Faculty of Humanities

A Framework for Unlocking Large-Scale Urban Regeneration Projects

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Declaration

To the best of my knowledge and belief, this thesis contains no material previously published by any other person except where due acknowledgement has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Roberta Schumann

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Abstract

This thesis investigates three Australian large-scale urban regeneration projects undertaken according to transit-oriented development (TOD) principles. Two of these, Kogarah Town Centre (NSW) and Dandenong Town Centre (Victoria), are more advanced than the third, Canning City Centre (Western Australia). Lessons from the more advanced projects are applied to the regeneration project currently being undertaken at Canning City Centre, where the author works as an urban designer and has the opportunity to influence policy. Canning City Centre is therefore treated as a "Living Lab". The case studies demonstrate that the application of a set of integrated actions across a range of domains can maximise the chance of delivering successful urban regeneration projects.

Creating a regeneration framework that can be applied in different scenarios is a complex task. Before proposing a change, managers in each of the three Australian municipal governments in the case studies realised they had not been through a peak redevelopment and had not experienced as much change as other suburbs prior to regeneration. This fact contributed to the opportunity for large-scale, comprehensive redevelopment. The case studies demonstrate declines in social conditions, economic performance including income levels, employment rates, and population growth, in comparison to similar centres prior to regeneration.

A range of strategic urban planning approaches to catalyse regeneration is analysed. These approaches include planning mechanisms, design guidelines for new buildings and social initiatives to create communities. The planning and building of an iconic, majestic building and the development of planning mechanisms such as Structure Plans are common elements of the case studies.

Analysis of the selected TOD case studies and other international examples suggest the importance of considering aspects of collaboration, sustainability, involvement of residents, the quality of public realm, leadership and quality of architecture when planning for urban transformation in suburbs. The establishment of a community is an important factor which can dictate the success and activation of the new space.

The major contribution of this research is to provide information about elements considered by the case studies as they experienced urban regeneration. This framework can be used for future urban regeneration to guide decision-making about the mix of uses,

residential population, agglomeration, proximity and pedestrianisation. The findings of this research culminate in the creation of a framework that can be applied in other regeneration projects, such as the Canning City Centre, a TOD in the planning phase.

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Glossary

Acronym	Full title	Definition
	20-minute city	Refer to TOD in this glossary
AAA	AAA rated appliances	A rating system that refers to appliances which are high performance and low energy consumption
AIA	Australian Institute of Architects	
AILA	Australian Institute of Landscape Architects	
	Battle-axe lots/ developments	It refers to a rear block where there is a house behind the main house. The house at the back is accessed through a driveway.
	Brownfields	Typically, old, vacant, underused industrial lots. Such land usually requires decontamination in case of rezoning and redevelopment. Explored in detail in Part 1.
BAU	Business-as-usual	
BIPV	Building-integrated photovoltaics	Solar panels used to replace conventional building materials such as wall, roof, awning or skylights.
CBD	Central Business District	The downtown; the main city centre of a large city; the financial or commercial and business centre of a city. Also known as central activity district.
	City Beautiful	City Beautiful was the name of the architecture and urban planning movement initiated in North American in the 1890s (Explored in detail in Part 1, in urbanism-led transformations section)
CABE	Commission for Architecture and the Built Environment	Independent decision-making public body funded by the UK government to provide design advice, contribute to creating better spaces, places and buildings.
CDZ	Comprehensive Development Zone	As part of the Dandenong regeneration project, the CDZ refers to areas specially acquired for redevelopment.
CIAM	Congrès Internationaux	International Congress of Modern Architecture

	d'Architecture Moderne	
CUSP	Curtin University Sustainability Policy Institute	
CPTED	Crime Prevention Through Environmental Design	An agenda for manipulating the built environment to create safer neighbourhoods
DCP	Development Control Plan	Classification of the regeneration project in Dandenong
FSR	Floor space ratio	One of the urban planning controls used to define the size of a building and control the intensity of a building on a site.
	Greenfields	Those ageing but occupied areas of central and middle ring suburbs representing undercapitalised assets that show signs of physical, technological and environmental failure (Newton, 2012). (Explored in detail in Part 1.)
	Greyfields	The areas that lie between a city's core business district and the more recently built single house suburbs "…those ageing but occupied tracts of inner and middle ring suburbia that are physically, technologically and environmentally failing and which represent under-capitalised assets. Here, attempts have been made to intensify housing and employment around activity centres and transit-oriented development projects" (Newton, 2012). (The term is described in detail in Part 1.)
ISUF	International Seminar of Urban Form	
LSUP	Large-Scale Urban Projects (LSUP), also known as Flagship Projects and Structure Plans.	Regeneration projects in general. The concept is explored in detail in the Introduction section of this thesis.
LMCU	Lille Métropole Communauté Urbaine	A targeted authority that drove the Roubaix project and its implementation (Examined in Part 1 of this thesis: urbanism-led transformations)

	Modern Era/ Modernism	The European Modern Era started in the late 19th century, after the industrial revolution. It was a time of changes in spheres such as cultural, economic, social, architecture, urbanism, and others.
	Placemaking	A term created in the mid-1990s, although the thinking behind it originated in the 1960s when authors like Jane Jacobs (1961) were in favour of designing spaces and cities for people rather than automobiles or shopping centres. For them, lively neighbourhoods have to focus on the social and cultural aspects and welcoming public spaces. For Jane Jacobs, ordinary citizens own public spaces because they have "eyes on the street" (Jacobs 1961)
PIA	Planning Institute of Australia	
PEP	Precinct Energy Plant	Part of Dandenong regeneration project. The PEP is the urban distributed energy precinct that uses cogeneration technology
RCD	Revitalising Central Dandenong	Central Dandenong's 2006 initiative - a $290 million urban regeneration project.
	Requalify	The term that refers to urban regeneration/ renewal projects including the revitalisation of old neighbourhoods and renovation of the housing aspect, existing buildings, public realm and other related aspects.
	terrain vague	Vacant sites in urban areas also known as lost spaces, fallow spaces, residual spaces, lost spaces, anti-spaces
TEC	Threatened Ecological Community	Vegetation classification present in the City of Canning (Chapter Four of this thesis)
TOD	Transit-Oriented Development	A term commonly used in urban planning that refers to increased number of people living and working in close proximity to public transport stations. It is a common term used in urban planning that refers to urban occupation with a cluster of activities including residential, offices, shops and other amenities forming a walkable area located within 800 metres of public

		transport stations.
	Urban acupuncture / punctual intervention	This concept will be explored in Part 1 urbanism-led transformations. It refers to strategic punctual interventions as a regeneration method
	Urban morphology	A method for urban analysis that investigates the urban scale results by analysing the urban fabric and its components such as streets and blocks configuration.
	Urban mosaic	A conjunction of elements that form cities such as buildings (residential, commercial and others) as well as the public realm elements.
	Urban regeneration	A process that aims to stop the deterioration of urban areas and improving these areas through design and urban planning mechanisms.
	Urban sustainability / social sustainability	When urban renewal projects have catered for all people by avoiding gentrification
	Urban typology	A method for urban analysis that focuses on the building/element scale and the elements that make interfaces with the city, such as external walls, open spaces (public and private) and landscaped areas.
	Urban 'typomorphology'	A method for urban analysis that combines 'morphology' and 'typology' above
	Urbanscape	Urban landscape
	Vocation	Strong inclination or predisposition to follow a particular activity.
WSUD	Water Sensitive Urban Design	
ZAC	Zones d'Amenagement Concertés	Denomination for Large Scale Urban Projects in Paris. Refer to LSUP definition above.

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Chapter One: Introduction and Methodology

This thesis explores city transformation in the post-war era, focusing on a range of approaches intended to catalyse urban regeneration. It starts with an investigation of planning approaches to urban transformation including urban morphology in the context of city transformation; underperforming existing suburban centres; residual land as an opportunity for transformation; iconic architecture; design-led vision and other approaches utilised in Large-Scale Urban Projects (LSUPs). This thesis investigates the regeneration of areas with low-density housing around train stations into Transit Oriented Developments (TODs) from a planning, transport and urban design perspective. It analyses the intentions of the proposed regeneration agenda and its context and asks what the agenda's achievements are. It attempts to provide a practical and implementable framework of redevelopment by understanding the aims and results of implemented Large-Scale Urban Projects (LSUPs).

Historically, regeneration projects have played an important role in improving the quality of contemporary cities, leading to regeneration of both undeveloped spaces in the public realm and urban voids, and built form (buildings). Regeneration projects can result in mutual interaction between the current urban form and the proposed intervention and surrounding areas. Although cities' shape and form are generally stable because of their infrastructure, and planners' control over their growth and form is only partial (Lynch 1960), regenerative projects can change and improve areas within city boundaries.

This study explores urban regeneration concepts in empirical form while analysing the morphology of contemporary cities that have been the object of numerous studies. Planning theory supports the value of morphological assessment of the case studies in this research project.

Large-Scale Urban Projects are by definition controversial. They most often involve various agents, public and private, working in the same territory. Most aim to acquire degraded and unused land in a strategy that seeks equilibrium between the principal intervention object and its adjacencies at different hierarchy levels: local, regional and global. LSUPs look for opportunities to enhance urban areas and their network of infrastructure which includes access, mobility, public spaces, built spaces and urban voids. Similarly, as Manuel de Solà-Morales, a leader in regeneration processes, explains, the LSUPs need precision, discipline and sensitivity in looking and understanding how the city

works and how people make use of it (Sola-Morales 2008). Therefore, it is not surprising that most LSUPs have (and must have) an applicability schedule for the medium and long-term, adjusting existing interferences. The scale of intervention must also be constantly evaluated. The intent is to cut down the impacts and risks of the implementation in all spheres. In essence, the need for modification of existing cities makes LSUPs fundamental 'tools' to ensure a continuous and contemporary city, that takes the technological needs and changes of the last two centuries into consideration.

This thesis briefly explores **gentrification** in the context of TOD redevelopment to provide information on population before and after each project was implemented and the areas were transformed. In regeneration projects, each LSUP had a different **management model** shaped by the public and/or private sector. In some cases, a unique body was created to manage the implementation process. This is a vital delivery factor which is apparent in each of the case studies analysed in this thesis.

Some modern examples of LSUPs include an **architectural icon** as the centre of the regeneration project. This thesis examines the impacts of these iconic buildings when they are intentionally designed and placed to be the 'centre' of a redevelopment. It analyses their impacts on the overall project area, their relationship with the surrounding area and, if they attract private investment, further redevelopment in the area.

The Australian urban regeneration projects studied in this thesis were selected because of their regional location and proximity to CBDs. They are representative of an urban strategy of revitalising suburban centres that have existing transport infrastructure and a large amount of vacant land. They aimed to fix centre areas and attract private investment. Taken together, those LSUPs have similarities with the primary case study, the Canning City Centre. Thus, they can be used for verification purposes.

In summary, this thesis starts with a global overview of urban regeneration processes. Then it explores two Australian case studies. Finally, it presents an analysis of the Canning City Centre redevelopment project, the primary object of study. It establishes a correlation between the theories of urban morphology identified in this process and the urban strategies in an "urban laboratory" case study, where other relevant elements may be suggested, regardless of the early stages of its implementation. Finally, a systematic approach to improvement is outlined, including a framework of key elements that can be used to enhance future regeneration projects.

1.1 Significance of this research

A significant deal amount of research and justification identifies the need to stem suburban expansion. The adverse consequences of suburban sprawl concerning housing affordability include increased traffic congestion, effects of climate change, high per capita cost of infrastructure and vulnerability to increasing oil prices (Newman & Kenworthy, 1989, 1999, 2015). Recent publications reveal the need to plan for 50 million residents in Australia by 2050 and 2111 and the need to plan wisely and encourage infill instead of suburban expansion (Planning Institute Australia 2016). Therefore, acknowledging the increased importance of the urban infill agenda, authorities have realised the importance of providing for higher density living in certain areas, more specifically near public transport stations. As a consequence, numerous theorists and practitioners worldwide advocate for TODs as a suitable approach for achieving housing density, activity, less reliance on automobiles, attractive buildings and activation to create vibrant communities (Gehl 2006; Newman & Kenworthy 1989, 1999, 2015).

1.2 Benefits of this research

Australian experience reveals that authorities are still learning how best to facilitate high-quality housing infill outcomes. This thesis is intended to contribute to knowledge, provide a justification of regeneration processes, and to develop a framework for improving their implementation. It provides valuable baseline information on the level of understanding and awareness of regeneration of TODs in the planning and urban design spheres. It aims to promote best practice urban regeneration of TODs. It adds to the existing body of knowledge related to transport and land-use integration. By enhancing the understanding of current opportunities and means to approach a TOD, the results of this research suggest an application of the proposed framework to improve and/or alter current practices. This will benefit urban planners, designers and local governments in their development and implementation of regeneration plans.

Further, the geographic spread of the case studies gives the thesis a global scale of significance. It will be particularly relevant for local and state governments who often face the TOD challenge in the context of increasing population and the need to contain or reduce urban sprawl.

1.3 Situating the researcher

The motivation for this research was the possibility of exploring regeneration projects in the context of different concepts, theories and daily reviews, whether they be academic, professional or amateur. As the author of this study is both an architect and a planner, the history of urban planning and contemporary architecture disciplines was a motivating factor, enabling the creation of a methodology to analyse architectural construction and review the impacts of each case study. Concomitant to the research, attendance at relevant seminars at Curtin University Sustainability Policy Institute (CUSP) and other organisations, and the day-to-day work at the City of Canning highlighted new theories and raised questions, culminating in much of the analysis in this document. Being a strategic planner at the City of Canning enabled the incorporation of many of the proposals raised through the Canning City Centre regeneration process into Chapter Four as an 'urban laboratory' to test all theories raised in the previous chapters. Additionally, the experience of working in and experiencing the Canning area for the past two years is included in the analysis. The regeneration plan, adopted as a policy in 2013 and approved by the State Government in 2018, has started to change the area.

1.4 Research question and objectives

Research question

The research question asked by this thesis is the following: How can the regeneration of TODs benefit underperforming existing suburban centres? With this question in mind, this thesis explores the topics below to improve understanding of strategies to best shape growth and form in underperforming suburban centres.

Research objectives

The research objectives are to:
- Define the problem of an underperforming urban centre;
- Define the elements and land use interventions that lead to the revitalisation of cities;
- Look at the global examples of urban growth issues and the need for urban regeneration; and
- Provide an in-depth analysis of three case studies which are examples of low-density, car-based Australian suburban areas.
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Chapter Two: Literature Review on Urban theory	This thesis begins by reviewing the literature on historical factors underpinning the way international cities started to create regeneration programs after World War II, bearing in mind the favourable post-war conditions for suburbanisation and the depopulation of urban areas and degradation in general. It examines several examples of how cities used vacant land to their advantage. It explores the origin of the term LSUP or Flagship Projects in the global context of urbanisation of modern cities and the need for regeneration of urban areas. It also looks at different approaches and effects in each case. The selection of examples takes into consideration the extent to which the contribution of those LSUPs provided a set of elements to support the new forms of contemporary cities. Globally and in Australia, the modernist car-based planning paradigms, suburban growth and living and vacant land have become issues that are faced by a large number of local governments. This thesis also explores the impacts on local economies and how people use the suburban spaces.
Chapter Three: Case studies	In light of the growth of suburbs faced by several Australian cities and the need to accommodate infill, this section looks at two underperforming Australian suburban examples that experienced a regeneration process. The case studies are Australian examples of integrated regeneration projects: Kogarah Town Centre (NSW) and Central Dandenong (Victoria). Each project had its peculiarities and unique strategies for urban regeneration based on the reorganisation of their dynamics and how new spaces integrate with the existing city. The section looks at the drivers, aims and successes of each case study, analyses the success of each sub-project and initiative, as well as analysing the management models used. It aims to inform the analysis of the regeneration of Canning City Centre as a Living Laboratory.
Chapter Four: Living Laboratory	*This section explores how lessons from other case studies could apply to Canning City Centre, an Australian example of an underperforming suburban centre.*

Historically, Canning City Centre has not experienced many changes during the past decade or so. Before plans for the recent urban regeneration project were developed, the newest buildings were single-storey medical clinics and small businesses. The local authority has developed and promoted a planning mechanism (adopted as a policy in late 2013) and applied as a requalification mechanism since that time. These mechanisms aim to requalify and rearrange the built or vacant public and private spaces in the City Centre. At the same time, the main shopping centre attracts 11 million visitors yearly and is a significant destination in the Perth metropolitan area.

This section looks at the current and possible alternative frameworks for Canning with the aim of identifying approaches used in other case studies and/or other frameworks that could potentially enhance Canning's transformation (and contribute to the transformation of other similar suburban centres). Ultimately, the aim is to provide a framework for suburban centres with a train station to maximise the benefits of their existing infrastructure.

1.5 Research limitations

Although this research was carefully prepared, there are limitations and shortcomings.

First, although there are several examples in Europe, it is difficult to transfer the lessons learnt to the Australian context. Secondly, the in-depth analysis of a limited number of case studies limits the conclusions. Thirdly, since the author herself conducted the assessment of all examples presented, it is unavoidable that there is a certain degree of subjectivity in the discussions. Finally, lack of data availability and scarcity of academic publications on current regeneration projects limited the evidence base underpinning the research findings.

1.6 Research design and methods

This research began with a scoping study aimed at identifying global examples of urban growth that raised the need for urban regeneration. After a revision of a broad selection of

global examples, a "short list" of exemplars was selected identified based on the following four criteria:

1. Cities that have experienced urban growth and where there was vacant land near transport stations;
2. Cities where local authorities have identified the need for urban regeneration and have planned and designed for change using existing vacant and underutilised land;
3. Cities where regeneration justified change and sub-projects were undertaken as part of the regeneration;
4. Cities with suburban examples that could relate to the Australian case studies.

Figure 1 below illustrates the types of information gathered and the methods used. Each method provides a different perspective to provide a more holistic approach to answering the research question. This research is accountable and clearly identifies assumptions that are made. The pros and cons of each methodology are discussed in this section.
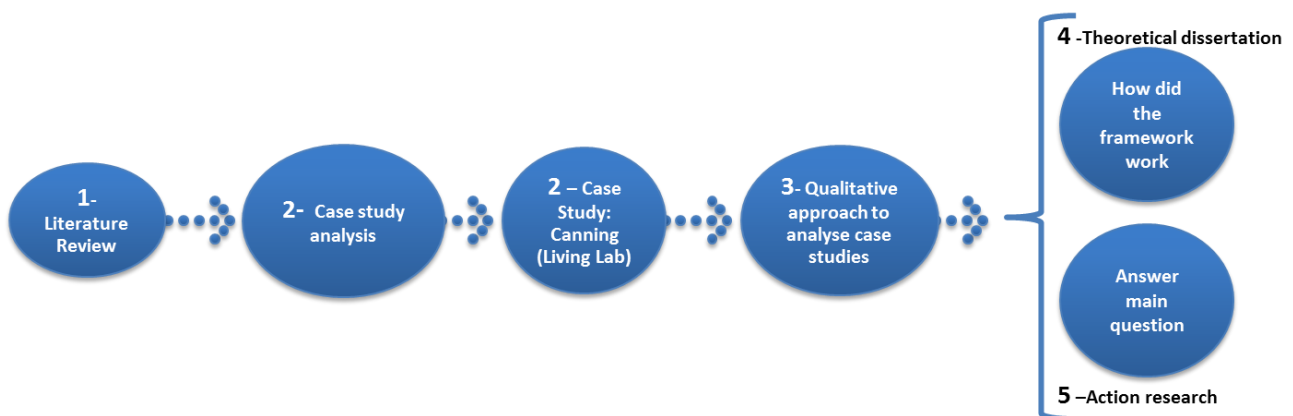
Figure 1: Research methodology. The numbers per method are described below.
Source: Author.

The research proposes a *theoretical dissertation* employing a *qualitative research approach,* including case studies of LSUPs. Most of the research is literature-based. It includes an analysis of academic material, extracts from informal interviews, conversations

and documents in context, and a comparison of different LSUPs. Each method and its applicability are discussed in detail in the following section.

Method 1: Literature review

This thesis starts with a review of the literature on cities' evolution and regeneration processes. It looks at urban issues and the different agendas of various urban regeneration projects at a global scale before focussing exclusively on Australia and examining the suburban dilemma, which is more common in Australia.

Guidance for this literature review is taken from Fink (2010), who summarises a literature review as assumptions drawn from the unique work of academics and researchers. Essential steps suggested for a literature review include: formulating precise questions; choosing bibliographical databases to answer the questions which can include different sources including online; searching for specific terms to be able to access the appropriate material; selecting only relevant articles; evaluating the material found regarding its coverage, relevancy and quality; and reviewing of each material and summarising results (Fink 2010)

The literature review on the theory of regeneration and TODs included a search for books, refereed articles and texts using diverse information sources such as academic publications, local and state government pamphlets and documents, as well as internet search engines. The literature review in the first part of this thesis provides historical data and qualitative information. The result is an understanding of the global problem, the need for regeneration and the importance of integration of land use and transport when planning for infill and TODs.

The literature review intended to blend the theory with practical examples of global urban regeneration processes. Part 1 includes a review of prominent urban design theorists such as Thomas Gordon Cullen (1971), Kevin Lynch (1960), Jan Gehl (2006) and Ignasi de Solà-Morales (1997, 2008), followed by supplementary planning material. Therefore, the findings of the literature review on morphological analysis are used to create the framework for analysis of the dilemmas associated with urban regeneration.

Method 2: Case study analysis

A case study is an interpretation of action, occasion or problematic that encompasses a tangible or theoretical condition and embraces the difficulties found in a specific situation.

Case studies can be helpful in helping us imagine how real situations can shape results. Kardos and Smith (1979) suggest that to learn from case studies, we must analyse cases with awareness and thinking before drawing any conclusion. The steps suggested for this research method are to start by selecting examples from real life and possibly finish with issues and topics for discussion. They suggest a case study should contain adequate data to enable the reader to recognise difficulties and concerns. Moreover, it has to be credible (Kardos and Smith 1979).

The literature review revealed some urban regeneration examples with potential for this study. Amongst these, two suburban Australian examples were selected for the purposes of this study, **Kogarah Town Centre** in New South Wales and **Central Dandenong** in Victoria. Each has similarities to the Canning City Centre (Western Australia) case study. These three cases were selected for analysis in Part 2 and 3. The case studies have been compared and contrasted, and with the primary research and the broader philosophical themes identified in the existing literature.

Method 3: The qualitative research approach

The qualitative research approach is an exploratory method that involves a detailed description of the issue using supporting tools, such as explanations and interviews. This method was considered suitable for this study as it enables the understanding of several factors that may influence an urban regeneration process and identify their causes. It also reveals the thoughts and inspirations of municipal authorities and management bodies. The qualitative approach allows the understanding of the context and its associated problems. It also reveals beliefs and attitudes of the leaders of each regeneration project. In this case, the data collection used a small number of semi-structured interviews only the number necessary to fulfil the need.

Bystedt et al. (2014) touch on aspects of interviewing methods and alternative techniques and understanding the roles of the moderator when conducting interviews. The role includes how to act towards the interviewee, how to be clear and encourage honest answers from them. They give a clear guide on do's and don'ts for interviews which was useful to get the answers needed in this thesis.

Following the above-mentioned guide, informal interviews were conducted with senior staff members who that participated in each of the Australian examples to inform Parts 2 and 3

(Ethics C is an appendix to this thesis). The results from the interviews have been incorporated in Part 2 of this thesis, the case studies section.

The qualitative approach is indeed not an accurate method based on numbers and how many people reached a particular result. This method is focussed on how things happened and why. The description focus of the method makes it attractive for this specific thesis. However, some writers (Hancock et al. 2007) regard the qualitative approach as being less effective than quantitative and experimental methods. According to Hancock and others, qualitative research develops understandings of social phenomena, providing understanding of the social world. Qualitative research seeks to answer questions underlying people's behaviour; the way attitudes and opinions develop; how events affect people; and the drivers of development of cultures and cultural practices.

The qualitative approach was used throughout the thesis to understand the way people interacted with the area that was affected by the regeneration prior to and after each regeneration process.

Method 4: The theoretical dissertation

The theoretical framework serves the purpose of showing the relation between theory and research. It shows what is already known. Apart from justifying the research, it can have the potential to highlight how this research can contribute to the field (Maxwell 2005). This framework is an arrangement that can back up a theory in a research thesis (Bloomberg and Volpe 2016). In this study, the theoretical approach is valuable because it explains the origins of issues such as urban growth, terrain vague, urban regeneration, the significance and obstacles connected with an urban transformation or any other issue related to the social sciences. This method was used throughout the discussion to explain issues the community experiences effectively.

O'Donoghue (2007) describes six categories of theory: description, concepts, categories, propositions, models and type. This thesis will look at all conceptual theories and models regarding urban regeneration as a collection of concepts that are related. The approach was developed from something almost like an inductive brainstorm of possibilities in the early stages of research.

While investigating urban regeneration inside and outside Australia, the answers gathered contribute to a series of ideas and concepts to frame the *theory*. In this sense, the outcome, which is a proposed framework for urban regeneration, will form a model that will

reveal relationships among concepts explored throughout the thesis and confirm or disprove the initial theory.

Method 5: Action research

Action research is also known as action learning, participatory research, emancipatory research, collaborative inquiry amongst other names.

This method intends to identify and correct real problems of local concerns in real-world situations. As identified by Gilmore, Krantz and Ramirez (1986), the primary aspect of this method is co-learning. Using action research means to contribute to practical concerns and try to solve a problem by finding answers collaboratively. This can be considered to be a learn-as-you-go method. This method differs from general professional practice because scientific study and theoretical considerations should inform the solution. It is mainly a cyclic method that involves analysis and re-considerations where the researcher starts by planning, actioning, observing, and reflecting, then revises the plan and continues to analyse the actions iteratively.

This thesis uses action research methodology because of the cyclical nature of analysing urban regeneration theories and the intention of solving Australian planning problems. Moreover, it not only pursues academic outcomes but also pursues action. Conclusions are drawn throughout the thesis. The applicability of this method to tackle a short-term problem - in this case the current suburban problem and urban regeneration techniques - is proposed to be more effective than the other research methods discussed here (Carr and Kemmis 1986).

Chapter Two: Review of the Literature on Cities' Evolution and Regeneration Processes

2.1 Planning approaches to city growth

This section explores the historical evolution of cities and paradigms, such as urban population growth in general. It starts with global examples of the post-war dilemma and the lost spaces (these are also called "fallow" and "residual" spaces). Then it analyses the advent of modernism, car-based planning and its relation to urban regeneration.

Cities are constantly changing. While most of the structures become fixed and static over time, the construction, modifications and the investments of the cities themselves shape streetscapes by repeatedly recreating new scenarios. Such transformations often occur in an uncontrolled and organic way and at different paces. They can be partial or total. Changes are needed for numerous reasons, including the need for renewing and revitalising damaged or inactive areas that are underutilised or abandoned. Change may also be directed at transforming areas. Often, the changes occur in response to public or private investments, which usually aim for a financial return.

2.2 Naming regeneration projects

Cullen and Lynch highlight the transformation of cities in the last decades of the 20th century, a transformative era for cities. This period also saw speculations that cities would adapt and adjust to new conditions and dynamics demanded by contemporary societies (Lynch 1960, Cullen 1971). Both authors identify transformations, which normally followed a regulatory framework, emerging from a mixture of predicted and unpredicted actions and expenditures by public decision-makers in local government, development authorities, and private developers (all influenced by population demands). Therefore, several forces and external stakeholders have an influence on local authorities' decisions and regeneration frameworks.

Various terms and acronyms are used to refer or describe projects that targeted urban regeneration and the 'terrain vague' problem, for example, Large-Scale Urban Projects

(LSUP), flagship projects, Structure Plans, ZAC (*Zones d'Amenagement Concertés* in the case of Paris), *Urban Operations* (in Brazil) amongst others. This literature review looked at contemporary cities that experienced regeneration projects. It focuses on factors such as: the new configuration; the transformation of the landscape; the objectives proposed by each case study; whether there was a relation to or dependence of an architectural element; and ultimately, the influence of the existing real estate market and potential of these areas to meet new or unmet market trends. In the urban regeneration context, it is possible to refer to many LSUPs, which may have not necessarily had a positive result, but had as a main objective the transformation of the urban form. That approach might have been about seeking new dynamics for a certain area, requalification and rehabilitation. The LSUP could have emerged from a crisis, such as deindustrialisation, loss of attractiveness, the growth of boundaries, policies to discourage sprawl or even housing shortage. As the Institut d'aménagement et d'urbanisme de la région d'Ile-de-France, 2007 explains, large-scale urban projects in cities and their regions can be thought of as languages of change, noting that the imperative to adapt in a rapidly changing world in order to survive (Institut d'aménagement et d'urbanisme de la région d'Ile-de-France. 2007).

A LSUP could be considered large not only because of its size, but also through the ambitiousness of its objectives, conveyed by its pioneers, the scale of its agenda, the number of jobs created and resident population targeted, or by the resources committed to it regarding financial investment from major public or private participants.

LSUPs generally comprise several independent projects that fit together according to the plan.

For the purposes of this thesis, regeneration projects are called LSUPs, not only because of their geographical area and size but also because of their programme and their complexity.

It is understandable that LSUP should present solutions to urban dilemmas that respond to the needs of various groups, such as residents, users and investors equitably. They need to have clear and straightforward objectives, for example, to requalify and rehabilitate specific areas. In urban regeneration projects, many contemporary cities have faced difficulties in guaranteeing the social aspects of urban sustainability where public aspirations and actions ended up transforming part of the damaged urban tissue which was technologically out of date using forces of the private sector and real estate entrepreneurs. The result does not always cater for all people when gentrification is a clear

consequence of a regeneration process. This phenomenon happened in places such as Soho in New York, Marais in Paris, Docklands in London, amongst others. Despite potential urban benefits, urban gentrification is the concept of pre-gentrification residents migrating somewhere else and being replaced by wealthier newcomers. While this thesis does not intend to assess the natural consequences of gentrification, it will show that in most cases gentrification was intentional.

2.3   The historical evolution of cities

When research for this thesis began in 2014, over half of the world's population (54 percent) lived in urban areas. This is an average figure that varies substantially across countries (United Nations 2014). Further deep fluctuations in numbers and spatial distribution of the global population are expected in coming decades. By 2050, the world's urban population will reach 66 percent of the total global population as an additional 2.5 billion people live in urban areas. Geographically, a substantial increase in concentration is projected for Africa and Asia, representing nearly 90 percent of the increase (United Nations 2014).

When rapid growth occurs without planning and infrastructure is not developed concurrently and accordingly, existing city structures can be under pressure. Such unplanned growth can create unequal areas, which force poor living in substandard conditions. As the United Nations points out, rapid urban sprawl can occur in some cities as a result of poorly planned urban expansion. This is often associated urban sprawl, environmental degradation and pollution. These negative effects are amplified by unsustainable production and consumption pattern (United Nations 2014). For over a century, parts of cities could have been occupied informally and speculatively, because of a possible lack of an urban vision to create the logical urban project for certain areas (Congress for the New Urbanism 21 2013).

2.4   Vacant land, a post-war planning paradigm

War destroyed the urban fabric of many European cities affected by wars, and areas within them remained abandoned for many years. However, from the 1970s many of those cities envisioned the possibility of transformation of affected territories in response to public demand. This transformation created new urban fabrics (Ignasi de Solá-Morales Rubio, "Terrain Vague" cited in Davidson, 1995). Regeneration of empty areas was noticeable in European cities that had to go through a reconstruction process after the devastation of

the Second World War to the established urban fabric. Examples in this literature review show that the deactivation of large industrial areas or the disarticulation of the railway system made opportunities out of spaces and those spaces became urban laboratories for architects and planners who were able to put into practice their theories on contemporary urbanism. In the process of cities' creation and occupation, some land historically has been turned into residual, empty spaces and as a result, created urban voids. Examples of residual land could be areas along railway lines or along busy roads. The built form tended to 'turn its backs' and build walls to separate these corridors. As a result, often the built and the unbuilt environment can become weakened if no plan is developed for residual areas (Trancik 1986). It could be that the degradation of the built form occurs because lack of maintenance and management by authorities that results in the weakening of the buildings in general. It can also be part of an economic cycle. Nonetheless, the deterioration of the unbuilt areas could be a result of lack of public incentives or urban initiatives.

Consequently, the mutual weakening process contributes to land depreciation of areas that should be the most valuable ones in the city because of the proximity of the high-speed public transport. The weak empty spaces become voids, which have been an object of study and intervention by many cities, urban planners and designers. The Spanish academic Solà-Morales aptly categorises this vacant, unproductive land with no clear future in sight as "terrain vague". Ignasi de Solà-Morales used the term in the architectural discussion to designate areas with a present historical legacy (Ignasi de Solá-Morales Rubio, in Davidson 1995). Nevertheless, those residual areas could eventually be considered as an opportunity. The objective is to use them as 'urban tools' that can reconstruct, regenerate, renew and rehabilitate those spaces as a new territory, new community living, new uses and a new hope of innovation—full of promise but with the results not yet determined. Some theorists such as Solà-Morales and Trancik have shown the enormous potential for those underutilised sites to contribute to overall city re-shaping.

The interrelation between the absence of use and activity and the expectations that the land carries is fundamental to understanding its potential. However, using vacant land as an opportunity for change is not considered a new practice and/or strategy. Further, this is not the only way to regenerate a damaged urban fabric. Roger Trancik (1986) refers to that same underutilised land as 'lost space', emphasising its incidence along railways, freeways, industrial complexes, car parking lots and areas that gaps disrupt the continuity of the city. He notes that this land offers an opportunity to counteract suburbanisation. He

highlights that those antispaces make no positive contribution to people or spaces whatsoever and acknowledges the impact of modernism, increased car driving and abandonment of industrial and port areas because of change in economies.

In regeneration projects in central areas, cities seek to value their ruins and protect the remaining vulnerable heritage that resisted the attacks or disasters. World War II attacks targeted government buildings (to destroy authorities, food stocks and shelter to weaken civilians). Attacks often destroyed central areas and important heritage elements, leaving ruins in such valuable areas.

A similar situation applies in Australia and New Zealand, with recent natural disasters that destroyed central areas. Cities must regularly deal with the consequences of natural disasters such as Cyclone Debbie in Queensland in 2017 or the earthquake in Christchurch (NZ) in 2011, as well as hailstorms, floods and bushfires. The point here is that the process of rethinking and redrawing cities takes place in the midst of destruction, manifesting itself spatially through real interventions throughout the 'urban mosaic'. The process starts in the periphery and then moves to central, devastated or abandoned areas. In that context, cities are forced to create new urban intervention strategies for practical reasons. Built and unbuilt areas must both be transformed, and controls created to harmonise new urban areas and their adjacencies, and to transform streetscapes. The process has created new morphologies and configurations of built and unbuilt spaces capable of assisting the new social, economic, and urban dynamics in contemporary cities (Trancik 1986)

After World War II, many cities had their urban canvas redesigned and reshaped according to modernism - this "new framework" of re-urbanisation strategies capable of creating a new vocation, which would be more compatible with contemporary life. The fundamental word here is 'vocation' for a city or a specific area. It means a clear vision for a regeneration process.

2.5   Car-based planning and suburbs

From the last few decades of the 20th Century, economic and social crises have contributed to the way cities developed. Processes of crisis introduced significant changes in models and ways of addressing disordered urban growth. This can be noticed in particular **suburban** and central areas, axes and railway line adjacencies, land that has suffered from natural disasters or even catastrophes caused by humans, such as wars.

Barton (1992) highlights the post-war factors that have enabled lower density suburbia and urban sprawl of the places people live, work, shop. Car ownership and the decrease in energy prices were apparent reasons to create new cities that were incompatible with the use of public transport and walking environments (Barton 1992). Newman (1996, 2012) affirms that the scale of cities with densities lower than 3540 dwellings was not suitable for walking and public transport. Where land uses are spread in lower density environments instead of being concentrated, driving becomes inevitable when there is the need to go somewhere. Driving creates other problems such as congestion, pollution and the need for additional infrastructure. Newman argues that freeways and reduced densities have enabled high movement/ dislocation of people and as a consequence automobile dependency (Newman 1996).

2.6 Suburban development and common subdivision practice in Australia

Bearing in mind that suburban (greenfield) construction and living are embedded in Australian society, the approach outlined above would mean a significant change in BAU (business as usual) attitudes towards development and construction and a shift in public perceptions and acceptance of apartment buildings (greater housing density) to achieve new targets. There is no real guidance or encouragement for a change of housing typologies, construction methods and apartment living (London 2016). Looking at aerial images of the Western Australian metropolitan region, we can see the dominance of single houses on single lots. It is possible to classify the horizontal type of development and suburban character that has been built over the years. Besides, outdoor space (backyards) has been gradually yielded space to other houses, which also contributes to less natural light and less natural ventilation in private households. Often, what we see from the street are garage doors.

Figure 4 below shows two examples of common subdivision patterns that generally occur in inner-ring suburbs, when the set residential code allows landowners to subdivide and sell one of the new lots. Example 1 shows a block that measures 20 metres by 50 metres that has been subdivided into more than one lot, allowing the owner to build houses at the back, accessed by a driveway. Sometimes the older house at front remains, and what was once a backyard is converted into dwellings. Example 2 shows lots subdivided into narrow lots (this specific example show lots that measure 8 metres by 50 metres). The result is narrow houses, no side setbacks, with single or double-storey houses. Both examples

show minimal outside areas and very little space for natural light and ventilation inside the dwellings.
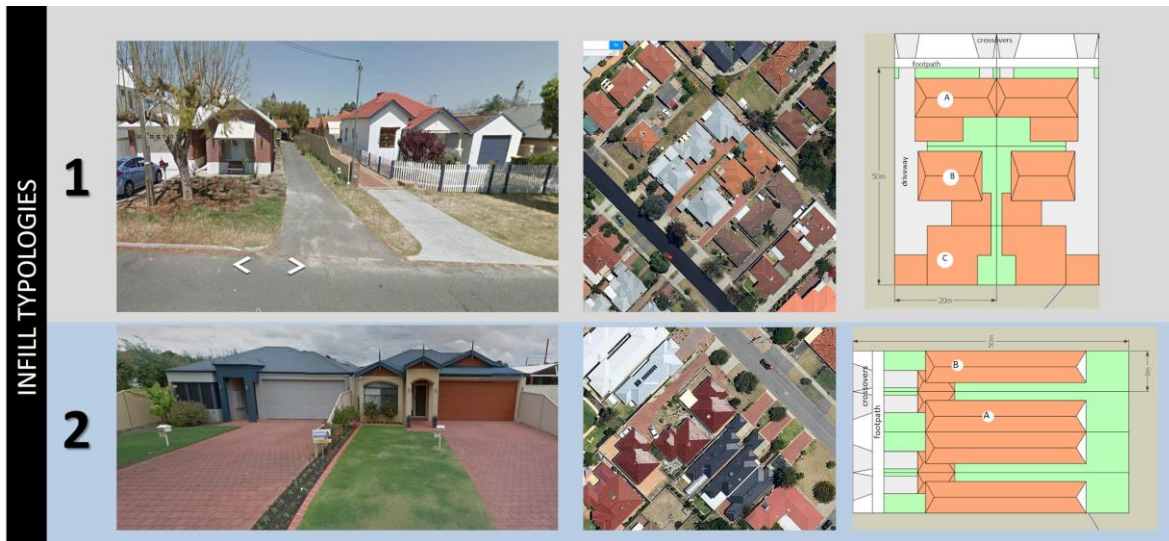
Figure 2: Common subdivision practices in Australia. Figure by author (02/02/2017)

The development market has entrenched business model of greenfield development and the common subdivision practices illustrated in Figure 2. The profit available for the development of greenfield sites may be more attractive to developers than the profit that can be made on infill. Therefore, suburban growth is considered to be strategic because it is embedded in a societies' culture and much time would be required to trigger a shift and encourage current residential developers to choose to develop infill sites instead.

Thomson et al. (2016) explain the three types of cities that have evolved over the years, as shown in Figure 3 below. Until the 1850s, city design was based on walking; the second city developed along tram, trains and its routes from port to the city; and the automobile city enabled the city spread and suburbia living. Curiously, after the late 19th century, with the freeing up of space within older cities, theories have evolved concerning possibilities for occupying vacant land , including greyfields and brownfields developments.[1]

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[1] These terms are explained in detail under the next heading.
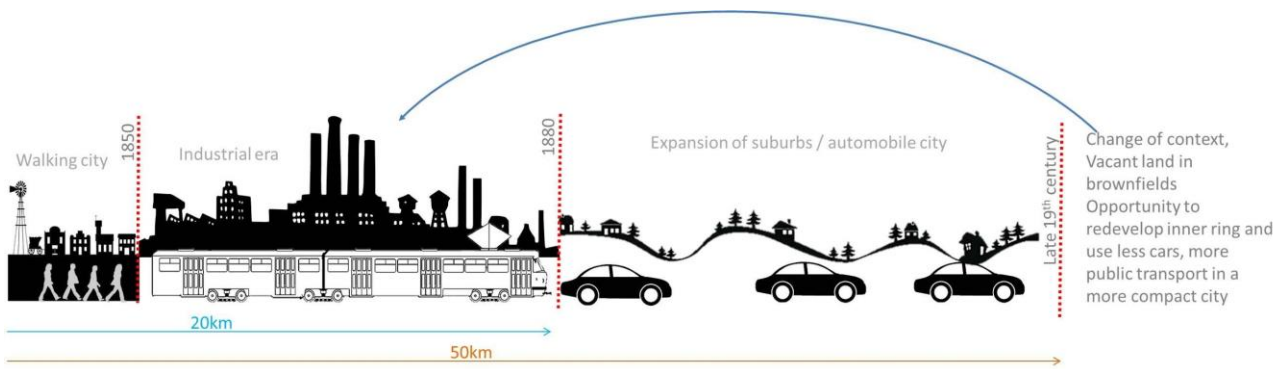
Figure 3: Ability to travel: distance, means of transportation and how the cities have developed over time. Source: Thomson et al. (2016). Figure by author.

From the 1980s onwards, some riverine cities that were formerly producers or service providers in a network of cities geographically important in trade of goods suffered economic and urban changes. Those cities experienced the degradation of their urban areas because of the shift of the global economy, as the common transport systems at that time experienced a period of decline. The modification of economies caused several consequences in the structure of cities and regions. In this context, the manufacturing activities and growth of investments triggered by technology at a global level contributed to the decline and ascension of different worldwide regions. The port cities that suffered the impact of the global economic change were New York, United States; Buenos Aires, Argentina; Santos, Brazil; Tokyo and Kobe, Japan; London, United Kingdom; and Barcelona and Bilbao, Spain. With the changing worldwide economy, some ports and industrial areas were abandoned because they were no longer accomplishing their function in the economic scene. These areas are referred to as Greyfields - ageing, occupied areas of the inner and middle rings of suburbia, which represent undercapitalised assets showing signs of physical, technological and environmental failure (Newton, 2012)

Cities are currently experiencing expansion in scale, size, density and infrastructure. New cities and centres have been expanding through Greenfields development and, therefore, the existing old centres demand new shapes of occupation over a denser and occupied territory. This thesis examines suburban examples most closely. However, the research shows that in some examples, especially in European cases, it is difficult to define what a 'suburb' is because the urban fabric evolves and can occupy the entire conurbation area. The development of transit-oriented developments (TODs) involves more than the creation of a neighbourhood where people live and work at a walking distance from a public transport station. The creation of a TOD relies on higher density living and a diversification

of uses within walking distance. The TOD concept also relies on the fact that the residents are likely to use public transport beyond the precinct to reach other destinations for many purposes including work (Curtis et al. 2009). Australian cities have been experiencing the creation of neighbourhood precincts similar to other cities around the world since World War II. Since the 1970s, Perth has been undergoing these kinds of planning strategies, which aim to create centres to provide for options and connect with the central business district (CBD) (Curtis et al. 2009).

2.7   The Ahwahnee Principles and TODs

The Ahwahnee Principles for Resource-Efficient Communities described by Newman and Kenworthy in *Automobile Dependence at the end of the Twentieth Century* (1999) recognise the importance of having land-use principles and mechanisms to guide local governments in their planning journey. The Ahwahnee Principles, originally written in 1991 by the Local Government Commission, outline principles for creating TODs, active compact downtowns with people, amenity, activities and public spaces in a walkable environment. They recognise the symptoms and patterns of suburban life, which are mainly congestion, pollution, car dependency and need for more expensive infrastructure that provides for cars, loss of open space, unbalanced income distribution, and the decreasing sense of community (Kenworthy et al. 1999). These principles inspired subsequent theories such as the Smart Growth movement and New Urbanism.

In Western Australia, the State Government, through *Directions 2031*, is trying to better facilitate development around infrastructure nodes and routes that already exists since the investment has already been made. The State Government itself has made a significant investment in railway infrastructure, while the joint State and Local Governments effort towards unlocking the development potential within rail station surroundings is still developing towards a future *urbanscape* scenario. A structure plan and/or policy is the best way to direct population and job growth to rail station precincts. These could be effective means of encouraging greater density, retail, and entertainment activity, and a higher use of public transport usage because of increased network accessibility.

2.8   Greyfields, the focus of this thesis

This thesis focuses on suburban TODs and not on CBDs that Thomson and Newton (2016) classify as Greyfields, that is the area that lies between a city's core business districts and the more recently built single house suburbs). The case studies discussed in this thesis are mainly Greyfields, middle-ring suburbs. These are mostly highly accessible

areas via heavy rail. Geographically, these TOD all have potential to provide easy connection to jobs, services and major road links, when compared to new suburbs (Thomson and Newton, in Roberts, Sykes et al. 2017). Newton defines Greyfields in Australia as old and occupied areas of cities, located in inner and middle-ring suburbs. They show signs of urban failure of some sort, related to either technology or environment combined with low financial value properties. Newton (2012) argues that the solution to increasing density lies in the Greyfields.

Greyfields are fundamentally different from Brownfields, which are typically old, vacant, underused industrial lots. The land usually requires decontamination to allow rezoning and redevelopment. These areas are becoming increasingly crucial in high-level strategies to accommodate future population. Newman and Kenworthy (1999) demonstrate the benefits of TODs, including lower everyday expenditure on commuting, more sustainable travel patterns, and lower carbon emissions. If development around existing public transport stations is not encouraged, the opposite is likely to occur. Outcomes would include greater distances to be travelled by car to perform activities such as shopping, work, and leisure; greater infrastructure investment to accommodate urban sprawl; more carbon emissions and pollution; and higher commuting costs.

The debate about densification continues. Many people are opposed to what they consider high-density and apartment living to be. On the other hand, we have studies in various fields including urbanism and sustainability that advocate increased urban density, together with state government directions for densification (Department of Planning, 2010; Western Australian Planning Commission 2010, 2015; Newton and Thomson, 2016; Kenworthy, Laube et al. 1999).

In addition, there is an established cultural preference for a single house on a single block in Australia and the USA. As Williams points out, writers have long expressed the notion that greater space in a city equates to healthier and more socially-adapted community members (Williams in Kenworthy et al. 1999). As explained by Brugmann (2009), the benefits of housing density are not fully understood. However, his studies show that the efficiency associated with increasing urban density can benefit economies, since it reduces the costs of production, consumption, organisation, construction and learning in comparison to less dense urban areas.

The benefits for businesses established in higher density, walkable, mixed-use redevelopment areas can include new, modern spaces; large-scale construction; well-

equipped premises with relatively low operational costs; lower rental costs compared to consolidated urban areas; and media coverage as part of the place communication plan. These benefits contribute to promoting the location directly and the businesses indirectly, as these suburban centres are not too far from the CBD and other urban areas.

The '20 minute city' is the concept at the centre of these planning approaches. Thomson and Newton (2016) explain that the key principle of Transit-Oriented Development is well established: an incentive for urban regeneration that proposes to improve a centre's usability and perception. The concept is about creating a gathering of buildings and a diversity of land uses and housing. It comprises higher density living and efficient public transport. Moreover, Thomson and Newton (2019) affirm that there is policy support and aspiration to include TODs and infill development in these areas. However, several barriers seem to hinder the process, such as cultural resistance to higher density, fragmented land ownership and willingness to redevelop, land costs in well-located areas and planning controls which conflict with strata legislation (Newton and Thomson, 2016). The TOD concept relies on people walking in their neighbourhood and being able to perform more activities locally and using public transport to access other urban nodes for purposes such as work. Thus, the overall intent would be to reduce the use of private cars at the origin where people live, and provide easy access to other destinations for activities such as work and shopping (Curtis and Olaru 2010).

2.9   Urban regeneration approaches

This section will introduce the three types of planning approaches explored in this thesis:

- Type 1: Urbanism- led transformations;
- Type 2: Architecture-led transformations; and
- Type 3: Design-led envisioning.

Type 1 and Type 2 approaches are distinct. Type 1 transformations sometimes disregard the configuration of buildings in existing street patterns and can overregulate urban development, with very few concepts and mechanisms to establish a connection between the built form and the cities' shape. Type 2 transformations place greater emphasis on construction than morphology. By contrast, in Type 3 approaches, public authorities initiate a process of reviewing cities' strengths and reanalyse economic and productive strategies to ensure sustainability, while seeking a new urban 'ability' or 'vocation'.

Type 1: Urbanism-led transformations: change in urban morphology

Overall, LSUPs with an urban focus aimed to enrich the public realm with new versatile elements, such as bridges, lookouts, paths, and other features, stimulate the existing city as a multiform place and can transform its historical and human logic. Those who employ LSUPs (as described by Solà-Morales) have transformed cities, ports and suburbs by thinking through connections, additions, and overlaps and articulating all those levels through modern architecture. For example, as Montaner (2008) points out, the naval complex Saint-Nazaire (1994-1998), an unused military base with substantial metallic structures and one of the largest harbours on the French Atlantic coast, was converted into a new place with boardwalks, apartments, supermarkets and public spaces.

Lynch observes that morphology provides stability to a city. Nevertheless, morphology is always changing and despite any plans or projects, it is difficult to have full control of its shape and form (Lynch 1960). His book was written in 1959, however his approach is still applicable and reveals a large variation in the quality of plans developed to transform cities. It is difficult to control how buildings shape space and how people will use public and private spaces. Lynch also notes that the city is ultimately a product of many builders and developers, who each have their own motivations in designing buildings. This could include costs, marketing, and sales (Lynch 1960).

Transformation projects proposed internationally from the 1970s onwards show that new theories were in line with the 'urban acupuncture' concept of how to transform cities, which was, by that time, a change of thinking and paradigm. The new strategy, 'urban acupuncture' was then to reconstruct underutilised or 'sick' urban areas, in anticipation that this would trigger positive changes in surrounding areas. The term 'urban acupuncture' was defined by the Brazilian architect and urban planner Jaime Lerner as the capability that people have to change their cities by focusing on punctual pressure points of cities.

From the last decade of the 19th Century, governments and communities began to plan for continuity and modernity to cater for the technological needs of the 20th century and the new conditions of global cities. For example, in the USA activists created the movement called 'City Beautiful' to transform cities and remediate the country's social 'deviations' that had arisen because of rapid urban growth (Wilson 1989). The City Beautiful activists advocated recovering cities through embellishment and in some instances, gentrification occurred with a purpose. They believed that poverty and social problems would damage the city's 'beauty'. They created inviting city centres that would at least bring the upper

class to work and spend money there. According to Wilson, the movement aspired to bring cultural value similar to that enjoyed by European cities at that time (Wilson 1989).

The interventions which were put into practice from the mid-20th Century onwards had a distinct focus. In summary, these were not only urban interventions - they were strategic projects aiming to transform cities physically and economically. This was essentially opposite to the aims of the City Beautiful movement, which focused mostly on the aesthetics of the new city and purposeful gentrification.

Some examples of the urbanism-led approach are briefly explored below.

Baltimore

An example of a change in morphology from the United States is Baltimore's regeneration in the 1970s. The development of the once decaying and condemned Inner Harbor is often seen as a model for other cities undertaking urban renewal. Baltimore had been decimated after a fire in 1904, and the decline had reached alarming proportions when a vast majority of commercial establishments, residents, pedestrian and all sorts of social activities moved out of the area by 1950. In 1956, the local authority hired David Wallance as city planner and architect to develop the revitalisation plan. The project was considered successful in a number of spheres: commercial development, housing infill, population flow, crime reduction and creation of employment (Dannes 2003).

Overall, many of the urban regeneration implementation plans put into practice from the 1970s onwards in Baltimore contributed to valuable new discussions about contemporary urban design, cities' vocation and transformation of the built and unbuilt environment. Also, debates on urban culture contributed to new social, economic and space appropriation concepts. Baltimore's transformed urban morphology comprises elements that have been retained and integrated with a better public realm. Ultimately the regeneration contributed to the consolidation of the new urban form, increased value of assets and new trends in land use of high-quality density and high usage public realm around the Harbour.

Paris and Barcelona

Barcelona and Paris are cities that have needed constant redevelopment of their urban areas for two reasons: density control, and the creation of new centralities capable of absorbing social and economic needs at a local scale. They have transformed themselves continually like 'live organisms' by renewing their 'urbanscape' while abstracting the

buildings' shape to create the new urban design as an overlay on the existing building mass.

The plans proposed far back in history by Cerdá and Haussmann for Barcelona and Paris were able to create new 'urbanscapes' with long wide avenues, parks, squares, iconic buildings and monuments, reshaped regular street blocks and other urban elements, which have influenced urban planners, designers and authorities in many European cities and also cities in other continents (Cullen 1971). Those cities generally had, and still seem to have, the capacity of exploring not only their heterogeneities but also the whole set of attributes that contribute to urban changes from streets to squares and buildings. As Lynch (1960) advocates, the city should be an artificial world in a positive sense, created by art to serve human purposes.

Cities like Paris seem to be continually developing plans to transform and adjust the urban fabric. Recently, France President Nicolas Sarkozy (in office 2007-2012) invited ten renowned architects to prepare proposals for Paris of the 21st Century, the European Metropolis of 2030, which aimed to be the first city to cater for the *Kyoto Protocol* as part of the Greater Paris Plan (The Guardian, 2009). Amongst the architects, were the British Richard Rogers, the Italians, Paola Vigano and Bernardo Secchi, the French Jean Nouvel, Roland Castro, Christian de Potzamparc, Djamel Kouche, Antoine Grumbach, and Yves Liot; the German Fin Geipel, and the Dutch MVRDV. (The Guardian, 2009)

As with Barcelona, a number of urban plans prepared in the 10th Century had to overlap Cerdá's plan, such as the plan for the Olympic Games of 1992, 22@BCN, the Forum in 2004. All have all revisited the city's image and enabled the creation of new areas, elements, experienced and urbanscapes.

Roubaix: A suburban example

Roubaix, a suburb with approximately 100,000 residents, is located in the metropolitan area of Lille, 1 hour and 20 minutes commuting by train from Paris. Roubaix location is illustrated in Figure 4 below.
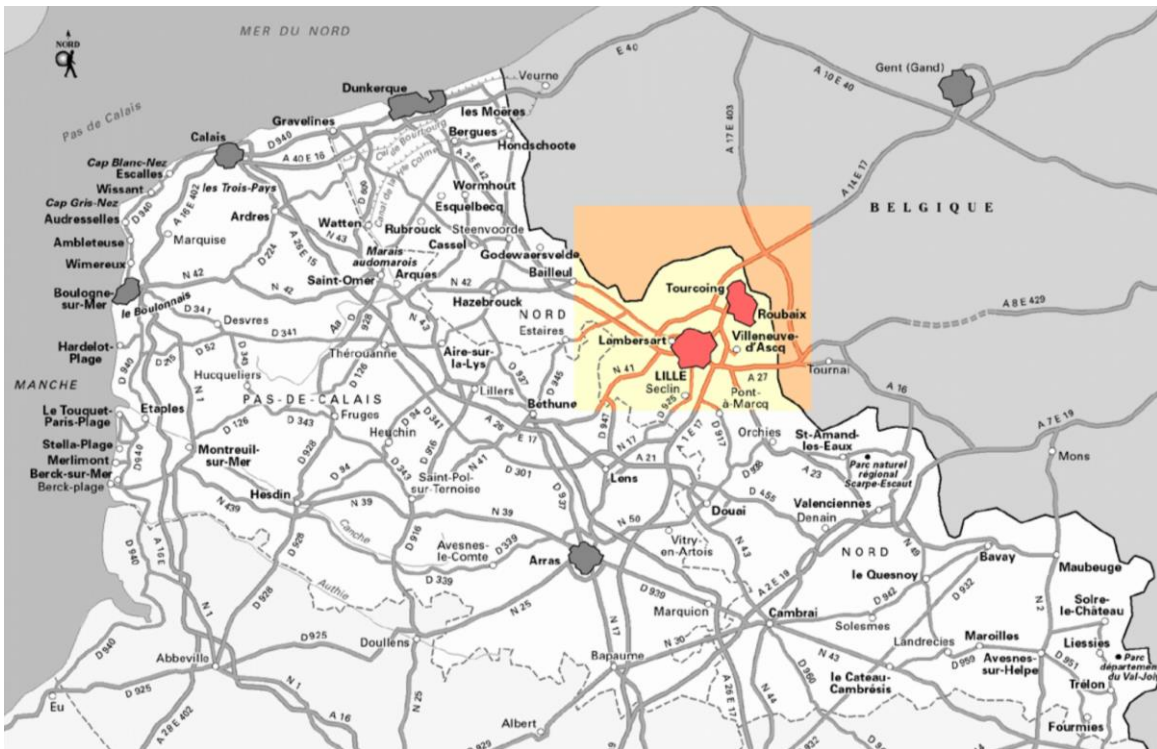
Figure 4: Roubaix on the map in relation to Lille and France, 2017.
Figure by author.

It was once a successful textile producer, which attracted migrants from Europe and Africa before it started to decline in the 1970s. The town rapidly collapsed, factories and shops closed, and people lost their jobs and moved out. Roubaix was then considered to be the worst town in France (Cadell, Falk et al. 2008). An integrated regeneration strategy has been developed by Lille's mayor, Pierre Mauroy, for the entire metropolitan area and it changed the scenario, perception and the city as a whole.

The plan intended to take advantage of the high-speed rail network that would better connect the city to other European cities and to a local new metro and tram system. Part of the scope of the plan was to attract businesses back to the city centre, improve existing dwellings, improve, beautify and make a safe public realm, develop a cultural program and action plan, attract new investment to the city with training and employment opportunities, and offer tax reduction and incentives they created new jobs. Regarding management, the LMCU (Lille Métropole Communauté Urbaine), a targeted authority overseen by some elected members from the metropolitan area, drove the project and its implementation. The group worked on projects, enter into agreements, and sought funding for the regeneration project. Amongst factors that have contributed to what was considered a successful LSUP case, were the following:

- geographic location integrated with rapid transit system,

- prioritisation of local people for new jobs;
- the economic transformation;
- the regional-scale management by LMCU;
- perseverance and partnerships in the implementation phase;
- sharing of income between municipalities to prioritise project actions; and
- consideration of culture (Cadell, Falk et al. 2008).

Type 2: Architecture-led transformations through development of an iconic building

The authentic urban revolution started in the second half of the 20th Century, with modernism. During that period from the 1970s, the industrial revolution based on the multiplication of the production capacity, automation and computerisation of processes intentionally or unintentionally affected the supposed reorganisation of cities. These processes occurred in both developed and developing countries. However, the transformation processes did not seem to take cities' urbanscape into consideration, which lead to the creation of urban shapes incompatible with the contemporary city. This effect has created in some cases disconnected and discontinuous spaces between proposed spaces and the empty areas. Subsequently, local authorities perceived the need to initiate intervention projects to fix certain portions of the cities. In the economic sphere, during the transition between conservatism and liberalism in the 1980s some urban initiatives aimed to soften the effects of the economic recession. These initiatives aimed to enhance and change specific pieces of the 'urban puzzle'.

In some cases, regenerations comprised a design competition and participation by renowned architects, which led to the construction of art centres and other iconic buildings. This was undertaken with the aim of reversing the social and economic impacts of the new liberal economic model. The resulting initiatives reflect a new contemporary urbanism, associated with positive results. However, in some cases the main positive achievement was the construction of an iconic architecturally designed building. Those regenerative projects that failed to spread architectonic production are considered to be incomplete. This has not been the case with all contemporary interventions - international urban renewal projects in USA, Spain, France, and others aimed to benefit larger areas of the city, based on emblematic icons of power, success, beauty, modernity and development.

In the European context, many LSUPs strategies encompassed an architectural icon, mostly signed off by a brand artist or architect as a tool to attract financial investments to the urban intervention perimeter. Theoretically, this idea has the objective of highlighting

the area or the city or attracting attention to an isolated element. Examples include the following: the National Library in Paris, by the architect Dominique Perrault (1995); the Agbar Tower in Barcelona, Spain, by architect Jean Nouvel (2005); the Guggenheim Museum in Bilbao by architect Frank Gehry (1997); and even the Gran Palais in Lille, by architect Rem Koolhaas (1994). Designing and building of masterpieces such as the ones discussed above is not always the intention and does not always fit the City's financial intentions. The first part of this thesis briefly discusses those European LSUP experiences for contextualisation purposes. This regeneration technique aimed to transform those areas, underpinning the idea of punctual interventions or urban acupuncture on the degraded city canvas, which was believed to have the potential to transform cities.

In analysing well-established cities where parts are underperforming, some studies identify the benefits of regenerating specific sites of areas of that city. However, cities with an established infrastructure and city blocks often have limited potential for transformation, as their morphology might not be appropriate or too expensive for a complete change. Lamas and Garcia (1992) argue that punctual interventions can have several effects. However, they do not change city structures and urban design. Lamas and Garcia (1992) argue that cities usually keep their original rules of spatial composition and the relationships among its parts or morphologic elements. Lerner (2003) suggests that the punctual interventions could be a modern solution for contemporary urban issues. In other words, minor changes can initiate positive flow effects for the greater city and society. Those small interventions in the design of cities involve quick changes can release energy and create new energy can bring life to decadent areas.

Paris and Barcelona

As mentioned above under Type 1 regeneration approaches, both Paris and Barcelona's urban fabrics have gone through various regeneration processes over the years. However, they also went through the Type 2 regeneration approach, which involves the development of iconic buildings.

Although the urban regeneration initiatives of the 19th Century started well back in history in the cities of Barcelona and Paris, they have quickly altered their images by creating symbols that are crucial urban references on a global scale. Those examples include the *Eiffel Tower, Opera Theatre* and *Arc de Triomphe* in Paris; and the *Sagrada Família, Gothic Quarter, Casa Milà, Park Güell* and *Casa Batlló* in Barcelona. These transformations created a Paris with a homogeneous canvas that could support the

increase in its quality and a Barcelona of contiguous and homogeneous blocks that seemed to have been resilient to changes in the way that buildings have developed overtime. Other classic cases could be highlighted as modern LSUPs.

Some projects aimed to regenerate historic centres using the urban acupuncture technique in their degraded urban canvas. Paris and Barcelona are examples that have built cultural or educational-related buildings in their historic cores as a direct and indirect strategy of urban regeneration. Those buildings are considered icons of beauty and culture. Both the Centre Georges Pompidou in Paris (1977) and the MACBA Barcelona Museum of Contemporary Art (1990) reflect that same context of regeneration. According to Manuel Solà-Morales, an intervention in a city can improve the urban fabric insofar as it also serves as a tool to restructure limits and enhance the immediate context because of its intrinsic limits and organisational character (Sola-Morales 2008).

Bilbao

Before World War II, Bilbao was considered one of the most critical European ship-manufacturing cities. Its morphology and labour were shaped for that function. The city and shipyards were intimately connected to the Nervion River. However, as time passed, the city lost its economic dynamics and because of industrial decline, resulting in a considerate amount of riverside vacant land. To avoid further crisis effects, despite the site's valuable geographic location, the local authority decided to establish a regeneration strategy in the city's heart, by the river. The first plan, 'Bilbao Metropoli 30', targeted a regional scale and the connection to the rest of Spain, proposed new roads, an airport and a rapid train. The second plan, 'Bilbao Ria 2000', had a local focus, which aimed to regenerate old industrial areas.

They built the Guggenheim Museum by the river (see https://www.guggenheim.org/). The punctual intervention, in this case, aimed to affirm the city's potential of having a new vocation and becoming a tourist attraction. The Museum, designed by Frank O. Gehry (opened in 1997) and the Euskalduna Palace, designed by Federico Soriano and Dolores Palacio (opened in 1999) were iconic elements built as part of the regeneration plan. The once derelict area of Bilbao, a city in economic decline, managed to attract financial development and reputation. The terms "Bilbao effect" and "starchitecture" reflected the regeneration's achievements and referred to iconic buildings designed by a brand-name architect who created landmarks for the city (Bilbao Ria 2000 2000, Asociación para la Revitalización del Bilbao Metropolitano Bilbao Metropolitarra Birbizteko Elkartea 2009). As

Patterson (2012) explains, the Guggenheim Museum is seen as an exemplar of the way landmark cultural sites and unique architecture can catalyse economic growth in urban environments. This is referred to as the "Bilbao effect".

There are those who consider the Guggenheim Museum an overrated place which has failed as a public space. Project for Public Spaces, a non-for-profit planning, design and educational organisation published a review in August 2015 arguing that its blank walls and sterile plazas are dead zones that it has failed to create social space (Kent 2015).

Dubai

Dubai is a purpose-built modern example of a city designed to achieve what was believed to be its vocation: tourism. The United Arab Emirates (UAE) city has adopted management strategies of building the city as a mechanism for attracting a high standard of tourism, business and investors seeking to invest in the real estate market. The initiative has contributed to Dubai being one of the world's most visited cities. While we must acknowledge that all strategies come at a cost, the built atmosphere looks very heterogeneous, resulting in a complex and uncontrollable urban design where all buildings seem to compete to protrude amongst the others. Buildings and streetscapes are somewhat disconnected. Furthermore, artificially built islands with man-drawn shapes were part of the Dubai Masterplan 2020 that guided its development.

Type 3: Design-led envisioning - cities' vocation or predisposition

Over time, some cities have continuously developed in coordinated or not-so-coordinated ways to rebuild and regenerate some parts of the urban fabric in response to specific issues and diversification demanded by globalisation. Global cities of note in this regard include such as Sao Paulo, New York, London, Shanghai, and even Mumbai. As Sassen explains, there is a global circuit of real estate investment by worldwide companies (Sassen 1999). One approach to urbanism is the 'New Urbanism' concept. Following the 'Charter of the New Urbanism' launch in 1996, some cities began to see the interaction of possible scenarios and the human scale. The Charter aimed to articulate regional systems, inspiring authorities to target central or small portions of urban areas, to plan to avoid urban sprawl, to value public transport, to recapture the tradition urbanism taking into consideration the arrangement of blocks and architecture (Congress for the New Urbanism 1996). By the time the Charter was launched and began to be used by local governments, Europe was already redesigning parts of cities aiming urban renewal and

strategies that would be capable of creating a new vocation to them, more compatible the contemporary life.

When we try to understand the reasons why new paradigms directly influenced the urban design of the contemporary city, we can easily find experts and theories that sustain that the importance of LSUP as a way to change land use to achieve balance and abundance. The New Urbanism mentioned above aimed to transform broader areas by intervening in a specific spot, in essence reflecting urban acupuncture. The practice acknowledged that urban interventions are constrained by urban design morphologic elements such as streets, blocks and footpaths. These elements will still maintain aspects of the spaces' original intentions and use.

Type 3 urban regeneration combines aspects of Type 1 regeneration by proposing morphology changes to the urban structure and Type 2 by proposing new buildings as a punctual intervention. It also looks at the city's vocation and the new objective which they will serve. It can be the creation of a residential area where there was previously a port or the creation of a cultural precinct.

Urban laboratory: UK as a modern association of designed envisioning with architecture-led projects

Good examples of positive impacts and achievements in this context can be found in the United Kingdom (UK), led by the Urban Development Corporations targeting vacant and underutilised land that needed a new vocation after changes in the economy. Some examples are London Docklands, London Broadgate and Trafford Park in Manchester (Smyth 1994). Not all projects that have implemented strategies to reach different objectives have been successful. For many years, the Docklands was one of the largest ports in the world, however, because of systemic changes its future seemed precarious, with changes in port technology from 1960 to 1980. Increasingly, merchandise was shipped by air rather than by sea. By 1981, larger ships were not able to reach the upper part of the River Thames.

In 1981, the London Docklands Development Corporation (LDDC) was established in response to "the severe economic, physical and social damage caused to East London by the closure of London's docks". LDDC formulated a masterplan or LSUP that has been in operation for approximately 20 years. It has attracted new businesses, improved infrastructure, such as road, rail as quick links to central London, new parks, schools, hospitals, sports clubs, pubs and shops, over 24,000 new homes, over 2,700 businesses

trading and 85,000 jobs (The London Docklands Development Corporation 1981 -1998, n.p.).

During the regeneration, the Government gave the LDDC the power of compulsory acquisition, to control the development by approving projects, setting urban parameters such as plot ratio, height, occupancy rate, and others. They also enabled the LDDC to sign public-private partnerships. Because of the complexity and diversity issues, the LDDC established four significant areas of intervention: Limehouse, Surrey Docks and Wapping, Isle of Dogs and Royal Docks. Despite various strategies utilised to consolidate those projects, the area became an "urban laboratory" for the larger architecture practices and their architectural icons (for example Richard Rogers and the "Millennium Dome" and Norman Foster and the "City Hall" station at Canary Wharf, amongst others). Nevertheless, disregarding new buildings, the Docklands LSUP had created one of the first cases of gentrification as low-income residents were displaced as the land was compulsorily acquired for redevelopment. Thus, the Docklands example meant a shift of vocation and a complete restructure, featuring architectural icons. Whether LSUPs were able to solve the initial problem and promote the regeneration process is a question that is still unanswered (Smyth 1994).

In contrast to contemporary privately funded developments along the Thames River which aimed to create a social mix by not excluding the current population, gentrification in the Docklands regeneration was seen as a significant consequence. It was a public-led project that had drastically removed working-class residents to attract middle-class new residents. The Government seemed to have promoted social mix but promoted gentrification and also social issues (Bentley 1997).

The Docklands is then a good example of Type 3 urban regeneration because it incorporates aspects of creating a new mixed-use vocation to the area, land acquisition, new urban fabric and morphology-related aspects as well as design and construction of iconic buildings.

Italy, Germany and others

Other European cities have experienced some degree of regeneration. Turin in Italy, Bobigny in France, Zaragoza in Spain and others that have re-shaped their urban fabric as a regeneration strategy to create a new economic dynamic by attracting private investment, transforming the streetscapes and offering spatial, social and economic quality

for residents and users of each area. This type of urban redevelopment leads to questions about the conception and construction of spaces, the city's image and its vocation.

Van Eyck (1962) highlights the importance of streetscapes - the spaces between buildings - in those projects. They have the power to give importance to the buildings themselves. Van Eyck advocates abandoning the concept of spatial continuity, and articulating transitions between spaces using defined in-between places that accentuate awareness of what is on either side. Haussmann envisaged a Paris with the significant streets built on purpose on top of the existing urban fabric, connecting the Arc de Triomphe to the city.

Berlin and Kobe are examples of cities which have suffered from effects of World War II, losing entire land blocks because of war attacks. Those cities were forced to rebuild entire neighbourhoods, administrative centres and ports, which were destroyed during the War. The technological advances since the second half of the 20th Century have required those cities to review their 'urban vocation' during the reconstruction period as their means of treating the design of the urban canvas. These transformations were developed in very structured ways, using existing large blocks, streets, and infrastructure.

2.10   Urban regeneration in Western Australia

In Australia, cities have constantly been rethinking their structure and going through regeneration processes. As Kenworthy et al. (1999) explain, this re-urbanization process could be market-driven, servicing 'global city' information-oriented jobs in the city and its inner area sub centres. This could lead to more concentrated, higher density cities with lower levels of car dependence.

The concept of concentrating people and jobs around transport nodes is not new and it has been explored in various local publications, such as *Directions 2031 and Beyond* (Western Australian Planning Commission 2010), *Sustainability and Cities: overcoming automobile dependence* (Kenworthy et al. 1999); and *Planning for Climate Change- Strategies for Mitigation and Adaptation For Spatial Planners* (Davoudi et al. 2009).

The concept was then put into a State policy. *State Planning Policy 4.2 Activity Centres for Perth and Peel* (Department of Planning, 2010) specifies land use and urban design requirements for the development or redevelopment of activity centres. It aims to integrate the activity centres with public transport, ensuring diverse activities to stimulate community benefits through better use of infrastructure and economic benefits of business agglomeration, and long commutes in all forms (State of Western Australia 2010).

The Draft Central Metropolitan Perth Sub Regional Strategy is a broad outline that looks at delivering the objectives of Directions 2031. It comprises an action plan with responsibilities and a timeframe for each action. It notes that the suburb of Cannington has a shopping centre and some commercial and bulky goods showrooms along Albany Highway. The 2010 document explains that the planning framework was underway to make it a proper centre, upcode densities, integrate, and diversify uses in the area (Western Australian Planning Commission 2010). As discussed above, State Government policies and related documents refer to Canning City Centre as necessary at a strategic level because of its location on a regional level, having a train station and important roads leading to it, its proximity to the airport, to the Canning River, to Curtin University and its identity as a strategic industrial centre.

A local government can design and implement an entire planning policy suite aimed at achieving TODs, but that does not mean that it will occur. In Canning's case, it would have to be an attractive investment in the private sector. Favourable market and economic conditions can enable development and consequently regeneration processes. Infill is a common term in urban planning, which refers to the rezoning of land in cities, usually dedicated to other uses or underutilised, to new housing. Infill has been encouraged by authorities worldwide as a cost-effective use of existing city fabric and urban infrastructure and a way to achieve a "solution" to urban sprawl. If infill is not encouraged, cities are likely to face an increase in greenfield development, the need for more infrastructure for access to new areas (including roads and all services), as well as tree and vegetation removal and all the consequences that come with it. The Western Australian Planning Commission, along with the Department of Planning, released *Directions 2031 and Beyond* in 2010. Both documents plan for a consolidated Perth, setting a target of 47% of infill new residential dwellings (Western Australian Planning Commission 2010).

In 2015, the draft document *Perth and Peel@3.5 million* was published by the same two state government agencies, which again designated the target of 47% for new dwellings as infill development. Concurrently, it was recognised that infill had achieved only 28% in 2014. There was a five-year gap between these two reports, which means that to reach the nominated target, the infill number would have to grow by 47% based on the 2014 figures (Western Australian Planning Commission 2015). These documents have set the infill targets for each local government in Directions 2031. The progress for achieving these targets is constantly monitored. It is not clear as to how infill is being supported. The responsibility is somewhat be transferred to the local government's actions, initiatives and

budgets. It is up to local government to follow State Government policies and directions to rezone their land, provide for infrastructure and attract development. There does not seem to be a comprehensive framework, funding of infrastructure or even the preparation for rapid transport to be able to support achieving the set targets.

2.11   The relationship between the leading authority and the private market

The local government role in the process is crucial for determining activities, precincts, uses and special distribution to create the market for the future area of regeneration. The role can be manifested through a policy or a plan to encourage private sector enterprises (Smyth 1994). When the local authority owns the land and has the budget to invest in the initial infrastructure, the LSUP can be implemented in an integrated manner. However, if a plan is put in place but the implementation is left up to the real estate market, the result can be varied and not always successful (Smyth 1994). In some cases, the local authority lacks the resources, budget or the expertise to promote development on the land they own. Sometimes they may embark on a journey of either selling their land locking in their expectations for development or partnering with developers in order to achieve what they believe is the best outcome. The entrepreneurial approach of local authorities is to be cautious of governance and accountability in partnerships of this nature (Smyth 1994).

It is recommended that all LSUPs have at least three essential elements:

1. definition of market position;
2. a planning framework (including all necessary policies); and
3. management processes in place.

Obviously to get to meet these requirements, each LSUP would have gone through a wide range of studies and tests, inevitably raising challenges regarding architecture, urban design and land-use planning, property management and housing finance, corporate planning, traffic planning, community development, leisure and cultural expertise and economic development. Some missed opportunities that might lead to an unsuccessful regeneration could be a lack of finance, conflicting planning policy and urban design.

Local authorities or development corporations that create a redevelopment framework cannot stand back and let the market take the lead. The examples in this thesis will highlight the importance of a guided process. In other words, whoever is leading the process needs to implement the planning framework and also attract private developers to invest in any regeneration situation. Furthermore, the private sector is most likely to

embark on the journey and invest when a local government which is committed, invests and is engaged in the process. In summary, private sector investors are more likely to be interested in a project if the local government can demonstrate profitability, innovation, a long-term vision and can make evident the advantages of the area evident (Smyth 1994).

2.12 Advocating for pedestrian POD's and TOD's

Newman and Kenworthy (1989, 1999, and 2015) explain the close relationship between transportation, economics, and cultural priorities in creating automobile-dependent cities. The higher the priority to automobile transportation and provision of the correspondent infrastructure, the more suburban developments that demand large areas and the more investments would have to be directed to new infrastructure development. The opposite is also true if priority is given to non-automobile infrastructure, the more compact the uses will be, and it is likelier that interlinked transportation can overcome the car dependency and prioritisation in modern cities (Kenworthy et al. 1999, Figure 2.4).

As Davoudi, Crawford, & Mehmood (2009) explain, TODs must also be pedestrian oriented developments (PODs) in order to ensure that they retain their attraction to businesses and households as car-free environments. In this thesis, all three case studies and the other background studies seem to have prioritised pedestrianisation. The justification is that to make businesses successful and a place where people want to stay rather than pass, it has to be pedestrian friendly. The three case studies that will be examined in Part 2 and 3 of this thesis involve places with large roads with high car access, where the intent was to create a lively activity centre. Whether or not the projects were successful, the pedestrian was and should be the focus of a regeneration process. Pedestrian spaces only look exciting and feel safe if they are well populated (Smyth 1994). They must be through-routes.

The problem with pedestrian proposals for some regeneration projects is that they may fail to generate sufficient traffic. Since traditional footbridges and subways do not overcome this problem, pedestrian crossings can be sunk, with wide footpath areas spanning the road. If there is not enough pedestrian traffic, businesses might struggle to survive, social interaction might not happen, the place-making aspect of redevelopment can be compromised, while the aim of achieving Crime Prevention Through Environmental Design (CPTED) and surveillance may not be met. Crime outcomes and the level of activity in spaces can be the opposite of what redevelopment authorities hope to achieve.

Urban regeneration processes and LSUP in general in Australia could be linked to the global cities effect and thus concentrate information-oriented jobs in the city centre and sub centres. As Kenworthy et al. (1999) point out, the impact of the new information economy on city form may thus help to concentrate cities and reduce car dependence, provided there are appropriate social conditions to support re-urbanisation and more sustainable transportation practices. Brugmann (2009) notes that cost-efficient communities are supported by density, scale and associated infrastructure investments and technology, which together contribute to cost efficiencies, because of a high level of interaction between people with range of interest, competencies and objectives, generating the third economy of cities. Increasing density and scale exponentially increases the opportunities for people to work together efficiently to solve problems and undertake collaborative strategies for urban advantage.

The UK city of Birmingham is a classic example of the transformation of a city with a negative reputation, often seen as boring, built around concrete drains and high-density social housing, into a POD. It succeeded in attracting population and pedestrians back to a new TOD precinct in the city centre. Birmingham lost 200,000 jobs in the 1970s and 1980s because of a decline in the manufacturing sector. Like other examples noted above, deindustrialisation left the city centre abandoned. Moreover, it had been built for cars in the first place, thus discouraging a pedestrian environment. Loftman and Nevin describe it as a 'sterile and unsustainable urban landscape' (1998, p. 137). In 1992, the local government took the initiative to redevelop Brindley Place, a former industrial area, as a mixed-use precinct to attract jobs, activity, and day and night activities. They estimated a ten-year process to transform the city as a destination. Now it is described as best practice in several literature examples (see for example Coupland 1997, Barber 2002, Dixon and Marston 2003, Holyoak 2010, CABE 2011). It is regarded as having coherent public spaces, being multifunctional, and pedestrian-friendly regarding permeability. A design strategy developed in 1987, a development plan created in 1993, and a masterplan were put in place setting the statutory requirements for development. The plan promoted landmark buildings and the creation of a neighbourhood quarter.

The brief has changed. In the beginning in the 1980s, it was meant to be an entertainment precinct, and the mixed-use aspect was not a priority. Then in 2001, because of a Councillor's decision, it shifted to a being mixed-use precinct to try to activate 24/7/365 activities. The pedestrian aspect was also crucial to the success of the project. An

advantage of the project was that it encompassed a feature leisure space fronting the waterways.

A factor beyond the scope of the regeneration plans that has changed the planned character of the area was the partial sales of the site dedicated to building the National Indoor Arena which was built as a gated high-end residential building, against all the plans and the local government's intention. These apartments were of significance because there was no residential development in that region, and perhaps it contributed to people residing in and using the space. Curiously, the high-end apartments have increased in value over time since they were launched.

Politically, the city council has been controlled by either left or right parties. However, as Holyoak (2010) explains, that is not seen as a major issue because of the pluralism and minimal ideological gap between them. After it was developed, the place and operations were constantly managed, cleaned, and privately secured. It contributed to social change relating to the absence of homeless people, beggars and litter.

There was no gentrification because there was no residential population in the first place. There are social equity issues that are yet to be resolved. For example, homelessness is a wider problem in Birmingham. There was no specific initiative to tackle the existing social problems of homelessness. The Spring Housing Association is an example of a local association that aims to tackle such problems. (Holyoak, 2010)

2.13 Review of LSUP commonalities

From the literature review, the international LSUPs previously mentioned show four common characteristics that contributed to achieving the most effective and coherent regeneration plans of the existing cities' designs:

1. Having a new vision for the future and good intent in enhancing life quality;
2. Having some sort of economic fund (some cities have experienced a higher participation of public funds while some others have experienced public-private partnerships believing that it brings more robustness for the project along the years);
3. Experimenting with new urban shapes; and
4. Having as a strategy varied scales of intervention characterised by a universal conception which sometimes was punctual interventions, and sometimes had a larger program and an integrated action plan.

These examples connect the idea of the LSUP with contemporary urban design, history, socioeconomic and technology changes. They demonstrate how the LSUP was used as a mechanism for urban regeneration of degraded and underutilised areas of cities that have experienced similar problems.

As previously mentioned, the transformations result from several factors related to economic and social issues, inadequate town planning, devastation because of World War II or even the need for renewal of the urban fabric because of new technologies. Each of the cities and the case studies analysed in depth in Part 2 contribute to the exploration of the urban transformation causes, proposals, consequences and results of a regeneration framework.

2.14   Urban assemblage theory

Assemblage thinking could be used to further explore LSUPs. This theory is a non-empirical complex model, based on tracing practices of all stakeholders and elements (heritage, architecture) to find a structure, relations, coherence (McGuirk et al. 2016).

As done in Newcastle NSW, they observed all stakeholders' practices including planning and developers, decision-making, investment, elements that enabled temporary 'placemaking' undertakings which enabled the removal of a heavy rail line and allowed for high rise development.

> Critically, this allows us to observe how urban regeneration is written into 'big stories'—of globalisation, urbanisation, capitalist development and neo-liberalisation—by tracing chains of meaning and practice that are pieced together in situated encounters, whereby 'wider processes' become practically effective by being mobilised to appear as universals that frame the practice of power (McGuirk et al. 2016, p.135).

2.15 Summary of key considerations when undertaking regeneration projects

The presence of large-scale urban projects has a fundamental influence on contemporary urban design, its configuration and the results achieved after implementation. Cities can be transformed. Important considerations that should be taken into account when implementing regeneration projects include the following:

- Historical crises such as war and conflict or natural disasters often give rise to the need for of urban development strategies;

- Local authorities must consider cities' vocation in a 'changing context';

- Economic and financial strategies must be developed, targeting consolidation and global success;

- LSUPs generally comprise planning controls with little association or control of building design;

- The development of LSUPs, flagship projects and structured plans is intended to improve the economic sustainability of the renewed area, however urban shapes are strongly influenced by private sector real estate investment activities which are generally designed to achieve maximum profit as a priority;

- LSUPs are essential tools for urban design, capable of regenerating parts of the city, transforming its shape and suggesting a new urban, social and economic dynamics;

- Clustering is important when planning for a walkable city; and

- Urban assemblage is a useful a method of analysis.

The next section will establish the framework for the analysis of the case studies.

2.16 The modern theory of urban morphology

LSUP are challenges for contemporary cities. They aim to create quality spaces, integrated with the urban culture and providing equitable access to public spaces. Those spaces are given priority. This thesis analysed literature on regeneration processes based and concrete examples. All LSUPs explored here indicate possibilities for thinking and applicability to the primary object of study at the Canning City Centre.

Different scales of intervention need to be considered. In some cases, the only initiative was an architectonic element. In others, it was a comprehensive plan, developed from several strategies to transform streetscapes, infrastructure, public and private buildings and land use. The selection of LSUPs took into consideration not only the regeneration concepts and proposals described by authors and/or organisations (private or public) but also its applicability to the urban canvas. It is fundamental to understand the legacy of contemporary urban thinking inherited from European theorists and practices in the modern world. In this context, the ISUF, International Seminar of Urban Form, created in 1994 for worldwide researchers and practitioners has been helping if increase and spread

the research about urban morphology and the built environment in different parts of the world (see www.urbanform.org). ISUF members are chosen from a variety of disciplines, related to architecture and urbanism.

The ISUF raises three morphological principles that are essential to the urban analysis:

> 1. Urban form is defined by three fundamental physical elements: buildings and their related open spaces, plots or lots, and streets.
> 2. Urban form can be understood at different levels of resolution. Commonly, four levels are recognized, corresponding to the building/lot, the street/block, the city, and the region.
> 3. Urban form can only be understood historically since the elements of which it is comprised undergo continuous transformation and replacement (Moudon 1997, p.7).

According to Anne Vernez Moudon, architect and landscape architect professor at the University of Washington (UW) in Seattle, USA, urban morphology is constituted by three essential components: shape, resolution and time. Those topics are present in all studies related to geography and architecture with different focuses: medieval, baroque or contemporary cities (Moudon 1997). In that sense, the group of buildings, open spaces, lots and streets which compose the urban fabric were built over the years guided by a set of parameters.

From the second half of the 20th Century, theorists began seeking answers to questions posed by Modernism at the *Congrès Internationaux D'architecture Moderne* (CIAM) and the Charter of New Urbanism, 1996. A different perspective utilising new methods and tools was available to analyse cities and their elements, such as architecture, landscape, image, society and liveability. Architects and town planners have since innovated, considering changes to the urban fabric and construction methods, shaping new analysis methods and defining new thinking streams.

The R Group, Team X and the Mars Group emerged at that time. Their work contradicted the old styles with innovative thinking and adapted European architectural tendencies architecture and aesthetic principles for modernity recovery in the years after World War II. As Rodgers explains, "The desire for modernization and openness to new ideas favoured the birth of Grupo R in 1950s, an intellectual discussion group on architectural issues, which included among its members the young Bohigas, Coderch, Moragas and Sostres" (Rodgers 1999, p.19). In 1969, Manuel Solà-Morales became the Urban Planning chair at the Barcelona School, focussing on studying, the place and created the LUB- Urbanism Laboratory of Barcelona (LUB; see

https://lub.upc.edu/web/Laboratori_LUB/l_presentacio_ang.html), which focused on finding a more reasonable and reality-based justification for urban growth. The LUB instigated a new urban science by addressing a whole series of ideas, such as introducing significance into expressions such as territorial and urban morphology, analysing the complexity of the cities and suburbia development, exploring cities' grids and patterns (such as Plan Cerdà for Barcelona). LUB has questioned the guidelines of masterplans and structure plans as static models, which conflict with the cities' dynamics (Moneo 2013).

The methodology proposed by Solà-Morales (1997) emphasised the understanding of the territory as a possibility for its transformation based on three essential elements: **subdivision (P), urbanisation (U),** and **building (E)**. For him, the sum of the three elements meant the unification of real fragments of places that are formed by (partial) projects as opposed to a single element. Solà-Morales affirms that there are different ways to organise streets, blocks and buildings and that different combinations can result in a variety of ideas, projects and, ultimately, built form.

Figure 5 below illustrates Solà-Morales' perspectives on a city block, its blocks and streets configurations and how buildings relate to them.
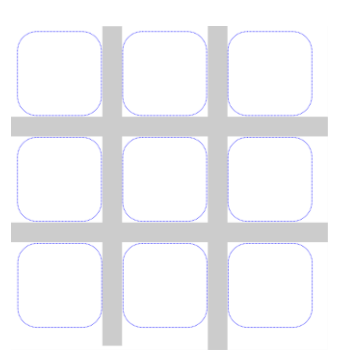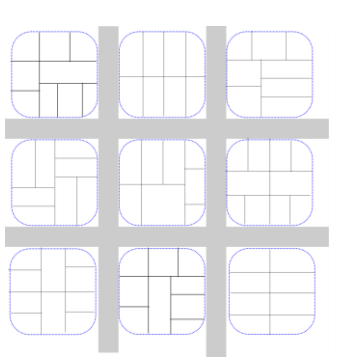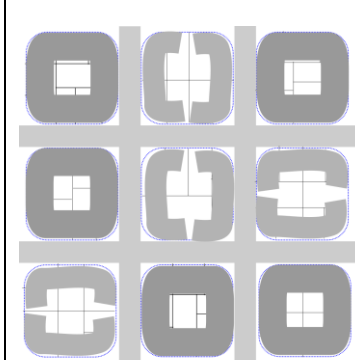
	Elements By Sola-Morales		
	Subdivision 'P' (the street blocks and streets as fixed elements)	urbanisation (street structures and lots) 'U'	Buildings 'E' over 'P' and 'U'
City Type: **urban city block**			

Figure 5: Structural typologies of a city block P+U+E

Source: Figure by author based on Sola-Morales 1997

With a new perspective, Solà-Morales has published "De Cosas Urbanas" ("A Matter of Things") in 2008. In that work, he relates urban form to the concrete, richness and urban

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spaces and proposes new possibilities to understand cities by establishing the continuity of differences and values of size, scales, nodes and attributes applied to 'urban acupuncture'. He makes analogies with acupuncture by saying that architects and planners intervene in the city 'skin' (Solà-Morales, 2008, p.23). He proposes a new understanding based on three 'things' which are the types of style to create a place, them being 'things invented', 'condensed form' (overlaying) and 'heterogeneous accumulation' (conflictual things). His approach is not about comprehensive revitalisation but focused interventions using urban acupuncture. He then recognised that such approach could trigger redevelopment at a larger scale.

Like the Catalans, the French have also contributed to the discussion about method and frameworks to analyse cities in a 'consolidated' manner, implementing architecture iconic examples in urban regeneration. Jean Nouvel, a renowned French architect famous for the Agbar Tower in Barcelona and the Quai Branly Museum in Paris is known for designs that are considered highly eccentric and meaningful in the modern city.

It is vital to understand the contemporary city with fresh eyes. The examples above enriched the analysis of urbanism, discussions about urban morphology and the continually changing urban canvas. Urban projects are capable of articulating scales, facts and schemes interact using as their own mechanisms to cater for future needs and contingencies.

The modern Paris
The European Modern Era started in the late 19th century and gained traction after the industrial revolution. It was a time of changes in all various spheres such as cultural, economic, social, architecture, urbanism, and others.

When the modern Paris was being rebuilt and reshaped into a modern city with an 'urban scenario', the French architect Christian de Portzamparc was influential in this regard. His 1960s research was published as *Ville Age III*: *The third age of the city* (Portzamparc 1995). In it, he proposed a new way of classifying three types of cities: the traditional, the contemporary and the one we live in nowadays. The 'third city' combines elements of the first and second eras, interrelating to each other and testing those cities that have been through transformation processes during the Modern Era. In *Villa Age III*, the architect describes the first city as contained, compact, enclosed, defensive and protected against immensity, information and the unknown. The second city was formed during territorial defeats. The 'third age' city was formed by neighbourhood archipelagos, diverse in shapes

and conditions that result from overlaying urban modifications in underutilised and degraded areas upon the first canvas. The logic was to go beyond the enclosed space (Portzamparc 1995). For Portzamparc, the modern city totally integrates the past and present. Portzamparc was not in favour of destroying parts of the original city for sanitation purposes or because of the presence of the automobile. Instead, he suggested that analysis of contemporary cities must respect the heritage and, at the same time, enable new ways of occupying the space and forming the metropolis and allowing gathering people and goods.

Despite not having defined a specific method to analyse the contemporary city, Portzamparc enabled the continuous understanding of an evolving and transforming urban canvas. Finally, he treated architecture and buildings as 'urban bodies', which have to recapture the human scale, connect the identity of the place and be support the city's diversity.

Outdoor activities

Urban planning also has had a significant influence on outdoor activities. According to Jan Gehl (2006), the quality of outdoor areas impacts the activities that take place and their frequency. If the public realm is of higher quality, there are higher changes in optional and social activities to occur rather than only necessary activities. The optional activities include playing, sitting, lingering and stopping. In addition to the types of activities that can occur, fundamental decisions or planning requirements such as colour palettes and/or material selection can influence the creation of places and enable occupation and use of the public realm. For example, those cities planned around cars are heavily focused on parking, require commuters to cover long distances, have an excessively large and impersonal public realm, so that residents are more likely to stay at home than spend time outdoors. By contrast, when buildings are close to each other and paths prioritise foot traffic, they generally form inviting spaces which people tend to use more. Gehl makes several references to cities that have streets dedicated to pedestrians only, such as Copenhagen, Bjerggade – Denmark (Gehl 2006), noting that people will use spaces that are worth using. Gehl believes that if people have more free time, they might use it more.

Gehl uses as an example the Tinggarden, a housing project by the Danish cooperative, built in 1978. He considers this project an example of consideration of both physical and social structures to create communal areas for different purposes. The group of buildings was oriented towards intimate squares and/or the streets. The spaces host various day-to-

day unplanned activities, such as walking, lingering and playing (Gehl 2006). Tinggarden uses a similar concept as Brasilia, capital of Brazil, designed by Lucio Costa's 1957 plan. Costa imagined that residents would live in large blocks (*Super Quadras*). Each large block would have eleven six-storey buildings, with plenty of open space, trees and playgrounds. Some in-between blocks would have commercial use. When discussing proximity of buildings and people, Jan Gehl used London Court in Perth as a positive example of intimacy achieved of small places that are "perceived as warm and personal", as opposed to cold spaces, such as 'La Defense' in Paris, which he considers cold and impersonal (Gehl 2006).

For Gehl the outdoor areas are influenced by the interface between cars and pedestrians as well. In this regard, he shows the contrast of four city types:

1. Ones that prioritise cars over pedestrians (Los Angeles);

2. Ones that give equal importance to cars and pedestrians (Radburn, New Jersey);

3. Ones the prioritise pedestrians over cars, showing a high degree of pedestrian-only permeability within street blocks (Delft); and

4. At the opposite end, cities that focus on pedestrian and pedestrian-related activity, with a simple traffic system with the highest levels of safety as possible (Venice) (Gehl 2006).

Not only is the public realm is imperative for him, but also the interface of the private properties. The public realm makes a vast difference in the ways that people interact with the streets. Gehl demonstrates the strong contrast between houses enclosed from the public realm, with barely any windows facing the street and no interaction between inside and outside activities, and others that interact and blend with the street. A Copenhagen example is the Sibeliusparken built in 1984-86, a building close to the public realm, many windows, access, balconies that increase surveillance and building articulation along the footpath (Gehl 2006). For Gehl, not only the interface of buildings and public places can create pedestrian-friendly streets, but also the length and quality of the walk makes a strong contribution. Discussions and research into acceptable walking distances show that a comfortable distance for a healthy individual to walk is between 400m and 500m (level walk). It is crucial to plan for pathways that are comfortable for pedestrians if the intent is that they use the street and stay there for a while. In that context, several factors can be disturbing and not pleasant for pedestrians. Examples of unpleasantness can be heavy

car traffic, barriers along the street and difficult crossings. Pedestrians generally feel more comfortable in slower environments with fewer cars, particularly when they have various possibilities to cross the street rather than being restricted to zebra crossings every 100 metres (Gehl 2006).

In addition, Gehl affirms that pedestrian paths should be designed to be interesting routes, with some winding and interruptions that are remarkable because people tend to avoid lengthy and straight routes. For Gehl (2006), distances often seem shorter to people who have access to a walking network with street spaces and small squares. Creating streets not only involves promoting pedestrian traffic, but also involves encouraging pedestrians to stand, sit and talk to each other. A successful space must be comfortable for all activity types. To make people stand and stay, Gehl suggests that shortstops must have a staying function, to wait for something, to enjoy something (Gehl 2006). Favourite staying zones might be a transition between spaces, where people can enjoy a view from both spaces at the same time. He suggests that walls between entrances, access stairs and others are people's favourite places for standing. (Gehl 2006). Siting and lingering can occur along the facade of residential buildings, such as the doorsteps, colonnades, awnings and such spaces provide an opportunity for observing and remaining unobserved (Gehl 2006).

In creating streets and walking spaces, Gehl notes that people tend to sit in favourable locations, and that sitting locations should therefore be chosen more carefully than places for people to stand (Gehl 2006). Choosing a seat typically involves consideration of its orientation and the view to enjoy the advantages of the specific location, and the type of seating. For some people such as the elderly, formal and comfortable seating is preferred to informal seating such as a floor, stairs, or the edge of a fountain for reasons of comfort and safety (Gehl 2006).

In creating places for lingering, spaces need to have a set of specific qualities such as weatherproof seating, views to get people to talk to each other and thus stay in that place for longer. Because people generally need a reason to talk to strangers, that can safely occur if they are sharing something such as a view, an activity or a seat. Gehl highlights the doorstep of Tartu College, a modern high-rise student accommodation in Toronto, as a trendy place to stay day and night in summer time as an example of people's choice of places that promote lingering (see: http://www.tartucollege.ca/). It has always been a place where residents gather. Its design promoted lingering between them and interaction with pedestrians to some degree (personal experience).

Analysing the contemporary city by looking at the urban morphology

From an urban design perspective, the urban morphology can be defined as the study of the urban form and other aspects putting into evidence the urbanscape and its structures. As Conzen explains,

> Urban morphology is the systematic study of the physical form of towns and cities, at all scales of observation. Its purpose is to conceptualize, describe, and explain the character of urban form elements and their interrelationships in a full cultural context. Cities are the most complex type of human settlement, and the elucidation of their built environment provides a powerful lens through which to examine the workings of the society at large (Conzen 1980, p.119).

Urban morphology has been the object of much research by multidisciplinary researchers with different aims, results and analysis criteria. It has merit in the urban regeneration context. When analysing urban morphology and regeneration, one can look at three main factors: technical aspects of visual perception, cartographic reading and historical interpretations. As discussed by Kevin Lynch, cities are always changing in detail. Based on his theory, such transformations occur in two different spheres: the built spaces (buildings) and the unbuilt spaces (public squares, public open spaces and roads). In this context, the pedestrian's perception and sense of place are related to the human scale and the conjunction of those two types of spaces. Space's sensitivity is fundamental in defining the relationship of the pedestrians with the surrounding spaces. Overall, the space we refer to is the day-to-day space, which creates all the experiences and memories for all people (Lynch 1960). The city's image is perceived in the first instance by the visitors' eyes: those of real public users, workers and residents. Then, the city keeps us watchful for transformations in the 'urbanscape', emerging architecture and urban design (Lynch 1960).

Moreover, people's perceptions are not fixed. They vary, depending on how people move around (if they walk, ride a bike, drive a car, take the bus, the train, the boat, the plane) and how they recognise the 'static' place. Paradoxically, the 'static place' is not so static either. It can experience changes because of the destruction of wars, natural disasters such as earthquakes and economic or social saturation of the space. This last change could be related to urban renewal attempts when the government tries to seek different urban, social and economic dynamics to renovate the perception of the city by transforming its spaces and human perceptions. Both '**morphology**' and '**typology**' have to be analysed in this context. Those two terms have different meanings, especially

regarding the methodology. In 'morphology', after selecting an area of the city, the elements that shape the space are then analysed. These can include land, blocks, facades and others. Those elements articulate and tie themselves to the mass that defines each of them.

Notwithstanding the last definition, for 'typology' analysis, a specific element is selected, for example, a construction method, open space or any space component. Then the variations and hierarchies are investigated about the urban context, historical period and the society that had created them. Another component that differentiates 'morphology' from 'typology' is related to the urban scale in focus. The first one emphasises the urban scale results by analysing the urban fabric and its components. As for the second term, it focuses on the building/element scale and the elements that make interfaces with the city, such as external walls, open spaces (public and private) and landscaped areas.

Some studies explore a third concept, the typomorphology, which proposes that the 'types' study should be done in conjunction with the urban canvas. When the analysis of building types is done in the context of the surrounding area, it enables linkages and combination between typology and morphology. In exploring theories about morphology, typology and typomorphology, it is crucial to understand the relationship between architecture and urban form. It is fundamental to comprehend the urban structure and subsidise the methodology of architecture, urban planning and design spheres. Some classic works have inspired this work and contributed to a repertoire that enables us to examine the case studies presented in Part 2. These are:

- Camillo Sitte (1843 –1903), a renowned Austrian painter, architect, and town planning expert, who influenced the development of urban planning and building regulation in Europe;

- Kevin Andrew Lynch (1918-1984), an American urban planner and writer of important books (see bibliography); and

- Thomas Gordon Cullen (1914-1994), an English urban designer/ architect, whose book *Townscape* originated the term 'townscape' which refers to 'city landscape' or 'cityscape'.

The conception and design of spaces takes into consideration a set of factors that enable quality spaces for those who use them because they create the perception or image of the city that defines the relationships between the user and the surroundings. As previously

mentioned, for some time cities have experienced historic, social and economic processes, which result in significant changes in the territory and in perceptions of the spaces. What matters in this study is the creation of a new image through LSUPs in contemporary cities.

As discussed above, theories such as Sitte's *City Planning According to Artistic Principles* (Sitte 1965) clarified and identified rules in cities' shapes and morphology, specifically regarding old cities, which were significant to the discussion proposed by the author. Sitte suggests that cities are a set of social, economic and urban overlays that interact with each other because of consequent 'interventions' over the years. Sitte also pointed out deficiencies in the modern planning system, such as the disregard for the topography in buildings' design, lack of traffic analysis, and failures in zoning amongst others. His theory is a criticism of the unproductiveness of the new cities in contrast with the living creativity and magnificence of old cities and their unregulated shape. Sitte was concerned about professional discussions about the spatial arrangement proposed via urban planning at his time, taking into consideration new building technologies through daily observation. Sitte is one of the authors who, after 1940, influenced other authors, including Kevin Lynch.

Kevin Lynch (1960) spent five years analysing the way people perceive indiscriminate information when they are walking through urban environments. He analysed three different cities - Los Angeles, Boston and Jersey City - and realised that people understand the city and surrounds in a stable and predictable manner, while creating mental maps made with routes, limits, neighbourhoods and nodes. For Lynch, perception is part of a complex process which uses memory as an essential component based on legibility and orientation as the basis of the cities' images and individual experiences. Based on his hypothesis, people can define the identity, structure and the meaning of each element of a place because of the need for recognising and standardising the environment. For Lynch, a city is a changeable, polyvalent organisation, a multipurpose space, built in a relatively short timeframe, where images constantly overlap and inform the observer at each point, limit and node. There are, however, fundamental functions that cities can manifest, which Lynch refers to as "form qualities". He describes categories of direct interest in design, which are uniqueness, form domination, clarity of combination, form minimalism, continuity, directional variation, visual space, movement perception, designations and meanings (Lynch 1960). These attributes are tools or mechanisms capable of developing a more accurate understanding of urban spaces. They enable the analysis of interdependent or interrelated elements, responding to the requirements

pointed out by Lynch. In summary, cities are not methodologically static models and should be adaptable to the users' habits and perceptions thus open to changes and allow for the creation of new images.

Thomas Gordon Cullen had strong influence on how spaces are perceived and cities are shaped. He was a leading English architect and urban designer, a crucial player in the 'Townscape Movement'. His classic book is *Townscape* (1961) (and the later edition *The Concise Townscape*). Cullen's urbanscape concept became one of the most well-known urban space assessment approaches because of its simplicity and objectivity. It showed ways to understand and analyse spaces in an intuitive manner. According to Cullen, "*'Townscape'* is the art of giving visual coherence and organisation to the jumble of buildings, streets and space that make up the urban environment" (Cullen 1971, abstract). *Townscape* is a remarkable book neither because of its content nor because of its influence, but more specifically because of its methodology and its style. Unlike so many urbanism texts it is a book written with attention to emotional aspects rather than the usual technical approach. Cullen proposes that cities should be analysed in three spheres: the discovery (the location and the particularities of each place, or the optics), the place, and the content (Cullen 1971).

The thesis brings together the theories of these renowned authors to analyse the case studies. Thus, the framework for analysis will involve three steps: understanding the city, looking at the formal urban aspects (lines, squares and intersections) and analysing the interpretation and perceptions of the spatial orientation at a human scale.

Buildings and visual perception of their surrounds

Urban design academic Roger Trancik (1986) acknowledges that the space between buildings is an urban problem created by Modernism, in the nexus between urban planning and architecture. The thinking behind this notion is that planning considered infrastructure aesthetics, composition and organisation of areas, while buildings were designed to address the functions of their interiors. Trancik emphasises Boston as a case study with the problem of skyscrapers disconnected from the public realm and the large empty areas of pedestrian unfriendly land (Trancik 1986). Cullen recognizes the principles that distinguish a single building from a set of buildings not as a quantitative factor but as a qualitative factor, which produces new morphologies and social relations. The set of elements and scales which create new spaces, also interact to produce streets, squares, and vacant spaces. Formal and social aspects can be perceived differently, as can

situations of space appropriation and awareness. In this sense, the visual consciousness and subsequent refining can be accomplished objectively through an understanding of the sensitive effects created by the association of physical environmental aspects - a process similar to contemporary planning assumptions.

Trancik (1986) developed the concept of 'serial vision'. it defines the urban landscape as a sequence of connected spaces. Each set of urban elements depends on interpretation of its dimensions and its social context since visual perception involves the observer's memory and emotions (Cullen 1971).

Finally, this research enables reflection about cities' images, cityscape, and the artistic principles of urban design, which are based on the visual perception principle and the 'discovery of the place'. This perception assumes pathway and discovery, the relation between observing, memory, a spatial reference that allows us to feel the location and the possibility of space ownership.

2.17   A combination of elements: urban morphology as a method for analysis

Building a framework of studies, analysis and concepts related to urban morphology is not an easy task. There is a variety of theory on regeneration of cities. Studies by Lynch, Sitte and Cullen include typological analysis of 'specific perspectives', building the city according to its artistic principles, and the image of the city and streetscapes studied by each researcher in different ways. Conzen's use of the term 'urban morphology' reflects the relationship between urban form and context, as well as the study of the urban space and its elements. More recently, the former preoccupation with analysing the urban design has changed. Current urban regeneration plans, structured plans, local development plans, development applications and others involve qualitative programs (such as densities, flows, volumes), the use of the spaces (land use), the natural elements (waterways, geography and landscape), the processes (historical, cultural, and social), as well as the relation with the surroundings, which in a way comes before the urban design (Conzen 1980).

Theories formulated by Solà-Morales and Bohigas (Rogers 1999) have inspired the framework of this thesis in the way it analyses the cities and their transformation. Relying on their work, the third step of the framework proposes to combine 'things invented' (proposals), 'overlaying' (overlapping of current and intervention urban fabrics) and 'conflictuous things' (P+U+E).

Urban design elements that are shaped by the composition, decomposition, buildings and morphology are of interest to this thesis. Following the same logic, the analysis method proposed by Portzamparc demonstrates the idea of consistency and urban life associated with the urban design and morphology for its residents. The fact that Portzamparc divided the ages of the city into three periods has contributed to an understanding of the current era. In that sense, this thesis is specifically interested in the third age, the city in which we live, know and attempt to improve. As a method of analysis, Portzamparc proposes a new form to occupy the street block (*bloc* in French), land-use diversity and public open space. His transformative vision of urban forms and structures, which he calls the "open block", has influenced places such as the Seine Rive Gauche-Quartier Masséna, built since 1995. This is an entire neighbourhood of Paris which demonstrates his urban planning and design techniques.

Taking into consideration the particular characteristics of each of the places to be explored in this thesis, there is a need to use a method of analysis of the contemporary city to test the study's hypothesis. It is beyond the scope of this study to compare methodological techniques. Overall, it is reasonable to say that each of the vital sources discussed above lived in a different time and place and developed ideas to understand their unique context. We understand that there is no need for creating a new method to analyse urban morphology because so many landmark studies have been published on the subject. However, the 'revisiting' or the 'contextualisation' of the subject is fundamental for us to understand our cities by focusing on the concepts explained above and adapting them to our history, culture, politics, economy and social aspects.

The methodology used for the case study analysis relies on elements from the work of all theorists described here: Solà-Molares and the types of urban structures; Cullen and the elements that create cities' morphologies (the discovery, the place and its components); Portzamparc and the current city; Lynch and the capacity that cities have to change; Gehl and his theory of how people use public spaces; and ultimately urban assemblage (McGuirk et al, 2016).

Figure 6 below illustrates the heading used in the case study section (Part 2 of this thesis).
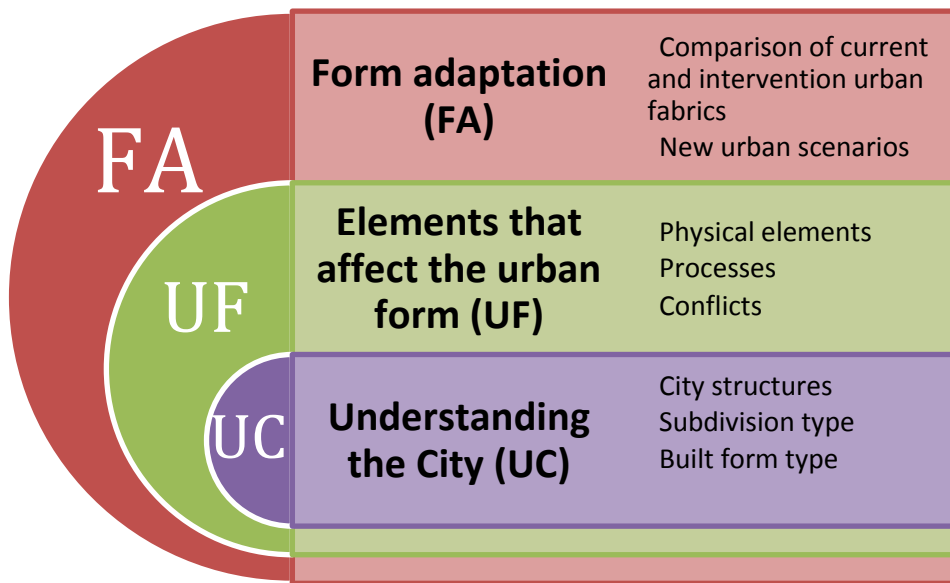
Figure 6: The urban morphology investigation of urban form diagram

Graph by author

Figure 6 illustrates the framework used for the case studies analysis, as follows:

1. Understanding the city: the structural forms of occupation and urban growth, integrated at various scales (neighbourhood, local, regional), which enable the first approach to the area, its relationships and integration with the urban canvas:

    ● City structures: such as streets, infrastructure network, waterways, hubs, access;

    ● Subdivision types (morphology): the urban design aspect, planned or not, its form and geometric shapes, spontaneous or by a pattern; and

    ● Built-form type (typology): type, density, occupied or unoccupied, alignment with adjacent buildings and ownership (public or private).

2. Elements that affect the urban form: the analysis of the places' variables and elements that are capable of changing spaces directly or indirectly, by performing new urban, economic and social interventions or because of degradation:

    ● Physical elements: topography, geography, urban infrastructure, land use, subdivision type, built form type;

- Processes: historical meanings, culture, previous transformation or replacement of urban form, normative and legal aspects, economic characteristics; and

- Conflicts: overlaying of functions, axes of circulation and transport.

3. Form adaptation: Overlapping of current urban intervention fabrics, which result in conflict between the existing and the proposed urban canvas, creating the new urban morphology and streetscapes. The overlaying method can be used to compare and contrast areas, such as the city centre, suburbia, residential areas at different densities, and new projects.

The method presented above has enabled the clear understanding of case studies. The aim is, in the first instance, to understand the city or the area of intervention through the separation of the elements that shape the contemporary urban form, using the proposed method and issues. The deconstructive method of analysis will help to unfold and compare each case study including the positive elements and ones that had a direct or indirect influence in the regeneration. It will also enable the identification of negative elements of the process, the ones that degrade or contribute to degradation directly or indirectly. Those negative elements could be physical, economic or social.

The case studies examined in Chapter Three demonstrate the physical results of urban interventions and the quality of the spaces, architecture, demographics of residents and users after the completion of construction. It will observe all spaces, public, private and controlled-use, following the framework for analysis proposed in Figure 6. The proposed analysis framework will identify enablers and conflicts in each area, building the case for each 'regeneration plan' or the intervention that took place in each instance, including the actions, projects, urban strategies which articulate formally and functionally within the area of transformation and/or the whole city.

2.18 Conclusion

This literature review examined cities' growth and urban regeneration at a global level. A definition of an underperforming urban centre, including the concept of terrain vague, was provided. Why and how such places have been "created" and how different approaches addressed local problems was also explored. The planning mechanisms used to resolve infill by integrating land use and transport were also examined, including the three main approaches: architecture, urbanism and cities' vocation.

A framework to examine the case studies is provided, which contains three main elements:

1. Former urban form (city structures, subdivision and built form type);
2. Elements that affect the urban form (physical elements, processes and functions); and
3. Analysis of the regeneration by contrasting the current urban morphology with the new urban morphology.

Chapter Three examines Australian case studies, including two typical underperforming suburban centres that have developed in the context of car use and suburbanisation.

Chapter Three: Kogarah Town Centre and Central Dandenong Case Studies

The analysis of case studies in Kogarah Town Centre (NSW) and Central Dandenong (Victoria) examines changes in each city's urban shape (design and form), as well as economic and social consequences such as gentrification. The analysis does not involve comparisons or contrasts. Data collation informs the primary case study, Canning City Centre. Several lessons result from an analysis of the case studies processes and management models. The management model is one element considered because it brings the pieces together and supports an LSUP development. It ultimately leads to reflections about the selected model's influence upon the urban form and to some conclusions about LSUP frameworks.

The projects documented are large in essence and program, and aimed to achieve a 'critical mass' to permit behavioural transformation with pedestrianisation of spaces and the evolution of urban regulations, market and transport systems. Twentieth century land-use practices and zoning codes were implemented along with infrastructure improvements to transform a space. In the two case studies, a piecemeal approach would not be adequate to address the problem and would not contribute to an overall sustainable improvement (Dunham-Jones and Williamson 2009).

For this study, it is necessary to establish a minimum benchmark definition of TOD that defines factors such as land use, density and the creation of walkable cities. The elements analysed for each of the case studies include the following items (data availability permitting):

- Number of residents
- Area
- Total figures/ targets (residents, jobs, cars, retail floorspace)
- Residential density before and after regeneration project implementation
- Creation of jobs
- Land-uses mix: share of selected non-residential land uses after regeneration project implementation: not having 100% of land uses as either residential or commercial
- Average block size: if urban structures were changed to create walkable blocks
- Type of project: regeneration/ urban intensification, urban recycling
- Architectural icons or symbols

- Demographic characteristics
- Housing mix
- Stakeholders
- Highest building height indication
- urban morphology.

These items were summarised into a SWOT analysis, looking at strengths, weaknesses, opportunities and threats.

Due to data availability limitations, it was not possible to collate data regarding:
- Percentage of commuters on sustainable modes before and after regeneration project implementation; and
- The average number of vehicles per dwelling before and after the implementation of the project.

3.1 Case Study 1: Kogarah Town Centre and Kogarah Town Square – New South Wales (NSW)

3.1.1 Understanding the city

Kogarah is a suburb located 14 kilometres south of the Sydney Central Business District (Sydney CBD). It is considered the centre of the St George area, an unofficial name for the suburbs of southern Sydney. It includes all the suburbs in the local government areas of Kogarah City Council, City of Rockdale and City of Hurstville. The suburb had 51,000 residents before redevelopment of the Town Square in the 1990's.
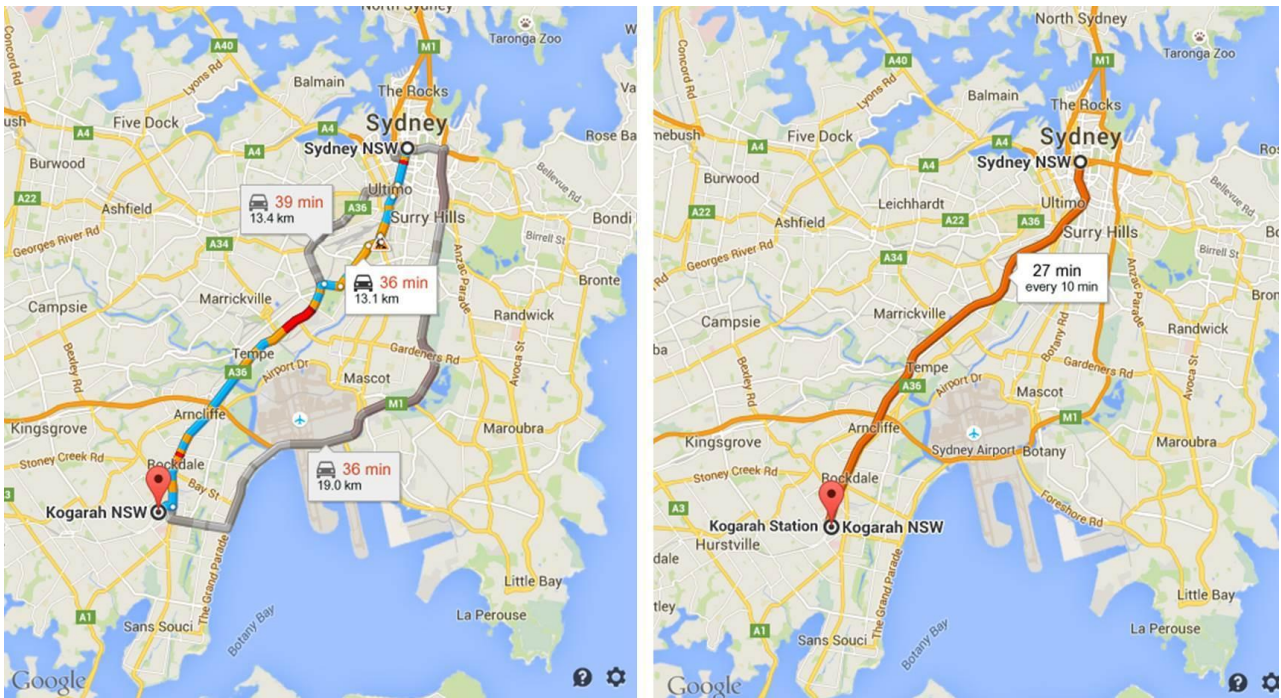
Figure 7: Sydney to Kogarah by car (left) and by public transport (right).

Source: Google 2015.

Figure 7 above shows the distance from Sydney CBD by transport mode - less than 40 minutes by car and less than 30 minutes by public transport. In May 2016, the NSW Government declared the amalgamation of the former areas of Kogarah and Hurstville Councils. The new local government is now called Georges River Council.

3.1.2 Elements that affect urban form

Physical elements: topography, land use, subdivision type

The Kogarah town centre and its surroundings have some vital urban features and physical elements: a TAFE, the St George Bank, schools, a train station with an old shopping centre above the train station. The last element was the crucial development attractor and icon for the entire area. The water channels, bushland reserves and 'village' town centre are well known by the users of the area. Aerial photographs show not much change regarding the amount of open space over the years despite the urban regeneration. A bushland reserve mainly comprising Tanner Reserve and Scarborough Park is sizeable, covering a large geographic area. These are well equipped and maintained, with playing fields for cricket, baseball, tennis courts, lakes, walking tracks, playground, seating area and an open recreation area. The central area of Kogarah does not have much open space. Before the former Council started the regeneration, Kogarah was an ordinary small urban centre, similar to others throughout the Sydney metropolitan

area. The small centre was more of a village type. It encompassed a main street with some shops running along the railway line and serviced by an at-grade car park behind the main street.

The climate in Kogarah is relatively mild year-round. It averages between 19°C and 26°C in summer and 7°C and 16°C in winter. There are plenty of clear, mild sunny days throughout the year as well as rainfall. The wettest day of 2017 was 8 February with a 51.4 millimetre (compared record of 396.1 millimetres in November 2009) totalling 816 millimetres for the year in November 2017 (http://weather.mla.com.au/).

Concerning morphology, the subdivision pattern is formed with long narrow blocks with lots that are oriented North-East or South-West, which is positive regarding solar access to the main façade for the day. Single residential blocks average 500m^2 while apartment blocks occupy 1,000m^2 blocks.

Processes: facts, culture, economic characteristics

Kogarah's role as a centre has gradually evolved since its establishment as a rail station in the 1880s. It has a range of community buildings such as the hospital, police station, Court House, churches and public school. However, the general feeling of residents, users and Council was that it did not experience the change for a high-rise type of development that other suburbs experienced in the 1980s and 1990s, although there was a large number of daily workers and visitor arrivals. It was an employment centre with few people living in it (Mouritz 2015).

The reasons for the lack of development were the land ownership in the area near the train station. Land was owned by State and local governments, St George TAFE, St George Bank, Wesley Church, St George public and private hospitals, and many schools and parks (Hagen Park and Montgomery Street). Its civic buildings included the Council administration building, Courthouse, library, police and fire stations, schools and churches. As a consequence of land use and workers/visitor numbers, Kogarah Town Centre was much less busy out of working hours, although it did provide for local shopping needs. One of the main attractors was and continues to be the Greek Orthodox Church, which has one of the largest parishioner bases in the whole of Sydney.

3.1.3 Form adaptation: the regeneration process

In 1995, a newly elected Council was acutely aware of the community's rejection of the proposed 15- to 18-level building in the town centre and decided to start an integrated regeneration project. The Council staff underwent significant change by a new CEO, who gradually hired new staff. In 1997, the new Director of Integrated Planning appointed had triggered several actions, and the regeneration of the Kogarah Town Centre became a priority. A set of planning processes and community engagement strategies was adopted. In particular, an Enquiry by Design workshop was used to engage the community and come up with ideas for a vacant site. This site became known as the Kogarah Town Square. It involved almost one hectare of Council-owned land (purchased over a period for purposes of creating at-grade car parking (Mouritz, personal communication, 2015).

The first workshop with the community occurred in 1998. Following that, the Council started to develop a Development Control Plan (DCP) along with a Public Domain Strategy, which was fundamentally what started the integrated framework/LSUP. The City organised workshops with a range of stakeholders (planners, residents, local businesses and architects) as an attempt to bring life to the city by increasing the density and create a hub with shops, cafes, restaurants and a community space to attract residents, as well as workers and visitors.

The Council predicted that by 2010, the renewed 'urban village' would provide for learning, leisure, living, working, and services opportunities, including special medical and healthcare. At the same time, the intent was to preserve and enhance its unique identity and character. As part of the vision, the plans had to maintain and enhance the 'village' atmosphere, be people-friendly at a pedestrian scale, display a unique character through buildings and streetscapes, and encourage opportunity for social interaction and community celebrations. At the same time, Council recognised that the place had a strategic location because of the following: proximity to rapid transit, a regional attractor and importance for employment, medical services, education, banking, social and civic services. It is an example of Transit-Oriented Development (TOD) and Pedestrian-Oriented Development (POD). The Council believed in its potential to be a thriving mixed-use development in Sydney. The plans for the Square encompassed a mixed-use development area, which includes residential dwellings, offices, retail, and new community space and square. The area was a former City council car park with a mixture of businesses adjacent to it. The redevelopment project has a mechanism that is considered

innovative in the way that its DCP established parameters for the inclusion of best-practice urban and environmental design features.

Community Engagement

As a strategic initiative, Kogarah Council purchased several dwellings to expand its car park near the train station and promoted the redevelopment of the land to incorporate a car park and community facilities (library and square) (Kogarah Council 2002) (see the next section, 'Architectural icon', for further details).

The redevelopment plans and initiatives for the Kogarah Town Centre and Square started after the community consultation in 1998. The community participated in workshops from early stages to agree on the direction and rules for the urban transformation. Residents were supportive of creating a vibrant and sustainable village. Consultants from Ecologically Sustainable Design, a Melbourne-based New Urbanist consultancy, led a design charrette for the precinct focused on the Square. The community members approved the scale and design of the building, which became a building envelope in the DCP, although they were initially opposed to the 15- to 18-storey building proposed for the same site. Community members were satisfied with the new plan, which had heights ranging between four and eight storeys. Perhaps the community perceptions changed because it was a more inclusive process than before. The community group was an informal decision-making body, which could have made a difference in this case.

Three essential pillars formed the planning framework to guide future developments. These were:

● A masterplan for an area of approximately 37 hectares;
● The DCP to guide building design; and
● The Public Domain Strategy to guide enhancement of the public realm, including streetscapes, public open space and traffic enhancements.

The intent of the urban regeneration was not only to bring tall buildings but also to enhance the social and physical environment. The design was faced holistically to address the best possible outcome in all aspects. The staff who led the process intended to create a model for sustainability and incentives to regenerate the area. The project also established a sustainability benchmark with requirements and principles for medium-to-high-density residential developments. Mike Mouritz was the Director of Integrated

Planning, overseeing a team of strategic planners, parks and traffic professionals and consultants to implement the Kogarah DCP, mainly focussed on the Town Square Redevelopment. He wanted to ensure that sustainability was a strategic component of the project. As part of his role, he ensured that the plan was on track, negotiated grants and followed up the development application process.

DCP: the planning framework

The DCP, a vital document of the Kogarah LSUP, was formulated in a very detailed and prescriptive manner by outlining the specificities of each precinct created in the context of the regeneration plan. The document clearly described what type of building can be built in each area to achieve the overall vision for the plan. Amongst the prescriptions for each precinct were clear design outcomes regarding land use, frontage and alignment to each street type, built form (building envelope, details of façade expectations, setback and landmark treatment), heritage buildings and the relation to adjacent development, interface with pedestrian (awnings, footpath treatment and tree planting). A Business Plan and an Economic Plan also formed part of the integrated LSUP framework. The first plan identified business opportunities and ways to improve Kogarah's CBD, while the second plan identified the needs of the whole local government area, to make businesses more vibrant and attractive. Those plans aimed to enhance Council relationships with local businesses and they contributed to solving some of the local government issues, including parking, signage, identity and business mix in specific areas.

Design advice for development applications

To ensure that future developments achieve the vision, a 'Development Advisory Service' was formed to provide advice before the developers lodged for approvals. The Council invited the primary stakeholders in the area, including St. George Hospital and Bank, TAFE, the community and businesses to form the Advisory Service. The group role involved the review and comments on preliminary development application plans. The Council provided a pamphlet describing the development application process to facilitate the procedure and the understanding of each aspect of the development, such as street alignment, corner treatment, heights, façade treatment, car parking, visual privacy safety and security, advertising/signage, energy efficiency, stormwater management, resource conservation and recycling, and lastly the design of essential elements (balcony, awning and roof).

An architectural icon

Council was awarded funds from the State Government's Urban Improvement Program to develop a cultural plan for Kogarah. It aimed to connect its community with public activities and art. The Council initially envisaged a project similar to the Bilbao contemporary art space, mentioned in Chapter Two above. However, they considered the idea and funds too ambitious for Kogarah. The plan then shifted its focus and aimed to use existing buildings, resources and spaces to hold events, conferences and exhibitions and gather people in a public square. In 1999, the Council prepared an 'Expression of Interest' to sell an old public car park, land adjacent to the St George Hospital in return for library space, a town square and an underground car park. In that site, the council aimed to build an architectural icon to attract people and be a catalyst development. Specific design features for that specific site were outlined in the DCP (Kogarah Council 2015).

The proponents were required to submit preliminary designs that addressed the Council's objectives. These include community facilities, an iconic built form and a commercial return to the Council. It was the opportunity to build something great that could become an anchor of the development of the whole area. If it succeeded, it could attract more investment and development.

Furthermore, despite public funding and resources available at the City Council, what was missing was a structure or plan to set the context within which Council and developers could operate and adequate funding could be pursued. The evaluation of the proposals for the old car park took into consideration the design aspects, environmental / sustainability features as well as the financial aspect. A steering committee was responsible for analysing all proposals, and the preferred tenderer was announced approximately one month after the formal submission. Concurrently, the Council received both the Solar Kogarah grant and the Urban Stormwater Initiative grant. These grants provided approximately $1 million to incorporate building integrated solar panels and approximately $650,000 to contribute to implementing Water Sensitive Urban Design (WSUD) features into the development.

It took three months to refine the designs, marketing and financial elements of the proposal. However, after months discussing the design with the preferred proponent, the developer formally withdrew because of constant changes to the design and the expected financial return for the final project. In early 2000, the Council reviewed the tender, started

negotiating with the second bidder and finally awarded Hightrade as the preferred developer. Finally, Hightrade was encouraged to partner with the architects of the first preferred tenderer, Allen Jack + Cottier, who were already familiar with the Council's expectations (Kogarah Council no date). The process went through difficulties since the design, the approval of the development application, the start of construction works, and debates with local shop owners and with the designers.

Expected growth and main features

The redevelopment of the car park site became the main project led by the Council. It encompassed a very particular mixed-use project. It aimed to provide for 194 residences, 4,500 square metres of shops, restaurants and a wide variety of retail and commercial spaces. Its main feature was a community space of 3,251 square metres comprising a library, a public square and an underground car park. Sustainability was imperative for the catalyst development. As both the Council and the developer led the implementation of the sustainability-related components as a partnership, the journey united them towards the vision. The Council retained ownership of the site until the construction reached the ground level. All of the excavations and costs were at the developer's expenses; however, they did not have to pay for the land until that time.

Kogarah was innovative in a way that its DCP established requirements for inclusion of best practice urban and environmental design features. The best practice environmental features included reuse of stormwater, natural crossflow ventilation, natural light, water-efficient appliances and fittings (such as shower-heads and toilet), and passive solar design principles. Kogarah currently saves 42% of the water, 60% of energy and 385 tons of greenhouse gas emissions, apart from substantial transport oil savings (Davoudi 2009). Kogarah Town Square Development officially opened in September 2003. The identification of the Kogarah Town Square site enabled the Council to demonstrate the desired outcome regarding standards, environmental strategy, urban outcome and commercially viable development.

Allen Jack + Cottier (architects) designed the building and Hightrade Pty Ltd built it. It covered an area of 10,000 square metres (for the town square central development only). The development was an excellent opportunity to establish more open space as the Council had previously identified a lack of it in the area.

As a delivery model, the Council consulted with the community, developers, landowners and different government levels and as a consequence, the project received funding from the different programs outlined below:

- $29KM from Environmental Australia to fund urban stormwater management initiatives;
- $1M from Australian Greenhouse Office to fund the installation of Building-integrated photovoltaics;
- $220KM from Sustainable Development Authority to fund the installation of building-integrated photovoltaics and energy efficient appliances and fittings; and
- $44KM from Planning NSW to fund place management and other urban improvements.

The Council embraced the sustainability aspects of the development because of the grants and tax reductions (Mouritz, personal communication, 2015).

The uniqueness of the building: stormwater and photovoltaic concept

Since the proposals for the architectural icon in 1997, the Council wished to harvest stormwater and re-use water as much as possible. It was not exactly a challenge particular to that area, but nationally applicable. These reasons include Australia being the driest habituated continent, with 80% of its land experiencing less than 600 millimetres of rain per year and increased demand for water. The Council felt the need to save water, use alternative sources for low-quality uses, use efficient fixtures and change behaviour. Water quality was a concern from the initial stages. Council was conscious that the increase in imperviousness would contribute to increased runoff, potential floods and pollution of waterways. Therefore, the design of the building had a site-based solution for retaining stormwater, providing minimal treatment and reuse for low-quality uses, such as toilet flushing, irrigation of landscape areas and car washing.

The systems saved up approximately 2,130kL per year of drinking water that would otherwise be used for irrigation. The system included gross pollutant traps to retain garbage and large pollutants of stormwater (dirty water). The water then goes from a high-level control tank to a low-level storage tank. These tanks are the size of an Olympic swimming pool. The water harvested is pumped to landscaped areas within courtyards. The landscape acts as a screen that removes particles and nutrients. The water is then captured, stored and distributed to smaller tanks. There is also a system designed for

clean water that collects rainwater from roofs and terraces. The system refers to clean water because the end use does not require high-quality water. The filtered water is then pumped to toilet flush, car washing and water feature. This is estimated to save 5,789kL of potable town water. (Kogarah Council no date)

The water harvest and re-use system was implemented having in mind financial savings and social/behavioural changing strategies. Moreover, all apartments within the building have fixtures and fixings that are resource savings AAA rated, such as dual-flush toilets, showerheads, flow control devices and appliances.

In summary, the achievements of the main project, the architectural icon were:

- **Water:** 42% reduction in drinking water use, 85% of rainwater and stormwater retained and reused on site for non-potable water uses, such as lavatory slushing, landscape irrigation and car washing, treatment of rainwater collected from streets. (Kogarah Council n.d.).

- **Energy**: Largest installation of Building Integrated Photovoltaics on a mixed-use building at that time, at a national level, 161kWp rated output for photovoltaics system, 153 MWh annual power generation, 143 tonnes of CO_2 saved, energy-efficient fittings and appliances; (Kogarah Council n.d.).

- **Design**: 91% of living spaces face north, 85% of apartments with natural cross-ventilation, new civic space and active street edges (Kogarah Council n.d.).

Regarding energy savings, the square was designed and built with integrated photovoltaic panels into the 'skins' of the building. Amongst the benefits of including the building integrated photovoltaic panels, the building experienced power generation efficiency in demand and also decreased transmission losses and related inefficiencies of the system. The square and the building became known as 'Solar Kogarah'. The redevelopment icon proposed to have the largest photovoltaics installation on a medium-density development in the country at that time. Besides, it was promoted a practical demonstration to the public and the development industry as a practical model of this technology in urban regeneration projects. Additionally, it proposed to support the BIPV technology and maintain the roof/building integrity and to provide an opportunity to be a live experience and allow the possibility for keeping a record and retain the lessons learnt and to develop training material/programs about it.

The building was unique, and had 1,459 photovoltaic cells installed. The cells rate 161kWp (131kWp amorphous cells and 30kWp polycrystalline) were manufactured respectively by Unisolar and BP Solar. Those cells, being photovoltaic, were integrated into the building by replacing building materials or integrating them with the fabric. Kogarah Town Square has made a reasonable effort compared to European cities and their 'green TODs'. Peter Newman and colleagues have referenced Kogarah as rail served, sustainable, and flourishing mixed-use development consisting of residential dwellings, office and retail space, and community space that includes a library and town square. The authors refer to the term 'POD / TOD / GOD' to describe the Kogarah Town Square redevelopment. – P, T and G standing for pedestrians, transit and green urbanism respectively (Newman et al. 2009). This project maximised the use of photovoltaic panels, which were strategically positioned to maximise thermal absorption. This, coupled with Kogarah's close proximity to the train station, contributed to a drastic decrease in carbon emissions compared to similar localities in Sydney. Kogarah's privileged location, near the train station, the variety of uses incorporated, together with heritage buildings, seemed to have attracted a variety of people, including new families, professionals, young couples and 'empty nesters' alike. The diverse range of people seemed to make Kogarah contribute to a culturally rich and demographically diverse community (Newman et al. 2009).

3.1.4 New urban scenarios

Attracting shops was part of the placemaking role. The intent was to try to help Hightrade achieve the appropriate mix. There was no commercial strategy as part of the wider DCP. Only when the construction of the architectural icon was underway, and the units were in being commercialised, did the Council begin to consider the ideal business mix and strategically work towards achieving it. Kogarah seemed to be very proactive in that sense, which was not something that all local governments endeavour to be. As per the contract, Hightrade could sell the commercial units only after the Council had established a retail mix. As Kogarah did not have an identity before the redevelopment, it was challenging to attract new businesses. However, Kogarah did not suffer from stigmatisation that might have spoiled any attempt to create a centre for all people.

As part of the guidance provided to retail establishments, the Council provided internal and external requirements. Supportive material with examples of high-quality shop designs was available for developers. Additionally, the Council required a predevelopment

application meeting with proponents to ensure high-quality shops. The Council was proactive and worked with real estate and leasing agencies to attract desirable businesses.

To reflect the diversity of Kogarah's population, the Council also expected a diverse use mix including medical-related establishments due to the proximity to the hospital. However, to thrive, the Council wanted to attracts specific uses which did not exist in that location previously, such as a bookshop, high-quality shops (home wear and others), as well as food outlets and cafes.

Kogarah also developed a plan to prioritise expenses in the public realm, the *Public Domain Plan*. It involved elements, such as street furniture, lighting, streetscape, paving, trees, widening of footpaths and traffic-flow management. There was also an effort to bring public art to the redevelopment area. The first demonstration of art was a mural implemented on the corner of the Post Office Lane and Montgomery Street. The construction works were finished by 2003. The Council held a celebration event to officially launch and open the building, hoping for success and for people to start populating the place, beyond working hours. It took some after the opening of the Town Square (2003) until the Council decided to develop the plans for the fit out of the library in 2004 and finally open it in late 2005. Locating the car park in the town square near the train station was an intentional action aiming to support the accessibility and activation of the place.

Concerns mounted about the Council's expenditure on the sustainability inclusions in the main project. For that reason, the payment for the land covered the costs of these elements. However, the financial benefit and the return for those inclusions were considered hard to measure. Amongst the successes of the overall project are the development of clear requirements for the built form in the DCP, various sub-strategies to guide actions from economic development to street furniture; clear documents about aim and sustainability helped selection of the developer; receiving various grants for implementation and achieving goals. Having a Place Manager who acted as a facilitator to "keep the ball rolling" was also beneficial to the project. The Council is making efforts towards considering the area as a whole, including related business and cultural strategies, streetscapes, buildings and addressing community needs. As the Council's publicity says, "A building does not make a centre" (Kogarah Council 2005). The idea is that research bodies will examine the sustainability outcomes and share knowledge with

the community. Council sees the importance of monitoring community perceptions of the iconic building, as well as monitoring their needs in general.

Council staff and residents noticed the change when a sushi shop opened in the main street, which meant a significant change. The arrival of the sushi shop marked a turning point in the type of lunch and take away food available, as small business owners began to see improvement. Soon after, the refurbishment of the local hotels and shops became noticeable to all (Mouritz 2015). Regarding investment and return, the Council received less money for the land compared to the value of the land, but in exchange, it achieved a public car park, a library, and a public square. It was recognised as a great project as a result of its prestige rather than the financial return it provided. The fact that the project received several national and international awards motivated the leaders and councillors and, for that reason, they supported the project. The Councillors revelled in the glory and reputation of the project for over a decade.

Impact on adjacent land

Construction of a few developments started with the Development Control Plan in place, attracted by the Council's efforts in the Town Centre building. Over a relatively short period, the whole of the Kogarah Town Centre had attracted private interest and more development. The combination of the creation of a DCP and the redevelopment of the Kogarah Town Square site stimulated other development. Approximately $500 million in development occurred over the next five to ten years.

Place activation

The Council organised events to bring people to the streets, especially during night time, resulting in a cultural change for both residents and visitors. Regarding marketing, the project has performed an excellent 'flagship function' by attracting some major events. These events lift the profile and have an indirect effect on marketing the area and the city for investors and visitors. The "Secret Life of Kogarah" was an event organised by the place manager, involving residents and workers. It encompassed the closure of a laneway, entertainment, food, drinks, a DJ and bands. The Council's place manager organised other events and engagement activities.

Physical results after implementation

There is little information on the quality of urban spaces/ public domain, quality of building design in and around the project area. The City Council worked hard to get the building

completed. However, after the success of the building itself, the Council put much effort into that specific development and walked away. No institution or association has been created as part of the process to carry on and learn from the incredible lessons learned. In other words, there was no social benefit from the whole process. A change of demographics has also occurred in the area over the years, with gentrification occurring with new developments. That changed the character of the place. It is possible that existing establishments such as the banks, the TAFE, and the hospital have attracted the new residents into the area.

Demographic changes after implementation

Concerning household size, the area absorbed an extra 616 dwellings from 2001 to 2011; the total numbers increased from 1,265 to 1,881 (Australian Bureau of Statistics 2011, Australian Bureau of Statistics 2016). Occupation by couples with children was more significant than the other groups for either period. Along the same lines, high-density dwellings have increased more than other dwelling types, from 428 in 2001 to 1,196 in 2011, while medium density dwellings and separate houses have slightly decreased in number (Australian Bureau of Statistics 2011). The Census has estimated that the population in the entire local government area has grown from 52,619 in 2003 to 91,951 by 2016, which may have had an impact on the local government plans and initiatives (Australian Bureau of Statistics 2011, Australian Bureau of Statistics 2016). For the entire local government area, the number of building approvals steadily grew after the implementation of the regeneration plan - the annual approvals went from 124 and 521 for single houses and other respectively in 2002 to 77 and 573 in 2013/14. Reasonably, right after the plan started to be implemented the numbers peaked at 124 and 721. With the plan in place, only apartments were allowed in the development area, not single houses (Australian Bureau of Statistics 2011, Australian Bureau of Statistics 2016).

Council records show an increase from 400 residents to 1388 residents in 579 households from 1995 to 2005. Workers and students represented a total of 10,000 people in 1998 with only 10% of them living in the Municipality (Kogarah surveys dated 1998 and the Australian Bureau of Statistics Retail Census 1991-1992). The majority of the workers, around 80%, are employed in the existing hospital TAFE and bank. The remaining 20% of the workers are in the retail sector.

Floor spaces in 2005 according to Council surveys have recorded 61,326m^2 for medical uses, 15,000m^2 for retail uses, 59,693m^2 for offices and 57,255m^2 for residential. There is

a projection that when the plan has achieved its projected growth, the new areas will be: 71,326m^2 for medical uses, 18,650m^2 for retail, 70,280m^2 for offices and 189,495m^2 for residential. Concerning population changes, the growth means an additional 4,300 residents and more than 9,000 workers.

3.1.5 Lessons Learnt

The SWOT analysis table below summarises the achievements and disappointments of the project.

Strengths	Weaknesses
Environmental aspects/ sustainability: the iconic building created a clear framework for sustainability and became a national icon. **Development of a public domain strategy and an economic plan** **Change in population**: the development attracted a variety of people. **A good guidance document. The DCP planning controls to guide development in the larger area**. Explicit requirements for the built form in the DCP, various sub-strategies to guide actions from economic development to street furniture, clear documents about aim and sustainability helped with selection of the developer, various grants for implementation and achieving the ends. The planning provisions were high-quality documents that had an influence on other Design Guidelines, for example, SP64/NSW. The library foyer became a place for gathering, event and exhibitions. **The construction of a unique iconic building** based on modern mixed-use, sustainability and TOD principles. Sustainability and innovation were essential aspects. **Activating the commercial part of the iconic building:** Having a Place Manager/	**Social issues:** the local government worked to try to change social perceptions, such as elderly women's fear of dark student boys. There is little evidence that social perceptions have changed with the implementation of the DCP. **Little evidence of the creation of a community** that had the sense of ownership. The Council promoted the construction of an iconic building and did not take the lead on further developments or endeavours. **Urban acupuncture:** The regeneration focused on the iconic building hoping it would attract more development. **Building deterioration:** poor quality of the iconic building construction. Over the years, the external rendering started to fall off. Some internal issues might have occurred as well, which is up to the strata to repair.

Facilitator was positive to establish the correct tenancies. **Community involvement and support** which had been an issue before. The local government managed to change public perspectives and bring the community along the journey. **Improvement in open space**	
Opportunities	**Threats**
Funding: the local government has achieved different funding sources to move forward with the project. **Sustainability data gathering**: the iconic building pioneered the gathering of data on sustainable developments. **Strengthening relationship with businesses**: the economic plan contributed to solving parking, signage and identity issues.	**Heritage issues**: buildings that should not be protected had an impact on development. **Management model:** It was a Council-led project. A change of elected members could have had an impact on the project after each election.

The Kogarah Town Centre has undergone significant changes bringing more vibrancy, life and working community over the last 15 years. The Development Control Plan provided the framework to guide significant development, making the Kogarah Town Centre a mixed-use urban village with employment, living and urban recreational resources (Kogarah Council 2015). The plan is considered fruitful by the local authority, as they have just released plans to extend the current development area. The local government foresees the need to progress with the DCP and unlock the potential of the land immediately adjacent to the Centre. The proximity to the commercial area and transport nodes are crucial factors in enabling higher density and avoiding low/medium density establishing in the area. The community was supportive of allowing for more density and diversity of uses in the next spatial ring rather than in Kogarah suburban areas, where access to public transport is only partial (Kogarah Council 2015).

In this way, an iconic building managed to attract investment. Therefore, the plans from 2015 include a high-density zone to areas to the north of the Kogarah Town Centre,

increasing densities to a High-density Residential Area (R4), which aims to regenerate areas close to public transport, hospitals, commercial establishments and jobs. The maximum building heights are proposed to be 33 metres (approximately 12 storeys), in comparison to the current heights, which range from 9 to 14 metres (approximately 3 to 5 storeys). The proposed floor space ratio would be increased to a maximum of 4:1. These controls aim to encourage the regeneration of the built environment to a higher density residential precinct, allow more people to live in a walking distance to the train station and amenities and aim to deliver the following:

- Improved public realm, footpath and streetscape;
- Increased housing variety, including lift access;
- Proximity to services, jobs, retail public transport and hospitals;
- Focused to be a walkable precinct, considering the mixed-use aspect of it;
- Upgraded in infrastructure, including stormwater and drainage; and
- Opportunities to improve existing community facilities (library and others) and parks.

The town planners who worked on the previous studies and plans have proposed FSR and building heights based on the neighbourhood character intended for the area. The initial intent has changed based on the 2015 proposal for doubling the building potentials.

The methods used to evaluate the Kogarah case study include the following:

- Solà-Molares' types of urban structures concept;

- Cullen's elements that create cities morphologies (the discovery, the place and its components);

- Portzamparc's current city concept; Lynch's concept of capacity that cities have to change; and,

- Gehl's theory of how people use public spaces.)

In conclusion, positives of the Kogarah process include the nationally iconic efforts towards achieving environmental and sustainability goals. This was recognised by a number of awards mentioned above. Other positives include a varied residential population, a clear planning framework to guide and provide for quality buildings, implementation of a real mixed-use TOD precinct, and community participation throughout the process, amongst others. Kogarah could have done more than just a building and creating a community that would take ownership and keep curating the space.

3.2 Case Study 2: Central Dandenong

3.2.1 Understanding the city

The City of Greater Dandenong is located 31 kilometres southeast of the Melbourne CBD with 130 square kilometres of area and had about 146,000 residents in 2014. It is a result of a merger of parts of the former City of Springvale and City of Dandenong in 1994. It is a major activity centre at a state level because of its central location and access to public transport, road and rail infrastructure. Figure 8 below shows Dandenong's location in relation to Melbourne CBD.
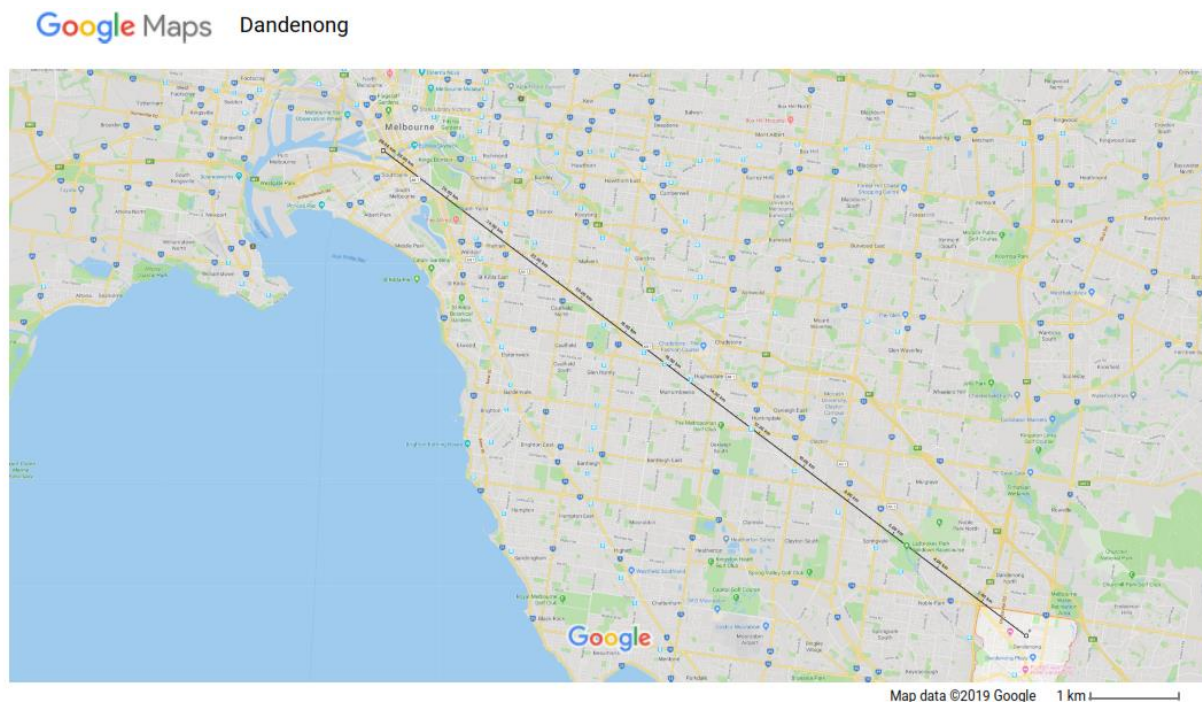

Figure 8: Dandenong location in relation to Melbourne.
Source: Map Data © 2019 Google

Dandenong was considered a successful precinct in the 1970s and 1980s. However, because of external factors, it became a depredated area with a bad reputation, gradually deteriorated since the opening of the Dandenong Plaza shopping centre, which resulted in the closure of many shops in the surrounding area.

Dandenong Market is a traditional site in the City, established in 1866. It is Melbourne's second largest and second oldest market. It has influence and food from 150 different nationalities, offering a variety of fresh produce, spices, nuts, rice, beans, fruits and vegetables. It has a section dedicated to clothing, collectables, second-hand pieces,

shoes, jewellery and accessories called 'The Bazaar'. One of the main attractors is the 'Market Square' (the market's food court).

3.2.2 Elements that affect the urban form

Physical: topography, land use, subdivision type.

The significant features of the regeneration area and adjacencies include (but are not limited to): the Dandenong Market, the Dandenong Plaza shopping centre, a high school, a hospital, banks, State Government offices including the Department of Human Services, Australian Taxation Office and Corrections Victoria, and a visible amount of public open space, especially a few parks and an oval near Dandenong Creek. The principal streets in the area include Lonsdale Street, Stud Road, Princess Highway, the railway, Eastlink (toll road) and Cheltenham Road. The northern portion inherited the commercial character, while the southern part was not the focus of the RCD. It was a separate project with a residential emphasis called *MetroVillage*. The subdivision type followed the same logic as the uses described above. There are bigger and higher buildings on Lonsdale Street between Clow Street and Foster Street. Apart from those blocks with a higher density, the land north of the railway inherited the street and lot design from the past, which was then subdivided and redeveloped as smaller dwellings (villas and townhouses). The land south of the railway seemed to have been through a proper masterplan process due to the design of the streets and the positioning of the houses. There are no battle-axe developments. The first houses that were built in 2009 after all the infrastructure was in place.

The local government has a population of over one million residents, a large concentration of manufacturers, as well as good accessibility through roads, trains and public transport. Those factors contributed to the attractiveness of the area and the vision for the regeneration plan.

Processes: facts, culture, economic characteristics

During the 1970s and 1980s, Central Dandenong was the second Melbourne capital, the central area for people from rural areas of south-east Victoria. It had a high number of retail and manufacturing outlets. In this context, Lonsdale Street once was the second or third most expensive retail floorspace in the metropolitan Melbourne area. The core of the transformation area was always a commercial precinct, never residential. Before any revitalisation, it was an economic hub with vital infrastructure and industries in place. It was far from being suburban or isolated. Central Dandenong had a railway station, as well

as road connections. Historically and similarly to Kogarah, Dandenong had not been through a peak redevelopment and had not experienced change. The local government understood it was going through social and economic decline, increase in employment rates, population growth, as well as having a lower income base compared to Melbourne. In addition, Dandenong also experienced the lack of a residential population, which is significant for the activation of places and spaces.

After the establishment of the "big box" - the Chadstone and Fountain Gate Shopping Centre - all activities were "sucked into the big box" (Arcaro, personal communication, 2015). As a result, all the shops along Lonsdale Street and Thomas Street struggled and closed. At that time, the economic situation was not favourable to businesses. During the 30 years before the regeneration, Dandenong went through an urban deterioration process as all shops were concentrated in the shopping centres, large manufacturers abandoned the area, job numbers decreased and at-grade car parking dominance in the public real undermined amenity to the offices and disadvantaged the remaining workers in the area. The area was attracting refugees, uneducated and under skilled migrants. The central area became unattractive, stigmatised, dangerous and unwelcoming by many (Arcaro, Dominic in Weller and Bolleter 2013).

Dandenong station was considered one of the most dangerous places in the whole of metro Melbourne and a centre for the drug trade. Graph 1 below shows the number of violent, property and drug-related offences in Greater Dandenong compared to the Melbourne metropolitan area. Property related offences represent almost 60% of the total number of registered crimes.
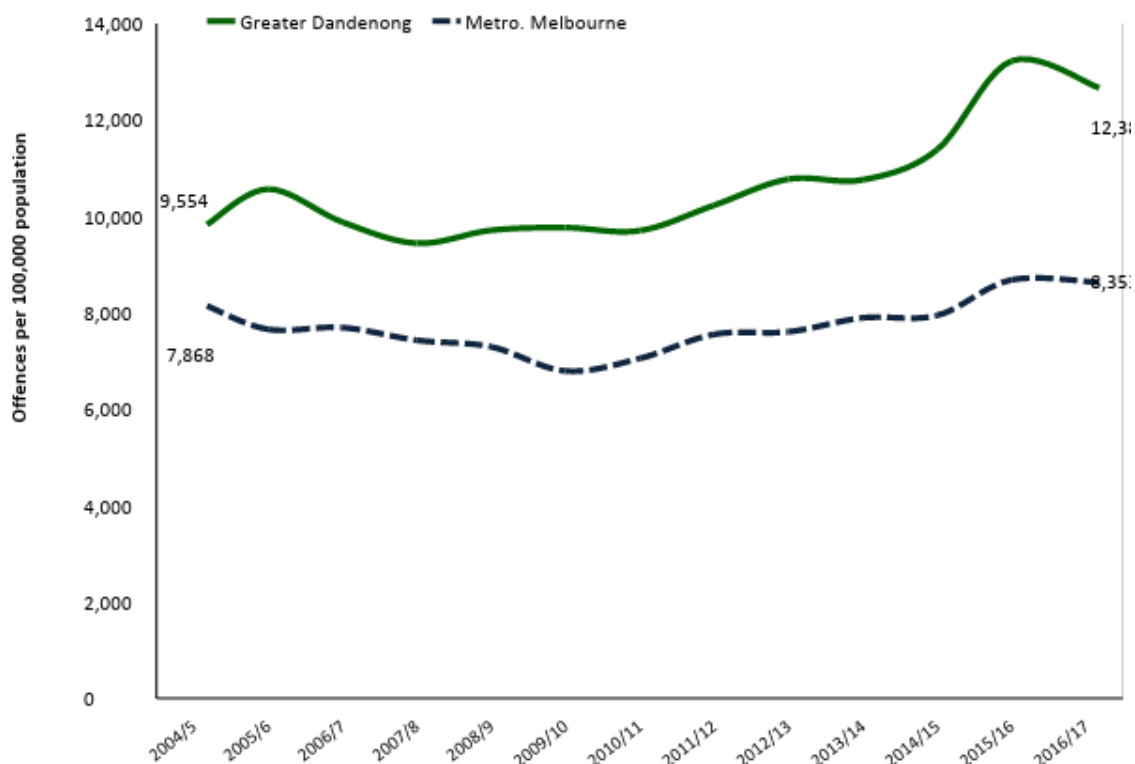
Change: 2004/5 to 2016/17		
	Number	**Percent**
Greater Dandenong	2,834	30
Metro. Melbourne	485	6

Graph 1: Crime statistics in Greater Dandenong compared to Metro Melbourne

Source: Victoria Police 'Crime Statistics Agency, 2017

3.2.3 Form adaptation: the regeneration process

Revitalising Central Dandenong (RCD) is a 20-year integrated framework initiated in 2006 by VicUrban which is being delivered by the City of Greater Dandenong and Places Victoria (former VicUrban). It comprised an LSUP integrating many urban regeneration projects. In 2011/2012, the urban regeneration team in central Dandenong at Places Victoria started a placemaking enterprise that created a program with a vision and actions to lead the urban renewal process and decision-making framework. The vision of the project was to make a better place by improving the urban environment. The RCD's main aim from the start was to restore central Dandenong as the capital of Melbourne's south-east due to its strategic position in relation to the CBD. Dandenong was probably not as appealing as other suburbs in terms of attracting new development and the change that would come with it. The decline was indeed a challenge that may have discouraged

change. The Council acknowledged that to create change, it would have to establish partnerships in a long-term approach.

VicUrban has developed the RDC (an LSUP), an urban renewal framework to transform the area at a precinct scale completely. In this case, the area comprised vacant and obsolete land. The RDC integrated framework includes several sub-projects and strategies, such as community participation, economy, legal framework and project planning. Dominic Arcaro was the general manager at VicUrban from 2005 responsible for the project development, management and budget. He prepared the business case, signed off in 2006 and then the project started. VicUrban proposed to link the state Planning Policy framework and real outcomes to transform the area.

VicUrban's priority was to understand the potential of Dandenong and its vocation. VicUrban considered that the urban design and regeneration aspiration could only be achieved if they did have control over the crucial issues, such as the economy, market realities, implementation and community engagement. It felt right to have numerical targets that could be measured in the future such as the future number of dwellings, office floorspace, retail and the investments for a 20-year period. The process followed by VicUrban involved six main steps:

Step 1
Develop a shared vision to guide the masterplan.

Step 2

Provide planning certainty for developers aiming to get the best proposals.

The committee formed by the local government, VicUrban, and the Department of Planning provided recommendations to the Minister for Planning, who was responsible for the significant planning approvals in the area. The planning framework for Dandenong was not prescriptive. It was performance-based and clear on the factors that were not negotiable.

Step 3

Provide the infrastructure identified in Step 1 as critical to help Dandenong to achieve the vision.

The infrastructure to be improved included amenity and improved connections in various areas, especially the redesign of Lonsdale Street (see Figure 9.) Princess Highway changes names in the central parts of the city. In that specific portion it is called Lonsdale Street. The 20-metre street reserve (50 metres wall-to-wall distance) included footpaths and on-street car park. It has deteriorated historically, as the shop owners migrated to the shopping centres with very ineffective traffic for either cars or pedestrians. Thus, it was not considered as a destination. Part of the shared vision was to bring back the Lonsdale Street "glory times", tying the city back together at that point and making a destination point again. Once the through traffic was directed to the Eastlink toll road, it made it easier to control speed and introduce permeability. The pavement treatment and pattern, as well as the street furniture including benches and lighting, and trees, were part of the distinction between the through traffic and a pedestrian area. Besides, a cycle lane along Lonsdale Street shows that priorities have certainly changed.

In the community engagement process, the community pointed that Lonsdale Street was a physical barrier and divided the place into two parts, with many obstacles for pedestrians, funnelling the cars, with very few pedestrian crossings. It has been designed to unify the area and bring the two sides of the street together. However, some say that it was an overly engineered design that did not act as a unifying element despite the transformation and aesthetics.

Step 4

Create catalyst projects to attract further investment.

A new building with 20,000 square metres of government office space was occupied by the Department of Human Services. VicUrban conducted the process to find the land, find a developer to buy, build and lease out the new office space to the government tenants. In this process, Grocon was selected to build a six green-star office building, the Government Services Office (GSO), which opened in April 2012.

Step 5

Have control of a significant portion of the land area to be able to make land-use changes on a large scale.

For VicUrban, having control of the land meant the possibility of establishing the supportive infrastructure and opportunity to create large lots to for significant buildings. VicUrban bought seven hectares of land (out of the total area of 104 hectares), amalgamated them to create sizeable development sites and sold these sites for development. While larger centrally located blocks have attracted larger developers and bigger buildings, landowners and small builders built smaller developments on the fringe. Land acquisition was done through negotiation without community adversity or reaction.

Step 6

Have the ability to manage market conditions including the 2008 Global Financial Crisis. The committee responsible for the GSO development had to negotiate an acceptable purchase price and rental to enable Grocon finance the building itself.

Investment and other impacts

The private sector became interested in the area and liaised with VicUrban to buy land and develop new infrastructure. The local authority had made a financial commitment to improve the area by spending $209 million to create amenity. That investment included improvement of the general amenity in the area, infrastructure modernisations, upgrades to street façades and public art. Over the longer term, the RDC targeted a pedestrian friendly mixed-use centre. This longstanding plan was expected to continue for 15 to 20 years. Landowners and developers started to show interest in redeveloping after seeing changes to the area.

As part of the Plan, VicUrban has created a Comprehensive Development Zone (CDZ), which comprised the main RDC where land was acquired for redevelopment. The main features of the integrated framework were the revitalisation of Lonsdale Street (see Figure 9 below), the City Walk, and the station precinct and the George Street Bridge.

Figure 9: Lonsdale Street: **Left**: Lighting design as a dynamic urban centrepiece. **Right**: Aerial looking north.

Source: John Gollings

Figure 10 below illustrates the context of the revitalisation area, the main streets and buildings in the context of the RDC.

The *MetroVillage*, south of the railway, was a residential project developed parallel to the regeneration of the central area (from the Shopping Centre to the train station, passing the Council's offices).
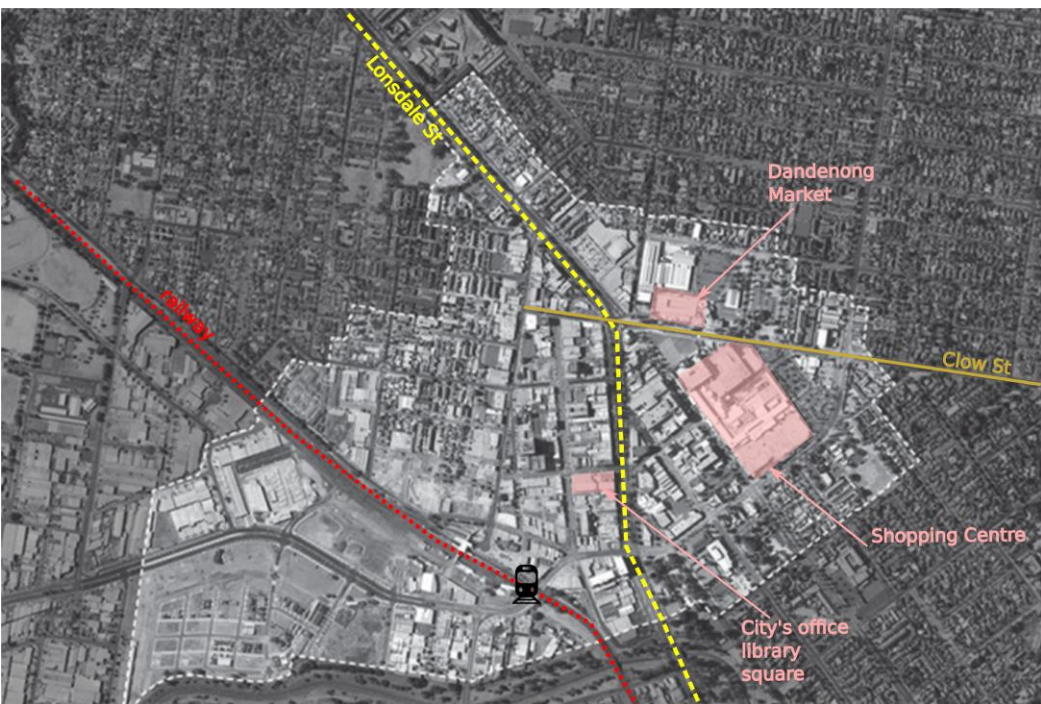

Figure 10: Context plan with main roads and buildings.

Figure by author based on a Google Earth image

As part of the RDC, VicUrban developed the City Walk. Its plan envisioned the connectivity between the train station, the city centre market and plaza. The path would include trees, high-quality energy-efficient buildings, retail on the ground floor. It would promote gathering through public spaces and have parking and cycle lanes. The Council and VicUrban have taken into account the diverse social demographics of the area and celebrated them through the transformation process. Little India and the Afghan Bazaar were the two social/community facets of the RDC/LSUP. In general, the RDC lacked social endeavours, which is quite noticeable, as the streets are still lacking people and activity after working hours. Activity has increased during working hours; especially when Dandenong Market is open for example, the Palm Plaza (a pedestrian strip) is well used by pedestrians. VicUrban led placemaking initiatives to activate the renovated area. The aim was not only to establish a residential population but also to build a community.

In 2011 and 2012, Places Victoria developed a set of values and actions to guide the appropriate behaviour and decision-making within the organisation regarding the RDC. However, because of staff changes, much of the in-house awareness concerning this placemaking initiative may have been lost. Part of the Act is as follows:

a) carry out or manage or co-ordinate the carrying out of urban renewal projects;
b) contribute to the implementation of government urban planning and development policies;
c) undertake declared projects (Victorian Urban Development Authority Act 2011).

Figure 11 below shows the cultural precincts location in relation to Lonsdale Street.

Historically, the Afghan Bazaar Precinct had developed naturally into an Afghan hub with Afghan origin shops near Thomas Street. As part of the regeneration, Hassell's project involved extensive community consultation in understanding users' wants and needs to enhance the culture in that area. The final product comprises narrow roadways, wide footpaths providing for space for community events with colours, textures and patterns on the paving, custom seating and a public art piece with lighting and references of that ethnicity. The renovated precinct, completed in 2014 is a place for gathering that celebrates the Middle Eastern identity.
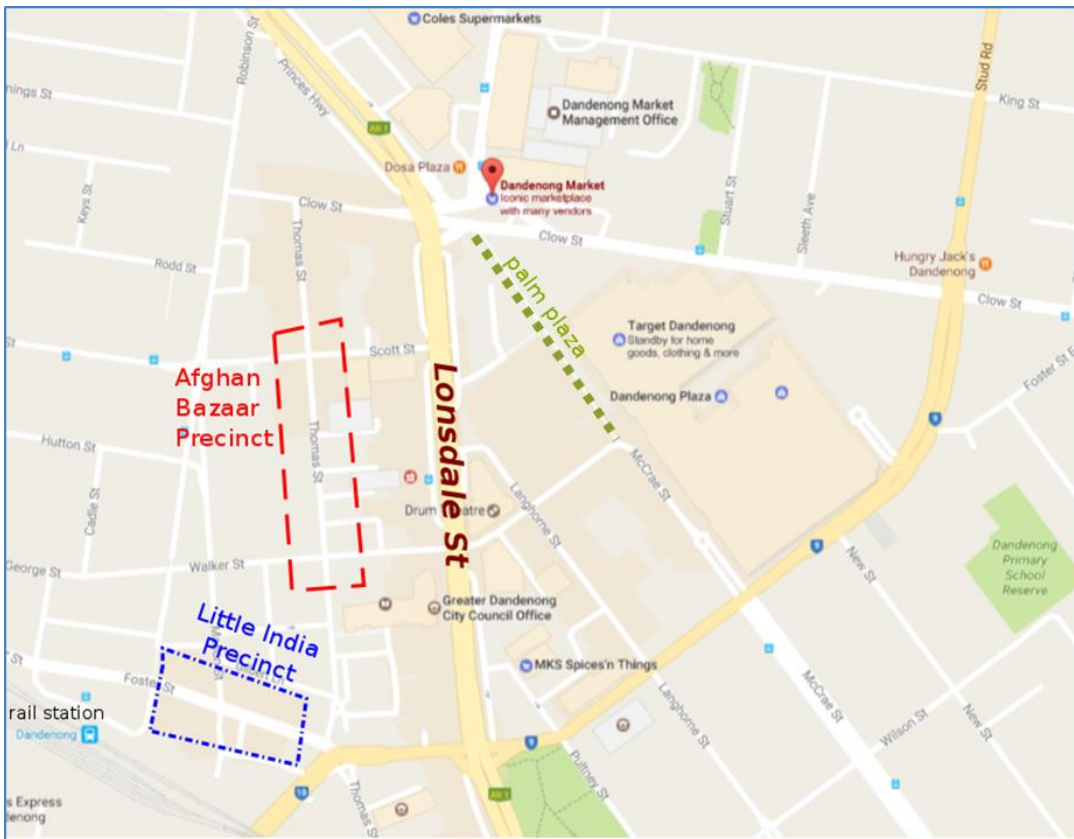
Figure 11: Precincts in relation to rail station and the Market.
Figure by author based on Google Maps.

The presence of the Afghan Bazar and Little India as part of the regeneration process highlights the presence of those two ethnicities in the area. Moreover, the very diverse Dandenong Market reflects the diversity of backgrounds in the area.

An architectural icon

In the case of Central Dandenong, the LSUP had a few icons that aspired to bring attention or differentiation to the area. The main icon is the City Council building integrated with the main square. In July 2011, following a public tender, Lyons Architects, Rush Wright Landscape Architects and Material Thinking, and the Commissioned Artists were appointed to design Dandenong Civic Centre. The $50 million civic centre incorporates the council administration office and chambers, a library, a square that could be used as a meeting space or to host events, performing arts and a gallery space. It is a five-level building with 13,500 square metres of space. Stairs connect the building and the square to Lonsdale Street. The library was positioned on the ground floor to be the welcoming door to residents and visitors. There is also a large screen at the square, similar to the one in Federation Square, which aims to attract people to stay there. The total investment form VicUrban was $290 million to rejuvenate the city centre and create a new, different future for central Dandenong.

Lyons Architects aimed to build a high-quality and continuous public realm that joined the central area of the redevelopment together. Most of the City Council building is covered in red aluminium. The architects chose the intense colour to make a strong statement in the focal site of the redevelopment. The pattern on the Square, selected by the artists, was inspired by the sixty-five different nationalities that live in Dandenong.

Secondary, but not less important, the **PEP** (Precinct Energy Project), near the train station, played a significant role in implementing low carbon energy generation state-wide at a precinct scale. The building was intended to activate the area with its sculptural form and while generating energy inside. The facilities in that building were designed to supply the buildings in that 7-hectare redevelopment area with Combined Heat and Power (CHP or Cogeneration) where electricity and heat, are produced and used simultaneously. It has lower carbon emissions than a typical gas-fired electricity station due to its efficiency. Furthermore, some buildings will use the hot water produced to provide run their air conditioning systems, resulting in even greater efficiencies. However, it has not materialised as expected so far. The plans were that the thermal and gas would generate energy for the whole precinct. Initially, the operator put in the appropriate infrastructure enough to repay those who invested in it and indeed the system has paid for itself. The network was designed to expand its capacity if there was demand for it. (Arcaro 2015).

Peter Hogg and Toby Reed Architects designed the building that represents the PEP. It aimed to create a conversation about energy and the environment. One of its artistic features is a giant power point, a switch and a diagram of the cogeneration system. It also has a panel to educate people about the energy and a dot matrix that displays data about energy production, consumption, and the Greenhouse gas savings of the operating system.

Lonsdale Street is an icon in itself designed to be a grand boulevard and the central part of the redevelopment. It comprises a slow environment, accessible for public transport, a generous footpath that accommodates various activities and prioritises pedestrians, more lighting, trees and shops. Taylor Cullity Lethlean and BKK Architects designed and built the road between 2007 and 2011. It received several awards. Awards included: 2013 AIA National Architecture Awards, Winner Walter Burley Griffin Award for Urban Design; 2013 AIA Victorian Architecture Awards, Winner Melbourne Prize; 2013 AIA Victorian Architecture Awards, Winner Urban Design; 2013 PIA Australia Award for Urban Design,

Commendation; 2012 AILA Awards, Excellence Award for Design in Landscape Architecture (Weller and Bolleter, 2013).

3.2.4 New urban scenarios

A site visit was made in 2014 to contribute to this section of the thesis. It was noticeable that the public realm was built to a high standard, considering the paving, street furniture and street lighting. The streets and the modern building integrated with the square show the investment in the area and the efforts towards making a better place to visit. The buildings constructed following from the RDC are of excellent architectural quality and create an exciting space for pedestrians.

The Dandenong Market is very eclectic and busy, attracting a variety of people to the area. Afghan Bazaar and Little India did not seem to be very busy or active. The City Walk is practical in a way that it leads to the iconic places in the area. The RDC had an impact in attracting new users of the area. New users and residents were attracted to the area with all the new dwellings and office buildings. For example, the office building on Foster Street and Lonsdale Street brought many offices and workers to the area and therefore more shops and cafes opened nearby. The State Government building designed by Grocon opposite the town square is of very high standards. The revitalisation of the central square and Council building was a catalyst for taller offices and residential developments in the region including the *MetroVillage*, a residential hub.

Changes to demographics and new dwellings

The dwelling prices have been steadily rising since 2006. The median price of the houses went from just below $200,000 in 2006 to $300,000 in 2014 and $590,000 in 2017. Comparatively, the median price of units went from $250,000 in 2006 to just above $400,000 in 2014 and $470,000 in 2017. No data were found for the previous years (RP Data Pty Ltd trading as CoreLogic, access in 22/11/2017) (Australian Bureau of Statistics 2011, Australian Bureau of Statistics 2016). The number of building approvals in the area has also increased. In 2009 there were 327 and 627 approvals for houses and units respectively. In 2013, we can see close to 50% increase, compared to 2009 figures, with 489 and 897 approvals for houses and flats respectively (Australian Bureau of Statistics 2015). The number of businesses increased by 5% in the same period, from 14,416 in 2009 to 15,090 in 2013. However, the number of business exits increased at a similar rate, from 2,306 in 2009 to 2,445 in 2013. The businesses that had greater growth in the area

were real estate services, manufacturing, transport/warehousing and construction (Australian Bureau of Statistics 2015). In a way, Arcaro considers that the area is developing as expected. For him, people understand it is a 20+-year project that is still ongoing (Arcaro 2015). The establishment of a residential population specifically to *MetroVillage* changed the demographics of the area and had an influence in the local shops as well. Also, as other office buildings were introduced to the area, new workers have been influencing the dynamics of the area.

Figure 12 below is an aerial image that shows the new civic square, council building and part of Lonsdale Street from above.
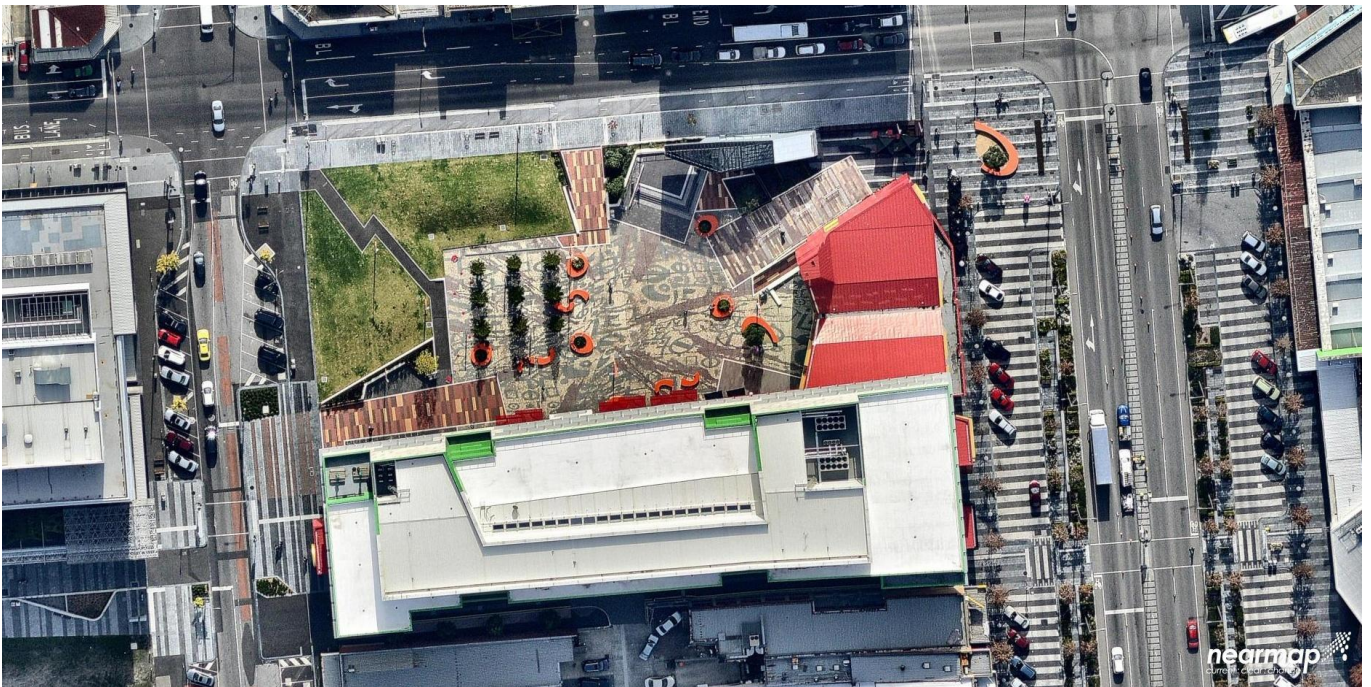

Figure 12: Civic square and Lonsdale Street.
Source: Map Data © 2017 Google

Comparing Dandenong aerial photographs from 2009 and 2015, the most significant change was in the area between the train station and the civic square and Lonsdale Street. It is possible to see new building abutting the City Walk, but the area still is to be dominated by cars because of the quantity of on-street car parking spaces.

Figure 13 below shows the Department of Human Services building which abuts the civic square. It is one of the buildings developed in the context of the RDC in one of the big blocks created by VicUrban.

Figure 13. Department of Human Services/ Corrections Victoria State Government Building abutting the civic square
Source: (Google 2019).

3.2.5 Lessons learnt

The SWOT analysis table below summarises the achievements and disappointments of the project.

Strengths	Weaknesses
Partnership/ Management Model: the effectiveness of the relationship between City of Dandenong and VicUrban (redevelopment agency) **Outcome-based plan:** The plan for central Dandenong and the guidelines are not as prescriptive as the Kogarah DCP, but they set a clear outcome performance and clear elements that cannot be changed. **Public realm:** The public investment in the public realm attracted private investment and new development to the area. Water-sensitive features in the public realm, feature trees, innovative lighting, welcoming civic square by the Municipal Building. The square is a project of Michael Wright, Rush\Wright Associates. It was completed in 2014	**Placemaking:** there were only two placemaking and community creations: Little India and Afghan Bazaar. The do not attract high levels of pedestrian traffic and the space still looks "empty" with minimal activation after working hours. **Fragmented land ownership:** VicUrban bought seven hectares of land (of the total area of 104 hectares), and amalgamated them to create a sizeable development. The ownership of land outside those sites is still fragmented, so

and has all sorts of details in its edges, a large pavement pattern that represent the complexity of indigenous and exotic textiles. It also has a large LED monitor that animates the space, and structure to enable events in the space. Increased pedestrianisation and linking enhanced public squares and the market The City Walk pedestrian path is also a highlight.

Iconic buildings: City's administration offices and square, the PEP building and the Grocon development. Includes the civic square with a bold and distinctive Municipal Building by Lyons Architecture which is an architecture statement, generous stairs and lifts that connect the civic square with Lonsdale Street.

Lonsdale Street was rebuilt to be less of a barrier. The pedestrian/ parking area has special paving, benches and trees to differentiate it from the main thoroughfare (Lonsdale Street was designed as a 20-metre street reserve and 50 metres wall-to-wall distance)

large developments are more difficult to undertake.

The PEP (energy precinct) is not as successful as expected. It has paid for the implementation costs, but it still relies on gas (and the variable costs related to it). Also, to increase its capacity, more developers would need to be interested in it, which does not seem to be the case.

Tertiary educational project: VicUrban failed to get government support for a tertiary education project, despite their belief in the merits of such educational institutions.

Lonsdale Street can be seen as overly engineered and remains a wide barrier to walkability.

Opportunities	Threats
Other sites: vacant sites are still being sold by VicUrban to complete the regeneration plan.	**Common understanding**: People have to be aware that regeneration projects of such scale take time.
Placemaking initiatives: There may still be an opportunity to enhance Little India and Afghan Bazaar and perhaps work towards new initiatives in the area.	**Politics**: The change of political parties in the state government with new people who did not believe in the project made things harder. Getting political support is important.
Lonsdale Street: Perhaps in the future, there will be an opportunity to reaffirm Lonsdale Street as a pedestrian environment and transform the patterned	**Public taxes**: There was a 5%

area into alfresco dining. **PEP (energy precinct):** alternative energy sources could be used, and more developers could be encouraged to make the change to renewables.	infrastructure recovery charge from Day 1. Developers had to pay 5% of construction costs. If it had started as a 0.5% charge and increased over time, this would have pushed developers to develop at an early stage.

Development has have picked up in the core precinct and the adjacent area as well. An indication of private interest in the area is the number of new houses and building in the MetroVillage and office buildings in the central region. The residential 10-storey building (Mosiac apartments) in the MetroVillage near the railway station would not be there if it were not for the RDC. An improvement in the built environment is noticeable, especially regarding the buildings implemented after the RDC. "Business as Usual" would be ageing single-family housing that perhaps would not have changed without a plan. The investment in the built environment, including infrastructure and amenity in the public realm, provided a real push - an "eye-opener" for the private market to start investing in the private realm.

Gentrification did not occur in Dandenong, as the residential population only moved to the central area of the transformation after the regeneration. Terrain Vague in Dandenong now forms the City Walk and Lonsdale Street. Both are fascinating walks for people who live, work and visit Dandenong. In terms of its implementation model, VicUrban led the process by acquiring land and regulating what could occur to achieve its vision.

3.2.6 Conclusion

Two underperforming Australian suburbs that have undergone regeneration processes were examined. Analysis shows some similarities between these two projects, including the fact that both were economically underperforming prior to regeneration and lacked interest from the private market, developers and possibly residents.

Geographically, the case studies consist of suburbs with a train station with good public transport access to the central CBD.

Neither of the areas had a residential population prior to regeneration and therefore have not been through a growth period in comparison to other centres.

The regeneration processes in both suburbs had similarities, such as the development of an integrated plan, comprising many subprojects to achieve an overall vision. They both prioritised the pedestrianisation to contribute to economic success and also tried to create a lively activity centre that would not rely entirely on cars. Both developed one or more iconic buildings to attract population and more development to the area. Regarding leadership, both case studies were developed and implemented differently, one by the

local government and the other by a redevelopment agency. Community participation was an imperative factor for each project.

The differences between the case studies primarily related to the focus of each regeneration project and management models. While Kogarah focused on the development of one iconic building with qualities unique to Australia, Dandenong concentrated on land assembly and the development of more than one icon. The public realm seemed to have been given more attention and more budget in Dandenong than in Kogarah.

Chapter Four will discuss the Canning City Centre regeneration process, and compare it with the two case studies presented above.

Chapter Four: A Living Laboratory – Canning City Centre Regeneration

The redevelopment of the area known as the Canning City Centre, adjacent to the Cannington Train Station and the Carousel Shopping Centre, has been under consideration for many years. The Department of Planning first analysed the empty areas in Canning in 1989 (Department of Planning and Urban Development 1989). That early study identified potential land-use intensification opportunities and constraints within an 800 metre radius (200 hectares) of all stations on the Armadale railway line. The study suggested the colocation of activities, the creation of vibrant areas through intensification of uses and residences, opportunities for walkability, reduction in communication and transport costs. This study takes into consideration the intensification and diversification of uses proposed for the Canning City Centre as part of its regeneration plan. It is 11km from the Perth CBD, and has not been through the development boom or investment phase that other activity centres such as Joondalup, Subiaco, Morley, and Midland have.

The site comprises approximately 12 hectares of vacant land and a huge shopping centre, with a variety of bulky goods operations. It is possible that the amount of vacant land and

car parking area will have an impact on the land value and the developers' perceptions of the area which will influence their actions. Currently, the amount of vacant, underdeveloped and/or land occupied by car park gives an impression of abandonment. The local authority states that the approximate amount of vacant land represents 23% of the entire project area (City of Canning, 2016). Figure 14 below illustrates the local government's Activity Centre Plan's values. These values have guided all the subprojects being undertaken as part of this regeneration project.

Connected — a highly used commercial hub that connects residents, businesses and visitors all the way from the station to the shopping centre and the river

Accessible – easy to get to and move through

Resilient – develop the basic ability to meet the challenges of the future

Vital – A place that attracts business and investment through a strong vision, leadership and partnerships

Re- energised — safe, enjoyable and leisure orientated – day and night.
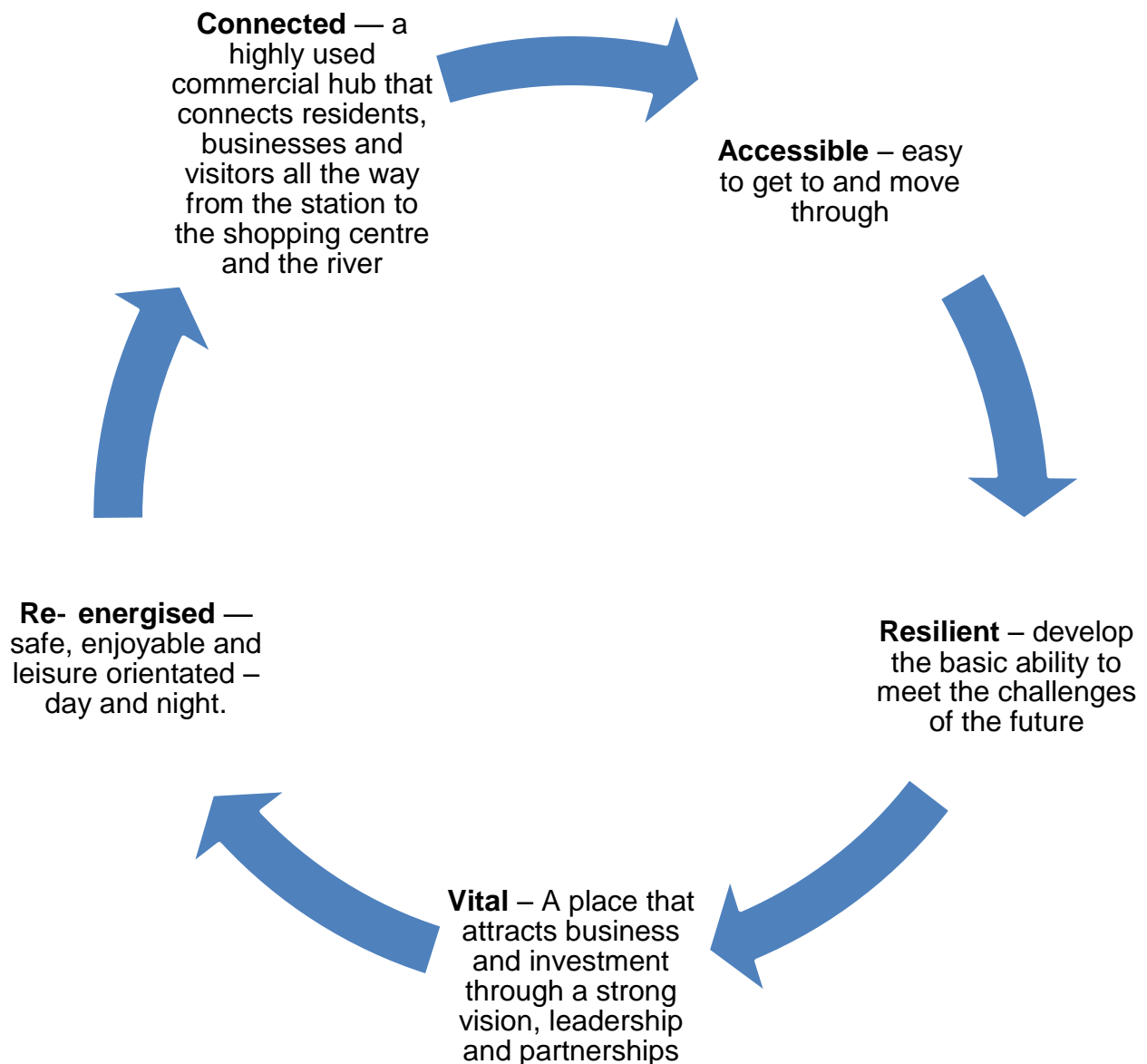
Figure 14 Canning City Centre Activity Centre Plan values

Source: City of Canning, 2016. Figure by author, 2015

Following State Government identification of the Canning City Centre as one of 10 Strategic Metropolitan Centres (Department of Planning 2010), the City of Canning

prepared a legal document in 2012 - the Canning City Centre Structure Plan - to achieve the values set out in Figure 14. The document is intended to:

- develop a regeneration plan as per State Government directions targeting infill development;
- give guidance to the design of future buildings and densities in each precinct;
- set the preferred land use in each sub-precinct;
- set car and bicycle parking ratios;
- improve the movement network to facilitate accessibility and permeability;
- concentrate residential development in strategic areas (lots along the central transport spine, Cecil Avenue, and near the Train Station);
- protect the ecological assets such as the Threatened Ecological Community (TEC) and the River from undesirable impacts;
- promote walkability and a mixed-use area; and
- create a main street connecting the main attractors with apartments and businesses (City of Canning 2012).

If this large-scale urban project can achieve greater diversity, users will be able to meet their multiple needs in the same place and will stay in the centre for extended periods. This would result in greater social and economic interactions.

A financial measure of success in this case would be self-sufficiency regarding jobs for residents. To succeed, this transformation would have to be attractive, offer diverse uses, recreation, social infrastructure, accessibility to all users (pedestrian, bicycle, private cars and bus/train) and be a safe environment both day and night. The 2012 Structure Plan targets the following:

- A total of 10,472 jobs (almost 57 jobs per hectare, as opposed to the current 30 jobs per hectare), with retail becoming less dominant;
- A greater focus on office employment, entertainment uses and community services such as health; and
- A total of 10,000 homes, with an approximate residential density target of 35 residences per hectare for the total area (City of Canning 2012).

The document developed in 2012 had to be rewritten to comply with more recent guidelines. Thus, the revised Structure Plan, called the *City Centre Activity Centre Plan,* has been reshaped and was approved by the State Government in October 2017.

4.1 Understanding the city

The regeneration area is located around the Westfield Carousel Shopping Centre, currently the largest shopping centre in the Perth metropolitan area. It is located approximately 12 kilometres from Perth CBD in the South-East and four train stations from the CBD along the Armadale line. Westfield Carousel has intentions to expand and increase the floor space to approximately 140,000 square metres of retail/commercial space, compared to the existing 90,000 square metres. The shopping centre currently attracts more than 11.5 million visits per year (City of Canning, 2016). In 2016, 5,928 residents were living in 2,655 occupied dwellings in the Cannington suburb, in an area slightly larger than the regeneration boundaries (Australian Bureau of Statistics, 2016). This number is expected to grow to 25,000 people and 10,000 dwellings. The development of and the changes to the Carousel Shopping Centre over time have contributed to its status as a major retail centre for the wider metropolitan area. The problem is that most activities occur indoors, deterring users from interacting with the shopping centre's surroundings. This is the challenge the City of Canning embraced when the Council decided to begin investigations for the regeneration plan.

Table 3 below compares aspects of the case studies that can affect regeneration. The information relates to demographics, urban morphology, culture, social perceptions and architecture prior to the regeneration project.

'Understanding the City' Comparison of Case Studies	Kogarah	Dandenong	Canning
Social factors	● Low socioeconomics ● Social housing (% of social housing if known) ● Low education levels ● Low house prices ● Low income ● Low housing quality and price	● Low socio economics ● Depredated area with a bad reputation	● Low socioeconomics ● Low house prices ● Low income ● Low housing quality and price
Physical Factors	● Public transport and road connections are good but still mostly accessed by car drivers ● Low-density area	● Public transport and road connections are good but still mostly accessed by car drivers ● A famous old market in the area which attracted visitors all year round.	● Open Space ● Public transport and road connections are good but still mostly accessed by car drivers ● A large amount of vacant land ● Underutilised sites (single-storey buildings)
Cultural diversity	No/ low residential population before regeneration	● No/ low residential population before regeneration ● Presence of cultural diversity (shops of different nationalities including Afghan and Indian) ● High cultural diversity background / immigrants	● High cultural diversity background / immigrants
Safety	● Perception of being unsafe by residents of neighbouring areas and visitors. ● No activity/ people movement after business hours.	Perception of being unsafe by Victorians due to crime statistics.	● Statistics and community say that the area is not safe ● Poor maintenance and litter ● Perception of lack of safety.

Table 3: Comparison of physical aspects that can affect the regeneration, 2017

Table 3 above shows many similarities between the three cities. They all had potential to be great TODs because of land availability and good access to the CBD. Similarly, they had not experienced interest from real estate developers for reasons that vary from lack of investment and plans from the local government to improve safety, low socioeconomics

and lack of economic activity. However, all the aspects raised in Table 3 might have been a reason to plan for a TOD in the first place.

4.2 Elements that affect the urban form

Physical: topography, land use, subdivision type

Accessibility is not an issue for this specific regeneration area. Large roads, frequent bus timetables, and heavy rail contribute positively to helping people access the area. However, patronage is higher during weekdays than on weekends. Cars and buses use Albany Highway to access the area. This very busy link carries 60,000 vehicles a day to and from Perth CBD and represents a barrier as it bisects the City Centre area. To a lesser degree, Sevenoaks Street, which runs parallel to the railway line, is an important link for cars. Cecil Avenue is the main connection between those two roads, however it does not allow easy access to the Canning River, as it currently crosses Albany Highway which is significant barrier to pedestrians. The current perception is that the *sense of arrival* to the city centre is the actual arrival at the shopping centre. The Council intends to change these negative experiences and opinions. There is currently no city centre area, apart from the main retail centre. Arrival points should be noticed from all main access points and roads.

Concerning **transport**, the mode share is heavily dominated by cars, which creates real and perceived barriers to safe access and movement by pedestrians and cyclists within and across the area. The area experiences congestion during peak periods. Not many people cycle because of limited facilities and connectivity. There are two main cycle paths in the area, one along the river and another one along the railway line but the connectivity with surrounding areas is limited. Traffic signals along Albany Highway give preference to vehicles, which inhibits pedestrian and cyclist movement. To change this, the Council plans to build more cycling infrastructure in the area to encourage more people to walk, cycle, and activate the area.

The land adjacent to Albany Highway consists mainly of **bulky goods** warehouses (primarily large-format retail warehouses) and car parking that separates them from the road and car yards. It has daily high traffic volumes. The bulky goods warehouses create an unfriendly pedestrian environment. Apart from bulky goods, health services providers, residential, commercial, and recreational premises also occupy the area.

Groundwater is a challenging issue because of the high water table in the area. This is a challenge that makes it costly for developers to build an underground car park. However, it is an opportunity to create Water Sensitive Urban Design (WSUD) initiatives and manage rainwater with swales to use as a street feature. There is a dedicated modelling study that envisages drainage management to create waterways and linkages through the urban centre using landscaping and green corridors.

Pedestrian access is poor and the environment is currently not the most inviting place for walking and socialising, which makes cycling and walking access very limited, compared to excellent road access for cars and good access by bus and train.

The positive aspect of Canning is that, despite its unattractiveness to users and pedestrians, it is conveniently located **close to Perth CBD**, as opposed to other activity centres that have attracted developers' interests, such as Cockburn Central and Joondalup which are further away and less accessible.

Processes: facts, culture, economic characteristics

The **existing houses** are mainly detached single-storey residences, which are common in areas of residential sprawl, zoned as R17.5/R40 split coding. **Recreational and cultural places** include a leisure centre, Coker Park, Greyhounds WA, Canning Agricultural, Horticultural and Recreational Society and the river park. There is also a power substation, which occupies a significant part of the area. It brings electricity in from the supply sources and redistributes the power around the metropolitan area. It has a negative effect on both amenity and the ability for future development to blend with it. The presence of large transmission lines make the area even more unattractive. Whether land could be freed up for development is a challenging matter.

The **Threatened Ecological Community (TEC)** mentioned above is 5.5 hectares of vegetation, bounded by Bent Street, Lake Street, Grose Avenue and the terminal substation. It is protected under State and Federal legislation. It is currently fenced off and publicly inaccessible. The TEC is mainly a seasonal wetland with a distinctive group of endangered plant species. However, the area does not belong to the local government and there is no maintenance program by the owner of the site. There are ownership and maintenance challenges as well as limitations imposed by state government agencies as to what can be done in the area.

Visibly, **car yards and car parking** dominate a great portion of the area. Approximately 23% (15 hectares) of the city centre area is underutilised (car parking) and vacant land. It is mostly owned by state and local authorities.

An **economic strategy** has been developed specifically for this project targeting the appropriate user mix, activity and urban form. The future user mix for the regeneration area is expected to be a combination of residents and visitors from nearby suburbs and regions, and people who work in the area.

In summary, the area has a strong retail focus and attracts an astonishing number of visitors each year. The council expects and tries to encourage a more diverse range of uses, including more dense residential, office, more structured healthcare, education, community and entertainment. This is intended to improve people's perceptions of the Canning City Centre in comparison to other existing metropolitan activity centres.

Overlaying: comparison with other centres

In contrast to the current density of 5.02 dwellings per hectare (Australian Bureau of Statistics 2011), the average density in centres across Australia is 14 dwellings per hectare. The guiding target of the State Government for an activity centre is 45 dwellings per hectare (State of Western Australia 2010) (see Figure 15 below).
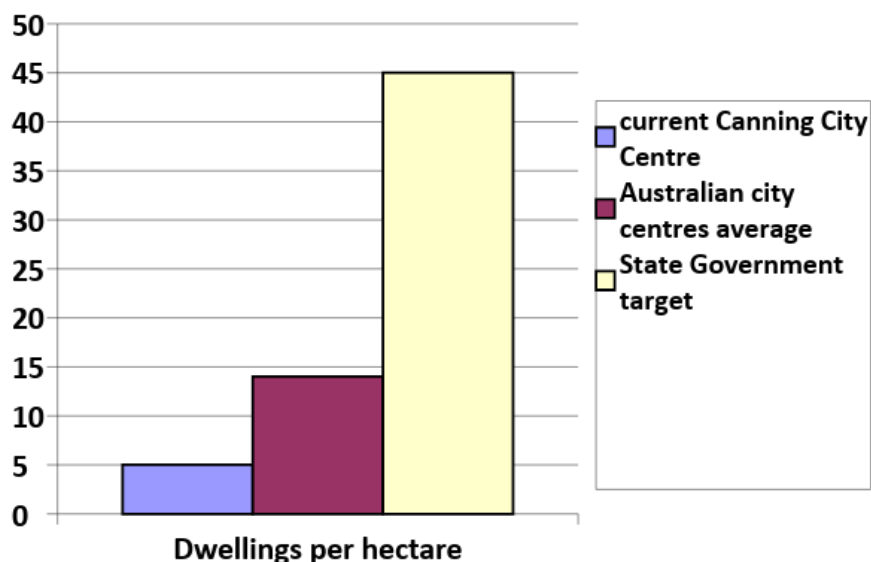

Figure 15: Comparison of densities. Source: Australian Bureau of Statistics (2011). Figure by author.

The job density in the area is 30 jobs per hectare while the average for similar centres is 51 jobs per hectare. Land use efficiency in the Canning City Centre is as low as 33% as opposed to Mt Lawley's which is estimated to be 64% (Curtin, 2011). The efficiency rate was projected based on the land area occupied by buildings versus the vacant and underutilised land. Curtin's study also observes the low diversity of land use, with over 60% of lots that are more than 1000 square metres in area. If Canning City Centre is compared to Subiaco, for example, these two centres are aiming at similar overall densities (35 dwellings per hectare) but in different scales. Subiaco has an area smaller than Canning has, and is seeking for buildings of same heights, 3, 6 and 12 storeys (see Figure 16 below). Based on detailed analysis of development potential within the Canning City Centre, an estimated 10,000 dwellings are possible by 2031 (City of Canning 2016).
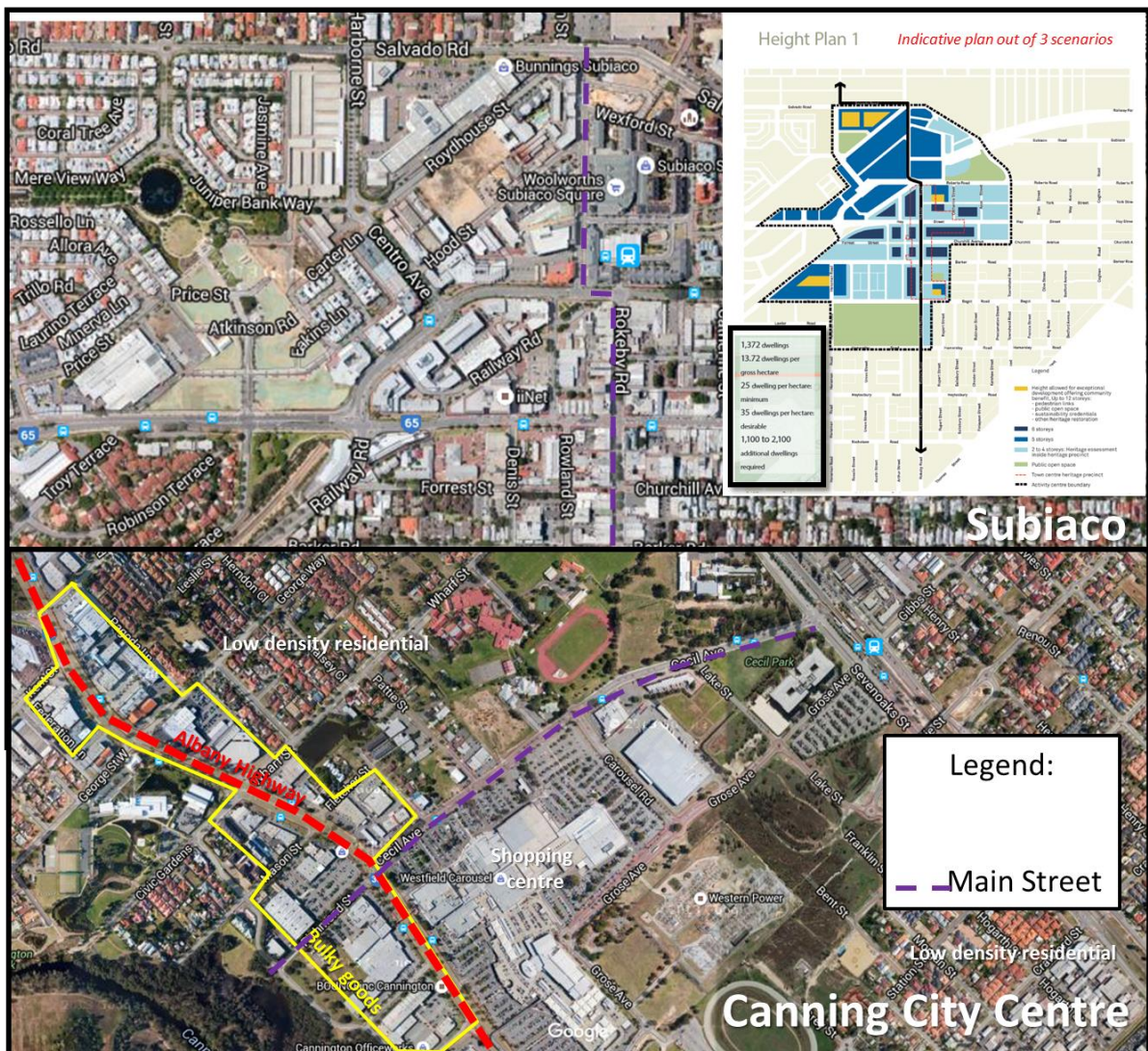

Figure 16: Subiaco and Canning compared. Figure by author (02/02/2017) based on a Google Earth aerial.

Informed by Chapter Three, Table 4 below compares economic activities and management models of each case study's regeneration process.

Comparison of elements that affect the urban form	Kogarah	Dandenong	Canning
Physical elements: open space	• Large quantity of good-quality open space. • Multi-function open space (Scarborough Park and Tanner Reserve) for the major local government area. • The central area lacked open space.	A large amount of open space (creek)	• Vast amount • Well maintained • Not overly used • Not very well known (not a destination)
Physical elements: geographic factors	• Regional importance • Presence of hospital bank headquarters and other attractors	• Regional importance/ tradition of the Market. • City centre with a major shopping centre • Low performing main street (businesses shut down)	• Proximity from CBD • City centre with a major shopping centre • Lack of an identifiable main street
Physical elements: architecture	• Apart from institutions, the place was mostly occupied by single-storey residential • Architecture lacks quality and distinction	• Large shopping centre • Traditional market considered a destination; • Single storeys residential otherwise • Architecture lacks quality and distinction	• Large scale: monotonous/ monofunctional: large shopping centre and warehouses; • Some single-storey health centres/ medical facilities • Single and grouped dwelling developments • No landmarks • Architecture lacks quality and distinction • No diversity of houses for different people (age and socioeconomics)
Economic activities	• Some level of dayly activities/ economy: bank, TAFE, hospital.	• The main activity in the public realm was the traditional market and some Afghan and Indian shops near the train station; • Internalised commercial predominance: the presence of a Shopping Centre contributed to the lack of activity outside it.	• Internalised commercial predominance: the presence of a Shopping Centre contributed to the lack of activity outside it.
Processes: economic development	All three local governments realised they have not been through a peak redevelopment and had not experienced change. Oppositely, they realised they were going through a decline in social economics, employment rates, population growth as well as lower income when compared to similar centres within the same States.		
Processes: management	The project was led by local government. Mainly focussed on the development of the old car park site and the formulation on the urban planning framework.	The project was led by VicUrban (public development agency) in partnership with the local government. The project involved land assembly and development of multiple buildings, an attractive public realm to attract more development.	The project is being led the local government. The process focuses on the urban planning framework and public realm planning.

Table 4: Comparison of processes that can affect regeneration, 2017.

The information in Table 4 shows many similarities between the three cities. They have not experienced interest from private developers, and they realised they were going through a decline in social economics, employment rates, population growth as well as lower income

when compared to similar centres within the same States. The economic context could have been another factor that motivated local governments to pursue urban change through a regeneration plan.

4.3   Form adaptation: The regeneration process

Advantages in comparison to other centres

The local government appreciates that the Canning City Centre has many advantages compared to other activity centres in Perth. These include:

- the proximity to the Perth CBD by road and rail - 20 minutes by car and less than 15 minutes by train;
- the vast number of visitors to Westfield Carousel Shopping Centre per year (estimated at 20 million by Scentre Group);
- the area's location in relation to other vital destinations such as Welshpool and Canning Vale industrial areas, Jandakot Airport, Curtin University and Perth Airport;
- the amount of vacant redevelopable land (between 15 and 25 hectares) of significant sites owned by state or local government; and
- well-established infrastructure.

Most importantly, the point of difference between Canning and other major activity centres is its proximity to the Canning River. The local government believes that the available land and opportunities represent an attractive option for investment by both public and private sectors.

Challenges

Elements that the Council considers crucial to make a city centre and **attract investment** include but are not limited to: quality public realm, residential intensity and diversity, a population driven activity centre, attraction of vital activities and investment, dense urban culture and promotion of walking and cycling. The presence of **bulky goods** warehouses surrounded by car parks is a problem that needs attention. These premises with large floor areas, low employment ratios to floorspace and large car parking areas contribute to the low diversity of the activity centre. Bulky goods warehouses will still be allowed under the Structure Plan, however it will have restrictions on the built form, requiring at least three storeys and less car park toward the major road. The intent is to introduce a more refined built form, with quality facades at a pedestrian scale.

What would help to attract developers' interest in participating in the regeneration of the City Centre is the land value. However, if the local authority does not invest in the public realm, infrastructure and in its regeneration program, developers are likely to spend in other places rather than in Canning. In the Dandenong Case Study, the construction of new modern buildings in addition to the local government investments in transforming the public realm has indeed attracted development to the area.

The masterplan

The local authority envisions Cecil Avenue as a main street which will concentrate the residential density and the various activities proposed on the ground floor, as well as the main pedestrian, bike and public transport movement. It will connect the train station to the river and will encompass light rail in the future (depending on State Government plans and budget). The future shops along the street will have awnings to provide weather protection for pedestrians.

The plan proposes two **new public squares** along this main spine. These will be positioned to provide amenity in the pedestrian journey from the train station to Albany Highway. These squares will have shops around them which will attract and retain people, and which will have the capacity to hold events and provide space for alfresco dining.

Whoever oversees the project, whether a project manager or a member of the local government, will have to make sure that public realm area is rebuilt nicely, including the design of streets, street furniture, public lighting.

Car parking needs to be managed carefully because as it is, it represents a hostile barrier to pedestrians. Nevertheless, it has to be there to make sure local businesses can attract visitors and be successful. Parking should be located at the back of future buildings. Despite costs such as land acquisition costs, Council would like to see multi-deck car parking. This may not be financially achievable at present.

A range of infrastructure improvements is required to support the Canning City Centre. They will be staged in accordance to need, common sense and available funding. These projects include road, drainage, services, public realm upgrades, and community facilities. The improvements are required in order to support growth, development, amenity, and recreation opportunities.

General built form requirements

The Activity Centre Plan provides conditions aiming for design excellence in all buildings, quality finishes, distinctiveness, materials and design articulation at the ground level, compactness and activation of the ground floor along the main street (City of Canning 2016).

The requirements try to push **future buildings** in a different direction compared to existing ones which mostly have low site coverage, are single storey and established on large lots. The requirements envision a more intense built form. Minimum height requirements will be in place to intensify the area and to meet residential targets. Building height bonuses are in the process of being developed for developments meeting sustainability performance targets. Future buildings will have to overlook the streets to increase safety and activation with reduced setbacks. Additionally, the buildings are expected to be built immediately adjacent to adjoining buildings, to create a continuing wall along Cecil Avenue.

Private car parking areas are expected to be built on-ground and above-ground, because of high ground water levels and related buildings costs. Possible public car parking locations have been identified but not yet provided.

Site coverage of a building should not be more than 80% of the site area. The Council expects some deep-rooted planting area along with landscaping and open space in the remaining 20% of the development sites.

This specific local authority does not have a **sustainability policy applicable to the built form**. However, there are intentions to establish a sustainability policy at the higher level, for the entire City. In this way, developments that incorporate certain sustainability criteria would be eligible for plot ratio bonuses. At this stage there is no sustainability requirement in place for any development.

The intensification may trigger a reduction in carbon emissions through high-density, increasing the longevity of the design life, naturally ventilated car park, energy monitoring lighting through motion sensors to common areas, use of solar photovoltaic panels, high-efficiency appliances including air-conditioning units, alternative material to reduce cement use, energy monitoring, amongst others. Some examples that achieved over 40% reductions in carbon emissions include the following developments in Perth: Meridian, Edge and Flo (courtesy of eTool, 2015).

There is a **Heritage Strategy**, which addresses all local government assets. Certain places within the regeneration area are recommended for protection because of their historical value. These places include the Canning River Regional Park, Canning Town Hall, Woodloes Homestead and Canning War Memorial. As part of the regeneration actions, these places would have improved signage and accessibility.

Future movement network

The local government is planning for 40 kilometres an hour roads in certain areas in an attempt to create a main street and a pedestrian-friendly environment. These future streets will have trees, street furniture and on-street parking. In Western Australia, car use dominates the way streets are designed and people move around. However, the Council expects that with the regeneration's road works and new dwellings in the area, a **modal shift** will occur towards less car dominance, more public transport use, and increased levels of cycling and walking.

Furthermore, it is expected that in the future, when the light rail is constructed by the State Government, it will connect the Canning Bridge Train Station in South Perth to Curtin University and finally to Cannington Train Station in Canning in the core of the regeneration area. The connection between two different train lines is expected to create an efficient public transport route.

Creating an active main street where there is hardly any pedestrian movement can be difficult. During the redevelopment, it will be imperative to focus on the activation of Cecil Avenue as the main street. The local government, or a third party, will have to make sure the appropriate mix of retail activities is placed correctly to create the desired activity.

As described in Chapter Two, **urban morphology** refers to creating a place where people can stay, sit and talk (Gehl 2006). To this end, the local authority will prioritise public transport, bicycles and greater amenity for pedestrians on the main street on Cecil Avenue. Seats, trees, shop windows, entertainment and alfresco dining will create a lingering environment.

Parking is an issue which has to be carefully managed by the local authority. The area is currently dominated by at-grade car park. The bays mainly serve the bulky goods warehouses, shopping centre and other businesses in the area. To create a pedestrian-friendly environment, the buildings will be brought closer together and closer to the streets by eliminating and 'hiding' the car park from the pedestrian interaction and views. For

similar regeneration processes, the car parking facilities should be located above ground or behind the shops and residences. Underground car parks are unlikely to be suitable in Canning because of the high water table. A plan is expected to locate the ideal public car park spots and number of bays required.

Marketing the project

It is still a challenge for the local government to market the project because of limited available resources. It is a challenge to encourage activities, businesses, and pedestrians to move outside the shopping centre. Any future redevelopment would have to orientate towards the main retail street. If the public realm is developed the way that the Council expects, the concentration of people along the retail strip and public squares could have a direct effect on marketing the area for investors and visitors.

Architectural icon

There are many sites on which the Council expects something special to be built. In other words, there is no single architectural icon in the area so far. However, there is an opportunity for more than one. The first icon is the Westfield Shopping Centre. Good or bad, it is an existing icon in itself. Is currently has a box shape with minimal interface with the outside world. Built in the 1970s, and redeveloped in 1999, it is indeed an attractor to the area. Because of its intention for further expansion, the local government expects a modern design and a greater interface with the public realm. Furthermore, Cecil Square, a public square within the shopping centre's land should be designed as an urban icon.

The second icon is the transport hub north of the project, where the train station connects to the bus station. The number of passengers boarding at the station is anticipated to increase as developments occur within the city centre area. If the redevelopment area reaches a population of 250,000 people as anticipated by the local government, the train and bus station will have to be redesigned and rebuilt.

The third icon is the area owned by the local government immediately adjacent to the train station. The vacant 10,000 square metres piece of land faces Cecil Avenue and a currently fenced-off drain. The local government is making moves towards getting a developer to create and build a landmark building that will demonstrate the new density proposed, play its part in having active uses on ground and contribute to the activation of the main street.

4.4 New urban scenarios

The Activity Centre Plan (a statutory document which is in draft format to date – September 2015) sets out the statutory planning framework as well as establishes the minimum requirements for development to ensure they are aligned with the plan's intent and vision (City of Canning 2016). The City of Canning has been liaising with the major stakeholders in the area, including developers and builders interested in buying land and development, residents, visitors, and shop owners. Even after two years of having the Structure Plan as a Local Planning Policy - a weaker planning instrument than the Structure Plan - there are at least eight approved development applications from developers aiming to achieve the intent of the Structure Plan. The Plan can be considered partly successful since it is attracting investments before the appropriate planning mechanisms are in place.

Development within the proposed area is expected to occur as per **market demands** and appetite. The City of Canning is interested in delivering catalyst projects and working with the main landowner, Westfield Carousel, to try to get a more attractive centre that helps street activation. The expansion of the Westfield Carousel Shopping Centre is expected to trigger development in surrounding areas.

The local government is looking at alternatives to fund infrastructure, such as using local rates and grant funds. A **Developer Contribution Plan** is an option that could potentially subsidise and deliver shared infrastructure such as drainage improvements and multi-deck car-parking facilities.

Place activation

The local government set up a popup square in 2015 with events, food vendors, music, and activities to promote the area and the project. The initiative was temporary and attracted people to the area. No further endeavours have been attempted up to the time of writing (2018). However, the local government is interested in public/private partnerships, including with the administration of the shopping centre, to try to get other events occurring and perhaps promote the area to a greater extent. Current circumstances may have slowed down the rate of development in the area.

Table 5 below illustrates how existing conditions (elements that affect the urban form) and their processes were addressed in each case study through a regeneration plan.

Form adaptation: the regeneration process[2]	Kogarah	Dandenong	Canning
Built form and activities intensification	● A masterplan covering an area of 37 hectares ● Constant community consultations throughout the process ● Advisory panels formed by all local stakeholders to make decisions; ● Create a mixed-use core for the entire project allowing for different dwelling types attracted new families, professionals, young couples, empty nesters (increased diversity)	● A masterplan covering an area of 104 hectares ● $290 million of investment to create public realm and amenity ● Land acquisition initiatives to be able to amalgamate and sell large lots for large developments ● Strong leadership with limited community involvement: The planning and building initiatives were lead by VicUrban who acquired land, promoted the new buildings and the new main street as new spaces and links	● Canning envisions more jobs available with the creation of the main street ● Canning has been undertaking constant community consultations along the process ● Council does community consultation, but there is currently a low number of residents in the area ● The plans envision a mixed-use core for the entire project allowing for different dwelling types
Cultural diversity	● Placemaking strategies and attracting shops took into consideration the social diversity of the population ● Events were promoted by the council to activate the area	The Council and VicUrban have taken into account the diverse social demographics of the area and celebrated them through the transformation process. Little India and the Afghan Bazaar were the two social/community facets of the RDC/LSUP	● Aim to make social diversity a positive characteristic ● The current guidance document requires percentages of each type of apartment regarding the number of bedrooms. It intends to cater for all ethnicities ● The project should consider present and future cultural diversity in future endeavours, placemaking and public realm projects ● Future placemaking initiatives should take into consideration such social mixture. For example, Spice Road Pop Up
Architecture	● One major focus/ icon: The Council promoted the development of its old car park to be a sustainable architecture feature; (10ha site; 194 apartments,	● Promoted development of at least three icon buildings: The main icon is the City Council building integrated with the main square. ● The PEP, building (Precinct Energy Project) would activate the area with its sculptural form	● Design guidance is currently provided through planning mechanisms: minimum and maximum plot ratio, heights and sustainability requirements ● The local government intends to gear built form towards CEPTED /

[2] Each area has its own image, history, weaknesses and strengths. Each LSUP is different due to its regulations, political systems, urgencies and funding resources

	450m^2 shops and 3,251m^2 community facilities) ● Requirements and intent for sustainability targets and savings in all aspects (water, energy, carbon emissions, reuse of water);	while allowing for the Cogeneration to happen on the inside. ● The State Government buildings near the City Council building are high and modern ● Some taller buildings were built for offices and residential as a consequence of the catalyst investment.	surveillance of public areas and also tried to achieve a better built-form and architecture with all the requirements for building articulation, windows, finishes. ● The presence of supporting policies and processes (such as the established Design Advisory Committee) are believed to contribute to better architecture.
Public Realm	● Public Domain Plan to guide investments on streetscapes, street furniture, paving, trees, footpaths, traffic management, ● Efforts to bring public art to the broader area	Lonsdale Street is an icon in itself. It was envisioned as a grand boulevard and the centre part of the redevelopment. It comprises a slow environment, accessible for public transport, a generous footpath that accommodates various activities and prioritises pedestrians, more lighting, trees and shops. Some people still consider Lonsdale Street a physical barrier because of its width.	● There are plans and budget to create an active main street with public spaces connected to it ● The programs for new public spaces in the area aim to promote gathering and community living ● The local government should try to promote public art, encourage pedestrian movement and invest in the public realm as intended. The changed public realm may attract new developments and population to the area
New urban scenarios	● Developments starting to happen, lead by council and market. Kogarah Town Centre was a smaller Canning, and equally 'unloved'. ● The focus was on the redevelopment of the car park. The local government had barely any influence in the rest of the redevelopment area, but in a way, the catalyst project triggered some development in the broader area.	● Vic Urban managed to attract development to the area, new offices, new shops and a new population of workers and residents. ● The new iconic buildings and the public realm transformation has changed the perception of the observer/ pedestrian.	● Developments are starting to happen, lead by council and market. However, in the case of Canning, not all instruments in place and there are some excellent recently built developments anyway.

Table 5: Comparison of form adaptation, 2017.

Table 5 above identifies the key elements of the regeneration processes in the case studies. The obstacles experienced by Kogarah and Dandenong may provide learning opportunities to inform the regeneration of the Canning City Centre.

4.5 Conclusion - how can Canning learn from previous regeneration projects?

Successes from the global examples in the literature review cited in this show thesis how an iconic building have brought benefits to regeneration areas such as the Guggenheim Museum in Bilbao (Patterson 2012) and the Docklands regeneration in London (The London Docklands Development Corporation 1981 -1998). This has also been the case in the Australian case studies examined, including the City's administration offices and square in Dandenong and the iconic building in Kogarah. Benefits range from attracting population to live in and occupy the place day and night; building modern architecture; and using alternative sources of energy generation.

Canning should pursue the construction of an iconic building which addresses all the project criteria and becomes a demonstration project. If the opportunity is lost and the design is mediocre rather than inspiring, it may not attract attention and investment. Ultimately such a building can set a precedent for other developments in the LSUP area. Being mindful that other projects have accessed special funds because they were distinctive in their essence, there is an opportunity to attract subsidies as well.

Learning from Kogarah, Canning should plan the maintenance of the building and create a body or community group to lead the implementation. This could contribute positively towards activating the wider area beyond the iconic development.

Learning from Dandenong, the design of the main street should accommodate pedestrians and unite the two sides of the project instead of creating a barrier. Strong leadership can push the project ahead. Canning should attend to the design of its main street and public realm in general and undertake land assembly if necessary.

The two case studies show that great initiatives can contribute positively to improving centres in suburbia. and that a modern framework is capable of attracting development and creating activation. It is up to the local or leading authority to keep managing and marketing the place. If a plan is not marketed adequately there is a risk that the project will not go any further. Local governments should remember that there is competition. There are frameworks of regeneration in more than one place occurring at the same time.

Therefore, one project may lose private market interest while another one may be gaining interest from investors.

Chapter Five: A Form Adaptation Process

By looking at a wide range of urban regenerations projects, national and international, it is clear that there is no single successful model that can be followed universally. Transferring the knowledge and experiences from one country to another should be done with caution. Each of the projects mentioned here occurred under specific circumstances and surely had political influences, support from state or federal government, different budget circumstances, and available resources. As difficult as it can be, local authorities have to work hand in hand with shopping centre operators if redevelopment is proposed. Examples mentioned in this thesis demonstrates that shopping centres tend to internalise all activities and attract users to their interior. A comprehensive plan should be developed to integrate outside redevelopment with the shopping centre. Good connections can be beneficial for all parties.

All the examples mentioned in this thesis, including Structure Plans, Development Control Plans, Large-Scape Urban Projects are attempts to patch up the urban fabric of post-industrial cities through the requalification of the land.

To promote an urban regeneration project is like telling a story. The list below, drawn from the literature review and all cases mentioned throughout this thesis can be a starting point or a framework of *40 elements* for unlocking urban regeneration projects.

Broad-brush thinking

1. An understanding of the area, the context and the market situation.
2. Integrate the plan with a larger transportation network at a regional level when there is an opportunity. If there is a future possibility to integrate the suburb with areas of regional importance, the plan should make space for the future link.
3. Define the scale of regeneration: urban, architecture and/or urban vocation.
4. Think about the future residents, who they are, their income, interests, age groups, family sizes, if they are workers, students, ageing community or immigrants and plan for them.
5. Urban regeneration projects are about a change of perception, especially the pedestrian perception, and their experience.
6. Create a unique place.
7. A project is not strictly confined to its boundaries. The economic benefit is usually wider, and the benefits can spread.

A strong lead

8. Have a strong lead, being the local government authority or a body shaped specifically to lead it.
9. Secure economic funds (public funds or public-private partnerships) to build infrastructure.
10. Have a strategy to the different scales of the project, comprising of a larger program with a vision, a strategy for punctual interventions and an integrated action plan.
11. Implement a planning framework to control future development.

The public realm

12. If there are families and children, provide for play spaces.
13. If there are parks in the area, there is no detriment in planning for high-density around them as it can promote its use and surveillance.
14. The public realm should be redeveloped accordingly to create great places and encourage people to use them.
15. The investment in the public realm is a major factor that can attract private investment and more development.

Accessibility

16. Consider how people will get there and move around the renovated area. Prioritise other transport modes rather than cars (TOD/POD). Even if this can only occur at the cost of narrower traffic lanes.
17. Depending on the location, laneways can be good places for pedestrian as well as for businesses, alfresco or used for car parking access and service trucks. They can always be converted at a later stage if there is a vocation for a different use.
18. Projects around transport hubs should prioritise the use of transit not around high-speed routes and freeways. The planning controls for future buildings should provide a limit ratio for private car parking while prioritising pedestrians and the use of public transport.
19. Promote walkability and wellbeing while reducing environmental impacts of automobile driving.

Variety, interest and diversity

20. Create exciting places. Encourage a variety of built form treatments, facades, materials to create an interesting place to visit, to live and to be.

21. Vibrant centres around transport hubs have been proven to work when there is a mix of uses where people, live, work, socialise and do their shopping and can easily by foot, bicycle and public transport. Colocation contributes to creating a community living.

22. Distribution of uses including diversity, balance, and integration should be well defined and monitored.

23. Plan for the various activities that are expected to occur: play, eat, work. The mix is likely to influence the pedestrian decision to stay or to leave.

Repair

24. If there is a specific site that needs to be repaired or transformed, plan for it.

Business and commercial activity

25. If the plan envisions the creation of a main street with commercial activity and the intention is to keep people in there, there should be a design to create a pleasant experience including appropriate and exciting street furniture (benches, bins, bus stops) as well as be designed for the activities that are expected there through modern streetscape design.

26. Plan for businesses to provide for a variety of jobs types for residents.

Iconic buildings

27. Big iconic buildings, architecturally designed to be landmarks and big public art can become attractors and/or wayfinding elements as well as attract more development and investment.

Sustainability and nature

28. Build and incentivise sustainable outcomes such as the use of materials and practices that can be managed by future users.

29. Have a sustainability focus, requirement or initiative as a policy requirement or incentive.

30. Whenever possible, celebrate nature in urban redevelopment projects through enhancement of natural corridors or connections between parks and natural corridors.

31. Weather should be taken into consideration when designing for a pedestrian environment. There should be a requirement for weather protection where needed because of the sun or rain.

Activation

32. Activation is about uses (shops, restaurants, residential entrances, community buildings, public squares).

33. Facades of a main street should conform to maximum pedestrian interaction, glazing requirements and provide lighting to promote safety, usability and surveillance.

34. Alfresco dining can be an option for activation and surveillance on a main street.

35. Consider that a main street that is proposed to be lively day and light probably needs to operate beyond commercial hours.

Competition

36. It is also a competition matter. Regeneration projects are generally occurring in more than one geographic place. A project needs to be attractive and unique to attract investment and people.

Residential population

37. The establishment of a residential population is essential for place activation and economic success.

Cooperation

38. Neighbouring local governments can support each other. Collaboration is essential to establish transport links, being them light rail, bus route, cycle ways, to link employment and education hubs and others destinations.

Change

39. Consider that uses can change overtime and require generous ground floor heights where appropriate.
40. Revision of regeneration plans is continually happening. The change can accommodate market and intention changes, and be a reaction to the metropolitan scale competition.

Conclusion

In this chapter the learnings from the case studies studied in the literature review and in Chapter Three are discussed. Their relevance to the redevelopment of the Canning City Centre, an example of an underperforming Australian suburb, is explored.

Like the other Australian case studies, Canning City Centre had not previously experienced the growth and development that other suburbs in Perth had, despite its location near the CBD, with a train station and amenities such as parks and a river. It had the shopping centre as a major attractor, but it failed to attract a residential population and commercial activity outside the shopping centre. The local government then took the lead in developing an integrated plan, still in the development and implementation phase, to try to change this situation. Canning's integrated plan envisions requalification, pedestrianisation, activity and allows for 25,000 new residents, along with more commercial activity.

It is clear that the Canning City Centre project had contextual and morphological similarities to the case studies. Moreover, there is still opportunity to apply the learnings from the case studies as well such as the development of a great urban space (Lonsdale Street or the public square in Dandenong), an iconic building (Kogarah building) and also to create and celebrate community ('Afghan Bazaar' in Dandenong).

It is noteworthy that the Australian examples endeavour to tackle the need for infill as well as suburbanisation problems. These and future regenerative TOD projects in Australia should be informed and enriched by the learnings from global and local examples.

A prototype framework is proposed to be used to guide urban regeneration projects.

Chapter Six: Conclusion

6.1 Summary of findings

This thesis takes the reader on a journey of regeneration of urban centres, focussing on suburban Australian case studies. The literature review in Chapter Two explains why cities around the world develop urban regeneration plans, the main aspects of the plans, and how they transform sections of cities. It explores the historical reasons that cities around the world began to implement regeneration programs after conflict, natural disasters, or merely to develop vacant areas contributing to urban, social or economic degradation. It explores examples of how cities use vacant land to their advantage. It looks at urban issues and the different agendas of various urban regeneration projects at a global scale before describing and analysing suburban dilemmas typically faced in Australia.

Chapter Three then focusses on two suburban Australian case studies with automobile dependency, urban sprawl and low-density living, and vacant land. The reasons local governments began to undertake form adaptation and develop integrated regeneration plans for areas near transport nodes are explored.

The comparison between the underperforming Australian case studies and their regeneration project gets to the reasons, main projects and successes achieved by them as well as the management models used by them. The learnings from the case studies show that Canning City Centre is still in early stages of redevelopment, but it is already achieving a shift from business as usual (low-density suburbia living style) to a mixed-use higher density centre.

In answering the main research question, the thesis highlighted essential aspects of a regeneration plan and how TODs can undergo a regeneration process to change underperforming existing suburban centres. It starts with a degraded or unsuccessful area which is seen as an opportunity and has vacant areas in which a plan can be implemented. The plan has to be guided by strong leadership. However, keenness is not the only aspect. Planning frameworks need to be in place to guide the overall transformation of the built form, while the local authority has to design and deliver the public realm.

Densification of TODs, clustering of activities and the "20-minute City" are initiatives to combine land use and transport to resolve the need for infill and the spread of suburbs issue. This thesis proves that TOD projects such as Canning City Centre can work. Therefore, suburban TODs such as Canning need strong leadership to deliver public realm

projects and ensure that future buildings respond to the intent of their plans. This thesis has shown that investment in good architecture or an architectural icon can help attract activity and investment, spreading its benefits.

The major contribution of this research is to provide a framework of elements derived from analysis of the case studies and their urban regeneration journey. The framework can benefit suburban regeneration projects. If the framework's elements are considered in regeneration infill projects in Australia there is a better prospect of maximising the value of existing infrastructure such as train stations, while containing suburban sprawl and its consequences.

6.1 Future research

Future research should investigate a wider range of regeneration processes in Australia to try to find commonalities, differences, successes and failures, in order to enhance the list of principles initiated in this thesis.

Analysis of development corporations would add value to this research.

In addition, other existing frameworks such as the Urban Regeneration Assemblage (Ruming 2017) could be explored in more detail.

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Memorandum

To	Roberta Schuchmann
From	Rena Catania , Ethics Form C Coordinator, R&GS Humanities
Subject	Protocol Approval HURGS-17-14
Date	15 October 2014
Copy	

Humanities Research and Graduate Studies office

Human Research Ethics Committee

Telephone: 9266 2249
Facsimile: 9266 3808
Email: r.catania@exchange@curtin.edu.au

Thank you for your "Form C Application for Approval of Research with Low Risk (Ethical Requirements)" for the project titled "LSUP Large Scale Urban Projects". On behalf of the Human Research Ethics Committee, I am authorised to inform you that the project is approved.

Approval of this project is for a period of 4 years **15/10/14** to **15/10/18**

Your approval has the following conditions:

(i) All participants in the survey should be provided with an Information Sheet and be asked to sign a Consent Form.

(ii) Annual progress reports on the project must be submitted to the Humanities R&GS Low Risk Ethics Coordinator.

(iii) A completion report must be submitted on completion of your Low Risk Ethics project **HURGS-17-14** no later than expiry **15/10/18**

(iv) It is your responsibility, as the researcher, to meet the conditions outlined above and to retain the necessary records demonstrating that these have been completed.

The approval number for your project is **HURGS-17-14** Please quote this number in any future correspondence. If at any time during the approval term changes/amendments occur, or if a serious or unexpected adverse event occurs, please advise me immediately.

Rena Catania
Coordinator
Humanities Research and Graduate Studies, Human Research Ethics Committee

Please Note: The following standard statement must be included in the information sheet to participants:
This study has been approved under Curtin University's process for lower-risk Studies (Approval Number HRGS-YY). This process complies with the National Statement on Ethical Conduct in Human Research (Chapter 5.1.7 and Chapters 5.1.18-5.1.21). For further information on this study contact the researchers named above or the Curtin University Human Research Ethics Committee. C/- Office of Research and Development, Curtin University, GPO Box U1987, Perth 6845 or by telephoning 9266 9223 or by emailing hrec@curtin.edu.au.

Sent to Roberta & annie Maton 15/10/14

CRICOS Provider Code 00301J

Central Dandenong regeneration - pictures from Archdaily   ☐ Inbox x

Roberta Schuchmann <roberta.schuchmann@gmail.com>   8/19/15 ⭐ ↩ ▾
to john.gollings ▾

Hi John,

My name is Roberta Schuchmann, I am a student at Curtin University and I am writing my thesis about urban regeneration of city centres.

I came across your pictures of Central Dandenong and they are great.
http://architectureau.com/articles/revitalising-central-dandenong/

I would like to use some of them in my thesis. To do that, I need your authorization. A simple email would be enough.

If you have any question, feel free to answer this email.

I will be waiting for your reply.

thanks,

Kind Regards

John Gollings <john.gollings@gollings.com.au>   8/20/15 ⭐ ↩ ▾
to me ▾

Hi Roberta

Responding on John's behalf and authorised to do so

Happy for you to use the images with a credit to John

Regards,

Sue Shanahan
PA to John Gollings

Google Maps & Google Earth

Thanks for considering creative applications of Google Maps, Google Earth, and Street View.

These guidelines are for non-commercial use, except for the limited use cases described below. If you want to use Google Maps, Google Earth, or Street View for other commercial purposes – meaning "for sale or revenue-generating purposes" – please contact the Google Cloud Customer Team.

We created this page to clarify questions we've received over the years about using our mapping tools in everything from marketing and promotional materials, films, television programs, books, academic journals, and much more.

Introduction

Generally speaking, as long as you're following our Terms of Service and you're attributing properly, you can use our maps and imagery. In fact, we love seeing creative applications of Google Maps, Google Earth, and Street View.

But we know you're looking for more specifics to ensure you're using our maps and imagery correctly. We suggest starting with the general guidelines below as these will apply to all projects. Feel free to click directly to the section that applies to your use: