different approaches to a design's ability to retrofit into a pre-existing condition found through the city, the Golden Mile bollards. Choosing this approach has resulted in some restriction as to the size and shape of the parasite design, which requires additional considerations such as ease of maintenance, encouragement of sociability, digital technology, and ability to adapt to a variety of different site conditions.

The first developed design investigated a long slim bench structure that cantilevered out from the bollard. This was a very simple structure with a variety of different outputs on the site (see appendix ii, p132). However issues arose with the design's ability to be strong enough to withstand potential abuse from the public due to its delicate and flimsy appearance. This therefore required re-examining how the installation was to attach to the bollard while providing a stronger and more dominant appearance, keeping in mind the scale and proportions of the social ergonomics in relation to the bollard.



▲ **Fig 41:** Diagram illustrating how people would engage with the concept design, including the option of moveable seating.



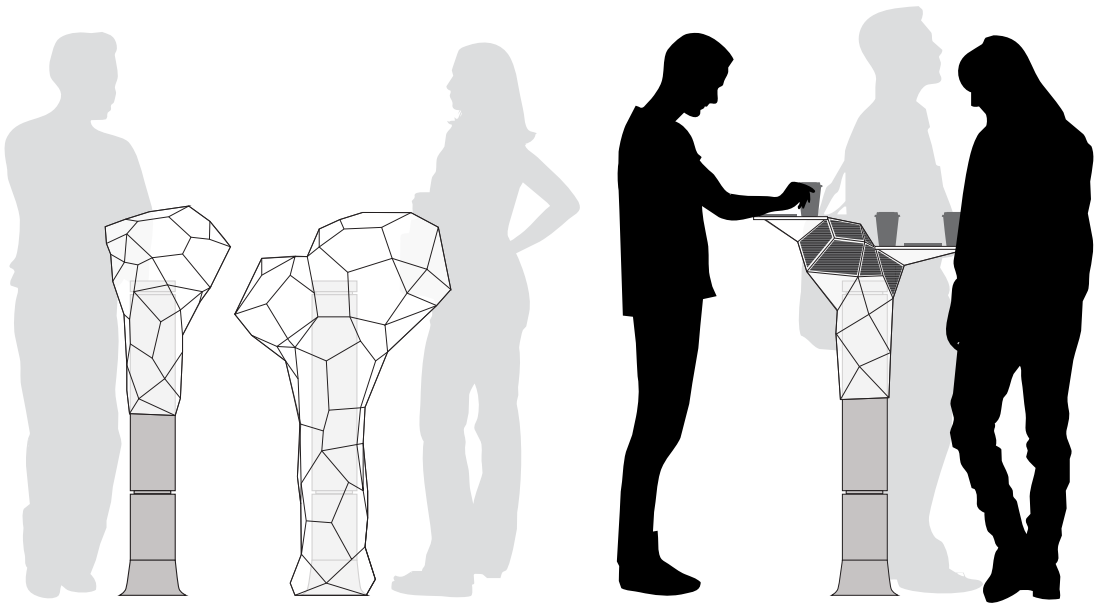
▲ **Fig 42:** Development and attachment drawings of the first main concept and photographs of the construction process of the 1:1 scale model.

SmartCharge

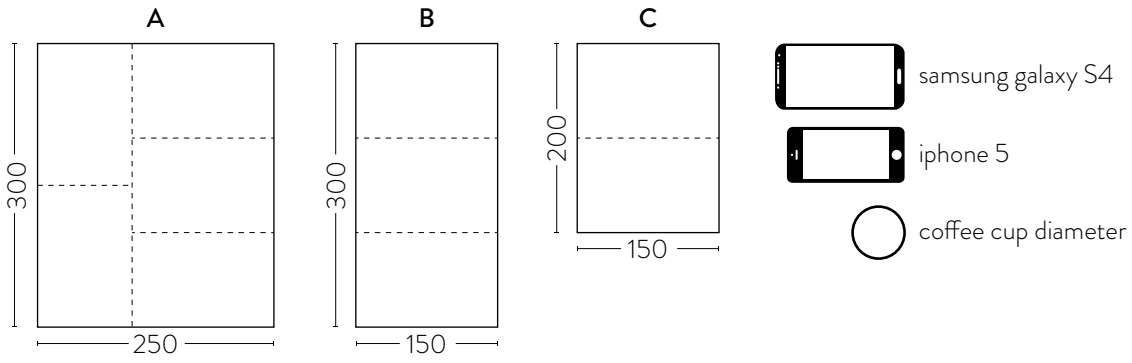
The new design is derived from reinterpreting the bollard itself, rather than simply attaching the installation to it. The form takes over the bollard with a contemporary geometric approach, where the multi-faceted surface captures the sunlight with maximum potential while attracting attention and inviting occupation through visual contrast.

The geometric form of the design is heavily influenced by the quantity, height, and size of the charging platforms examined in figures 44 and 45. The sizes of the charging platforms were determined based on average phone dimensions, as well as the quantity of people and their movements, such as; drinking coffee, or eating lunch in the area. This also allows the installation to be specific to the size of the site itself. Additionally components will be site-specific and chosen in order to suit the setting.

The installation of the design on site is comprised of three components; the internal attachment to the bollard, including the battery compartment, the external shell and the induction platforms and wiring. Figure 46 shows how it attaches to the bollard on site.



▲ **Fig 43:** Concept drawings and form development investigation for geometric form concept.



▲ **Fig 44:** Diagram illustrating the different charging platform sizes in relation to relevent objects.

x x x x x

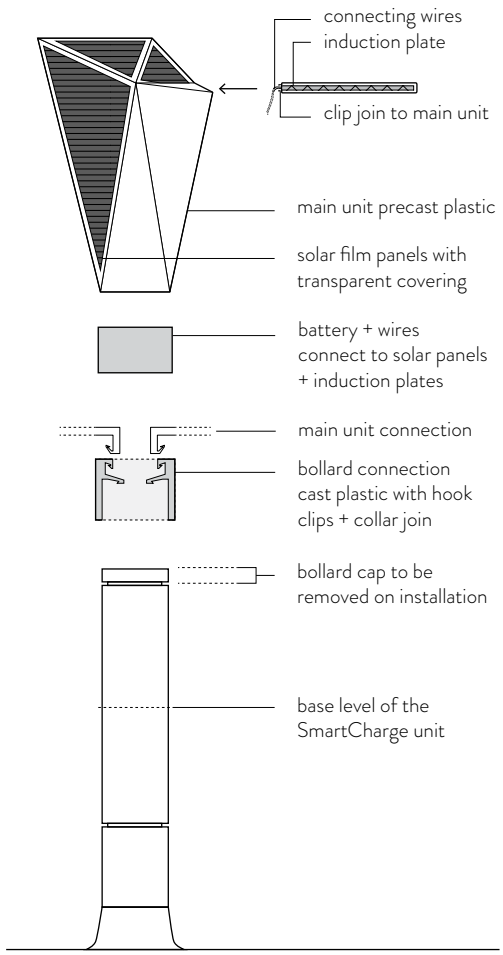
▼ **Fig 45:** Table illustrating the different elements that compose the SmartCharge intervention.

Charging Platform	Size	Use
A (multiple people)	250 x 300mm	Up to 5 phones, 1-2 tablet devices, or phones, coffee and lunch, or phone and bag
B (individual or pair)	150 x 300mm	Up to 3 phones, 1 tablet device, or 1 phone and lunch
C (individual)	150 x 200mm	Up to 2 phones, 1 tablet device, or a phone and coffee

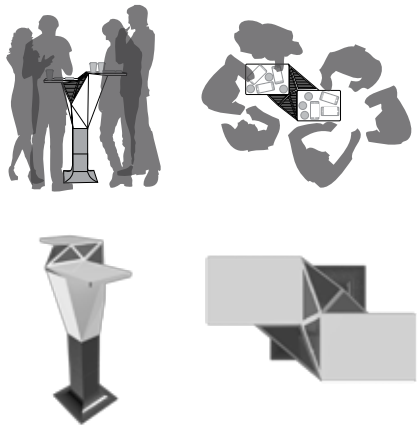
Axis	2 charging platforms:	3 charging platforms:
		

Height	1000, 1050, 1150mm	Incorporating people of all heights and comfort levels for leaning, which provides versitility on site for the public.

Elements such as different platform sizes, heights, and axis points, provide a number of different installation iterations as illustrated in figure 45. The following pages cover sixteen iterations based on the charging platforms alone; where each iteration has another 2-12 combinations possible based on the elements mentioned. This enables each site to have a different makeup of charging units, which allows it to be specific to the size and specifications of the site.

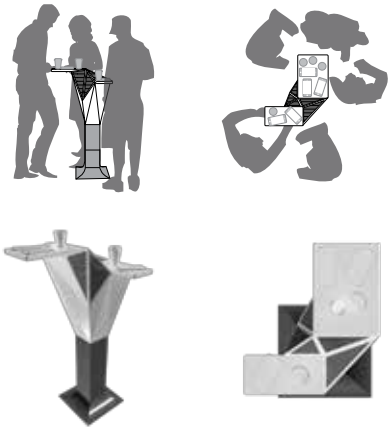


▶ **Fig 46:** The composition of the SmartCharge intervention installation, comprised of a internal structural element, battery and wirering component and external shell.



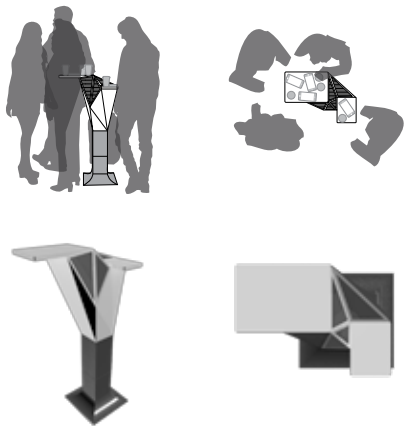
01

Charging Platforms:	**A A**
Max # of Phones:	**10**
Social Setting:	**lrg group**



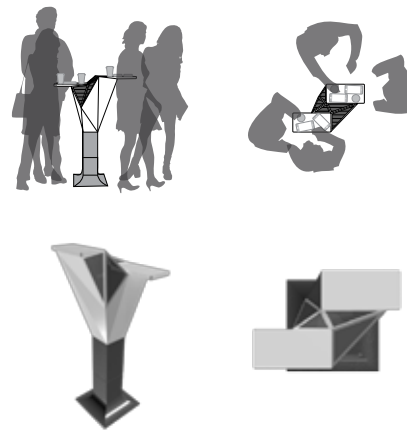
02

Charging Platforms:	**A B**
Max # of Phones:	**8**
Social Setting:	**med group**



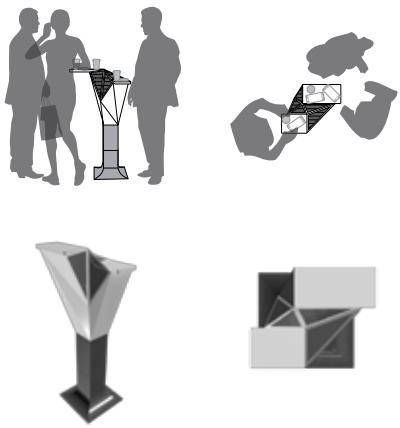
03

Charging Platforms:	**A C**
Max # of Phones:	**7**
Social Setting:	**sml group**



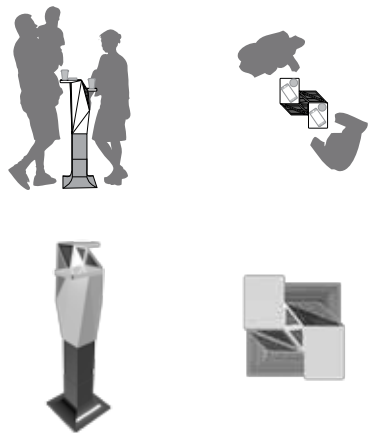
04

Charging Platforms:	**B B**
Max # of Phones:	**6**
Social Setting:	**sml group**



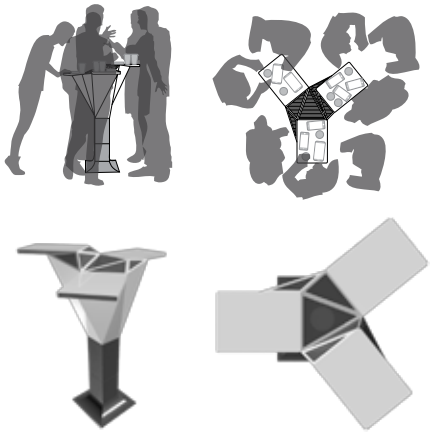
05

Charging Platforms:	**B C**
Max # of Phones:	**5**
Social Setting:	**individuals**



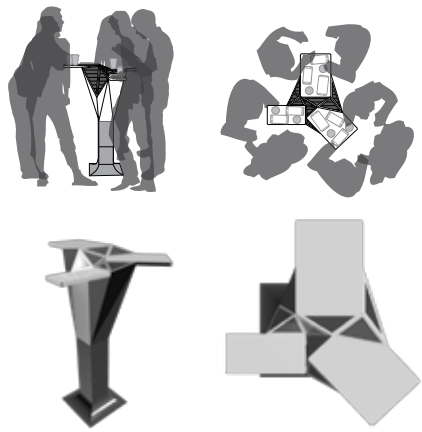
06

Charging Platforms:	**C C**
Max # of Phones:	**4**
Social Setting:	**individuals**



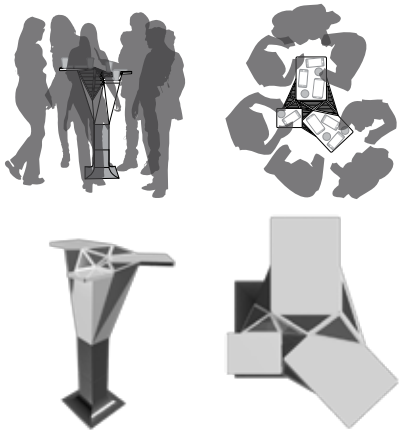
07

Charging Platforms:	**A A A**
Max # of Phones:	**15**
Social Setting:	**xl group**



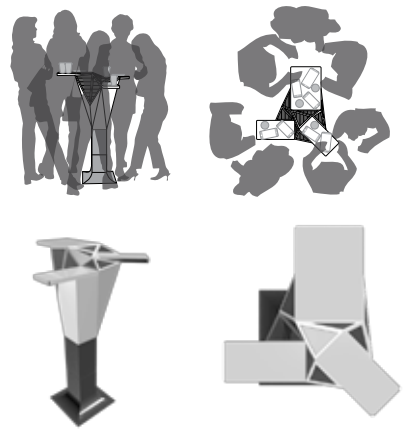
08

Charging Platforms:	**A A B**
Max # of Phones:	**13**
Social Setting:	**xl group**



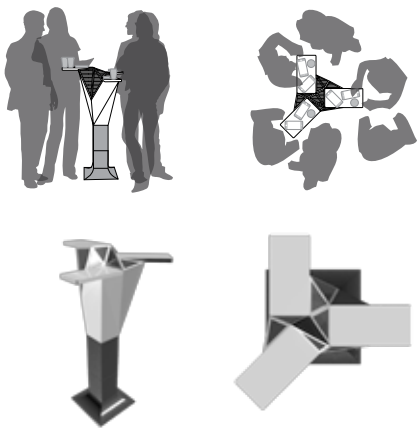
09

Charging Platforms:	**A A C**
Max # of Phones:	**12**
Social Setting:	**xl group**



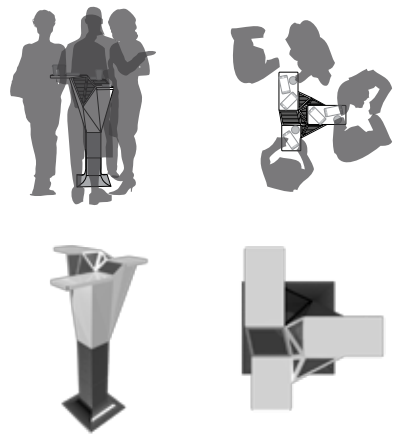
10

Charging Platforms:	**B B A**
Max # of Phones:	**11**
Social Setting:	**xl group**



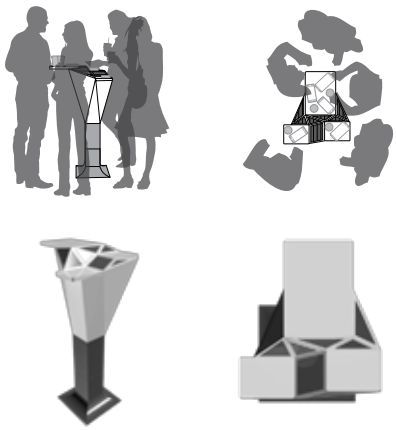
11

Charging Platforms:	**B B B**
Max # of Phones:	**9**
Social Setting:	**lrg group**



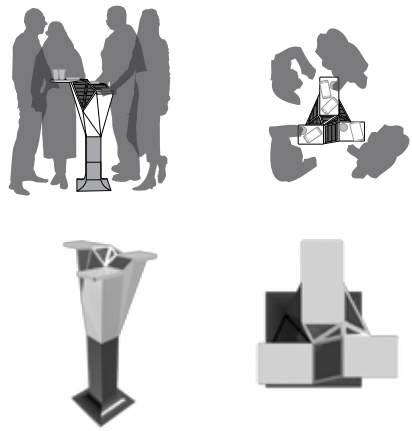
12

Charging Platforms:	**B B C**
Max # of Phones:	**8**
Social Setting:	**med group**



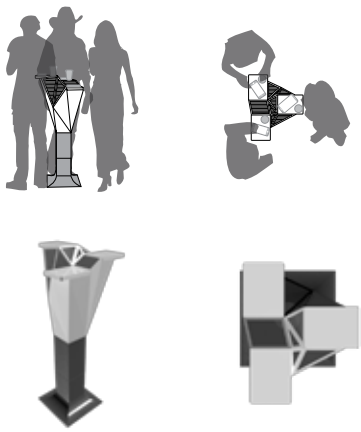
13

Charging Platforms: **C C A**
Max # of Phones: **9**
Social Setting: **med group**



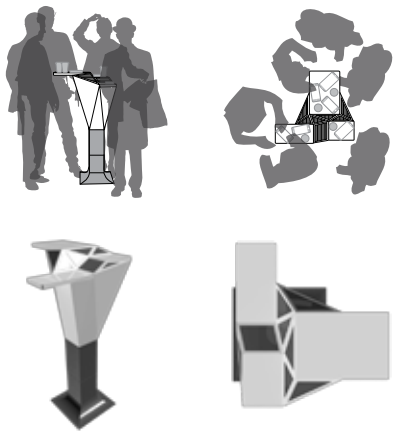
14

Charging Platforms: **C C B**
Max # of Phones: **7**
Social Setting: **sml group**



15

Charging Platforms: **C C C**
Max # of Phones: **6**
Social Setting: **individuals**



16

Charging Platforms: **A B C**
Max # of Phones: **10**
Social Setting: **lrg group**

▲ **Fig 47:** Perspective render of design components in a social-urban setting illustrating how it can be placed and used within the public environment.

▲ **Fig 48:** Perspective render of design components in a social-recreation setting illustrating how it can be placed and used within the public environment.

SmartCharge App Design

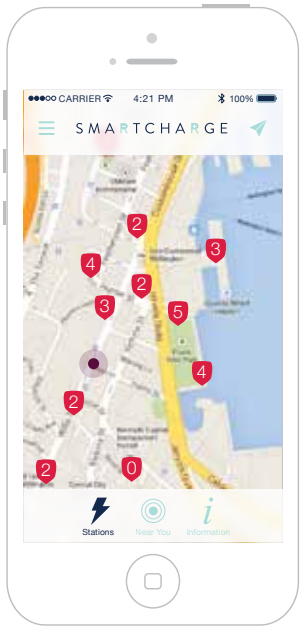
Incorporating the digital interface within the proposed design provides a different realm of interaction with the device, the user, and their environment.

The design of this user interface (UI) connects users of the app to the locations of the SmartCharge stations located around the city. Like many apps of this kind the design specifically overlays the SmartCharge information in relation to the city map. Therefore the information can be easily read and understood by the user. It locates routes, presents basic city information, and has the ability to collect real-time data on the use and maintenance of the SmartCharge interventions. It also has the ability to relay information of a location of a station to a friend to serve as a meeting place.

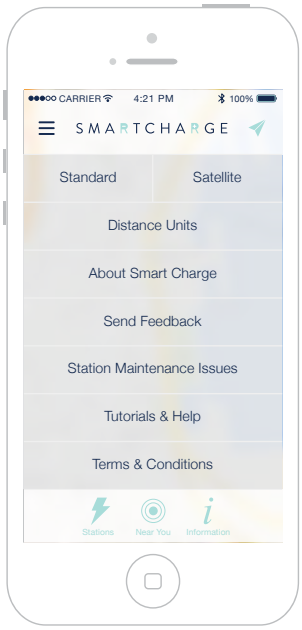
This technological medium also has the capacity to produce real-time data that could provide information as to the success of the site installations. This data would include the number of people using the stations, identifying the most popular locations, or ones that need to be repositioned or removed. Because this information is likely to be of more value to the designers, council, and also neighboring businesses, the data would be open to those who require it.

▸ **Fig 49:** Images depicting selected designed screens of the (UI) app design for the SmartCharge App design for an iPhone 5 template.

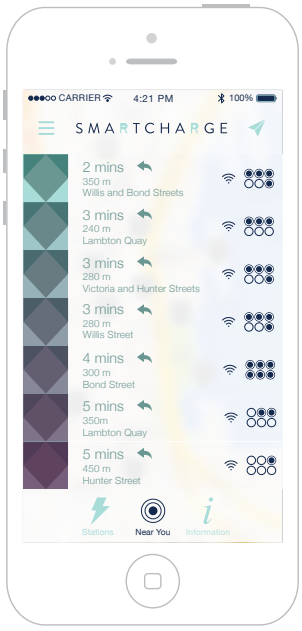
Intro Screen



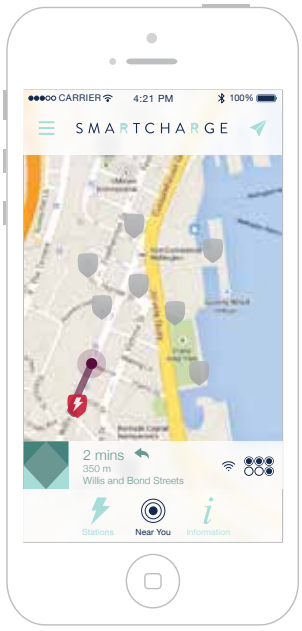
Stations Map



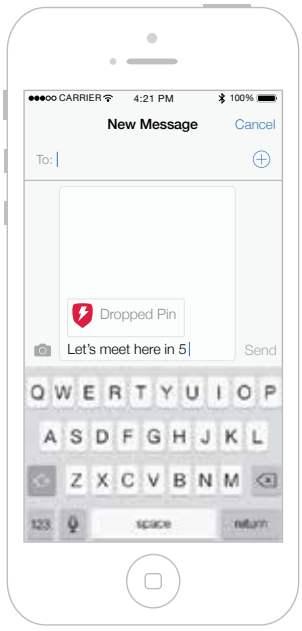
Settings



Near You



Chosen Route



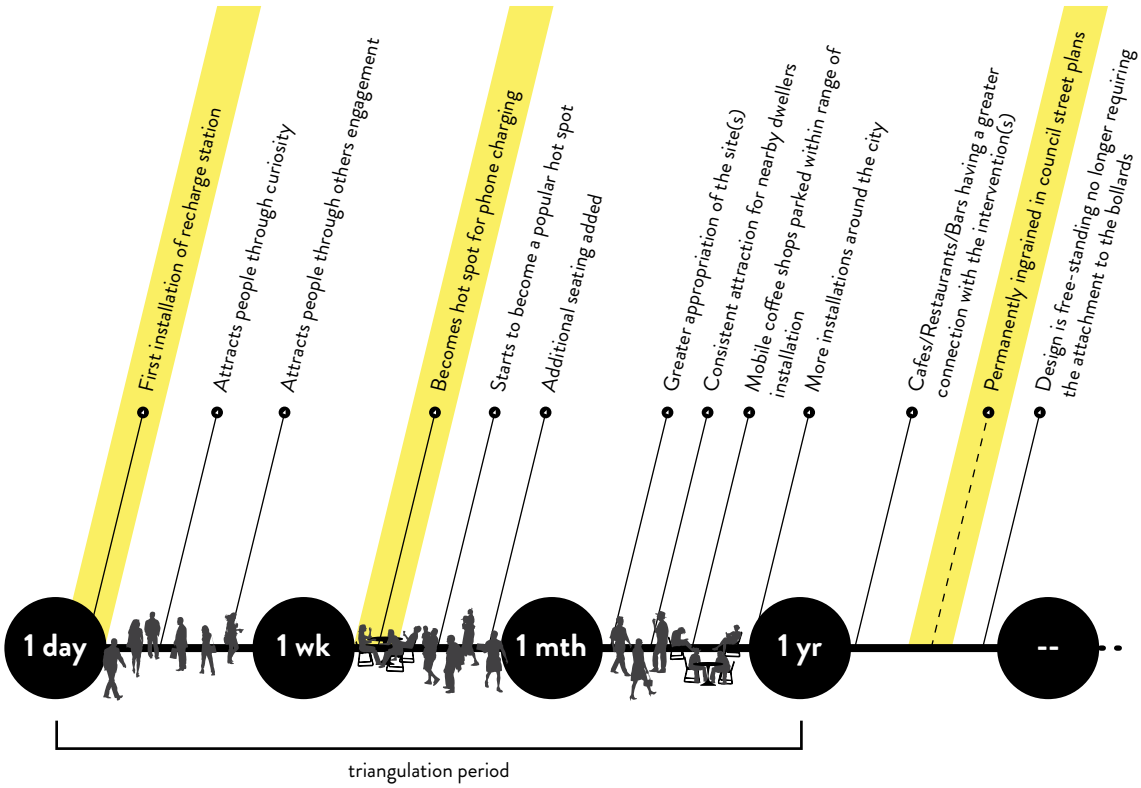
Share Location

Urban Influence

Much like the diagram illustrated in the OKRA, Objects of Desire case study (page 33) this micro scale recharging intervention seeks to provide a similar objective in which it provides positive effects for the public and pedestrian environment, and on a larger scale it has the ability to connect and influence, its outward surroundings.

The SmartCharge units will be placed in strategic locations where they will act as nodal interventions in these underutilized footpath spaces. They will act as a way of redefining the character of the sidewalk and making people engage with the site more readily. Firstly by providing an amenity that is unfound in public spaces in New Zealand, it is likely that these spots will thrive with activity. This will influence the Wellington City Council (or private investors) to re-examine their understanding of small-scaled spaces such as the ones explored within this thesis and potentially upgrade the public facilities surrounding said spaces.

This micro scale intervention approach has another advantage in the sense that its trial and error approach is less costly than a complete site upgrade. Rather it tests the public's attitude towards a site by providing a simple amenity. The public can appropriate the site accordingly which can influence either the need for a space upgrade or the public facilities surrounding it. This kind of approach is ideal for cities such as Wellington, as the council currently do not allocate a lot of funds to regular public space revival. Such a design move challenges investors, councils, and designers to rethink their perceptions of these small spaces which are often overlooked in terms of a means for urban renewal. This exploration could trigger a series of experiments with other facilities within similar spaces around the city.



▲ **Fig 50:** Timeline diagram illustrating the suspected catalytic effect the SmartCharge intervention could achieve in the public realm.

The way in which the SmartCharge is likely to influence the public space is illustrated in figure 50. This assessment is based using the triangulation principle and food truck example by William H. Whyte (p17). It provides a short to mid-term chain of events that have the potential to catalyze urban rejuvenation through the installation of one simple designed experiment.

Summary

This chapter has identified each of the different aspects of the design investigation and how it will impact and strengthen the design installation. By detailing each of the different 'scales' (physical, digital, environmental), it enabled refinement of the smaller details of the overall design. Through this progression of analysis and conceptualization, a series of different types of criteria such as; inserting the solar power and induction technologies, and attachment to the bollards, started to manipulate the overall form and mechanics of the design.

This chapter gives an insight to the potential of the streetscape intervention, the app design, and a hint of how it will be appropriated over time. The next step is to apply it to the selected sites and analyze the design's ability to function in that space and see how it will transform and change the use and sociability of those sites.

design application

This chapter explores the relationship between the designed intervention and the urban streetscape and its ability to adapt and impact the urban environment of Wellington City, by applying it to three different sites as identified in the site assessment chapter:

- *Lambton Quay and Hunter Street*
- *Bond and Willis Streets*
- *Lower Courtenay Place*

Each site will be analyzed in terms of its current condition, the transformation it will undergo once the design intervention is in place, and a further analysis as to how it would urbanistically impact on the greater site that would benefit the pedestrian experience and enhance the life in the city.

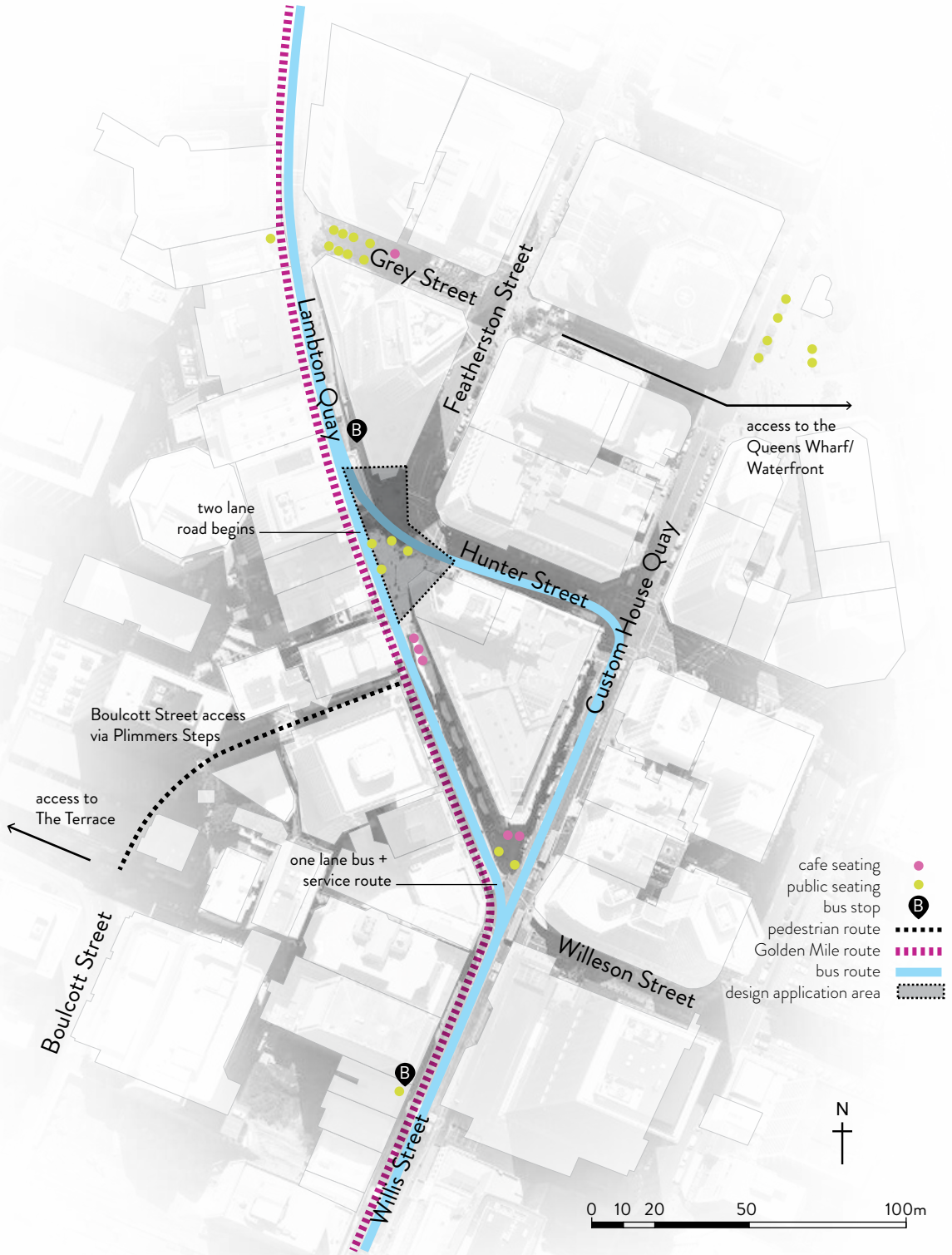
Lambton Quay and Hunter Street

Pre-site Analysis

A part of a highly used pedestrian walkway, the intersection of Lambton Quay and Hunter Street consists of two awkwardly designed pockets of space that are severed by a bus lane. Adjacent to the bustle of the main Golden Mile route it seems unusual that the east side of the road lacks the quantity of pedestrians. This appears to be because of the tightly spaced footpath between Lambton Quay and the Old Arcade Building, as well as the bus intersection (following north). It is also at this point that it becomes more difficult for pedestrians to cross to the western side with ease, as the double-lane, and occasional service lane, takes precedence over the pedestrian. This is further analyzed through figures 52, 53 and 54 where the quality of this public space in relation to the way it is currently used, and perceived by the public.

This analysis highlights the issues that could potentially be remedied through the intervention design.

▸ **Fig 51:** Site analysis map of Lambton Quay and Hunter Street site, illustrating the key functionings of the site and its relationship to the Golden Mile.

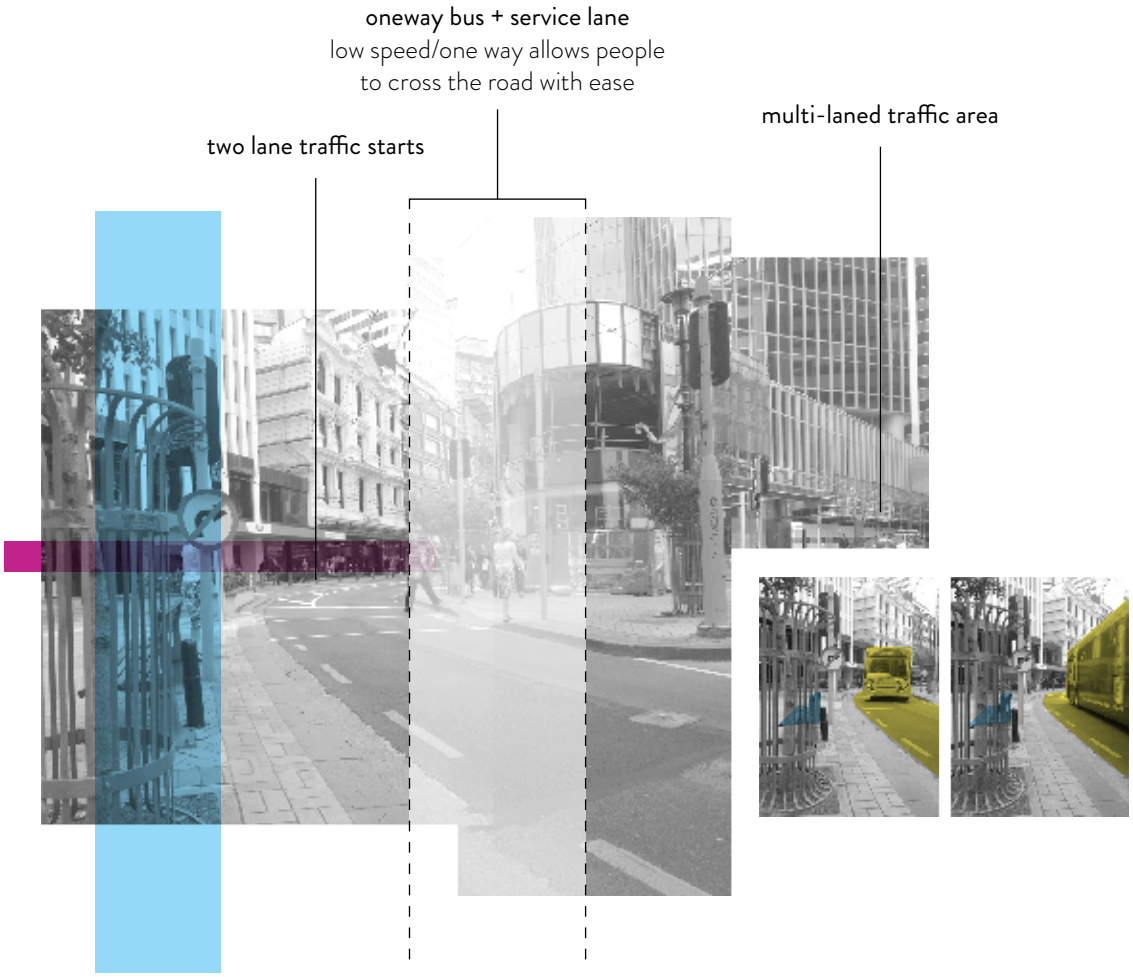

Grey Street
Featherston Street
Lambton Quay
access to the
Queens Wharf/
Waterfront
two lane
road begins
Hunter Street
Custom House Quay
Boulcott Street access
via Plimmers Steps
access to
The Terrace
one lane bus +
service route
Boulcott Street
Willeson Street
Willis Street
cafe seating
public seating
bus stop
pedestrian route
Golden Mile route
bus route
design application area
N
0 10 20 50 100m

main pedestrian thoroughfare
continued link of the Golden Mile
fast pace movement
limited stopping

right side thoroughfare
tightly spaced
confined by bollards + bank arcade
max 2-3 people comfortably
fast paced movement

street furniture obstacles
provides eddies for individuals to break
away from the main thoroghfare movement
opportunity to cross the road

▲ **Fig 52:** Detailed analysis of the Willis Street entrance to Lambton Quay.



main pedestrian thoroughfare
continued link of the Golden Mile
fast pace movement
limited stopping

bus passing intensity
buses that move through this area are very dominant and seating is not ideal for long periods of time due to noise + pollution from the buses

street furniture obstacles
provides eddies for individuals to break away from the main thoroghfare movement
opportunity to cross the road

▲ **Fig 53:** Detailed analysis of the Lambton Quay and Hunter Street intersection.

main pedestrian thoroughfare
continued link of the Golden Mile
fast pace movement
limited stopping

minimal pedestrian gap
new shops have been introduced but the issue of the bus stop with awkward waiting space makes it difficult for people to walk past on the normal route

street furniture obstacles
provides eddies for individuals to break away from the main thoroghfare movement
opportunity to cross the road

▲ **Fig 54:** Detailed analysis of the Lower Lambton Quay bus stop and building edge.

Installation on Site

The SmartCharge units in this example have been placed at the edges of the large pocket space on either roadside, attracting pedestrians from the more populated side of the Golden Mile, and also attracting pedestrians from the smaller pocket to the larger. This area has a larger quantity of space to cater for people engaging in the act of charging their devices and other activities that may offshoot from this initial catalyst act.

An issue of this site is that it does not have many bollards in the position that the units are intended for. Instead there are park benches that have the same ground footing as the bollards. Therefore by replacing one or two of these park benches with two or four bollards in order to install the SmartCharge units will allow for more ideal positioning, in terms of creating active social pockets.

The site itself is still relatively small, so the units chosen for the installation should consider the edge of the road and proximity of buses and cars in relation to the charging platforms. The qualities of the space can be enhanced by spreading the intervention out across the site to create small active areas rather than block a full edge; allowing permeability across Lambton Quay.

The goal for this site is to encourage use within the pocket space for conversation and socialization; something that is mildly restricted in the contrasting fast-paced pedestrian movement of the west side of Lambton Quay.

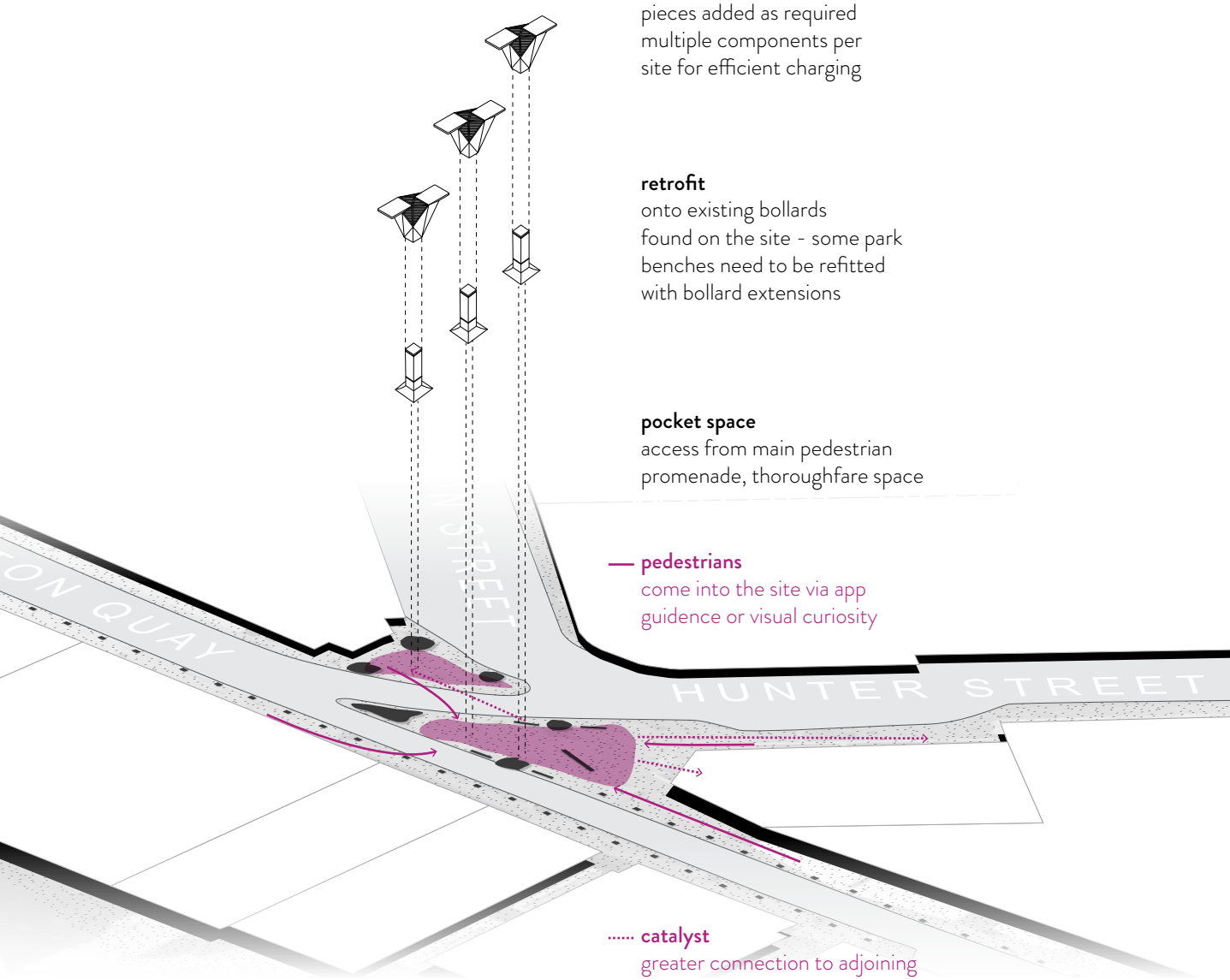
▸ **Fig 55:** Perspective image of social spots created by the the SmartCharge installation at Lambton Quay and Willis Street site.


MARCS

Catalyst Output

Redirecting current bus routes would allow the consolidation of the two pocket spaces to give room for a small square-like urban space within this bustling city area. This would increase the use of Lambton Quay and Hunter Street intersection area. It would also provide the lower end of Lambton Quay with the same amenities that Midland Park provides, a space for the workers, and those enjoying the shopping and cafes, to stop for a rest, seating, shelter and socialization. The site would also have connections to The Terrace (through Plimmer Steps) and the waterfront area (through adjoining streets).

▶ **Fig 56:** Diagram illustrating an example of the location and impact of the design installation in relation to its surroundings for the Lambton Quay and Hunter Street site.



adaption
pieces added as required
multiple components per
site for efficient charging

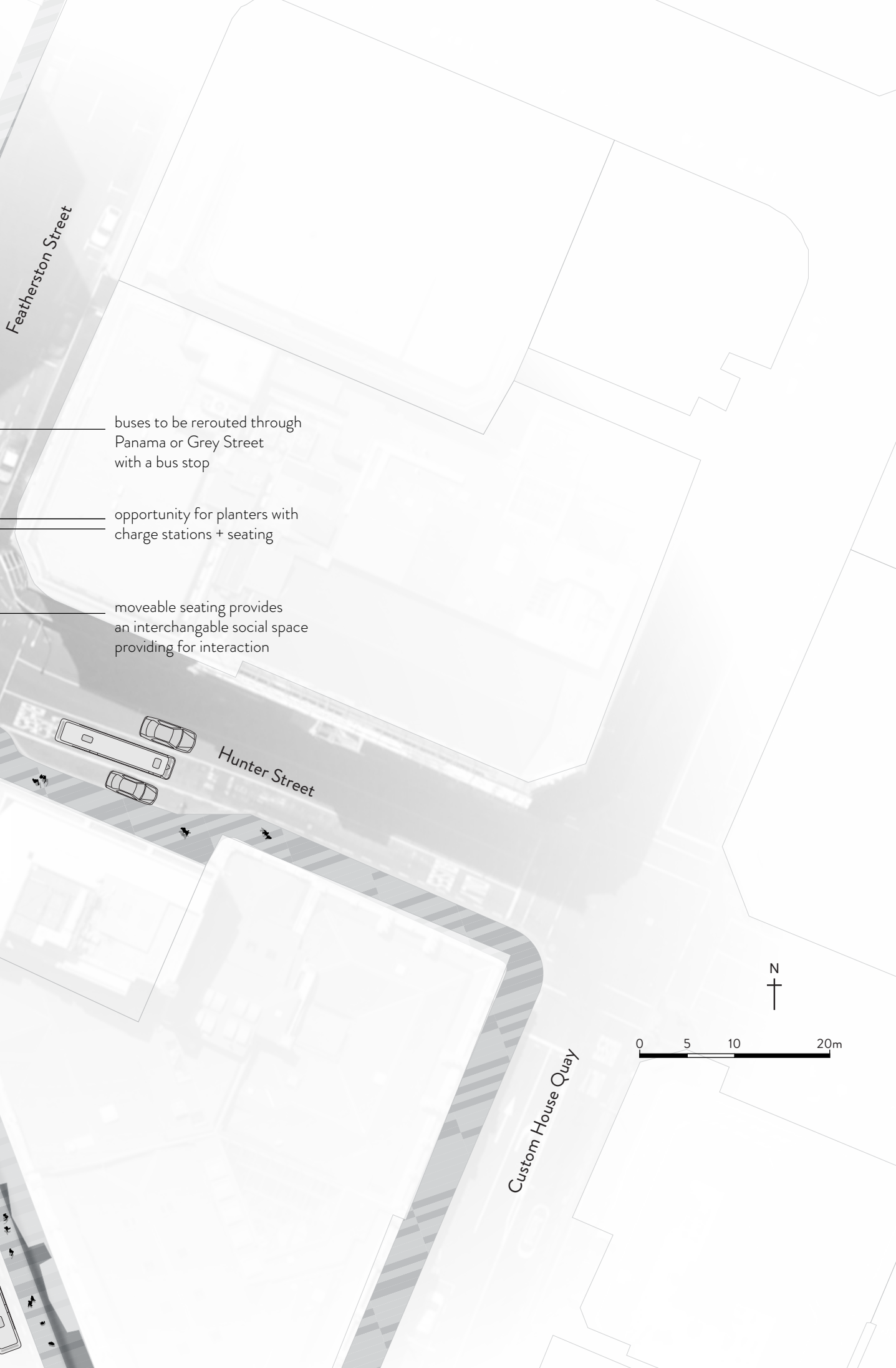
retrofit
onto existing bollards
found on the site - some park
benches need to be refitted
with bollard extensions

pocket space
access from main pedestrian
promenade, thoroughfare space

pedestrians
come into the site via app
guidence or visual curiosity

catalyst
greater connection to adjoining
pocket space and surrounding
retail and cafe environment
potential for upgrade in quality of
space - better sqaure facility

▲ **Fig 57:** Schematic Master Plan for the potential urban development for the Lambton Quay and Hunter Street.


Featherston Street
buses to be rerouted through
Panama or Grey Street
with a bus stop
opportunity for planters with
charge stations + seating
moveable seating provides
an interchangable social space
providing for interaction
Hunter Street
Custom House Quay
N
0
5
10
20m

Bond and Willis Streets

Pre-site Analysis

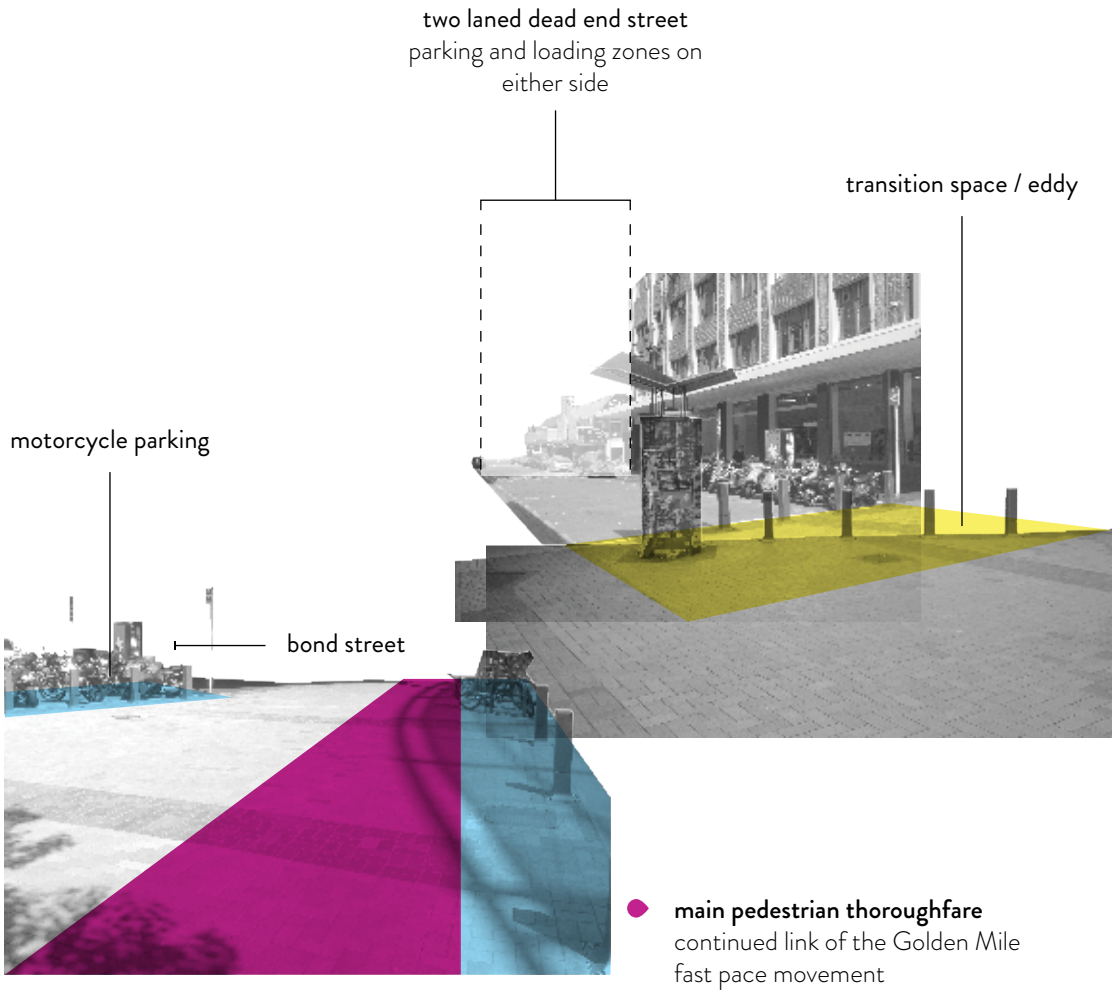
This site has recently undergone urban redevelopment with the new Manners Mall Bus Route upgrade in 2012-2013. What once was a motorist intersection between Bond Street and Willis Street has now been paved over, giving priority and less disruption to the bus route. This blocked a motorist connection, however emphasized a pedestrian one.

The main issue of this site is the empty bubble of space that this has created as it holds no real amenity for the pedestrian, with exception to a poster poll and additional bollards for safety. Combined with a back-facing street edge and tight footpaths along the length of Bond Street this creates an unappealing environment for many to walk through, which is further illustrated in figures 59 and 60.

Many pedestrian users typically transition through this site, with the exception of the few that loiter on phone calls behind the poster poll, as it provides some sort of quiet just off the main pedestrian thoroughfare.

► **Fig 58:** Site analysis map of Bond Street and Willis Street site, illustrating the key functionings of the site and its relationship to the Golden Mile.


Mercer Street
motorcycle parking
direct access to
Civic Square/Waterfront
Willis Street
motorcycle parking
+ phone booth
Boulcott Street
Bond Street
Victoria Street
Manners Street
cafe seating
public seating
bus stop
pedestrian route
Golden Mile route
bus route
service laneways
design application area
N
0 10 20 50 100m



main pedestrian thoroughfare
continued link of the Golden Mile
fast pace movement
limited stopping

under-utilised space
there are some active frontages many of which are cafes + bars but are limited to street outflow due to the parking and limited sidewalk width

street furniture obstacles
provides eddies for individuals to break away from the main thoroghfare movement
opportunity to cross the road

▲ **Fig 59:** Detailed Analysis of the Willis Street Entrance to Bond Street.

main pedestrian thoroughfare
continued link of the Golden Mile
fast pace movement
limited stopping

active frontage
there are some active frontages many of which are cafes + bars but are limited to street outflow due to the parking and limited sidewalk width

service and back entrances
unappealing back entrances and loading zone parking make this lane way unappealing to the pedestrians

▲ **Fig 60:** Detailed Analysis of the Bond Street Entrance to Willis Street

Installation on Site

The SmartCharge units are to be placed on the Bond Street edge of the Willis Street bollards. The pre-site analysis identified a pocket space (as seen in figure 59) on site as created by the widening of the footpath with Bond Street. The same could not be said about the pedestrian thoroughfare that continues the invisible line of the building edge. Due to the close proximity of the bus route on the Willis Street edge, as well as the edge of the pedestrian traffic, it is not an ideal positioning for the SmartCharge units. With the end of Bond Street being a dead end a combination of little and slow moving traffic will allow pedestrians to fill out onto the street if necessary.

The intention of this installation is to draw attention to the Bond Street edge activating its use as a laneway in which the 'people-following-people' principle will promote pedestrians from Victoria Street up towards Willis, and vice versa, reinforcing the emerging character of the space as a laneway street.

The placement of this design installation seeks to address the issues associated with the underused street.It also intends to create amenity in an underutilized pocket space within the city center.

▸ **Fig 61:** Perspective image of social spots created by the the SmartCharge installation on site, facing down Bond Street.

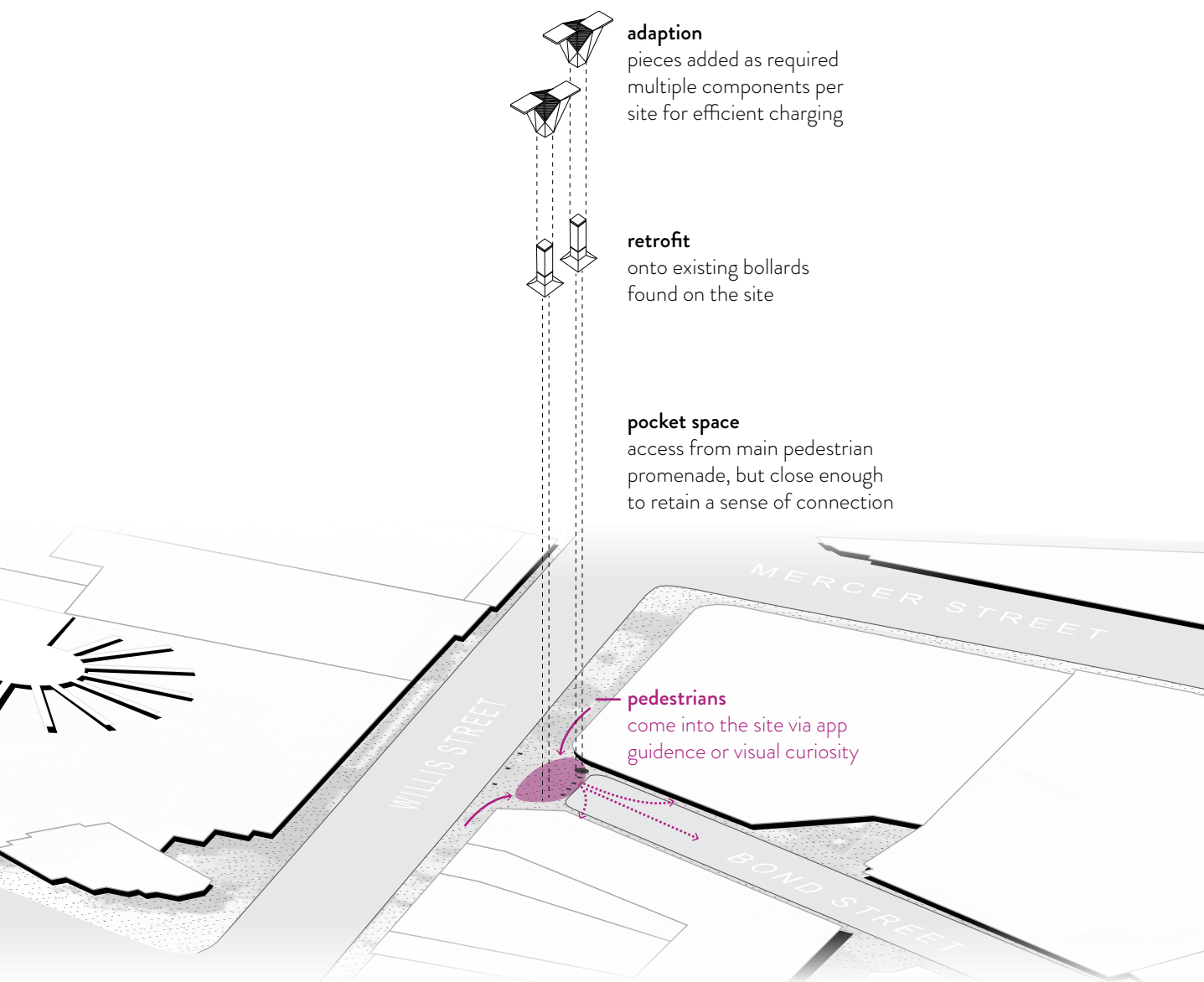

BOND ST
TAB

Catalyst Output

With emphasis on relinking Victoria and Willis Street, further urban design renewal in this schematic investigates changing the upper Bond Street area into a shared street. The back entranceways would still be accessible for car thoroughfare and very limited parking; however it would provide a higher priority to pedestrian activity.

This change would provide additional opportunities for outdoor space for cafes and eateries in this area, as well as additional moveable planters with charging capabilities. This would encourage more life on the street, making it more approachable and re-emphasizing greater city connections.

▶ **Fig 62:** Diagram illustrating an example of the location and impact of the design installation in relation to its surroundings for the Bond Street and Willis Street site.



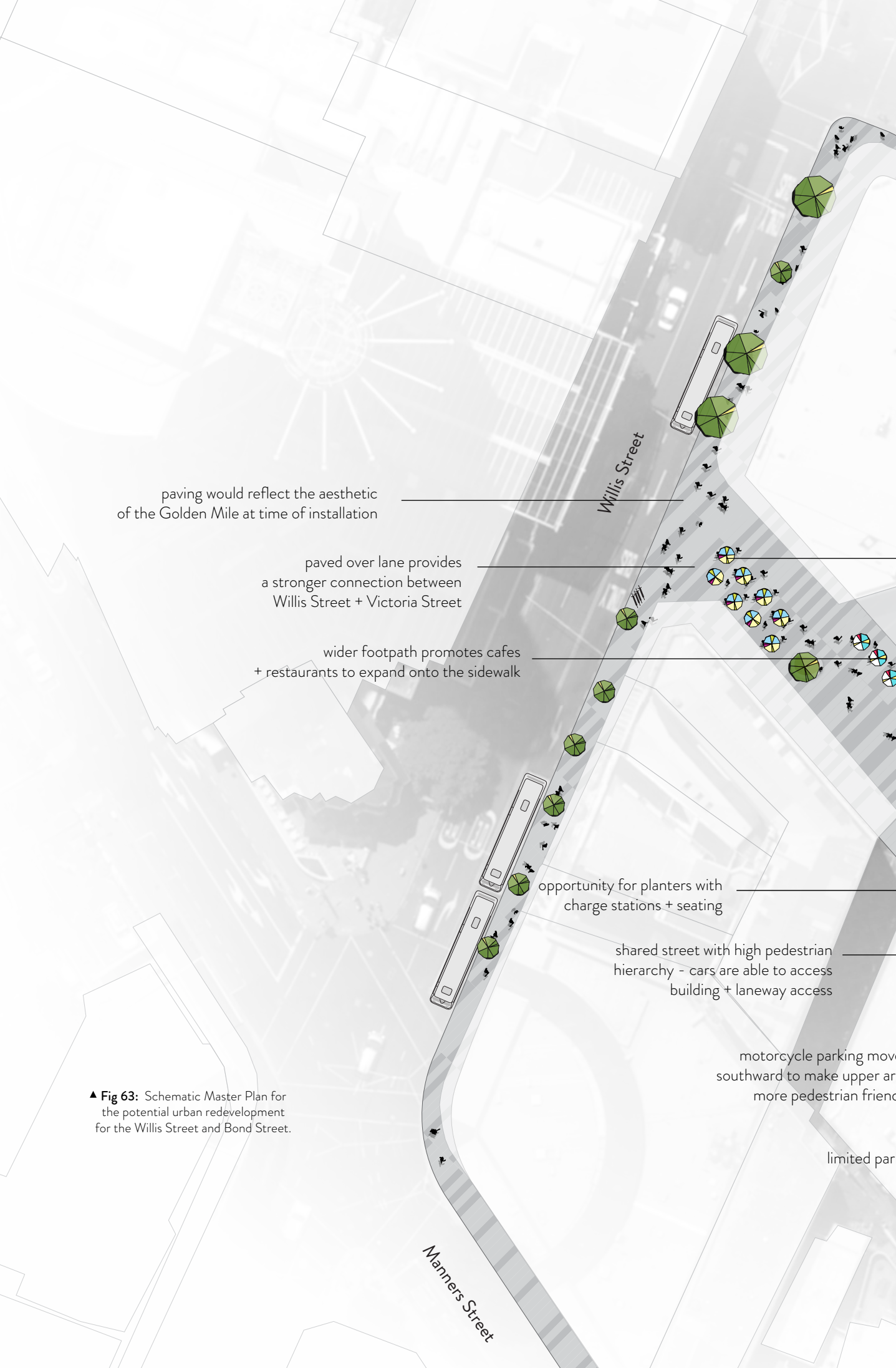
adaption
pieces added as required
multiple components per
site for efficient charging

retrofit
onto existing bollards
found on the site

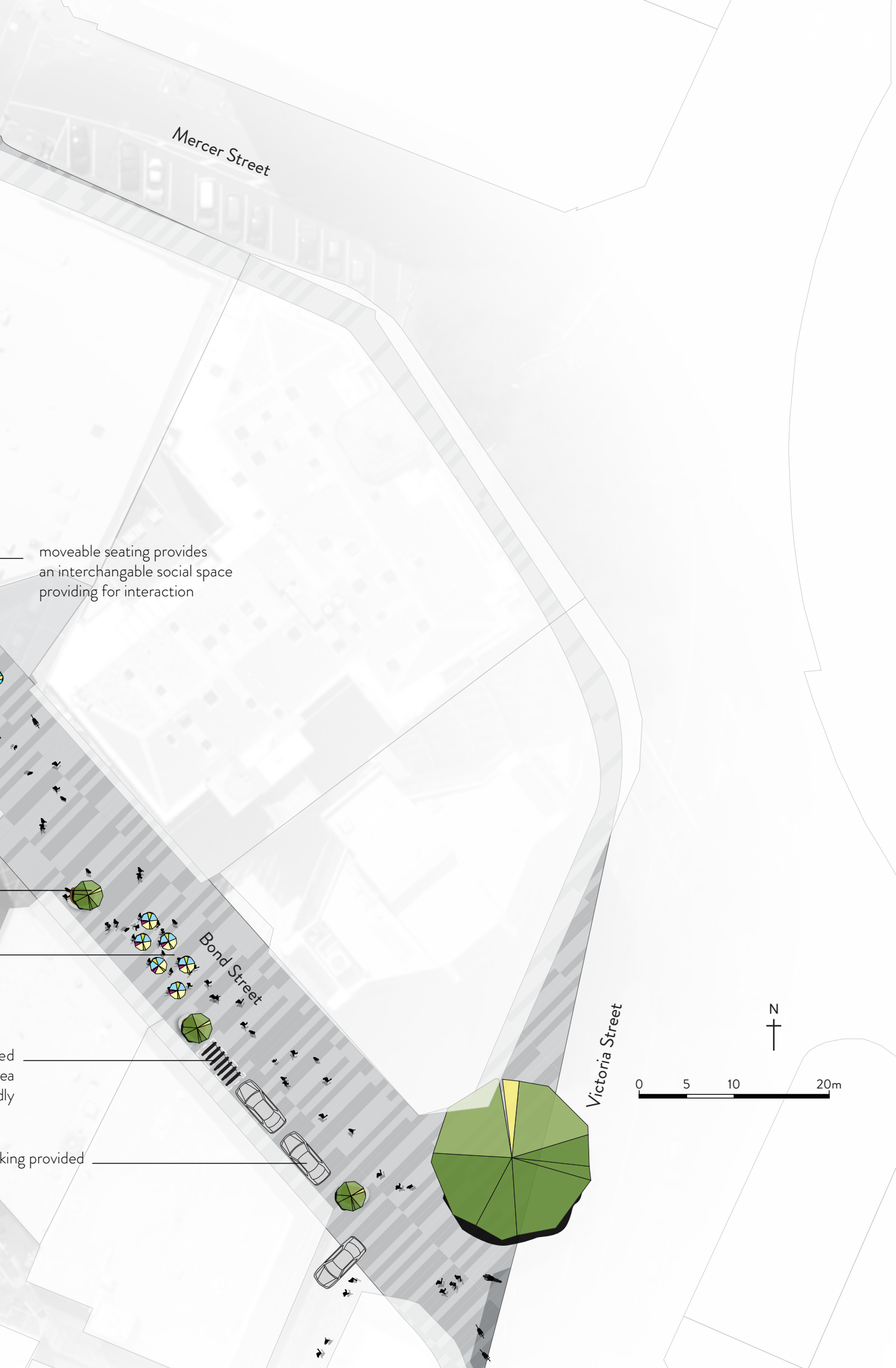
pocket space
access from main pedestrian
promenade, but close enough
to retain a sense of connection

pedestrians
come into the site via app
guidence or visual curiosity

catalyst
greater connection to nearby
cafes - greater link to Victoria St
potential for pocket space extension



▲ **Fig 63:** Schematic Master Plan for the potential urban redevelopment for the Willis Street and Bond Street.


Mercer Street
moveable seating provides
an interchangable social space
providing for interaction
Bond Street
Victoria Street
N
0
5
10
20m

Lower Courtenay Place

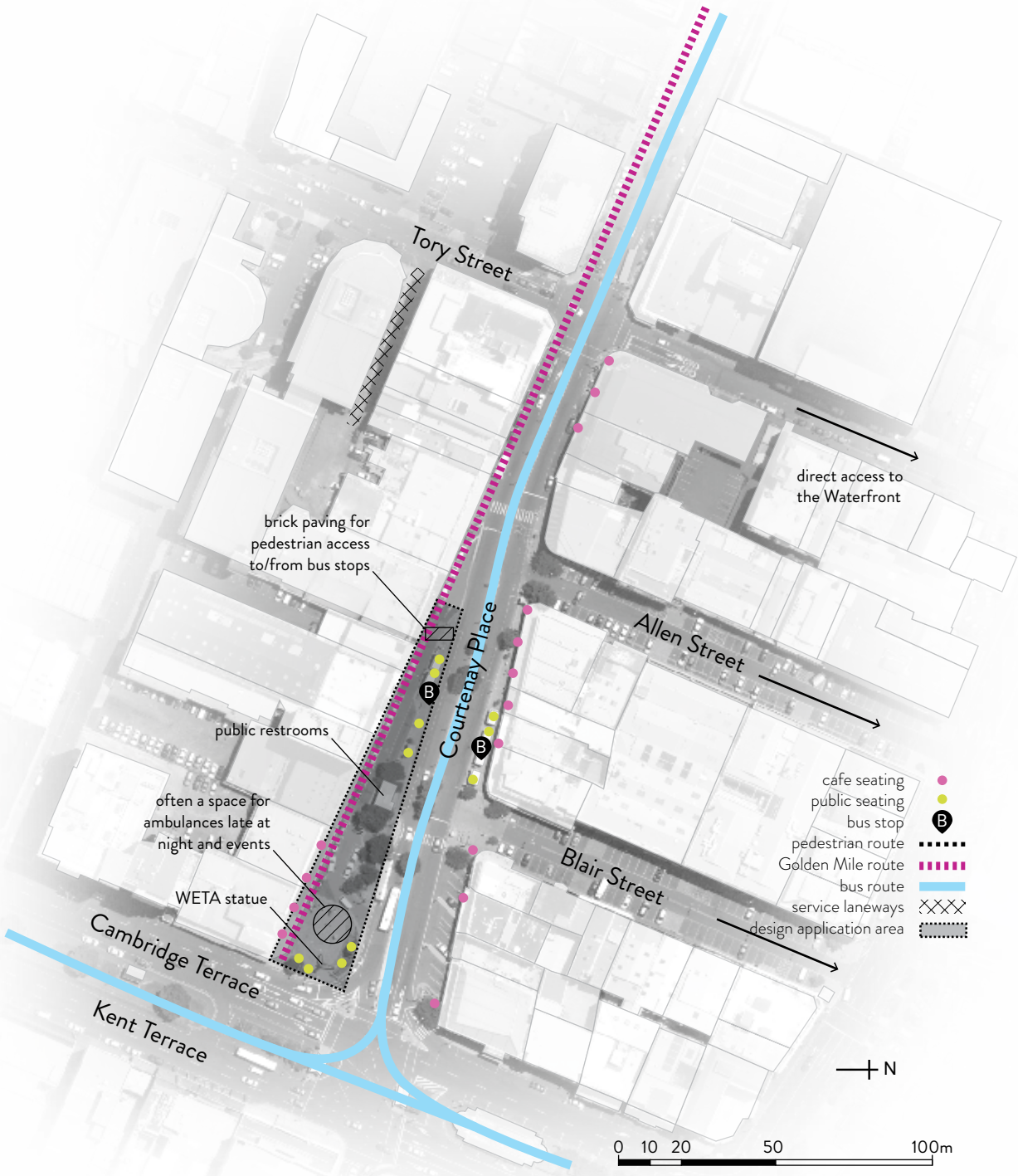
Pre-site Analysis

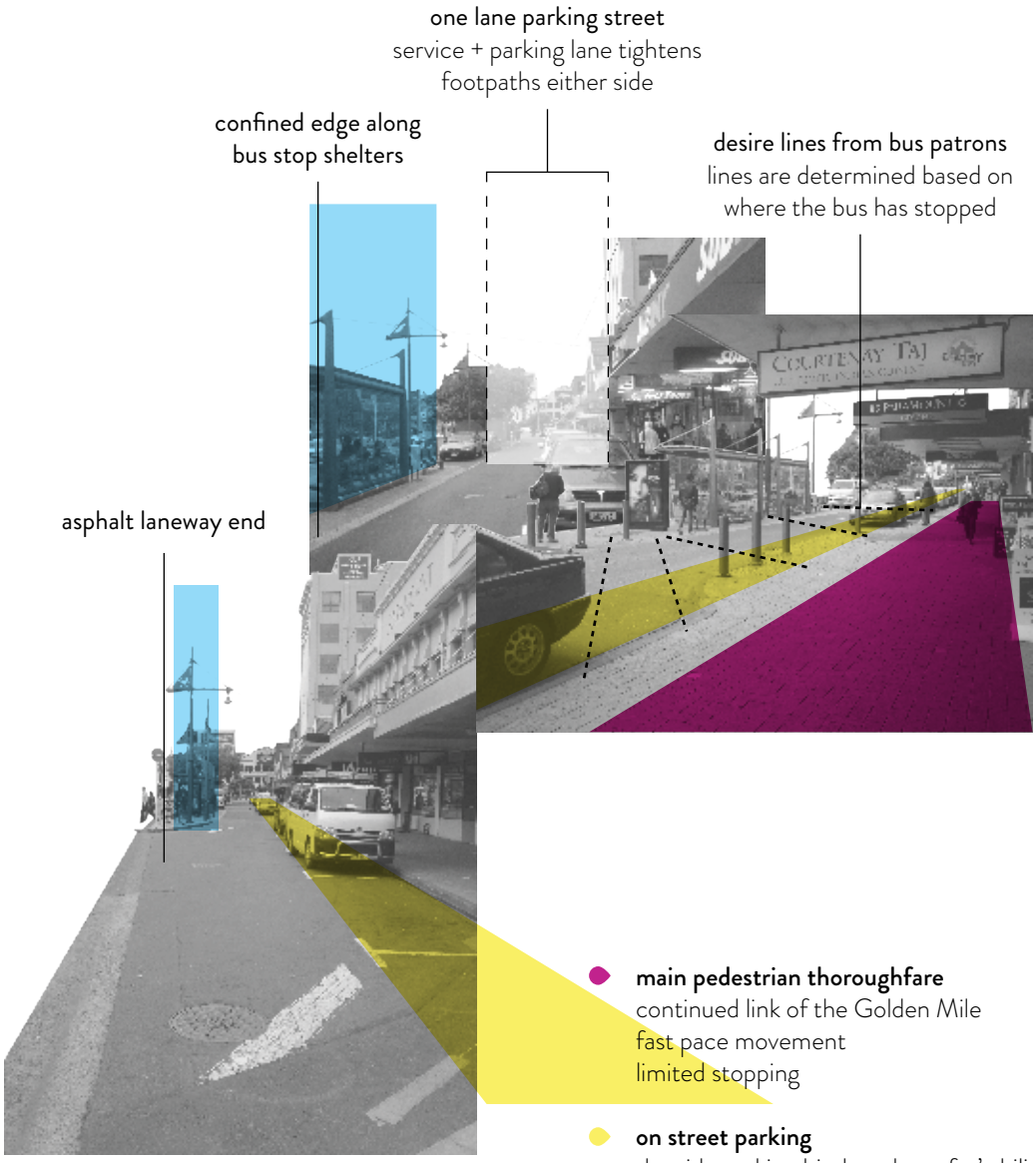
This area is almost a reflection of the size and shape of the Taranaki Street and Courtenay Place public space area. However, the lower end of Courtenay Place does not provide as much designated space and accessibility for the pedestrian.

Disrupted by car parks the bus stop floats in the middle, surrounded on all sides by vehicular traffic. Cars generally have priority with the asphalt surfacing. With parking either side and limited paving at the mouth of the entrance this does little to encourage cars to give way to pedestrians in this area. The pedestrian access to and from the bus stop is typically in the gaps between parked cars and street furniture, with one paved hump to provide limited access to the footpath.

During large citywide events such as movie premieres and the Sevens sporting event, this street is typically cut off to motorists. However, transition is difficult through this area due to its disjointed collection of spaces, excessive street furnishings, and different paving heights.

▸ **Fig 64:** Site analysis map of the Lower Courtenay Place site, illustrating the key functionings of the site and its relationship to the Golden Mile.


Tory Street
direct access to
the Waterfront
brick paving for
pedestrian access
to/from bus stops
Courtenay Place
Allen Street
public restrooms
often a space for
ambulances late at
night and events
WETA statue
Blair Street
Cambridge Terrace
Kent Terrace
cafe seating
public seating
bus stop
pedestrian route
Golden Mile route
bus route
service laneways
design application area
N
0 10 20 50 100m

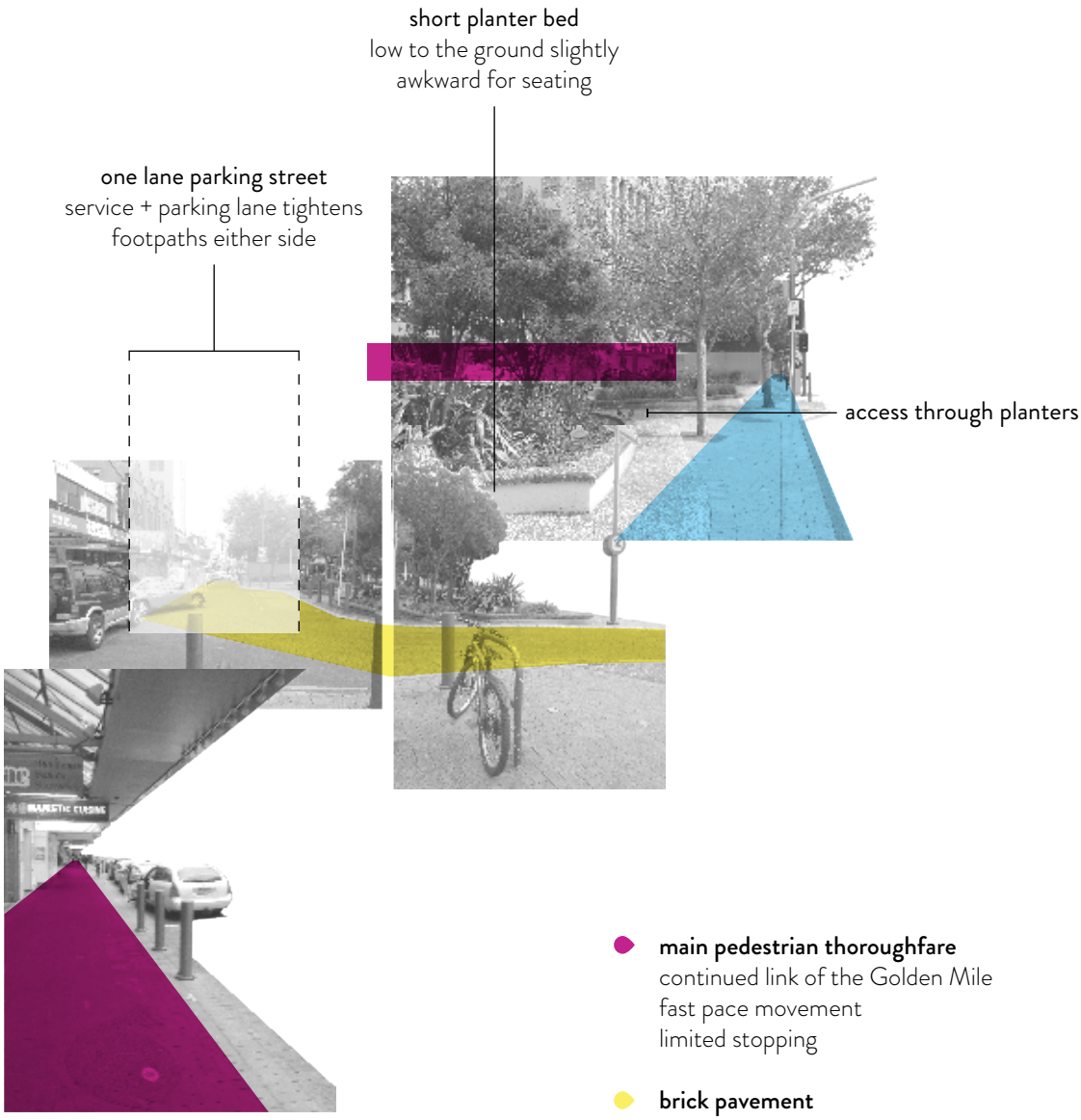


main pedestrian thoroughfare
continued link of the Golden Mile
fast pace movement
limited stopping

on street parking
the side parking hinders the cafes' ability to bleed out onto the street such as the ones closer to the open end (eg. Sweet Mothers, Kapai + Crafty Tavern)

bus stop edge
popular bus stop for the lower Courtenay area as it services to the outer suburbs
the parking has made it into a small island that is separate from its built surroundings

▲ **Fig 65:** Detailed Analysis of the Courtenay Place Site West End.



main pedestrian thoroughfare
continued link of the Golden Mile
fast pace movement
limited stopping

brick pavement
identifies to drivers to slow down
makes it easier for pedestrians to cross over
however does not last the length of the lane

bus stop edge
tight space with some sheltered seating + public rest room
highly used bus stop with many routes to outer suburbs

▲ **Fig 66:** Detailed Analysis of the Courtenay Place Site East End.

Installation on Site

The application of the SmartCharge units investigates the potential for the connection between the stranded public space (bus stops), with the cafes and main pedestrian thoroughfare by placing the charging units on the edge of the bus stop area, close to the bus shelters.

This placement will give those waiting for the bus the opportunity and ability to charge their phone while they wait. It will also provide a more open platform for an engagement with their social surroundings. The placement of the stations in this space would provide a more constant node of interaction and activation in a space which is currently very transitional with bus users coming and going within very short time frames.

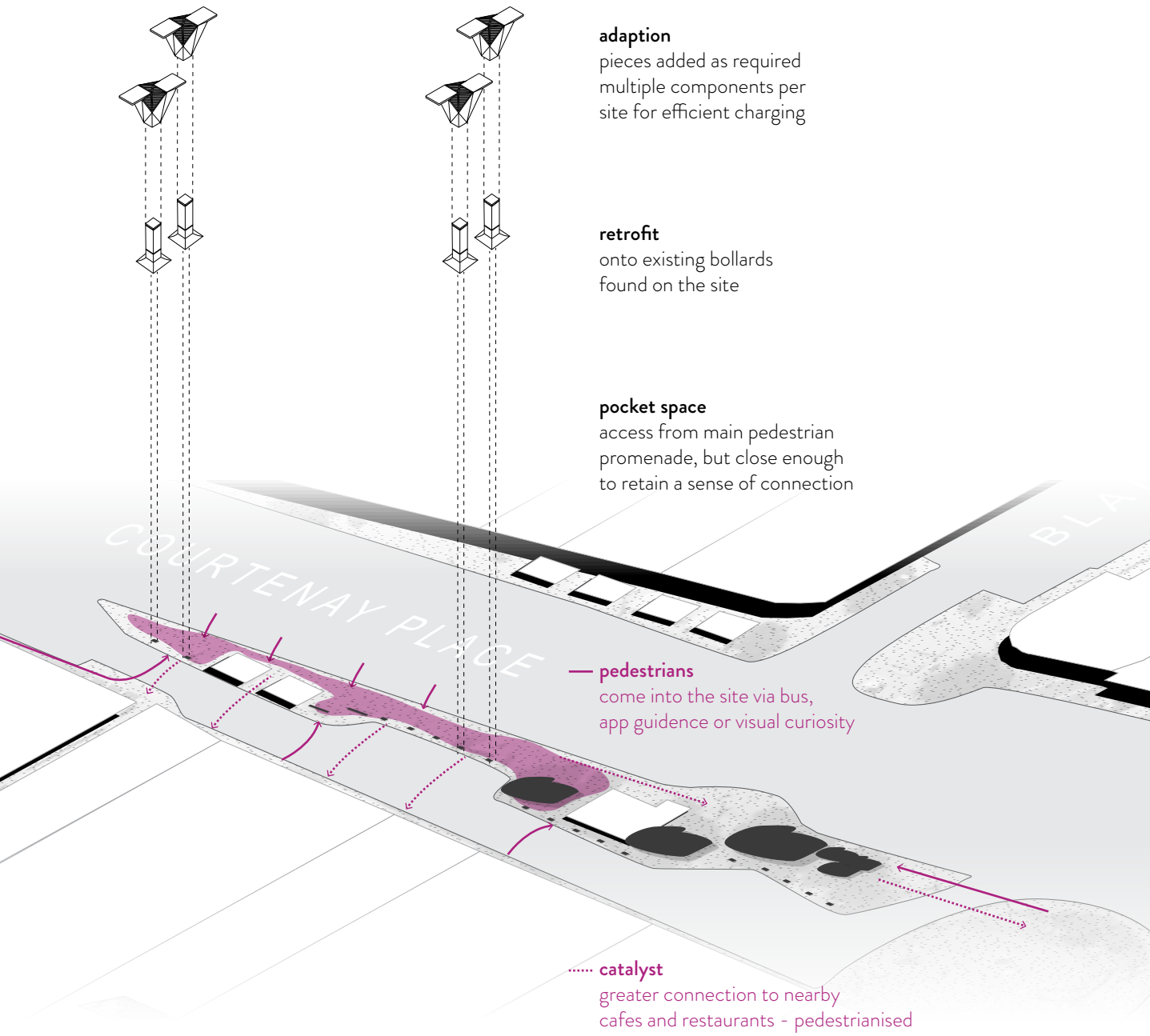
▶ **Fig 67:** Perspective image of social spots created by the the SmartCharge installation on the Lower Courtenay Place bus stop site.

Catalyst Output

The main issue that is being addressed in this schematic is the introduction of the lower Golden Mile route, creating the first experience of these spaces that will be found throughout the length of the route.

This schematic provides a consistent level of paving, while providing service access allowing the current functions of the site to continue, such as: deliveries to shops, and evening ambulance setup, while providing additional space for café overflow, shelter, and seating for bus patrons. This additional space and restrained street furnishings could also provide space for buskers and popup shops as re-appropriations of the space. This provides a similar aesthetic to the upper Courtenay Place area previously mentioned, however, the characteristics of the cafes provide a unique quality about the site.

▶ **Fig 68:** Diagram illustrating an example of the location and impact of the design installation in relation to its surroundings for the Lower Courtenay Place site.



adaption
pieces added as required
multiple components per
site for efficient charging

retrofit
onto existing bollards
found on the site

pocket space
access from main pedestrian
promenade, but close enough
to retain a sense of connection

pedestrians
come into the site via bus,
app guidence or visual curiosity

catalyst
greater connection to nearby
cafes and restaurants - pedestrianised
side street, reduced parking with higher
pedestrian priority

▲ **Fig 69:** Schematic Master Plan for the potential urban development for the Lower Courtenay Place area.


Blair Street
additional space provides more seating space for cafes + bars
upgraded planter beds with additional seating
WETA statue to remain
upgraded toilet facilities open to the public with additional bike rack providing a multi-use unit
access for bicycles + ambulances as well as service + delivery cars.
N
0
5
10
20m

Summary

The main emphasis illustrated throughout each of these site design explorations of the StreetCharge is its ability to act as the catalyst for more pedestrian-life on the street. It identifies the issues that currently deter pedestrians while also seeking the implementation of simple solutions. These stations can be the beginning of a chain of events to grander schemes.

The sites that have been chosen in this chapter reflect ways in which the SmartCharge can provide a positive influence to the urban and built environment specific to troublesome or underutilized sites. Attracting attention through a wanted and very necessary amenity within our communicative era – the charging station – is likely to populate these nodes that lead to the enhancement of public life in urban centers. This small installation is used as a testing ground in which to identify areas of the streetscape would be most beneficial to the life of the footpath.

The intervention itself can also be placed where the site is in no need of rehabilitation. It can provide amenity to the user while highlighting a greater connection to the rest of the city, as each SmartCharge unit has the ability to provide a city way-finding feature both physically and digitally. Accordingly it is equally important that the SmartCharge units are able to work as a basic functional amenity, such as street furniture, as well as fulfill their ability to test for urban renewal through the increased use of a site.

discussion + conclusion

Digital technology is a constant part of our lives, but has often been seen as limited in terms of its application and use in urban design. With a new generation that is heavily focused on these communicative devices, it is important that our public environment changes in ways that help cater to the flexible needs of this changing society. Therefore this thesis develops a design strategy that embraces mobile phone technology, while still attempting to address key issues in the urban environments. The design itself has used mobile phone dependence as a way of attracting attention in order to provide a platform from which to address public space issues.

The rapid growth of mobile phone technology is a constraint to the process and lifespan of the design, as well as the challenge to apply this technology to multiple sites throughout a city. The design is required to demonstrate some form of crucial adaptability, a point that was explored through the thesis by investigating a series of iterations. This sort of iteration process would allow each site installation to differ enough to respond to the size, functions, constraints and character of each site. Combine this flexible design language with a construction which is formulated to be easily installed and maintained on site for various lengths of time, and the urban environment starts to have an entirely different set of 'furnitures' which can assist in the process of creating successful urban spaces.

In regards to site selection there was a requirement for each site to be connected within the bollard infrastructure of Wellington city as detailed in Chapter 4, therefore enabling a quick installation and easy adaption to the current site, combined with close proximity to the main pedestrian thoroughfare as to gain interest and attention. The sites that were used for the design application were in areas that lacked visual or physical cohesion and were left over pocket space from other development.

One of the key issues for a successful design outcome was the installation process onto the bollards. The design also needed to adapt to different parts of the city, as each site has different social and physical requirements. Therefore creating a design that was adaptable to each site was the main driver for the design iterations. The restrictions for designing onto the bollard was ensuring that the bollard was still functional and did not hinder its original function, while also having to derive a way of attaching the design to the bollard that allowed it to be easily installed and removed without damage.

Further design development would be needed to ensure that the SmartCharge intervention could also be applied to alternative street furniture components. The Golden Mile bollards are not always in desirable locations. This design is also limited to a particular route in Wellington City. The design presented in this thesis is a framework that can be built upon in order to attach it to a variety of streetscape conditions such as: park benches, footpaths, or curb edges, this would provide more locations and a diversity of responses to the intervention.

This thesis argues that the way we investigate urban design should involve all the different public elements that now exist within this

technologically advanced age. Not just the physicality of an intervention with the individual, but how it can interact with the urban, social, and digital environments.

The design developed in this thesis has incorporated each of the different levels of engagement; digital, social, urban, and has influenced the form and capabilities of the design. It provides an amenity that seeks to interact the individual, with their phone digitally (app design) and physically (recharging), while also socially (via share in app or interacting at the unit install sites), and urbanely (ability to adapt to different sites across the same city while providing different arrangements, use as way-finding, and the position could provide catalytic urban events such as renewal). It thereby engages mobile devices and their users urbanistically. The way the stations are installed by the council (or government) should be determined through similar criteria of site selection where the design process of this study becomes a tool for determining future sites where redevelopment could be appropriate.

Potential problems that could emerge from this design solution are that the installations could fail to function due to the lack of power generation, due to the positioning of the unit, and lack of sunshine hours it absorbs, or that the quantity of people surrounding the station block out its ability to generate power. Other issues that could occur include the design's ability to help rejuvenate public space. This could be due to the placement and proximity to surrounding charging units which would require a re-evaluation of the location of those units. As already mentioned in Chapter 2 there is an exponential growth in technology, especially in the fields of mobile phone technology, solar technology, and induction charging technology, this means

that there is a high possibility of these initial developments becoming redundant and out of date reasonably quickly. In this sense the small scale and plug in-and-out nature of the design becomes essential to the constant re-invention of these elements, where the internal mechanics of the installation will need to be regularly re-developed and designed.

Solutions to these matters include providing additional solar power generation on site, as investigated in Chapter 6. Additional solar panels are included in the redevelopment of the Lower Courtenay Place site and there is similar opportunity for each site to be retrofitted with additional panels, with or without urban redevelopment. In regards to location and proximity, initial installation across the city should start with problem areas, depending on popularity increase and the number and location of the SmartCharge units. This observation aligns with the chosen sites for this study. Lastly in respect to the increased development of technology, the installations should have a minimum age warranty. Each installation should be able to re-adapt, if necessary, for a certain number of years before becoming obsolete. As with most installation design and street furniture, there is a limited lifespan.

The matter of digital technology integrating with public space extends more than short-term installations. As society is progressing with such attachment to mobile phones and as our requirement for digital connection increases, these technologies and ways in which we can engage with these technologies diversifies it and solidifies the need to provide long-term engaging and useful public space installations that dually function as charging stations. As illustrated in figure 4 (page 13), the infinite loop of urban design's ability to influence the physical environment is derived

from public social requirement. In this respect this thesis explores the relationship of society with their mobile devices and how it can provide life within the city.

In conclusion this thesis has explored and proposed a strategic method that would integrate mobile phone technology urbanistically, while also addressing issues in public space. Engaging with the different levels of the social realm, it illustrates the greater effectiveness small-scale interventions have in urban design.

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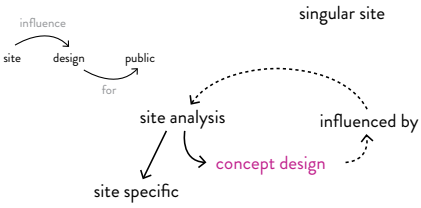
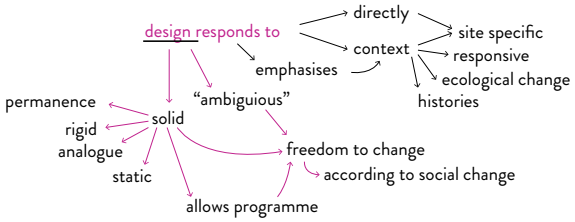
list of figures

appendix i - research investiagtion

DESIGN RESPONDS TO CONTEXT






Landscape Architect

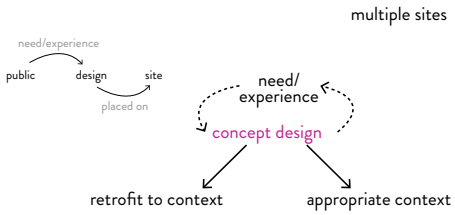

Landscape Architect
Architect
Public

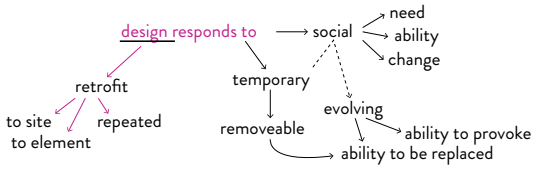

Architect


Architect


Experimental Design Collective

DESIGN WITH NO/LIMITED CONTEXT






Industrial Design
Architect


Architect
Electrical Engineer


Industrial Design


Architect


Transdisciplinary Design


Interactive Design


Landscape Architect (Object Design)

THE FUN THEORY
piano stairs

THE FUN THEORY
bottle bank arcade

play space
association with mundane task
interaction with the individual
responsive to actions
responsive engagement
reactive
interactive
fun
temporaray
removeable

THEO JANSEN
kinetic sculpture

LOOSE AF
picnurbia - t

removeable
interactive with individual
temporary
engaging
night / day atmosphere
sustainable technology
sustainable energy

MIT
soft rockers

expressive to wha

Designer creates the interactive form

design
- modularity
- appropriatable
- 'family'
- iterative

- adjustable prototype
- reconstructable

testing

- micro scale?

- recycled

Interventions are small(ish)
- interact with the world
- interact with the environment

- obvic

possibilities
- usb hub
- power charging
- QR codes
- solar power

- mobile phone/wifi

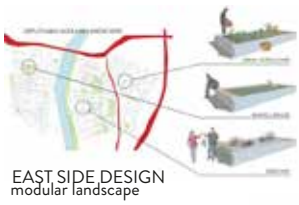
- interact with

site
- ability to change the intervention
- individually responsive
- dexeterous

Adjustable co

sustainable energy
sustainable technology
interactive with individual
interactive with groups

SOL DESIGN
solar pump charging station



use dependant on
reinvigorating
small intervention
adaptability

EAST SIDE DESIGN
modular landscape

sensory
reactive
removable
interaction with the individual
human responses
transitional space

PHILLIP BEESLEY
hyzoloic series: vesica

PHILIPPE RAHM
jour noir

PENSA
street charge

FILIATES
he yellow picnic wave

removable
reinvigorating
small intervention
seasonal (summer use)
temporary
transformation of a space
navigational tool
funding

removeable
recyclable materials (some)
transformation of a space
interactive with surroundings
temporary
medium sized intervention
public funding public space
private funding public space
formulaic

PAVEMENTS TO PARKS
parklets of San Francisco

at it is

- manufacture
- configuration on site
- joints
- strength

construction
- durability

cost
economy
stake holders?
- how is it funded?
- who is it funded by?
- how/who is maintaining/managing/moving?

transportability
- size restrictions?
- ability to move and transport it around the city
- pieces? whole?
- modular pieces
- managability for it to be (re)moveable
- modularity
- adjustability
- temporary

weight

/ savaged / manufactured
sustainability
usness of sustainability?

materiality

- potentially user configuration?
- realative permanence

nfigurative object
within the environment

issues
- theft
- security

site

portable
recyclable materials
transformation of a space
interactive with environment
engaging
temporary
part of the festival
medium sized intervention
utilises surroundings
removeable

HASSELL
urban coffee farm and brew bar

sensory
interaction with the individual
transitional space
human responses
interactive
manipulation of senses

physically engaging
play space
manipulation of perception
interaction with the individual
interactive without contact
water as space
responsive to movement

DASH 7
waterfall swing

sensory
subconscious interaction
human responses
interactive
manipulation of senses
manipulation of space sensory
neorological
climatic interaction

PHILIPPE RAHM
hormonorium

play space
manipulation of perception
interaction with the individual
interactive without contact
water as space
responsive to movement

RANDOM INTERNATIONAL
rain room

Original mind map of precedent analysis; first generation of ideas and criteria for design

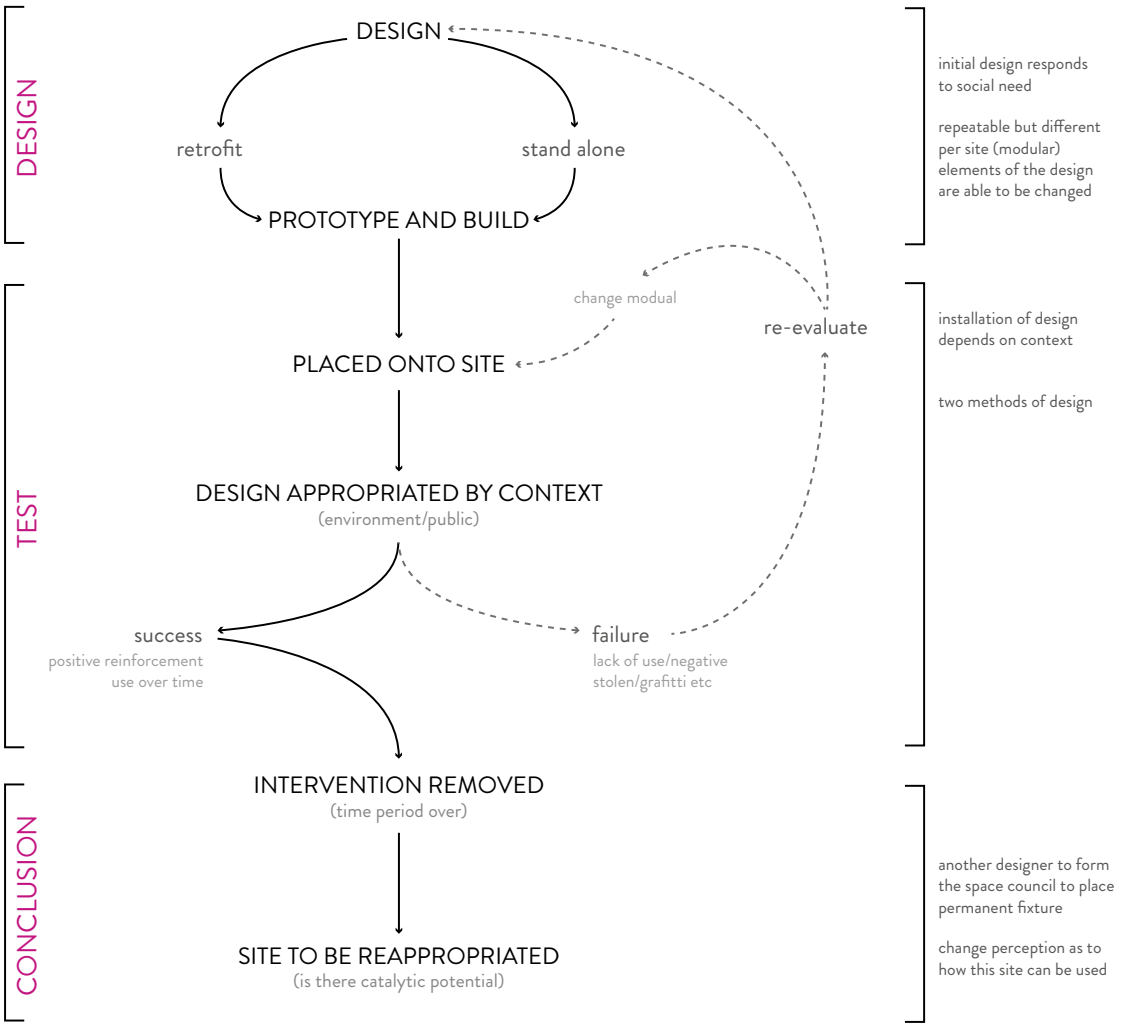
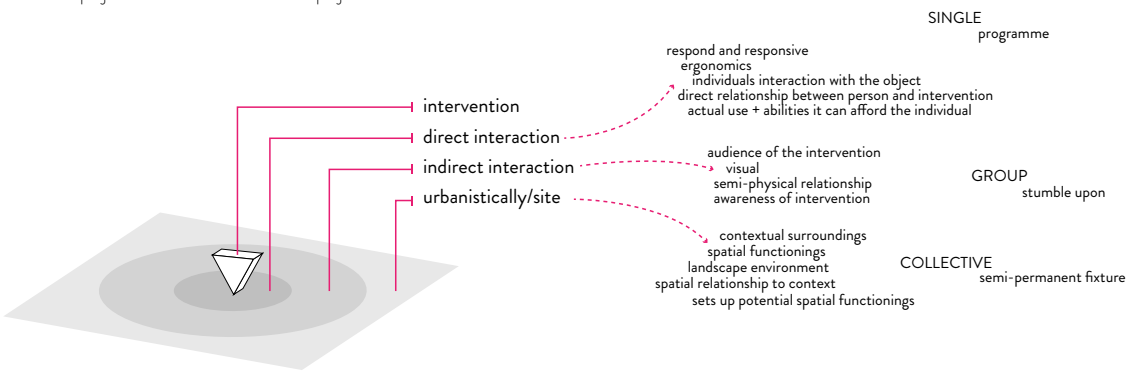


Diagram illstrating the potential design process

TEMPORARY
ALLOWS FOR...

reappropriation of the site
intrusion to the site to seek alternatives
FUN
in the moment
invoke humour into the external environment
trial and error
retain its 'pop' quality
not be reduced or absorbed into the environment

even after the temporary use has ended,
the location of temporality remains a
projection screen onto which new projects can be made

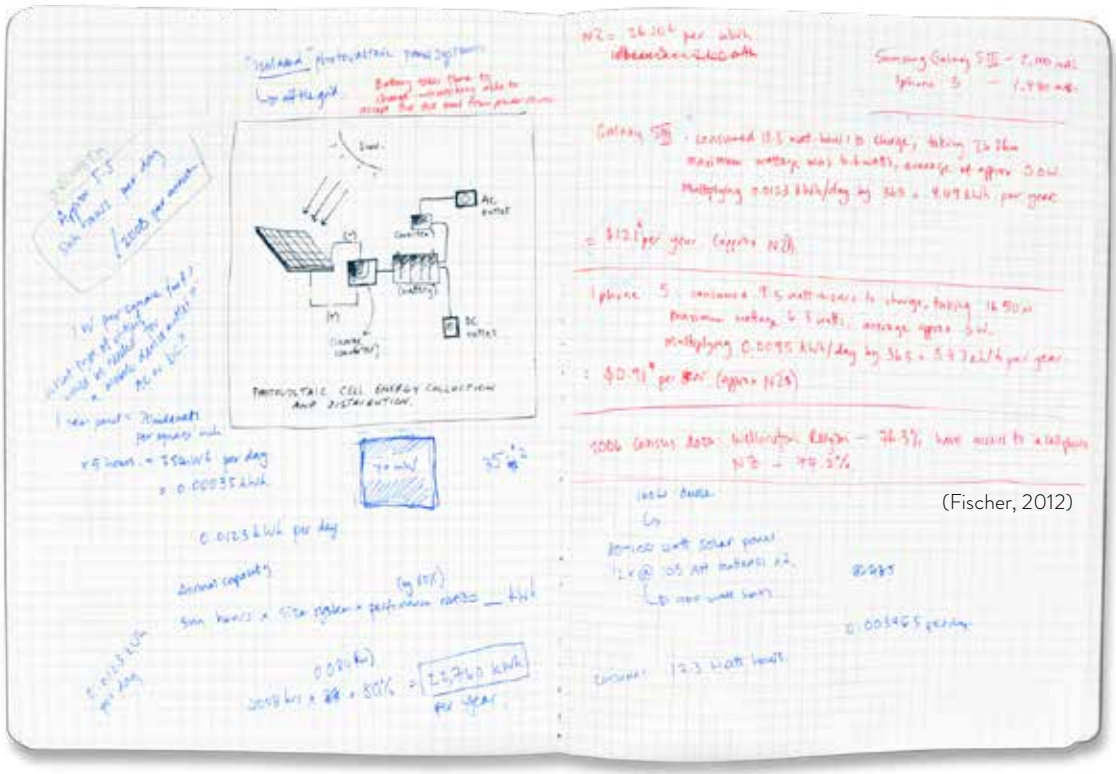


TECHNOLOGY
ALLOWS FOR...

interaction and reaction
responsive and reactive design
change of space between day and night
interaction between the individual + the group
social desire
excitement
reactable environment
life span
a point of difference

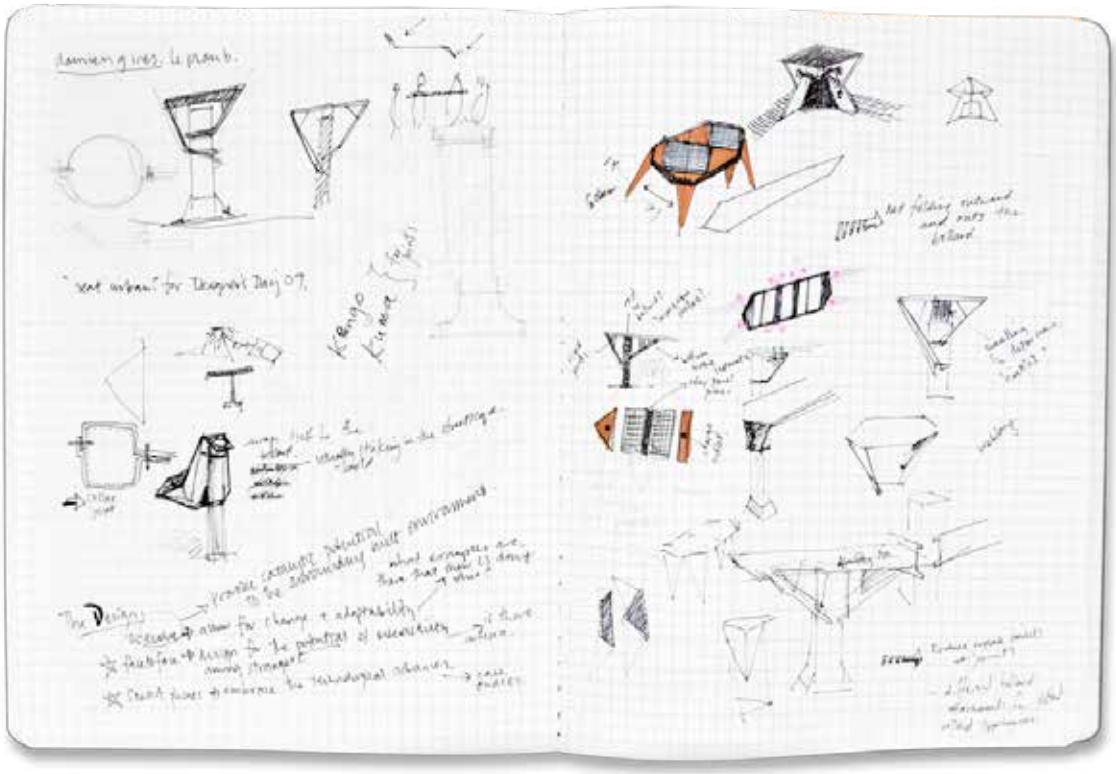
Process diagram exploring the interaction with the intervention on site

appendix ii - design investigation

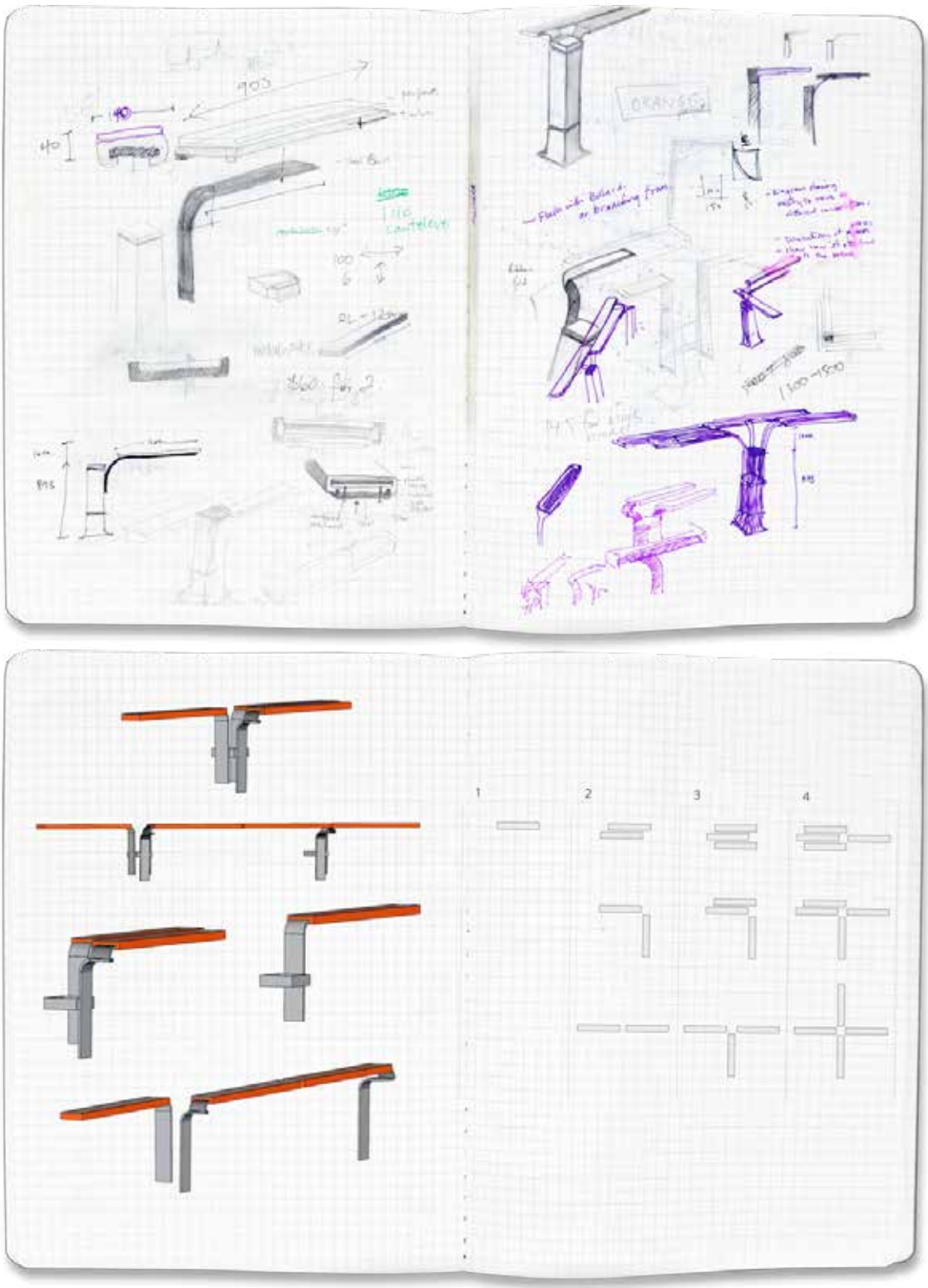


(Fischer, 2012)

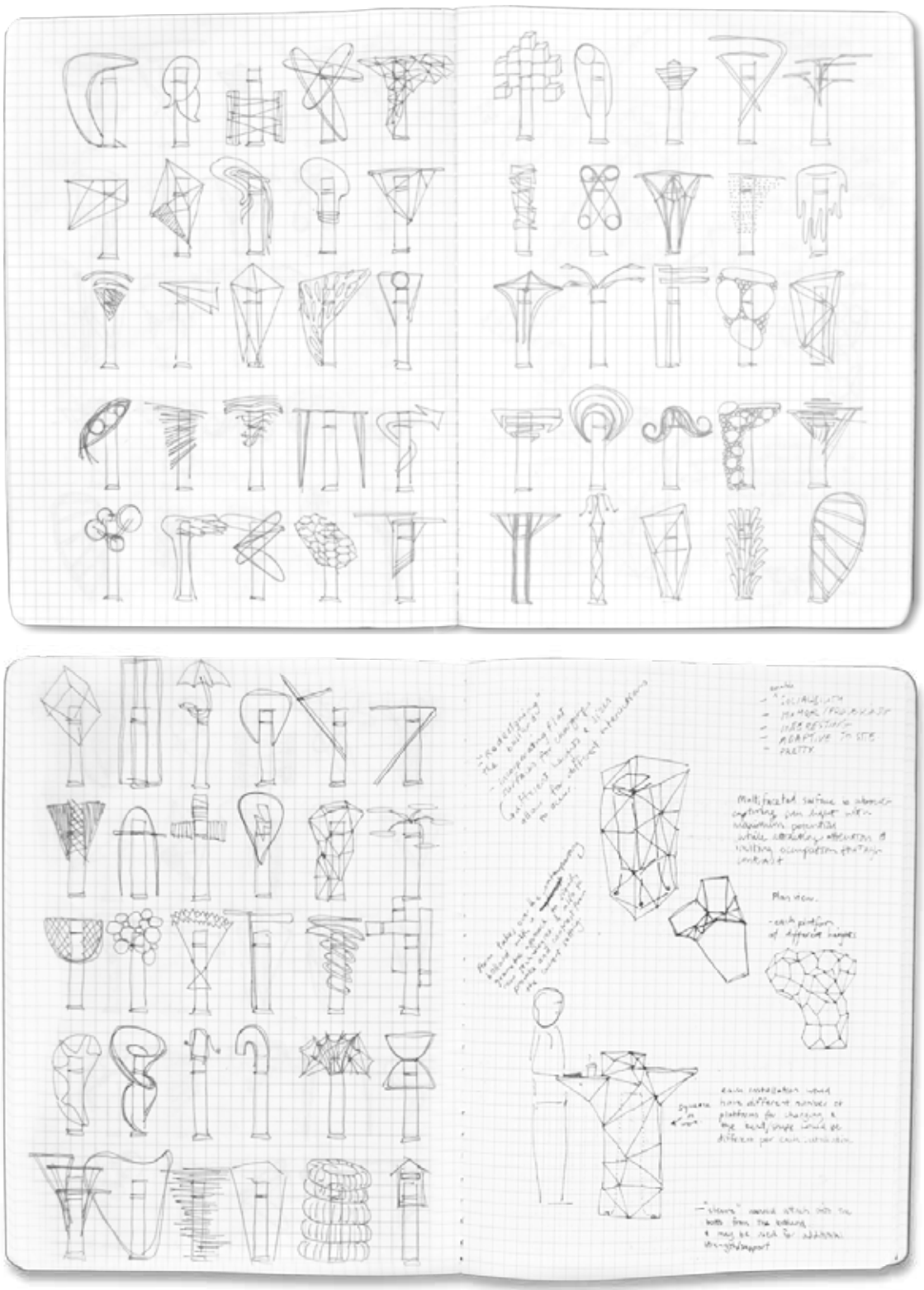
Initial solar panel and phone charge calculations.



Sketches of concept design and potential construction details



First design arrangement possibilities and construction development



Redesign multiple concept generation and development

Initial app design concept and idea development


Charge and Go
Charge and Go
Charge and Go


Charge and Go
Charge and Go
SMARTCHARGE
SMARTCHARGE