

IMAP Implementation Committee
Briefing Paper
Urban Manufacturing research

BACKGROUND

1. At the IMAP Implementation Committee meeting of 30 May 2014, Dr Marcus Spiller from SGS Economics & Planning gave a presentation on "The Rise of Urban Manufacturing and the future of Inner Melbourne's industrial land". Dr Spiller outlined potential problems if appropriate policies are not developed to assist the Urban Manufacturing sector and proposed a research project to:
 - understand how industrial zoned land in inner Melbourne is being used and how businesses in these areas interact;
 - test the hypothesis that a revival in manufacturing is latent or underway; and
 - extract the implications for planning controls in inner city industrial zones.
2. IMAP representatives subsequently met with Dr Spiller to further discuss the potential scope and approach for progressing the project.
3. The IMAP Implementation Committee meeting of 29 August 2014, resolved to:
 - establish a working group to explore Dr Marcus Spiller's proposal
 - scope the project to ensure it is relevant to IMAP; and
 - report back to the next meeting (28 November 2014) of the IMAP Implementation Committee.
4. The IMAP Implementation Committee also resolved to approve that the project steering group:
 - (1) progress the final project scope, aligned to the preliminary scope, identifying key stages;
 - (2) progress the final funding arrangements comprising up to \$150,000, with a contribution of up to \$60,000 from State Government agencies (subject to a formal request for funding) and \$18,000 from each IMAP member Council; and
 - (3) progress a partnership and matching funds from the University of Melbourne's Carlton Connect initiative; subject to final ratification from the IMAP Implementation Committee.
5. The project scope was subsequently considered by a wider group of representatives from the IMAP Councils and relevant State Government agencies, including DSDBI, DTPLI and MPA. These representatives developed an Investment Logic Map (ILM) (Attachment 9a) to clarify the project scope and focus and inform a proposal back to the Committee. Representatives from the working group have also continued to scope the project with the University of Melbourne to develop a proposal (Attachment 9b) which meets IMAP and Carlton Connect funding requirements.

ISSUES

6. The abovementioned stakeholders have defined an agreed project scope to address the key requirements presented to the IMAP Implementation Committee meeting of 29 August, as follows:
 - a) Define the Urban Manufacturing sector, including it's nature, scale and linkages to other sectors;
 - b) Understand the key influences on the sector, including major drivers of success;
 - c) Understand the sector's potential contribution to the IMAP, Metropolitan and State economies;
 - d) Identify policies and actions that might be required to address impediments or capitalise on opportunities to enable the sector to achieve it's full potential; and
 - e) Develop an evidence base to support any proposed actions.
7. To address these key requirements, a three phase project scope is proposed, with funding only being requested for Phase 1 at this stage. The proposed project phases are:
 - a) **Phase 1 - The Land Approach (six months)** - Analyse existing data and conduct a pilot survey to define the nature and scale of urban manufacturing in the inner region, with the aim of informing immediate policy directions about the significance of the sector and the need for more detailed analysis in Stage 2;
 - b) **Phase 2 – The Sector Approach (six months)** – Expand the pilot survey and conduct more detailed qualitative analysis, to fully understand the key influences on the urban manufacturing sector, economic linkages and the critical success factors for firms to survive, innovate, grow and prosper; and
 - c) **Phase 3 – The Economic Approach (longer term via ARC Grant)** – Define the impacts of the urban manufacturing sector on local and regional economies, including productivity, employment and innovation effects, to inform long term policy directions about the economic impacts of the sector and the use of central city employment land.

8. Funding is sought for Phase 1 only at this stage. The scope of Phase 1 is:

a) Review existing information

- Undertake a literature review to define the specific sectors to be included in the definition of urban manufacturing (e.g. manufacturing and other sub sectors);
- Identify relevant research already undertaken by Councils, State Government and other peak bodies concerning the relevant industry sectors;
- Draw together the research and spatial data sets (including Worksafe, ABR, property rates and CLUE) to determine the overall scale and spatial distribution of the urban manufacturing sector(s) and the best method of survey delivery.

b) Design and deliver a pilot survey

- Develop a robust pilot survey that answers the research questions posed for Stage 1;
- Deliver the pilot survey across defined target area(s) and in a variety of formats, where possible utilising existing business engagement channels through DSDBI and inner Melbourne Councils.

c) Confirm the problem

- Analyse survey results to confirm whether there is a need for further study and/or a policy dilemma requiring further intervention.

d) Define the immediate policy implications and next steps

- Document the study findings in detail, including relevance to policy directions in Plan Melbourne and other urban management strategies; and
- Define the scope of a detailed sector analysis to be carried out in Stage 2.

PROJECT OUTCOMES

9. Each phase of the project is designed to deliver specific, policy-relevant recommendations and findings. Assuming all phases proceed, the range of expected outputs include:

- Systematic capture of value chain data for urban manufacturing firms, including in-bound logistics, operations, outbound logistics, marketing and sales, after sales service, strategic management, human resources, technology and procurement.
- Exploration of barriers to entry or growth for urban manufacturers, for example, accessing finance or government assistance;
- Mapping of select firms' spatial linkages with suppliers, collaborators, workers, distributors, customers and retailers with a view to understanding economies of scale and scope attaching to agglomerations;
- Estimation of agglomeration effects for the IMAP region and the State of Victoria, for urban manufacturers, differentiated by location; and
- Estimation of lost innovation and value added due to displacement effects.

RECOMMENDATION

10. That the IMAP Implementation Committee review the attached proposal and agree to:

- Approval of \$18,000 from each IMAP member Council for the implementation of Phase 1;
- Approval to seek a partnership with and matching funds from the University of Melbourne's Carton Connect initiative; and
- Endorse the following Governance Structure to oversee the project:

I. Project Champion

Tracey Slatter, CEO - City of Port Phillip -

II. Project Manager

Cameron Brenton, Coordinator City Business – City of Port Phillip

Virginia Miller, Industry, Investment & Research – City of Port Phillip

III. Project Management Team

Austin Ley, Manager City Research – City of Melbourne

Liz Mackevicius, Research and Policy Coordinator – City of Yarra

IV. Steering Committee

Nigel Higgins, General Manager Sustainable Development – Maribyrnong City Council

Karen Watson, General Manager Sustainable Futures – City of Stonnington

Jane Monk, Director Inner City – MPA

Emily Mottram, Structure Planning Manager – MPA

Elise Coughlin, Senior Business Development Manager – DSDBI

Peter Dearsley, Business Development manager – DSDBI

Fiona Delahunt, Executive Director, Policy & Business Strategy – DTPLI

Elise McElroy, IMAP Executive Officer

The Dilemma of Urban Employment Land

An Inquiry into the
Viability of Small Urban
Manufacturing in Inner
Melbourne

Draft Concept

(26/11/2014)

IMAP

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INTRODUCTION

The core goal of this study is to deliver policy-relevant findings that can guide the IMAP councils in making strategic decisions about the use of employment land in the IMAP area. Underlying the core inquiry of this project is our over-arching hypothesis that small, high-value added, highly-innovative urban manufacturers in Melbourne can benefit significantly from the agglomeration economies associated with inner-urban locations, and that there is great value to the urban economy in preserving a place for manufacturing innovators in the central city and immediate inner suburban areas.

As part of the implementation of *Plan Melbourne*, urban policy is being formed and implemented in the IMR that will directly impact the capacity of urban manufacturers to remain in central locations.

The study seeks to deliver policy-relevant findings in the short term (one year), medium term (18 months) and long-term (five years) in a research program that addresses the challenge of creating jobs and economic growth through fostering small urban manufacturers. The project aligns with IMAP's *Investment Logic Map*, which identifies competition for space and a loss of economic diversity as major challenges for the IMAP area. The research program will inform strategic responses that are specifically-targeted to the IMAP area, to address these challenges for the IMAP area.

The proposal outlines a multi-faceted approach implemented in three phases, leveraging existing data, testing hypotheses and completing the narrative:

1. **The land approach** (understand how employment land in inner Melbourne is currently being used)
2. **The sector approach** (understand the value of central locations for businesses in the small manufacturing sector)
3. **The economic approach** (Understand the economic impacts and contributions of small urban manufacturers (the economic approach))

The over-arching goal of generating understanding in these three areas is to extract the implications for policy, planning controls and design in inner city industrial zones. The content-driven objectives of this study are to:

Key outputs of the study include:

- Systematic capture of value chain data for delivery planning , covering in-bound logistics, operations, outbound logistics, marketing and sales, after sales service, strategic management, human resources, technology and procurement¹.
- Exploration of barriers to entry or growth for urban manufacturers, for example, accessing finance or government assistance
- Further mapping of select firms' spatial linkages with suppliers, collaborators, workers, distributors, customers and retailers with a view to understanding economies of scale and scope attaching to agglomerations
- Estimation of agglomeration economies effects for the IMAP region and the State of Victoria, for urban manufacturers, differentiated by location (urban versus suburban)
- Estimation of lost innovation and value added due to displacement effects.

¹ After the framework developed by Porter M. (1985) "Competitive Advantage: Creating and Sustaining Superior Performance"

Possible recommendations of the project include:

- Preservation of some specific employment land and accommodation types in the IMR
- Re-examination of current zoning regulations to make them more compatible with urban manufacturing
- Development of built form and site design strategies for successful integration of urban manufacturing in mixed use areas, including major urban renewal areas.

PROJECT SIGNIFICANCE

The project will open a new front in domestic urban research with far reaching implications for government programs dealing with balanced labour markets, social inclusion and environmental sustainability. The research can be expected to attract an eager audience across national, state and local government and likely to gain significant media interest. The project will test the conventional wisdom, both in research and policy circles, that there is an inevitable bifurcation in the economic geography of Australian metropolises, characterised by a knowledge intensive, 'desk based' urban core versus an increasingly disconnected suburbia.

The project is likely to establish the platform, and appetite, for a major national investigation of urban manufacturing, including the prospect of ARC recognition. The principal research outputs will be documented to rigorous scholarly standards. In addition to this formal documentation, project publications will be prepared for wide circulation, both inside and outside the planning and public policy professions. Graphic design and innovative presentation techniques, particularly using advanced GIS capabilities, will be deployed to broaden the legibility and influence of the research findings.

SUMMARY

The research can be expected to have an immediate impact on planning policies for several of inner Melbourne's key employment and urban growth areas. It will provide an initial evidence base to support decision making about if and when employment areas should be 'protected' from property market pressures or how to leverage of investment to create value adding employment opportunities. The same insights may support the development of more nuanced and innovative planning mechanisms and design models to accommodate the needs of contemporary manufacturers, promote business development and profitability, strengthen positive interaction between industrial and non-industrial uses, and promote industry-university partnerships.

THE DILEMMA OF URBAN EMPLOYMENT LAND: AN INQUIRY INTO THE VIABILITY OF SMALL URBAN MANUFACTURING IN INNER MELBOURNE

26 November 2014

To:

Representatives at the IMAP General Meeting, 29 November 2014

Liz Mackevicius, City of Yarra

Cameron Brenton and Virginia Miller, CoPP

Prepared by:

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INTRODUCTION AND BACKGROUND

This concept note describes the activities we propose to study the contributions of small urban manufacturers to the economies of the Inner Melbourne Region (IMR), which includes the Cities of Melbourne, Port Phillip, Stonnington, Yarra and Maribyrnong that have prepared the Inner Melbourne Action Plan (IMAP). The core goal of this study is to deliver policy-relevant findings that can guide the IMAP councils in making strategic decisions about rezoning of urban industrial-zoned land in the IMAP area. Underlying the core inquiry of this project is our over-arching hypothesis that small, high-value added, highly-innovative urban manufacturers in Melbourne can benefit significantly from the agglomeration economies associated with inner-urban locations, and that there is great value to the urban economy in preserving a place for manufacturing innovators in the central city and immediate inner suburban areas. We hypothesize that the potential loss of urban manufacturing from central locations would come at greater costs to the Melbourne community than simply displacing some jobs to outlying suburbs. We suspect that this loss would include loss of innovation from the overall economy, loss of agglomeration economies, and other economic losses that we discuss in the remainder of this proposal.

Right now, as part of the implementation of *Plan Melbourne*, urban policy is being formed and implemented in the IMR that will directly impact the capacity of urban manufacturers to remain in central locations. The purpose of this study is to help the local governments participating in IMAP to develop informed strategies as they make decisions about whether there is value in preserving industrial-zoned land in the IMR. As industrial uses compete with housing in a city where housing is among the most expensive in the world, now is the time to generate the new knowledge necessary for local governments to make informed decisions about how to use the industrial land at their disposal.

The above-described inquiries are aligned with IMAP's *Investment Logic Map*, which identifies competition for space and a loss of economic diversity as major challenges for the IMAP area. We propose a research program that develops strategic responses that are specifically-targeted to the IMAP area, to address these challenges for the IMAP area, with particular respect to the small manufacturing sectors. We are seeking to deliver policy-relevant findings in the short term (one year), medium term (18 months) and long-term (five years) in a research program that addresses the challenge of creating and maintaining jobs by fostering small urban manufacturers and their supporting industries, and by examining the economic impacts of doing so. In Section 2 of this document, we describe the components of our proposed three-faceted approach: the land approach, the sector approach, and the economic approach. The remainder of this document describes the entire proposed research program. We also provide a general work plan and budget that differentiate between short-term and longer-term activities.

1.1 BACKGROUND

The remainder of this section provides a conceptual backdrop for examining the above-described queries. Empirical evidence in the United States strongly suggests that there has been a revival in small scale, local, and distinctly urban manufacturing in metropolises characterised by their knowledge-intensive activities (The Pratt Center, date not specified). The latter include a growing interest in one or more of: fair trade, sustainability, local product orientation, health of the local economy, and/or product customisation. Driven by these underlying economic forces, the manufacturing that has reemerged in US cities is high value-add, either because it is 'high-tech', or because it is 'high-touch' – capitalising on a host of competitive advantages including sophisticated design and astute market insight.

In Melbourne, the empirical evidence of such activities is limited at best: the actual structural changes in the manufacturing sectors are not well understood. There is some anecdotal evidence supporting the emergence of these trends here but we strongly suspect that Melbourne's public policy climate tracks that of the United States in its tendency, as the eminent economic geographer, Saskia Sassen, observes, that "....economic development experts and planners, or misunderstood as an anachronism because its connection to the advanced knowledge sectors is not noticed"². In short, while manufacturing may have changed considerably in Melbourne, the sector is still conceptualised by some in politics, public policy, planning and the general public as a relic of the city's industrial period. The conventional wisdom is that manufacturing is no longer suited to the inner city. This work would challenge that wisdom.

A first step in our proposal is to refine currently-available data to take the investigation of small urban manufacturers beyond the anecdotal. Current publically and council-available data such as that from the Census and the Australian Business Register, are currently not suitable for an analysis of spatial distribution or sectoral character of small manufacturing firms in the IMAP region. This is because of the ANZSIC code scale and the fact that firms' employee numbers are not given in these datasets. Because of this, economic analysis of Melbourne's small manufacturers – their contributions to the local, state, and national economies in terms of short-term jobs and longer-term innovation – are currently not possible. Nor is spatial analysis of where firms locate and how they use central locations toward the generation of efficiencies and innovation, possible.

What we do know is that industrial land across inner Melbourne is under considerable pressure for rezoning to so-called higher and better uses. Furthermore, we anticipate the possibility of a vicious cycle, with a lack of long term vision and zoning uncertainty leading to disinvestment that in turn results in underutilisation, and then strengthening the pressure for rezoning. We contend that industrial activities in Melbourne may be in need of reconceptualization for policy purposes. Manufacturing and its supporting activities no longer exclusively require large workshops and warehouses housing a single firm. New manufacturing sectors compete with commercial and other uses in small home-based businesses and on commercial and mixed-use zoned lands. The needs of high-service, "high touch" producers in the manufacturing area are not well understood in Melbourne.

Undoubtedly, there is strong latent demand for housing in central-city areas. Residual land values for industrial properties are likely to be significantly higher under most housing redevelopment scenarios compared to continued use as 'employment land'. However, property market valuations do not factor in the wider economic, social and environmental benefits attaching to retention of a diverse pool of employment generating land uses in the inner city. Left to its own devices, the market may well be generating inefficient outcomes in these areas and for the metropolis as a whole. But the evidence to judge this in either direction is currently not available.

² Sassen, S. (2014) Jane Jacobs revisited: the link between older material economies and today's knowledge economy. http://www.thecitiescafe.com/?page_id=47

Given the lack of substantive research to the contrary, the popular conceptualisation of industrial lands located in the inner Melbourne as ‘no longer fulfilling their function’³ may be ill-informed and outdated, resulting in the unnecessary suppression of economic activity and job creation. As alluded to by Sassen in the quote set out above, an important source of worthwhile work lying between that undertaken by ‘symbolic analysts’ and that transacted by ‘in person service workers’⁴ may be foregone, adding to the hollowing out of the labour force.

Moreover, this unwitting displacement of existing and latent manufacturing activity may be eroding the metropolis’s environmental sustainability. For example, locally produced goods can be more environmentally sustainable due to reduced material-intensity, a strong culture of recycling, orientation towards local markets reducing total vehicle kilometres, more rapid adoption of new technologies and sensitivity to subtle changes in client demand leading, amongst other things, to reduced waste and excess production. More generally, in the absence of propitious spaces for this locally focussed and customised production, environmental entrepreneurship and leadership may be dampened.

2. APPROACHES AND OBJECTIVES

Toward understanding the complex urban systems underlying small urban manufacturing, we propose an approach that examines the issue from three angles: a land perspective, a sector perspective, and an economic perspective. Scholars and practitioners interested in urban economies are aware that the land, sector, and economic approaches are actually heavily interdependent and endogenous. However, for analytical purposes, it is useful to distinguish the three areas. This is because the theoretical concerns, research approaches, and practical policy realities for land use, sector activity, and economic outcomes are often very different, and each must be fully considered. The over-arching goal of generating understanding in these three areas is to extract the implications for planning controls and design in inner city industrial zones. The content-driven objectives of this study are to:

1. Understand how industrial zoned land in inner Melbourne is currently being used (the land approach)
2. Understand the value of central locations for businesses in the small manufacturing sector (the sector approach)
3. Understand the economic impacts and contributions of small urban manufacturers (the economic approach).

We propose that the short-term funding that supports development of a base of evidence that cuts across all three of these approaches in the short term, and treats them all more thoroughly in the longer term. We plan to seek future ARC or other funding to support Objective 3. The remainder of this section describes these approaches and explains our rationale for including each. Section 3 describes the proposed phased implementation of the research program.

2.1 THE LAND APPROACH

The primary activity in the land approach would be a cataloguing and analysis of the economic activities occurring in industrial-zoned areas. The land approach is crucial for two reasons. First, urban policy is currently being formed that will heavily influence the use of a significant amount of industrial-zoned land in the IMR. Second, local governments participating in the IMAP are seeking updated information to inform their decisions about whether there is value in preserving industrial-zoned land in the IMR. There is currently a possibility for divergence from the dominant paradigm of housing being the highest and best use of the

³ Plan Melbourne (2014) Initiative 1.6.1, page 49

⁴ To use the typology of occupations developed by Robert Reich in the “The Work of Nations” (1991)

industrial land. Now is the time to generate the new knowledge necessary for local governments to make informed decisions about how to use the industrial land at their disposal. Second, the impacts of urban manufacturing extends far beyond the trade-off between industrial and residential zoning. Urban manufacturers may not be primarily located on only industrial land – and instead may be utilising commercial and mixed-use office spaces, particularly for the non-manufacturing parts of their business.

The land approach creates the possibility of a renewed understanding of what constitutes manufacturing in today's service-oriented economy. Industrial zoning is based on notions of manufacturing as land-intensive, machinery-intensive processes that are not appropriate for contemporary central cities because of their polluting smokestacks, noise concerns, and warehousing requirements. As evidence from New York suggests, new urban manufacturing no longer necessarily comes with these concerns. Just-in-time shipping reduces the need for large warehouses that store weeks or months' worth of supplies. Many small urban manufacturers are actually hybrid entities of sorts, concurrently providing a product and a service. Some of these concurrent products and services are very high-end, such as \$12,000 custom bicycles that come with a two-day experience of visiting the factory to be fitted and meet the craftsmen who will produce the bicycle. Our questions are in whether these uses can benefit from central locations in terms of the capacity of inner cities to develop agglomeration economies among small manufacturers. It is time to rethink urban manufacturing and its role in the central city, and we propose the following questions to query this hypothesis:

1. What kinds of economic activities are being conducted on industrial-zoned urban land in inner Melbourne?
2. Are manufacturing activities occurring on other types of lands, such as mixed-use and commercial zoned lands? Is there a particular type of manufacturing that is suitable for these types of lands?
3. Is there evidence of a high-innovation, high-value-added manufacturing sector developing in the inner region?
4. What other uses are occurring on industrial-zone urban land? Is the land being used largely by entities that comply with the industrial zoning requirements?
5. Are new types of manufacturers, with economic scopes different to those of traditional manufacturing, emerging in the IMR? Do we have reason to rethink how we define urban manufacturing and support its presence in inner cities?

2.2 THE SECTOR APPROACH

Our sector approach examines the interactions of inner-city land uses with the requirements of firms to survive, innovate, grow, and prosper. Concerned with the needs that firms have in order to continue carrying out their core business, this line of inquiry examines the barriers and impediments that occupancy of high-value, highly-accessible urban land provides – if any. The activities and questions in this approach are informed by economic theory on *agglomeration economies* and innovation.

Agglomeration economies are the productivity benefits that firms receive from being located in close proximity to concentrations of firms and people. They are often differentiated into two sub-categories, *urbanization economies* and *localization economies*. Urbanization economies are the productivity effects of being in a large labour market featuring a large concentration of readily accessible firms across a variety of sectors, while localization economies are the productivity benefits associated with being near firms that are involved in similar or complementary industries. Both are what economists call *positive externalities*.

The reliance by small firms on agglomeration economies is well-documented. Small firms tend to be at the forefront of innovation, and thrive in the presence of other innovators. As firms grow, their processes become standardized and established, and they tend to become less innovative. They also become less reliant on the *positive externalities* associated with highly urbanized, fertile central-city environments. A good example of

this effect is Microsoft, which moved away from Silicon Valley when its Windows operating system became firmly established as the industry leader.

In Melbourne, it is possible that displacement of urban manufacturers from central cities could have a stifling effect on innovation, creation, growth, and prosperity of individual firms. It is also possible that, rather than merely relocating, firms that are forced to leave the IMR simply close, removing their value added and their innovative capacity from the pool of Australian industries. Crucial to understanding whether preserving industrial land uses is necessary, is an understanding of how these small manufacturers interact with each other, learn from each other, and grow from that experience. Crucial also is an understanding of the barriers and impediments that stifle that innovation and growth. Toward this end, this line of inquiry examines the needs of small manufacturers in the IMR according to the following questions (numbering continues from the previous section):

1. Is the central location required for these firms to survive, grow, and prosper?
2. Are we seeing evidence of agglomeration economies forming among small manufacturers in the IMR?
3. What factors do firms consider when deciding to locate in an inner city?
4. What types of local firm interactions are important for firm growth? What kinds of linkages do they exploit? Ignore?
5. What are the growth goals of inner-city manufacturing firms?
6. What are the major impediments to growth, e.g., space, regulatory environment, rents?
7. Are strong links to universities compelling small manufacturers to locate in central cities? What is lost when they move away from the university environment?
8. Why do boutique manufacturing firms leave the inner city? Is it because they have graduated to a more mature stage of development, or do they leave while still in stages where proximity to other firms is crucial? Where do they go? Do they survive?

2.3 THE ECONOMIC APPROACH

Our description of the economic approach is brief, as we expect this to be funded by a grant award arising out of the collaborations we develop during Phases 1 and 2. Our economic approach examines the impacts that small urban manufacturers exert on the urban economy, including the effect on wages, jobs, and innovation in the region. Underlying this approach is our hypothesis that the impediments experienced by small manufacturing firms can have a stifling effect on the entire economy, and conversely, that these small firms can exert positive influences on their own and other related and supporting sectors. If small, high-value manufacturing creates positive effects for the urban economy, and if the contributions of this sector can be made more productive through public policy initiatives or investments, then policy makers would surely want to know this. The questions below are indicative of the queries that we would make through the economic approach (numbering continues from the previous section):

1. Is firm birth, growth, and innovation limited by the diminishing quantity of industrial-zoned land in the IMR?
2. What would be the overall economic costs (local, state, and national) of continued loss of urban industrial land in terms of jobs, value-added, and innovation, within the small urban manufacturing sectors?
3. Are there demographically-differentiated economic costs associated with loss or movement of small manufacturing firms, e.g., loss of modest-wage jobs or jobs for the young and recent university graduates?
4. Do small manufacturers support other sectors, e.g., legal and accounting services? What fertile effects would occur outside of the manufacturing sector?
5. What components of the industrial value chain are suffering the most from land restrictions? (informed by input-output analysis)

6. How do Australian and Victorian macro-economic trends and restrictions affect local manufacturing outputs?
7. Is council assistance in the form of start-up grants or business incubation, associated with firm longevity and value-added over the medium term?
8. Are universities exerting significant influence on creating fertile environments for firm growth in the small manufacturing sectors?

3. RESEARCH PLAN

We envision a multi-phase project implementation wherein each phase cross-cuts the three approaches we describe above, with ongoing reflection on the public policy implications of the findings. The short-term funds would fund Phases 1, 2 and 3. Future funding, either via an ARC Linkage Grant or Centre of Excellence, would fund further investigations of these issues, perhaps on a national scale. In this section, we describe the three research phases, including a brief overview of the methods of data collection and data analysis that we would employ in each. We also describe some expected observations and outcomes in the ongoing reflection during the project.

PHASE 1. LEVERAGING EXISTING DATA AND PILOT SURVEY

Current publically-available data are currently not suitable for an analysis of spatial distribution or sectoral character of small manufacturing firms in the IMAP region. Because of this, economic analysis of Melbourne's small manufacturers – their contributions to the local, state, and national economies in terms of short-term jobs and longer-term innovation – are currently not possible. Phase 1 would develop existing data sources by generating partnerships with the owner organizations to provide data at the appropriate scale and scope for industry analysis. Phase 1 would further pilot new data-collection instruments designed to further develop what we know about small urban manufacturers in the IMAP region, and provide the IMAP councils with timely policy recommendations to help them leverage their urban land and develop their small firms. The remainder of this section describes two sub-phases within Phase 1, and also describes the outputs for Phase 1.

Phase 1a. Leveraging Existing Data

There are several datasets currently in existence for Victoria that each provide key data for economic analysis of economic development in small manufacturing sectors, but none of them provide a complete picture for all three approaches – land, sector, and economic – to be analysed for small manufacturing firms. Some datasets provide important spatial and sector data, but do not provide it at a fine-enough information on employment to isolate small makers. For instance, Industry Atlas data provide sector information by LGA, highlighting success cases such as the large and growing machinery and medical technology sectors in Yarra. However, the data in their current format do not allow for the isolation of small and very small manufacturing firms (fewer than 20 employees, fewer than five employees). Similarly, existing Australian Business Register data are available to the IMAP councils in geocoded (or geocodable) format. However, this data does not include firm size or other critical data such as value added and capital investment. These data could provide a spatial picture of how industrial-zoned land is used in the IMAP region (the land approach), but do not allow us to discover the sector-based economies and constraints that exist for the makers occupying these spaces (the sector approach).

Some existing datasets provide spatial information – such as land use zoning and VicCLUE data – but do not combine it with sector data about firms occupying the spaces that is specific enough for economic analysis. These datasets can tell us something about where to find industrial-zoned land in the IMAP region, but do not provide us with information about how small makers are distributed in this space (the land and sector approaches), or how being located within this space affects their productivity and innovation (the economic approach). Finally, none of the existing data tell us anything about why firms leave the IMAP region – either via relocation or firm death – and where they go if they do relocate (the economic approach).

Phase 1a would create an over-arching narrative using these existing datasets. It would also develop a sampling framework to be followed up with a survey in Phase 2. This sampling framework would reflect the land approach and the sector approach. The land approach tasks would sample firms operating within the IMAP region, in order to develop a picture of how industrial-zoned land is used in the region, and how small manufacturers situate themselves spatially. The land approach sampling strata would be spatial, reflecting

industrial-zoned land and other land that could house industrial uses, e.g., mixed-use zoning or zoning code exceptions.

The survey strata reflecting the sector approach would target particular firms within certain manufacturing sectors. These strata would come from ABR data on small manufacturers, and would target particular sectors. Targeted sectors would be developed in cooperation with IMAP and would reflect the size of particular small manufacturing sectors and the importance of each of these sectors in the economic development plans of the IMAP councils.

Phase 1b. Pilot Survey: Testing Hypotheses on the Land and Sector Approaches

Even if all available data from the ABR, Census JTW, VicCLUE, Valuer General, and other relevant datasets are compiled, we strongly suspect that there will be significant gaps in our understanding of how small manufacturers derive their economies of scale, capitalise on information networks, and leverage their location and proximity for growth (the economic approach). More fundamentally, there will also be significant gaps in our understanding of what it means to be a small manufacturer, how manufacturing functions integrate with service and other functions to create service-oriented production like high-end bicycles, three-dimensional printing, and biotechnology products with strong service dimensions (the sector approach). Even more fundamentally, there will still be significant omissions in our understanding of how urban land is used in the IMAP region (the land approach).

Phase 1b will develop and test hypotheses from the land and sector approaches, some of which are described above, in Sections 2.1 and 2.2. From anecdotal experience, media, and the international literature from the USA and other places where these sectors are currently building an economic base, about how we might find these firms to be different than established manufacturers; for instance, they may have a higher proportion of their activities dedicated to services associated with the manufactured product; may source their products more locally; may be particularly dependent on local networks; may be at the early stage of firm development that requires them to be highly adaptive and nimble, and also proximity to other firms may be crucial to this; may share spaces with non-registered companies; etc.

The main data used in Phase 1b will be a survey, developed to test specific hypotheses and according to rigorous methodological standards. The particular hypotheses will be generally as described in the previous paragraph and in Sections 2.1 and 2.2, and will be developed and refined further according to the evidence that emerges during Phase 1a. The survey design will integrate international evidence from places like New York, so that it can include hypotheses that can test for possible future scenarios that may emerge in Melbourne.

The major data-collection instrument in Phase 1 would be an electronic land-use survey and business inventory of firms on lands in the IMAP area, and also a sample of firms located outside the IMAP area. A survey of firms located outside the IMAP area will allow us to address hypotheses about why firms leave the IMAP area and whether agglomeration effects are real in the IMAP area. A sampling framework would be devised to reflect both the land and sector approaches. Survey strata reflecting the land approach would sample firms operating within the IMAP region, in order to develop a picture of how industrial-zoned land is used in the region, and how small manufacturers situate themselves spatially. The land approach sampling strata would be spatial, reflecting industrial-zoned land and other land that could house industrial uses, e.g., mixed-use zoning or zoning code exceptions. Survey strata reflecting the sector approach would target particular firms within certain manufacturing sectors. These strata would come from ABR data on small manufacturers, and would target particular sectors. Targeted sectors would be developed in cooperation with IMAP and would reflect the size of particular small manufacturing sectors and the importance of each of these sectors in the economic development plans of the IMAP councils. About 150 firms would be sampled in this pilot phase.

This survey would collect data on products and services, firm size, output, employment, growth and location history, and organizational structure (non-profit, etc.). It would collect information on non-manufacturing activities being conducted as part of the firm's activities, the amount of innovation investment that the firms make, firms reliance on central locations for growth and innovation, considerations that firms make when choosing inner city locations, firm interactions and linkages, growth goals, links to universities and government, major impediments to growth, e.g., space, regulatory environment, rents, why boutique manufacturing firms leave the inner city, and when they do, where they go and whether they survive.

Outputs of Phase 1 would be a report containing these deliverables:

- A. An extensive international literature review to identify potential ANZSIC sectors of interest (ie manufacturing and other sub sectors – creative industries and non-traditional manufacturing etc) to determine a definition of relevant firms for this research project
- B. A summary description of any relevant surveys or research already undertaken by councils, state government or peak bodies in relation to business location preferences, etc
- C. Compilation and analysis of various spatial data sets, including Worksafe, ABR, Property & Rates and CLUE to determine:
 - a. Overall sense of scale of the sectors we are interested in. this would likely be in terms of business counts at this point
 - b. Areas where these firms appear to be located/ concentrated
 - c. Appropriate method of surveying these businesses – to ensure we reach the most relevant person in the business and maximise our chances of obtaining quality responses
- D. A descriptive analysis of:
 - a. Types of uses on industrial-zoned and other relevantly-zoned land in the IMAP region (the land approach)
 - b. The general spatial distribution of small manufacturing firms in the IMAP region (the sector approach)
 - c. The identification of sectors with strong potential for economic development contributions in the region (the economic approach)
 - d. Constraints and opportunities for small urban manufacturers in the IMAP region
 - e. Motivations for urban manufacturing
- E. Hypothesis testing of relationships between public policy and outcomes for small urban manufacturers. These hypotheses will be developed as part of Phases 2 and 3a, so cannot be thoroughly itemized here, but could include:
 - a. Links between rezoning and firm displacement
 - b. Links between agglomeration and growth
 - c. Links between displacement and decline
 - d. Links between central location and innovation
- F. Status of Memoranda of Understanding (MOUs) between data owners and the University of Melbourne for use of data parsed appropriately for economic analysis
- G. Next Steps – Developing a full inquiry
 - a. Analysis of the pilot to determine project significance and value of a full study incorporating relevant to *Plan Melbourne*
 - b. Further stages as outlined below in a full inquiry into the issue focusing on further analysis of supply chains, further mapping of spatial linkages and estimation of agglomeration economies

PHASE 2. EXTENDING THE PILOT AND COMPLETING THE NARRATIVE

Phase 1 will provide a proof of concept – a narrative and analysis to support further and deeper exploration of the issues uncovered. Phase 2 extends the study a qualitative exploration of firms in the IMA region and also with a larger survey that incorporates the qualitative considerations. The remainder of this sections describes those tasks and the associated outputs.

Phase 2a. Completing the Narrative

Even with a rigorously-designed survey informed by local and international experience as detailed in Phase 1, there will still be blind spots in our analysis: unknown unknowns that we will not foresee even with careful planning. We think, for instance, that we may be in for some surprises in an audit of industrial zoned land that goes deeper than a survey. There are likely significant instances of non-complying, non-industrial uses, including music venues, cafes, live/work artists lofts, midnight bakers that supply the local cafes, and maybe even squatters. The presence of a high concentration of actual industrial uses, or alternatively, a high concentration of industrial uses that do not align with traditional manufacturing definitions as defined in the ANZSIC codes. Whether we, in subsequent phases, ignore the non-complying uses or integrating them into the complex narrative that we will probably uncover, is dependent on us first knowing that they are there.

Given the possibility of these unknown unknowns, we will require a qualitative exploration to explain anomalies and inconsistencies we discover in Phase 1, and also to develop a sufficient theory base to test the deeper economic hypotheses that we describe in Section 2.3 above, around the economic approach. We do not have enough understanding of the current business climate in the IMR to settle on this or some other specific hypotheses as the important ones to test, and the dynamics of small, high-value added urban manufacturing is not well-understood. In this case, in a limited-information environment, qualitative work will yield the most interesting and instructive results.

Phase 2a will be entirely qualitative. From the sample generated in Phase 1 and additional snowball methods, we will select various firm types, drawn from various locations in the IMA region. Additionally, using snowball methods we will sample firms that have relocated from the IMA region to another jurisdiction outside of the IMR. Sampling will be stratified to engage four firm groups:

1. Firms located in the inner city in industrial-zoned land
2. Firms located in the inner city in mixed-use and commercial-zoned land
3. Firms located in the Melbourne metropolitan region but outside the inner city, having relocated from the inner city
4. Firms located in the Melbourne metropolitan region but outside the inner city, not having relocated from the inner city

These groupings will allow us to test the validate hypotheses tested with the survey and analysis in Phase 1, regarding kinds of uses occurring in firms located on industrial-zoned lands in the IMA region (the land approach), the factors that facilitate firm survival and prosperity decline and demise (the sector approach), and the local, state, and national economic impacts of these small firms (the economic approach). We will examine these questions using Grounded Theory and guided by the findings from Phase 1..

An astute observer may ask why we do not place the qualitative queries before the survey design described in Phase 1. In placing the survey first, we forego the chance to integrate these findings into a more-complete survey instrument. The reason we have chose to order the activities in this way is so that we can deliver policy-relevant results to the IMA councils in the near-term, so as to facilitate policy responses guided by a significant body of evidence, regarding how industrial-zoned lands should be changed in the implementation of *Plan Melbourne*. These needs are immediate, and cannot wait for a qualitative study of urban manufacturers, which itself would take the better part of a year. We see Phase 2 as informing a large study to be carried out over several years, possibly with an ARC Linkage grant with the University of Melbourne in

partnership with IMAP and perhaps other similar organisations around the country. These activities are described in Phase 3 below.

There is a significant-enough evidence base such that design of a good, rigorous, high-quality survey can be accomplished for the IMAP region without an immediate qualitative component. We do have some ideas, from anecdotal experience, media, and the literature from the USA, about how we might find these firms to be different than established manufacturers; for instance, they may have a higher proportion of their activities dedicated to services associated with the manufactured product; may source their products more locally; may be particularly dependent on local networks; may be at the early stage of firm development that requires them to be highly adaptive and nimble, and also proximity to other firms may be crucial to this; may share spaces with non-registered companies; etc.

However, there will quite a few blind spots even with careful planning and survey design. For these, we will need the qualitative exploration.

Phase 2b. Refining the Survey and Increasing the Sample Size

With the insights gained from the pilot in Phase 1 and the qualitative study in Phase 2a, we will refine the existing survey instrument to reflect the particular local conditions that we encounter. Expanding the survey from Phase 1, we will generate a dataset of a statistically valid sample of firms within the IMAP area and also at strategically-selected areas outside of IMAP (for control and comparison), designed to understand business structures, processes and linkages, as well as any additional hypotheses we generate during Phases 1 through 3. Sampling will be designed to allow for spatial representativeness of the data and appropriate statistical power. Again, as in Phase 1, sampling will be stratified to reflect the spatial and sector characteristics of firms in the IMAP region, and will draw a sample of displaced firms outside of the IMAP area.

Outputs of Phase 2 would be a report containing that extends the Phase 1 report and contains the following deliverables:

- A. Summary of Phase 1 report
- B. A rigorous qualitative analysis of the field interviews conducted in Phase 2a, including:
 - a. A firm typology, i.e., development of a set of classification and descriptive systems for firms engaged in small urban manufacturing. These could include descriptors like “high touch” or “service heavy”
 - b. A set of illustrative firm profiles, designed to illustrate the firm typology
 - c. Relevant additions to the survey instrument arising from the qualitative work
- C. A descriptive analysis of the larger survey outcomes, including:
 - a. Firm characteristics, e.g., FTEs
 - b. Firm innovation efforts and constraints
 - c. Service composition of firms classified as manufacturing
 - d. Firm agglomeration effects
 - e. Identification of sectors with strong potential for economic development contributions in the region
 - f. Constraints and opportunities for small urban manufacturers in the IMAP region
 - g. Motivations for firms to engage in urban manufacturing
- D. Hypothesis testing of relationships between public policy and outcomes for small urban manufacturers. These hypotheses will be developed as part of Phase 3a, so cannot be thoroughly itemized here, but could include:
 - a. Links between rezoning and firm displacement
 - b. Links between agglomeration and growth
 - c. Links between displacement and decline
 - d. Links between central location and innovation
- E. Next Steps – Developing the economic inquiry

PHASE 3. UNDERTAKING THE LARGER ECONOMIC ANALYSIS

We see the Phase 3 as a large study to be carried out over several years, possibly with an ARC Linkage grant with the University of Melbourne in partnership with IMAP. Phase 3 work is not in the immediate scope of the IMAP/Carlton Connect-funded work we describe here, but we include it anyway to give the reader a sense of the larger public policy questions that can be addressed with a longer-term commitment to cooperation and funding.

This phase is designed to test the larger economic questions as outlined in Section 2.3. These questions include impacts that small urban manufacturers exert on the urban economy, including the effect on wages, jobs, and innovation in the region. Underlying this approach is our hypothesis that the impediments experienced by small manufacturing firms can have a stifling effect on the entire economy, and conversely, that these small firms can exert positive influences on their own and other related and supporting sectors.

From Phases 1 through 3, we will develop testable quantitative hypotheses such as those outlined in Section 2.3 above. In Phase 3, we will use the survey and data developed in Phases 1 and 2, in which we will have a statistically valid sample of firms within the IMAP area and also at strategically-selected areas outside of IMAP (for control and comparison). The products of this phase could include the following (hypotheses could be refined in Phases 1 and 2):

- Analysis of value chain data for each enterprise, covering in-bound logistics, operations, outbound logistics, marketing and sales, after sales service, strategic management, human resources, technology and procurement⁵.
- Exploration of barriers to entry or growth for urban manufacturers, for example, accessing finance or government assistance
- Further mapping of select firms' spatial linkages with suppliers, collaborators, workers, distributors, customers and retailers with a view to understanding economies of scale and scope attaching to agglomerations
- Estimation of agglomeration economies effects for the IMAP region and the State of Victoria, for urban manufacturers, differentiated by location (urban versus suburban)
- Estimation of lost innovation and value added due to displacement effects.

4. IMPLEMENTATION TIMELINE AND OUTPUTS

This section describes the project the timeline for implementation of Phases 1 through 3. It also describes the significance of the project and associated partnerships.

4.1 PROJECT OUTCOMES

Moving from the pilot phase through to the full-scale implementation, each phase of this project is designed to deliver specific policy-relevant recommendations and findings. We describe these products above. This section describes the overall projected products of all three phases, collectively. We foresee some final outputs being:

- Systematic capture of value chain data for each enterprise, covering in-bound logistics, operations, outbound logistics, marketing and sales, after sales service, strategic management, human resources, technology and procurement⁶.

⁵ After the framework developed by Porter M. (1985) "Competitive Advantage: Creating and Sustaining Superior Performance"

⁶ After the framework developed by Porter M. (1985) "Competitive Advantage: Creating and Sustaining Superior Performance"

- Exploration of barriers to entry or growth for urban manufacturers, for example, accessing finance or government assistance
- Further mapping of select firms' spatial linkages with suppliers, collaborators, workers, distributors, customers and retailers with a view to understanding economies of scale and scope attaching to agglomerations
- Estimation of agglomeration economies effects for the IMAP region and the State of Victoria, for urban manufacturers, differentiated by location (urban versus suburban)
- Estimation of lost innovation and value added due to displacement effects.

Each of Phases 1 through 3 would result in a report to IMAP. This ongoing reflection will pay particular regard to the specific implications for planning controls and macro-economic influences, based on the findings from the phase. Possible findings include the following:

- Small manufacturing firms are more diverse than the detail represented by ANZSIC codes, and operate outside the traditional organizational structure and production framework of the manufacturers around whom these codes were designed, e.g., auto manufacturing. Firms using industrial-zoned land in the IMAP area are highly innovative, nimble, "high-touch" industries that significantly benefit from agglomeration economies, both in the form of urbanization and localization economies.
- These small firms engage peripheral and support industries to a significant degree and create significant multiplier effects that ripple throughout the economy, from legal services to accounting services to component suppliers and manufacturers.
- Small manufacturers are not only high-touch, but also highly-linked, with extensive supply chain networks that are configured differently than those of traditional manufacturers, i.e., more into the services realm.
- Enterprise competitive advantage significantly suffers when small firms are forced out of the IMR. Outward movement impairs firms' ability to share inputs and suppliers, attract a creative workforce, and collaborate with universities and research institutes.
- Land availability and rents are major reasons why small manufacturing firms move out of the IMAP region before they are mature.

Possible recommendations include:

- Preservation of some industrial-zoned lands in the IMR
- Re-examination of current zoning regulations to make them more compatible with urban manufacturing
- Development of urban and site design strategies for successful integration of urban manufacturing in mixed use areas

4.2 PROJECT TIMELINE

After an initial mobilisation period during which we would also secure University of Melbourne human ethics approval, we expect Phases 1 and 2 of this research project to take approximately twelve months, as per Table 1. ARC linkage grantwriting and development of publications will begin in Month 13 (if not before) and continue until complete.

Table 1. Timeline for Phases 1 and 2

Timeline for Phase 1 and 2				
Month 1	Team assembly			
Month 2	Ethics approval			
Month 3		Inception Workshop	Phase 1	
Month 4				
Month 5				
Month 6			Dissemination Workshop #1	
Month 7			Phase 1 Report	
Month 8			Phase 2	
Month 9				
Month 10				
Month 11				
Month 12			Dissemination Workshop #2	
Month 13			Phase 2 Report	ARC Linkage Grant Application*
Month 14				
Month 15				
Month 16				

*Depending on funding begin date and ARC application timelines

4.3 PROJECT SIGNIFICANCE

The project will test the conventional wisdom, both in research and policy circles, that there is an inevitable bifurcation in the economic geography of Australian metropolises, characterised by a knowledge intensive, 'desk based' urban core versus an increasingly disconnected suburbia. The project will open a new front in domestic urban research with far reaching implications for government programs dealing with balanced labour markets, social inclusion and environmental sustainability. The research can be expected to attract an eager audience across national, state and local government jurisdictions. It is likely to win significant interest in the press and popular media.

Thus, the project will most likely establish the platform, and appetite, for a major national investigation of urban manufacturing, including the prospect of ARC recognition. The principal research outputs will be documented to rigorous scholarly standards. In addition to this formal documentation, project publications will be prepared for wide circulation, both inside and outside the planning and public policy professions. Graphic design and innovative presentation techniques, particularly using advanced GIS capabilities, will be deployed to broaden the legibility and influence of the research findings.

The research can be expected to have an immediate impact on planning policies for several of inner Melbourne's key industrial areas. It will provide an initial evidence base to support decision making about if and when industrial areas should be 'protected' from property market pressures. The same insights may support the development of more nuanced and innovative planning mechanisms and design models to accommodate the needs of contemporary manufacturers, promote business development and profitability, strengthen positive interaction between industrial and non-industrial uses, and promote industry-university partnerships.

5. PROJECT TEAM

Prof. Brendan Gleeson ¹	Chief investigator (strategic) Responsible for overall conceptual design and research quality
Dr Jennifer Day ¹	Chief investigator (operational) Responsible for detailed research methodology and execution, including quantitative modeling
Dr Marcus Spiller ² Mr. Bryn Davies ² Prof. Richard Tomlinson ¹ Mr Terry Rawnsley ² IMAP delegates (x3)	Research reference panel Responsible for <ul style="list-style-type: none">critiquing and developing research methodsguiding exploration of policy issues arising from the research

¹ Faculty of Architecture, Building, and Planning, The University of Melbourne

¹ SGS Economics and Planning

We anticipate that some of the research will be conducted as part of course work by undergraduate and post graduate students drawn mainly from the Faculty of Architecture, Building and Planning at the University of Melbourne.

6. BUDGET

Table 2 summarizes the proposed budget for Phases 1 and 2. This funding would be generated from Carlton Connect, IMAP and other potential partners in state government. Currently, our best indication is that Carlton Connect would contribute around \$20,000 immediately to partly fund Phase 1, and there is a possibility of medium-term funding for Phase 2 of \$50-100,000 through the Carlton Connect Initiative Fund (CCIF), for which we would have to apply through normal channels. Currently, IMAP partners envision contributing \$18,000 each to Phase 1, with Phase 2 funding contingent upon Phase 1 outcomes. State government agencies would contribute a combined \$60,000, with funding subject to formal requests via normal procedures.

Combined estimated IMAP, state government, and CCIF Phase 1 contributions are currently \$152,000. This amount would fund the entire Phase 1 and part of Phase 2. The additional funds would be secured, hopefully, from a successful CCIF application.

CCIF contributions are predicated on commitment to consider longer-term partnerships through Australian Research Council (ARC) Linkage Grant applications to fund Phase 3. This does not imply a commitment by the partners to engage in a Linkage Grant application, but does imply that such an application is a serious consideration.

These amounts are aligned with the IMAP resolution on 29 August 2014:

Resolution

1. The IMAP Implementation Committee also resolved to approve that the project steering group:
 - (1) progress the final project scope, aligned to the preliminary scope, identifying key stages;
 - (2) progress the final funding arrangements comprising up to \$150,000, with a contribution of up to \$60,000 from State Government agencies (subject to a formal request for funding) and \$18,000 from each IMAP member Council; and
 - (3) progress a partnership and matching funds from the University of Melbourne's Carlton Connect initiative; subject to final ratification from the IMAP Implementation Committee.

The attached budget outlines projected costs for Phases 1 and 3. As discussed above, further research examining urban manufacturing in a national context – a Phase 3 – will be developed over the longer term via ARC Linkage Grant proposals.

TABLE 2. PORPOSED BUDGET FOR PHASE 1 AND 2 ACTIVITIES

Item	Units	Cost (AUD)
Phase 1. Leveraging Existing Data and Pilot Survey		
Research assistance, RA Grade 2 salary plus on-costs, based on \$42 per hour salary plus 16% on-costs (estimated), 1 FTE for 6 months	1040 hours	\$50,669
Survey implementation and coding, RA Grade 2 salary plus on-costs, based on \$42 per hour salary plus 16% on-costs, 1 FTE for 1 month	160 hours	\$7,795
Jennifer Day, UoM salary and on-costs	0.2 FTE, 6 months	\$22,919
2x Workshops (inception and dissemination), key stakeholders, organizing assistance, catering and venue	2	\$20,000
<i>Phase 1 Subtotal</i>		<i>\$101,383</i>
Phase 2. Extending the Pilot and Completing the Narrative		
Research assistance, RA Grade 2 salary plus on-costs, based on \$42 per hour salary plus 16% on-costs, 1 FTE for 6 months	1040 hours	\$50,669
Survey implementation and coding, RA Grade 2 salary plus on-costs, based on \$42 per hour salary plus 16% on-costs, 1 FTE for 1 month	160 hours	\$7,795
Field interviews, implementation and coding, RA Grade 2 salary plus on-costs, based on \$42 per hour salary plus 16% on-costs, 1 FTE for 4 months	640 hours	\$31,181
RA travel and field expenses, \$70 per person-day @2x 40 days	80 days	\$5,600
Jennifer Day, UoM salary and on-costs	0.2 FTE, 6 months	\$22,919
Workshop, key stakeholders, organizing assistance, catering and venue	1	\$10,000
<i>Phase 2 Subtotal</i>		<i>\$128,164</i>
TOTAL		\$229,546

7. REFERENCES

The Pratt Center (Producer). (date not specified, 17 October 2014). URBAN MANUFACTURING: New York City is at the forefront of a national urban manufacturing renaissance. Retrieved from <http://prattcenter.net/issues-expertise/urban-manufacturing>

APPENDIX A. CHIEF INVESTIGATORS' BIOGRAPHIES AND RELEVANT EXPERTISE

The Pratt Center (Producer). (date not specified, 17 October 2014). URBAN MANUFACTURING: New York City is

Jennifer Day is a Lecturer in Urban Planning at the University of Melbourne. She completed her PhD in City and Regional Planning at the University of California, Berkeley, in 2009. Before that, she was a civil engineer. Her research interests follow two streams: urbanization and economic development in the Asia-Pacific region, and political economy in developed countries. Her dissertation research focused on the economic welfare outcomes for families subject to involuntary resettlement in Shanghai. She has developed a significant body of work on factors that influence the development of agglomeration economies in Indonesia, for which she has been invited to speak to the Indonesian cabinet in November 2014. She is currently working on research examining the drivers of economic growth in Indonesian cities and South Asian cities, the decline of the traditional media and the associated outcomes for public participation in urban planning decisions at the local level in the USA, and the adherence to urban growth and economic development policies in Melbourne, Australia. She regularly consults as a regional and urban economist for the World Bank on issues of urbanization and economic development. Indicative works include:

Peer-Reviewed Journals

Day, J. and B. Lewis (2013). "Beyond Univariate Measurement of Spatial Autocorrelation: Disaggregated Spillover Effects for Indonesia." *Annals of GIS*, 19(3) pp. 169-185.

Day, J. and P. Ellis (2013). "Urbanization for Everyone: The Benefits of Urbanization in Indonesia's Rural Regions." Forthcoming in the *Journal of Urban Planning and Development*. Currently published online at <http://ascelibrary.org/doi/abs/10.1061/%28ASCE%29UP.1943-5444.0000164>.

Day, J. and P. Ellis (2013). "Growth in Indonesia's Manufacturing Sectors: Urbanization or Localization Economies?" *Regional Science Policy and Practice*, 5(3) pp. 343-368.

Invited Presentations

Day, J. (2014). Indonesia National Seminar on Infrastructure Sustainability, Bali, October.

Day, J. (2014). "Identifying Industrial Clusters in a Data-Poor Environment." SGS Economics and Planning Master Class, 29 July 2014.

Conference Proceedings

Day, J., S. Sturup, and Y. Chen (2013). "An Open-Source Tool for Identifying Industrial Clusters in a Data-Poor Environment." State of Australian Cities Conference, Sydney, 26-29 November.

Day, J. and P. Ellis (2012). "Some Determinants of Growth in Off-Java Lagging Regions Since Decentralization" Annual Congress of the Association of European Schools of Planning, Ankara, Turkey, 11-15 July, 2012.

Inner Melbourne Action Plan

Urban Manufacturing in Inner Melbourne

INVESTMENT LOGIC MAP

Program

PROBLEM

BENEFIT

STRATEGIC RESPONSE

Growing competition for space in inner Melbourne threatens the viability of small scale knowledge intensive industries 60%

A decline in diversity of economic activity across inner Melbourne detracts from the region's vitality and attractiveness 40%

A growing, more productive Victorian economy 50%

KPI 1: Small scale knowledge intensive businesses and jobs
KPI 2: Availability of productive space

The creation and retention of local identity 20%

KPI 1: Business clusters
KPI 2: Under-utilised space
KPI 3: Local employment

A stronger, more resilient local economy 30%

KPI 1: Diversity of economic activity
KPI 2: Business maturity
KPI 3: Economic activity

Better connect businesses with potential markets and inputs

Facilitate relationships between related businesses

Create and retain a diversity of spaces in strategic locations

More effectively promote the region for potential investors

Encourage the provision of services that support new entrants