ADDENDA 5

Amendment GC81 Fishermans Bend Expert Urban Design Evidence: Additional material requested at Panel Hearing

Prepared on behalf of DELWP
28 March 2018

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Hodyl+Co

Overview

1) This addenda has been prepared to provide additional material as requested at the Panel Hearing through cross-examination on the 14th, 15th and 21st March, 2018.

Requests arising from the 14 March, 2018

a) Compile sources and maps for Figure 9 in the Urban Design Strategy

2) Refer to the following:

- Table 1 for sources
- Figure 1 for maps

Table 1 Sources for Figure 9 in the Urban Design Strategy

Size (hectares)		Location	No. of residents	Densities (residents / gross hectare) (as per UDS report Figure 9)	Updated No. of residents *(2)*	Updated densities (residents / gross hectare) *(2)*	Source
158		Southbank (projected 2034)		308		305	Figure provided on City of Melbourne website: http://melbournepopulation.geografia.com.au/maps/popdensity#2037
207		Hoddle Grid (projected 2034)		297		309	Figure provided on City of Melbourne website: http://melbournepopulation.geografia.com.au/maps/popdensity#2037
146	*(1)*	Docklands (projected 2034)	23,924	126	24,694	169	Population figuree provided at http://melbournepopulation.geografia.com.au/maps/popsize#2037. Residents/hectare then calculated
4,700		Kowloon, Hong Kong		430	2,194,800	467	https://www.pland.gov.hk/pland_en/info_serv/statistic/tables/Lock_WGPD%20Report_2015-2024.pdf
150		Mongkok, Kowloon, HK		1,300			http://www.abc.net.au/news/2011-11-03/the-busiest-place-on-earth/3611032
5,877		Manhattan Island, New York		273			Population density provided per square kilometre: http://worldpopulationreview.com/boroughs/manhattan-population/ Divided by 100 to calculated population per hectare
748		L'Eixample, Barcelona		359			Figure provided at http://densityatlas.org/casestudies/profile.php?id=92
56		Arden Central (draft vision)	15,000	268			https://vpa.vic.gov.au/project/arden/
248		Fishermans Bend CCZ precincts	80,000	323			Fishermans Bend Vision 2016

Notes:

(1) Size calculated to exclude water bodies

(2) Updated data now provided from original source

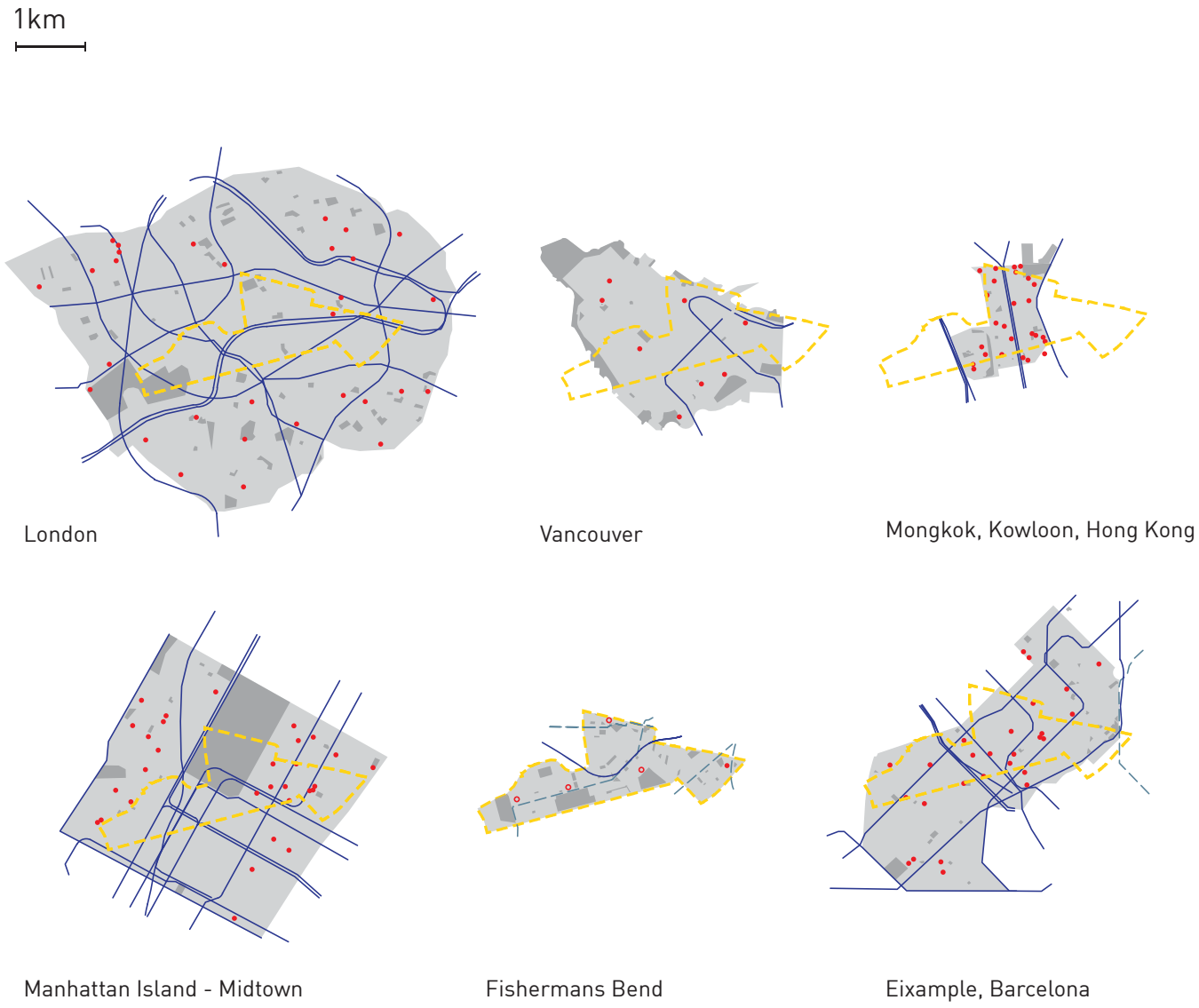


Figure 1 Map diagrams of comparative cities illustrating relationship to infrastructure provision (metro/trams, open space and schools)

b) How the total population would be calculated if the current approval rates continue.

3) Table 2 provides estimates of the potential residential and worker population that could be delivered under GC50 interim controls.

4) The overall Gross Floor Area (GFA) figures have been drawn from testing that the Fishermans Bend Taskforce prepared in 2016 to determine the potential overall floor area that could be delivered by the Interim controls. This has been translated into a potential residential and employee population by attributing the floor area between these two uses as follows:

- Scenario 1: which assumes 10% of the potential GFA is attributed to employment uses
- Scenario 2: which assumes that 5% of the potential GFA is attributed to employment uses

5) The other assumptions are all aligned with the built form testing that has been prepared for the proposed controls under GC81. This includes:

- 31m^2 per employee
- 1 car park per 100m^2 of commercial uses
- 110m^2 floor area per dwelling on average (which includes circulation/services and car parking requirements)
- Average household size of 2.17 people per dwelling

Table 2 Potential population estimates delivered through GC50 controls

Scenario 1: INTERIM CONTROLS GC50 Assumes 10% of GFA contributes to employment

Precinct	GFA data provided from Urban Circus model - Dec 16	Assume 10% is employment	No. of Employees (31m^2 per employee + 30m^2 per 100m2 of commercial)	Remaining GFA for residential uses	No. of dwellings (Assume 110m^2 per dwelling average - includes circulation spaces and car parking requirements)	Residential population Assume 2.17 people per dwelling (average for total FB area)
		10%	62.25	90%	110	2.17
Wirraway	1,964,058	196,406	3,155	1,767,652	16,070	34,871
Sandridge	2,702,744	270,274	4,342	2,432,470	22,113	47,986
Montague	2,090,946	209,095	3,359	1,881,851	17,108	37,124
Lorimer	1,818,801	181,880	2,922	1,636,921	14,881	32,292
TOTAL	**8,576,549**	**857,655**	**13,778**	**7,718,894**	**70,172**	**152,273**

Scenario 2: INTERIM CONTROLS GC50 Assumes 5% of GFA contributes to employment

Precinct	GFA data provided from Urban Circus model - Dec 16	Assume 5% is employment	No. of Employees (31m^2 per employee + 30m^2 per 100m2 of commercial)	Remaining GFA for residential uses	No. of dwellings (Assume 110m^2 per dwelling average - includes circulation spaces and car parking requirements)	Residential population Assume 2.17 people per dwelling (average for total FB area)
		5%	62.25	95%	110	2.17
Wirraway	1,964,058	98,203	1,578	1,865,855	16,962	36,808
Sandridge	2,702,744	135,137	2,171	2,567,607	23,342	50,652
Montague	2,090,946	104,547	1,679	1,986,399	18,058	39,186
Lorimer	1,818,801	90,940	1,461	1,727,861	15,708	34,086
TOTAL	**8,576,549**	**428,827**	**6,889**	**8,147,722**	**74,070**	**160,732**

6) This results in the following population estimates:

- Scenario 1 - 152,273 residents and 13,778 employees
- Scenario 2 - 160,732 residents and 6,889 employees

c) Other locations where affordable housing is delivered through a FAU and copies of the planning controls where affordable housing is delivered through a FAU.

7) Refer to Figure 2 for examples of other locations where a FAU is used to deliver affordable housing.

8) Two detailed examples of planning controls are provided below. New York includes a density bonus which is defined and capped for nominated precincts. Vancouver includes a combination of a density bonus which is defined and capped and an opportunity for a negotiated outcome with no cap.

New York

9) The New York Zoning Regulations are the equivalent of a local planning scheme in Victoria.

10) The New York Zoning Handbook is provided as a summary of all of the zoning regulations (which in New York include land use, density, building envelope and other development controls) and is found here: http://www1.nyc.gov/assets/planning/download/pdf/about/publications/zonehand.pdf

11) A summary explanation of the application of a density bonus for affordable housing can be found on pages 117-118 of the Zoning Handbook. Note that this is called an 'Inclusionary Housing Program' however it is a density bonus scheme and not an inclusionary zoning policy as we think of it in Australian terms.

In these examples, the amount of additional FAR is prescribed for each precinct and applies as per the diagram illustrated in p118.

12) The full zoning regulations for New York are found here: http://www1.nyc.gov/site/planning/zoning/access-text.page. There are a number of precincts in which affordable housing is supported through a density bonus. One specific example can be found here (refer to Clause 98-22 which lists the base allowable FAR and the potential density bonus for delivering affordable housing): http://www1.nyc.gov/assets/planning/download/pdf/zoning/zoning-text/art09c08.pdf?r=0907

Vancouver

13) The Vancouver By-Laws are the equivalent of the local Planning Scheme in Victoria. The use of a density bonus to deliver affordable housing is utilised in two ways as follows:

- It is included within the bylaws as a designated bonus. The ByLaws for Downtown Vancouver are found here: http://bylaws.vancouver.ca/ODP/DD.pdf. They apply to the traditional commercial CBD and the surrounding inner-city high-density residential precincts. An example of a density bonus for social housing is found on page 16 (Areas L and M within the Downtown area). The definition of social housing that is eligible is found on page 6.
- Through a Community Amenity Contribution (CAC) which are linked only to site specific re-zonings (see: http://vancouver.ca/files/cov/community-amenity-contributions-through-rezonings.pdf). The CAC mechanism is utilised to deliver a range of public benefits including affordable housing. They can be negotiated or tied to a CAC target. An example of this being used to incentivise the delivery of affordable housing is in the Southeast False Creek Area (refer page 9). For further detail

on the application of CACs and how they are negotiated see here: http://vancouver.ca/files/cov/cacbrochure.pdf

(d) Example jurisdictions where height controls paired by density controls

14) Refer to Figure 3 which summarises the jurisdictions reviewed through preparation of the Fishermans Bend Urban Design Strategy and, in addition, those reviewed through the C270 report.

(e) Population densities and area of Mongkok

15) Refer to Table 1.

(f) Details of Australian research re family friendly housing and tower accommodation

16) Robert Gifford has written an informative article that brings together the key findings of the international research into high-rise living. Refer to: https://www.dropbox.com/s/ophaqr1xz4mwf3t/Gifford%2C%20R.%20The%20Consequences%20of%20Living%20in%20High-Rise%20Buildings_1.pdf?dl=0

	Downtown Chicago (Zone DX-16)	New York Downtown (Zone R10)	Auckland Downtown (Queens Street Valley)	Singapore Central Area Core Downtown (established area)	Perth Citi–Place and St Georges Precinct	Sydney Centre (Central City)
Affordable Housing						
Public Realm				Major public transit connections		
Heritage Conservation	'Adopt a Landmark'	Theatre preservation Transfer 'bonus'		Heritage Bungalow Conservation	Transfer 'bonus'	Heritage floor space
Community Infrastructure	Public School Improvement Fund	Performing/Visual Arts	Public Information kiosk	Sport and Recreation, library, elderly person service	Public Toilets	Entertainment + club floor space
Built form and Urban Design	Upper level setbacks		6 metre tower setback to all sides	Skyline Lighting Incentive Scheme		
Environmental Sustainability Development	Green roof		Bicycle Facilities	'LUSH' Sky rise Landscape Scheme		Bicycle Facilities/ Car parking reduction
Strategic Land Use		FRESH food retail	Residential/Hotel Accommodation		Residential/Hotel Accommodation	Residential/Hotel Accommodation/ Refurbish Opportunity
Design Excellence						Competitive Design Policy

Figure 2 Summary Comparison - Public Benefit Categories with some specific examples noted (Source: Helen Day Urbanism,. Comparative Planning Controls Report, April 2016)

	Downtown Chicago The Loop (Zone DX-16)	New York Midtown Manhattan (Zone R10)	Auckland Downtown (Queens Street Valley)	Singapore Central Area Core Downtown (established area)	Perth Citi –Place and St Georges Precinct	Sydney Central City	Melbourne Built Form Review Study Area (Interim Planning Controls, Sept 2015–Sept 2016)
Allowable Floor Area Ratio (FAR)	Mandatory 16:1	Mandatory 10:1	Mandatory 9:1	Mandatory 12.6: 1 (non-conservation areas)	Mandatory 6:1	Mandatory 8:1	Discretionary 24:1
Allowable Floor Area Uplift (FAU)	Mandatory Up to 50% allowable FAR	Mandatory Up to 2:1	Mandatory Up to 4:1	Mandatory Up to 10% of allowable FAR	Mandatory Up to 20% or 50% of allowable FAR (Refer Plot Ratio Bonus Plan)	Mandatory for each available FAU item No maximum stated	Discretionary (for items of State or Regional significance)
Maximum Building Height	Discretionary Residential – 134 m Non residential -158 m	Not regulated	Mandatory Special Height Plan (Site based assessment for Sun & View access plane)	Mandatory Height Control Plan Max. 50 storeys (for >50 storeys - additional 30 m of sky floors allowed)	Mandatory and Discretionary Building Height Plan designates range from 70 metres to 'no prescribed limit' (excludes heritage precincts)	Mandatory (LEP) Up to 235m Varies by designated locations & Sun Access Planes	Not regulated (Excludes 'Special Character Areas', DDOs, Precincts and parts of Southbank)
Minimum + Maximum Street wall / podium height	Not regulated	Mandatory Min 18 m Max 26 m	Mandatory Min. 19 m Max. 28 m	Mandatory Min. 19 m (4 storeys) Max. 100 m	Mandatory Max 1: 1 street width Varies by precinct	Discretionary Min. 20 m Max. 45 m (Excludes special character areas)	Mandatory Max. 40 m
Minimum Setback- front above street wall	Not regulated	Mandatory 3 m min. wide street 4.5 m min. narrow street 'Tower rules' allow sky exposure planes to be penetrated	Mandatory 6 m Setback exempt within 8 metres of corner intersection (to 3 storeys or max 12 metres)	Mandatory 3 m min. Additional .3m setback at podium level –for each additional storey	Mandatory 5 m below 65m 10 m above 65 m height	Discretionary 8 m weighted average to primary street 6 m to minor pedestrian street (Excludes special character areas)	Mandatory 5 m for streets > 9 metres
Minimum Setback- Rear and side above street wall	Mandatory (rear only) Residential -9 m rear only Not regulated (side)	Mandatory 6 m (wall) 9 m (window)	Mandatory 5 m	Mandatory Urban Design Guidelines (Downtown Core) 3 metre above party wall height	Mandatory 5 m below 65m 10 m above 65 m height Discretionary Small lots - Performance-based	Discretionary 6 m up to 45 m Varies above 45 m, with windows 3 m (commercial to commercial / residential) 6 m (commercial to residential) 12 m (residential to residential)	Mandatory 5 m or 5% overall building height for buildings > 100 m
Setback- Street level	Mandatory Max. 1.2 m for designated Pedestrian Streets only	Mandatory For 'Standard Tower' control Refer site coverage (max floor plates)	Discretionary	Mandatory With 3-5 m setback covered walkways on designated streets Max 40% of building façade - setback	Discretionary	Discretionary	Discretionary
Minimum Tower Separation	Not regulated	Mandatory 12 m (wall to wall) 15 m (wall to window) 18 m (window to window)	Mandatory 25 m	Guideline 16 m Refer mandatory setback controls	Not regulated Refer mandatory setback controls	Discretionary Above 45 m on same site 6 m (commercial to commercial) 15 m (commercial to residential) 24 m (residential to residential)	Not regulated Refer mandatory setback controls
Maximum Floor Plate Size (or Tower Coverage)	Not regulated	Mandatory 33% min - 40% max of site covered by tower (greater than 1860m2). 50% for lesser site areas (Excludes top 4 floors)	Mandatory 50 m max. horizontal plan for floors above 28 m	Guideline	Not regulated	Discretionary Commercial Above 120 m – the greater of 25% of site or 1400m^2 Above 45 metres – 65 m max. horizontal dimension	Not regulated
Shadow protected areas - designated	Discretionary	Not regulated	Mandatory Sunlight Admission Plan (key public spaces)	Discretionary	Not regulated	Mandatory Sun Plane	Mandatory
Wind Impact Assessment required	Not regulated	Not regulated	Mandatory Five public realm categories with prescribed max. gust speeds	Not regulated	Mandatory Required above 10 storeys	Not regulated (triggered at Planning Application stage for significant projects)	Mandatory Required as part of development submission

Figure 3 Summary Comparison - Density and Built Form Planning Controls (Source: Helen Day Urbanism,. Comparative Planning Controls Report, April 2016)

(g) Planning controls re: family friendly in Toronto and Vancouver

17) Refer to the following:

- Family-friendly guidelines for Toronto - https://www.toronto.ca/legdocs/mmis/2017/pg/bgrd/backgroundfile-103920.pdf
- Council report introducing Housing Mix Policy (incorporating a copy of the High Density Housing for Families with Children Guidelines 1992) http://council.vancouver.ca/20160713/documents/cfsc2.pdf

(h) Data supporting claim that tower development less sustainable

18) Refer to the following references:

- https://www.thefifthestate.com.au/articles/high-rise-living---is-it-the-sustainable-answer
- City of Sydney policy: Residential Apartments Sustainability Plan including data on relative sustainability of high-rise buildings - http://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0005/241538/FINAL-Residential-Apartments-Sustainability-Plan_2015.pdf
- Council for Tall Buildings and Urban Habitat Conference presentation, 2017 Dr Peng Du and Dr Antony Wood - http://global.ctbuh.org/resources/presentations/downtown-high-rise-vs-suburban-low-rise-living-a-pilot-study-on-urban-sustainability.pdf

Requests arising from the 15 March, 2018

(a) Planning controls supporting Figure 41 and whether mandatory or discretionary

19) Refer to Figure 3 for a summary of Sydney and Perth CBD. In addition, links to planning controls for each city location as follows:

20) Green Square Urban Renewal - https://www.legislation.nsw.gov.au/#/view/EPI/2013/541/part4/cl4.3. Refer to:

- Parts 4 Principal development standards for method of applying floor space ratio controls and
- https://www.legislation.nsw.gov.au/#/view/EPI/2013/541/maps for maps identifying location of the range of floor space ratio controls

21) Central Sydney - https://www.legislation.nsw.gov.au/#/view/EPI/2012/628/full

22) Refer to:

- Parts 4 Principal development standards for method of applying floor space ratio controls and https://www.legislation.nsw.gov.au/#/view/EPI/2012/628/maps#FSR for maps identifying location of the range of floor space ratio controls

23) Perth CBD - Development Requirements including method for applying FAR is found here: https://www.perth.wa.gov.au/sites/default/files/documents/Part%203-Development%20Requirements%20UPDATED.pdf.

24) Refer to the map of the varying plot ratios that apply here: https://www.perth.wa.gov.au/sites/default/files/documents/Plot%20Ratio%20Plan.pdf with a map of the potential density bonus (either 20% or 50%) found here: https://www.perth.wa.gov.au/sites/default/files/

documents/Maximum%20Bonus%20Plot%20Ratio%20Plan.pdf

(b) All other cities analysed for comparative purposes

25) Refer to the following:

- Table 1 for sources
- Figure 1 for maps

(c) What other parts of inner city Melbourne are most like the proposed densities of Wirraway, Lorimer and Montague

26) See pages 15-21 of this Addenda.

(d) What FAR can 118 Bertie Street achieve?

27) As illustrated in Addenda 4, page 5, 118 Bertie Street can achieve a FAR of 6.7:1.

(e) Modelling for 11 Montague Street

28) The modelling for 11 Montague Street indicates that the FAR cannot be realised on this site due the open space taking up approximately 70% of the overall site area. The potential FAR achieved is in the order of 3-3.5:1 (of a potential 6.3:1 proposed). If this was a private site then, considering the impact of the proposed open space on this site, this would need to be acquired. This site is owned by state government therefore this is already addressed.

(f) Further modelling re: potential population increases from FAU for community infrastructure and open space

29) Table 3 provides estimates of the potential residential population that could be delivered through the use of the FAU for community infrastructure hubs and open space. These estimates were prepared in mid-2017 to test the potential scale of impact on population projections only. They are included here for information only, not as a recommendation.

(g) Intentions of street wall controls if developers include plaza forecourts

30) I was asked to consider the preferred built form outcome if a development incorporated a plaza forecourt that separated the building from the street. The question was asked whether the proposed street wall heights should still apply. The definition of a street wall would exclude the frontage of buildings that are located onto a plaza forecourt. In effect, the creation of a plaza forecourt is no different from locating a park (or square) on a site on the street frontage.

31) The proposed street wall heights that front parks should therefore apply if a plaza forecourt is located between the street and the building. I have recommended that these are a preferred street wall height of 15.4 metres and a mandatory maximum of 23 metres.

(h) Proposed change to controls where there is a street parallel to the freeway - should upper level setbacks be reduced to 5 metres above the street wall for buildings taller than 68 metres?

32) Yes, this is acceptable as the potential public realm amenity impacts of the tower would only impact the freeway area. The 5 metre setback above the street wall should be discretionary, not mandatory.

(i) Images of laneways with 6m separation but not primary outlook (ie. non-habitable to non-habitable uses)

33) This issue was raised in relation to the potential that the building separation requirements for habitable to habitable rooms would result in laneways up to 12 metres wide and for habitable to non-habitable rooms in laneways up to 9 metres wide. There was concern that this would dilute the activation of the laneway if residential uses (habitable rooms or balconies) were not fronting the laneway.

34) The majority of laneways in the central city include non-habitable to non-habitable interfaces, for example commercial or car parking uses. Many are activated along one or both ground floor edges and rarely rely on the uses above the ground floor interacting with people in the laneway below to provide this activation.

35) The design of laneways should not just consider the activation of the ground floor but also the need to provide for sufficient internal amenity in the floors above. For example, Centre Way in the Hoddle Grid is one of the most regularly photographed laneways in the city as an example of a vibrant and active space. This is due to the fine-grain frontages (cafes, shops and commercial/residential building entrances) that front onto this space. The laneway is only 3.5 metres wide. The internal amenity of the apartments that directly (and only) front this space, however, is not high in regards to daylight and outlook (based on my own site visit).

36) Activation of the laneway should not compromise the internal amenity of residential uses above.

Table 3 Potential residential population estimates that could be realised through application of FAU for community infrastructure and open space

Benefit	Potential scale of benefit (1)	m^2 per item	No. of items (1)	Total m^2 of benefit (2)	Additional m^2 for every $1m^2$ of benefit (3)	Additional potential residential floor area granted through FAU using these ratios	No of potential additional dwelling (asssumes average of $110m^2$ per dwelling including circulation/service areas and car parking)	Additional people	Potential additional people by category of benefit
							110	**2.17**	
Community Infrastructure Hub	12 hubs as defined by draft Framework		12	80,000	1.15	92,000	829	1,799	1,799
Open space (likely to occur on large sites only)	Large parks	5,000	1	5,000	4	20,000	180	391	
	Medium	2,000	5	10,000	4	40,000	360	782	
	Small	1,000	10	10,000	4	40,000	360	782	1,955
Total									**3,754**

37) The proposed controls do not preclude the delivery of activated laneways in Fishermans Bend. They do, however, propose that if residential (primary habitable uses) front this laneway then internal amenity considerations must also be taken into account, hence the need for minimum separation distances.

(j) Provide table showing calculation that informs Clause 22, Table 2.

38) Refer to Table 4.

(k) Provide modelling for Site 1 as identified in Ms Pearson's report, figure 4.9.

39) Refer Figure 4 which illustrates the ability for these two sites to deliver the FAR within the built enveloped controls. This modelling adopts all of the same assumptions as noted in Addenda 2.

Figure 4 Modelling of Site 1 as identified in Ms Pearson's report, figure 4.9

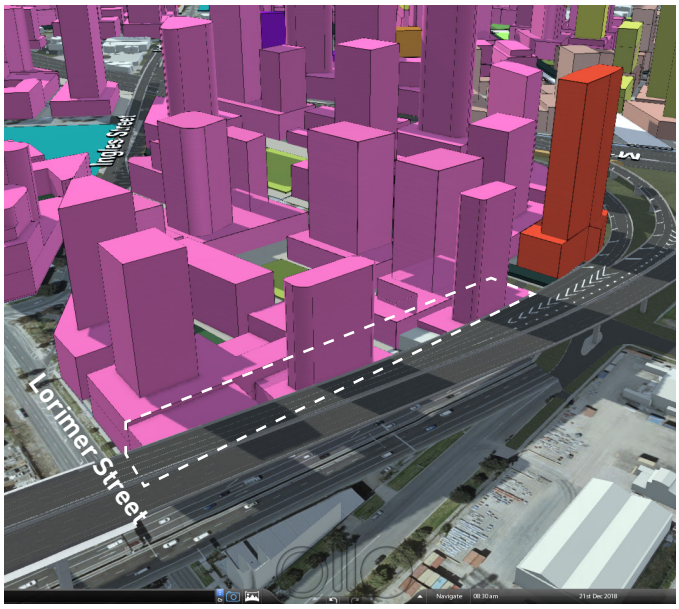


Table 4 Dwelling density calculations - summary table

Dwelling Densities per gross hectare (by sub-precinct)

Precinct	Total Residential GFA		Remaining no. of dwellings needed	Dwelling split	Dwellings per area	Gross Developable Area	Dwelling densities /developable gross hectare
Wirraway	718,530	**Core**	6,181	20%	1,236	8.92	139
		Non-core		80%	4,945	37.69	131
Sandridge	1,314,905	**Core**	12,232	65%	7,951	30.26	263
		Non-core		35%	4,281	26.15	164
Montague	728,589	**Core**	6,549	75%	4,912	14.53	338
		Non-core		25%	1,637	7.36	223
Lorimer	506,578	**Core**	4,712	100%	4,712	18.49	255
TOTALS			**29,674**			**Average**	**216**

(l) Need to revise FARs based on rate of development assumptions listed for Lorimer and Montague in the DELWP report.

40) In general, the FAR is based on the assumption that the population targets will be delivered on 75% of the sites within Fishermans Bend. It is reasonable to expect that the Lorimer and Montague precincts will have the greatest pressure to develop in the next decade as these areas are already serviced by public transport (Montague) or in close proximity to the existing CBD (Lorimer). What is not known, however, is whether the development pressures across Fishermans Bend will change over time.

41) While the DELWP report makes assumptions about the rate of development in Lorimer and Montague these are assumptions. The 75% target is also an assumption that will need to be monitored as Fishermans Bend developments.

42) The FARs have been tested and are shown to deliver the preferred character for Lorimer and Montague, as well as supporting the delivery of the new parks and streets. Moderating the FAR now because of concern of how these assumptions may be actualised across the next 20-35 years I think would be premature and could compromise the overall vision and strategy for realising the vision in these precincts.

(m) Potential for affordable housing within Lorimer delivered through FAU, and

(n) Impact on population forecast for Lorimer if development reaches 100% buildout (refer item l above) and FAU is maximised to deliver affordable housing.

43) There is significant opportunity for the delivery of affordable housing in Lorimer (see Table 5 and Figure 5). In effect, this could lead to a population of 28,300 people which is more than double the projected population of 12,000 people by 2050.

Table 5 Potential dwellings and population if FAU is maximised in Lorimer to deliver affordable housing

	No. of dwellings	**No. of people (calculated at 2.04 people per dwelling)**
Total dwellings + population delivered through FARs (on 75% of site area)	5,882	12,000
Total dwellings + population delivered through FARs (on 100% of site area) - Increase x 133%	7,823	15,960
Potential FAU GFA as tested in 3d modelling (refer Figure 5)	665,550m^2	
Potential no. of dwellings + people delivered through this FAU (assume 110m^2 per dwelling)	6,050	12,342
Total no. of potential dwellings + population (FAR on 100% of sites + potential FAU)	13,873	28,300
Potential no. of affordable dwellings (1 affordable housing dwelling for 8 market dwellings)	672	1,371
Affordable housing dwellings as % of total dwellings (672 / 13,873 dwelling)	4.8%	

44) This is only reached if all sites redevelop, take up the FAU option to deliver affordable housing and significantly increase the amount of development on their site through this mechanism. It assumes that developers won't choose to deliver any of the other community benefits such as open space or community infrastructure.

45) This scale of residential density is not supported in Lorimer and is not the intention of the use of the FAU control. As noted in my Urban Design Expert Witness Report, the application of the FAU, together with the potential for faster rates of development growth

need to be carefully monitored to ensure that infrastructure planning and population growth are aligned and that any potential negative precinct-wide amenity impacts are managed through proactive infrastructure planning.

46) This also highlights the need to explore, in addition to utilising the FAU, other mechanisms for the delivery of affordable housing (for example inclusionary housing) to minimise the potential impacts on amenity in Lorimer.

47) Reducing the FARs at this stage, however, to avoid a potential situation of very high population growth is not supported. This could result in an underdevelopment of the Lorimer precinct. The monitoring of development applications and the delivery of projects will enable the potential impact of the FAU to be carefully considered.

48) The FAU is only available by agreement which provides the opportunity for the careful consideration of the potential impacts of more significant population growth.

Requests arising from the 21 March, 2018

(a) Identify the areas of Fishermans Bend that will have the highest densities

49) Refer to Table 6.

(b) SGS report: identify higher density precincts within comparable cities. Calculate density/area and compare character and infrastructure. Identify parts of Melbourne that have highest densities as per this report.

- Refer Figure 6 and Figures 7 - 17 for examples of residential densities that are comparable to those proposed in Fishermans Bend precincts
- Refer also to Figure 1 for maps of comparable cities (Vancouver and London)

50) A copy of the full SGS report can be found here: http://apo.org.au/node/63334.

51) A excerpt of the Melbourne case study is illustrated in Figure 6 .

Figure 5 Modelling of Lorimer to test potential build out with FAU

Table 6 Residential densities - people per hectare (gross) for each precinct (core and non-core areas)

	Residential population target	Gross area	Residents/gross hectare (average across core and non-core)	Core/ Non-core	Target % split for Core and Non-core areas	No of residents	Gross area within core / non-core areas	Residents/gross hectare
Wirraway	17600	94	187	Core	20%	3,520	14	250
				Non-core	80%	14,080	80	176
Sandridge	27200	86	316	Core	65%	17,680	40	443
				Non-core	35%	9,520	46	206
Montague	23200	43	540	Core	75%	17,400	31	561
				Non-core	25%	5,800	12	484
Lorimer	12000	25	480	Core	100%	12,000	25	480

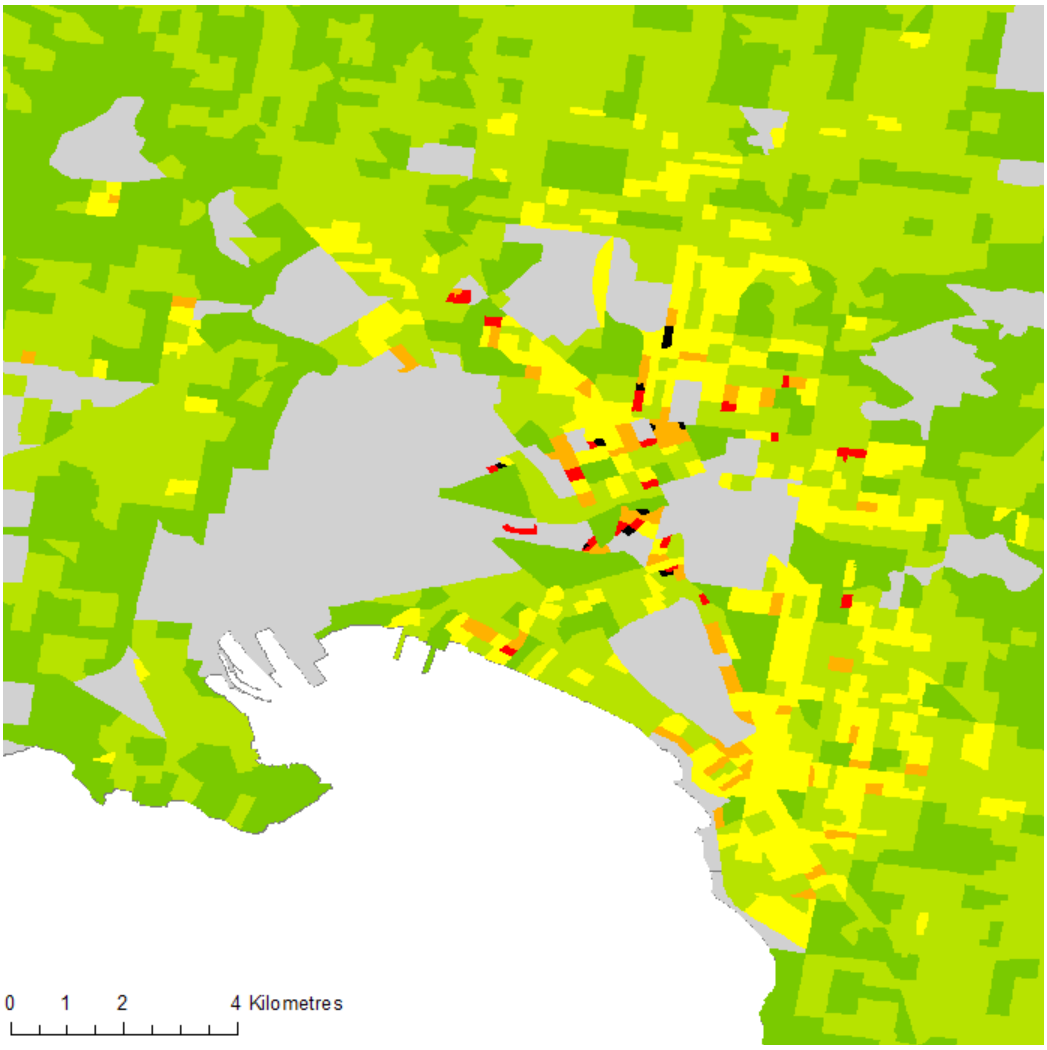
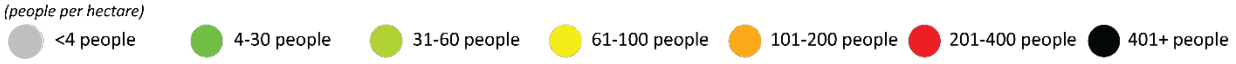


Figure 6 Melbourne map = Excerpt from Figure 4 in the SGS report: Urban or suburban? Examining the density of Australian cities in a global context



Southbank: Locations over 176 residents per hectare

Figure 7 Southbank - Locations with residential densities above 176 residents per hectare (the lowest proposed in Fishermans Bend - Wirraway Core) Source: Nearmap incorporating 2016 Census data

Southbank: Locations over 443 residents per hectare

Figure 8 Southbank - Locations with residential densities above 443 residents per hectare (Sandridge core proposed density). All of Montague and Lorimer are proposed at densities higher than Sandridge core. Source: Nearmap incorporating 2016 Census data

Hoddle Grid: Locations over 176 residents per hectare

Figure 9 Hoddle Grid - Locations with residential densities above 176 residents per hectare (the lowest proposed in Fishermans Bend - Wirraway Core) Source: Nearmap incorporating 2016 Census data)

Hoddle Grid: Locations over 443 residents per hectare

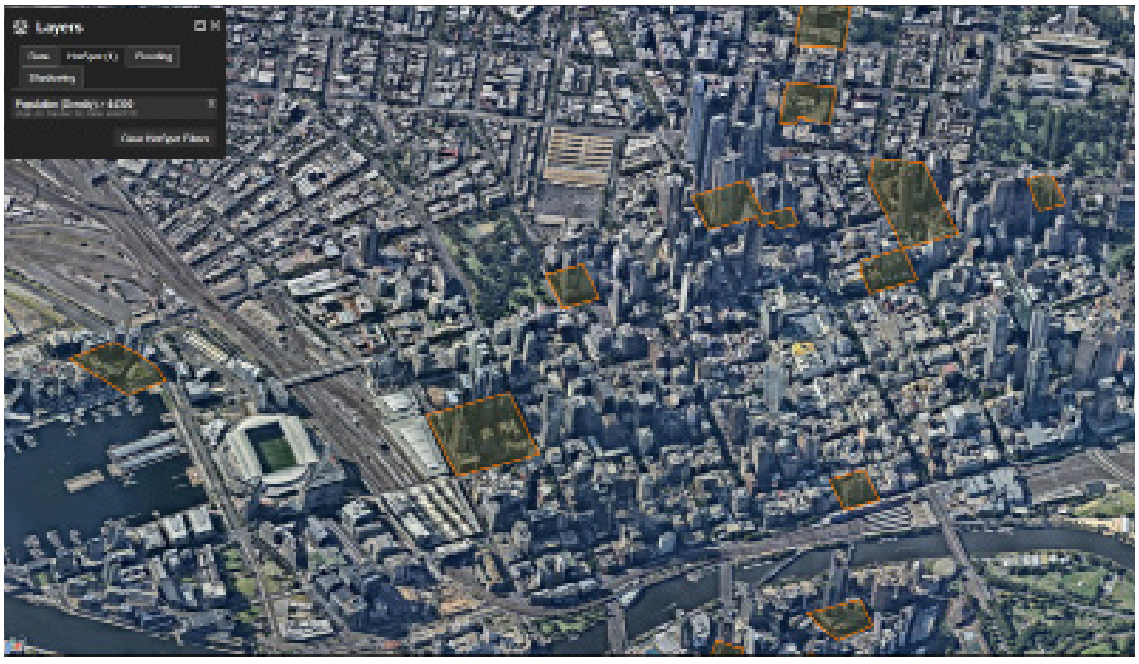
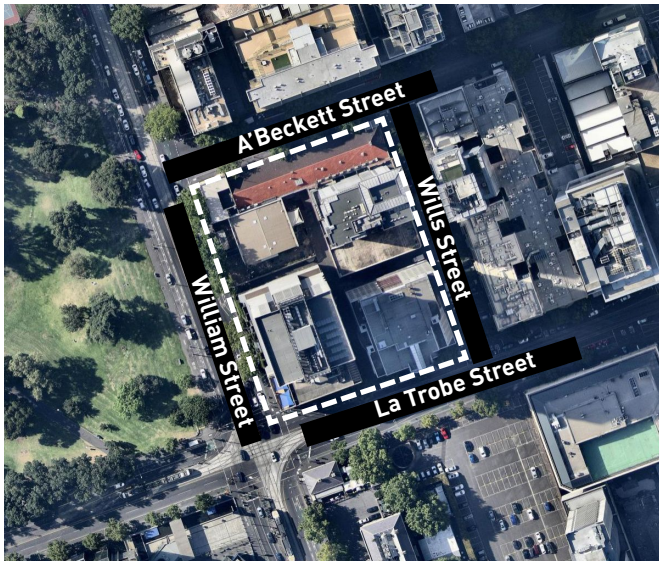


Figure 10 Hoddle Grid - Locations with residential densities above 443 residents per hectare (Sandridge core proposed density). All of Montague and Lorimer are proposed at densities higher than Sandridge core. Source: Nearmap incorporating 2016 Census data

Montague Core

561 residents per gross hectare (proposed)
Below example: 579 residents per gross hectare



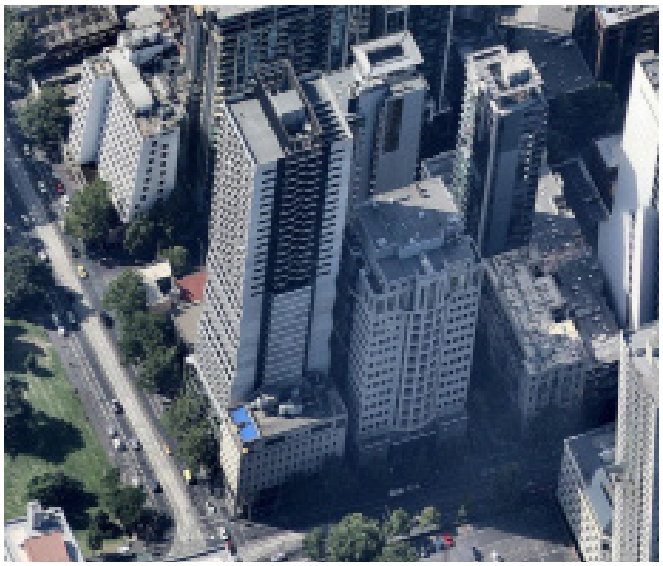
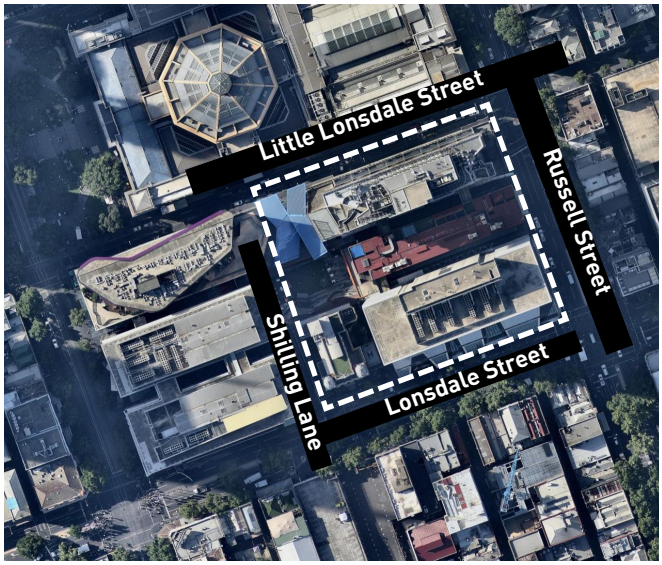


Figure 11 Example of 579 residents / hectare in Hoddle Grid (Source: Nearmap incorporating 2016 Census data)

Sandridge Core

443 residents per gross hectare (proposed)
Below example: 541 residents per gross hectare



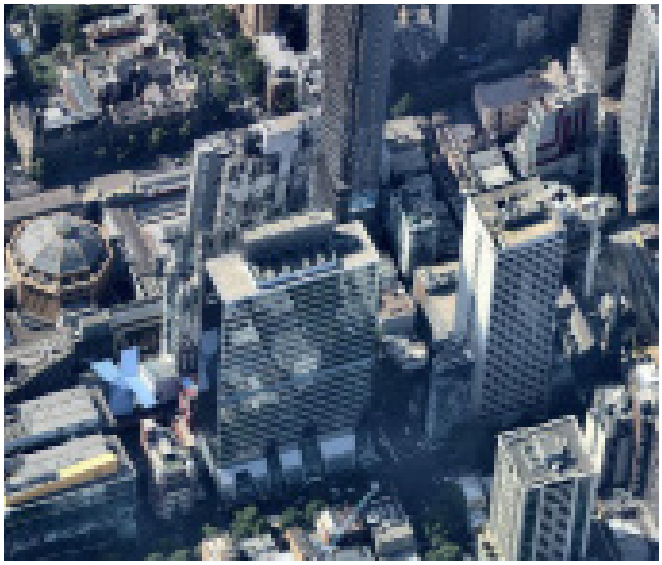
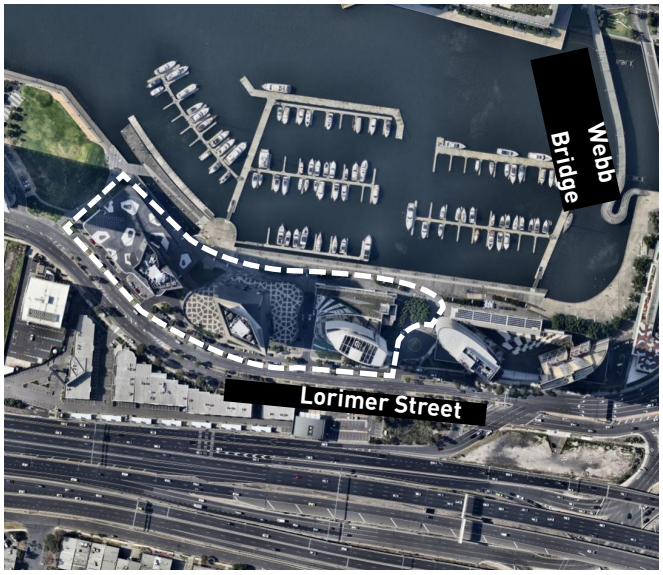


Figure 12 Example of 541 residents / hectare in Hoddle Grid (Source: Nearmap incorporating 2016 Census data)

Lorimer Core

480 residents per gross hectare (proposed)
Below example: 447 residents per gross hectare



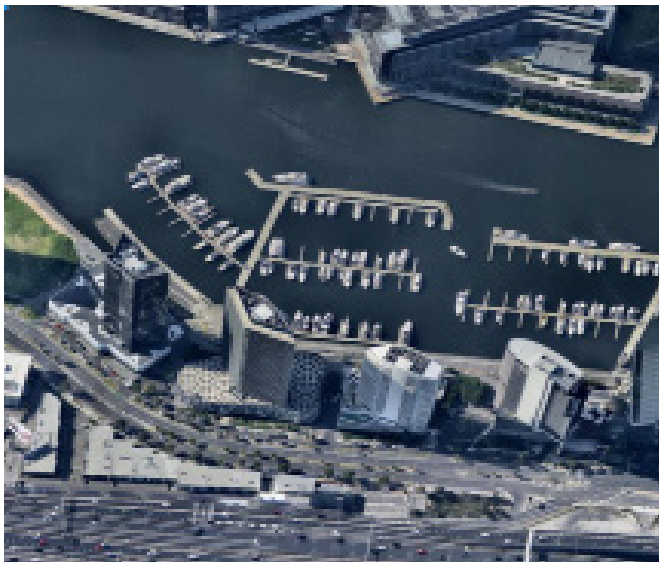
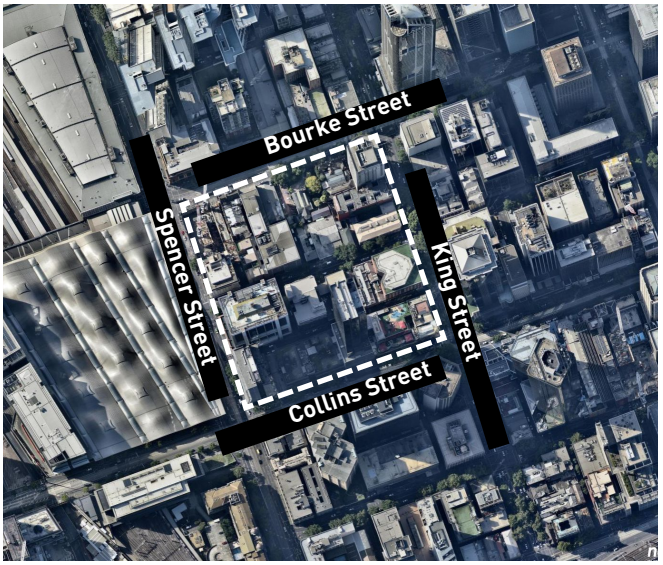


Figure 13 Example of 447 residents / hectare in Docklands (Source: Nearmap incorporating 2016 Census data)

Wirraway Core

250 residents per gross hectare (proposed)
Below example: 254 residents per gross hectare



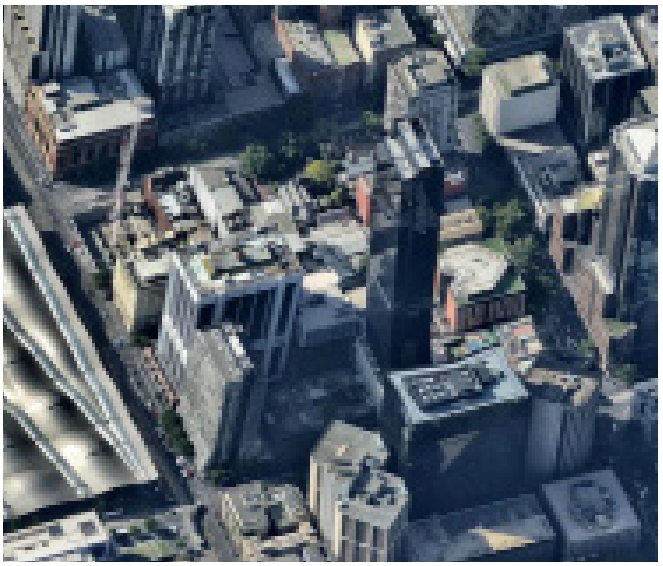
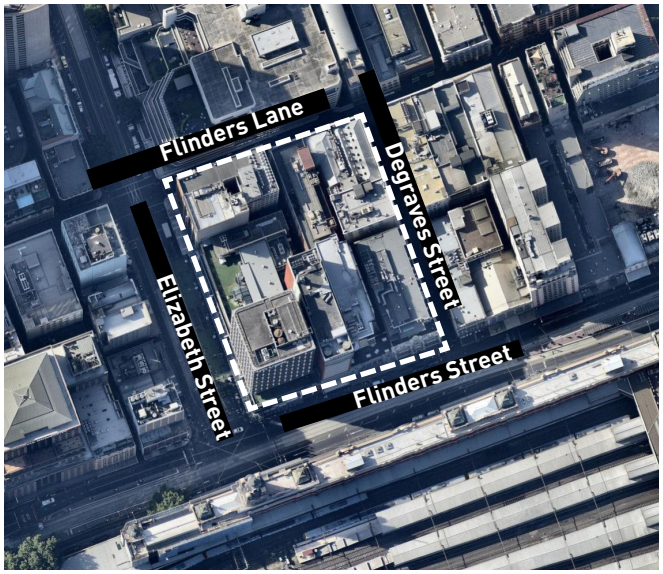


Figure 14 Example of 254 residents / hectare in Hoddle Grid (Source: Nearmap incorporating 2016 Census data)

Montague Non-core

484 residents per gross hectare
Below example: 507 residents per gross hectare



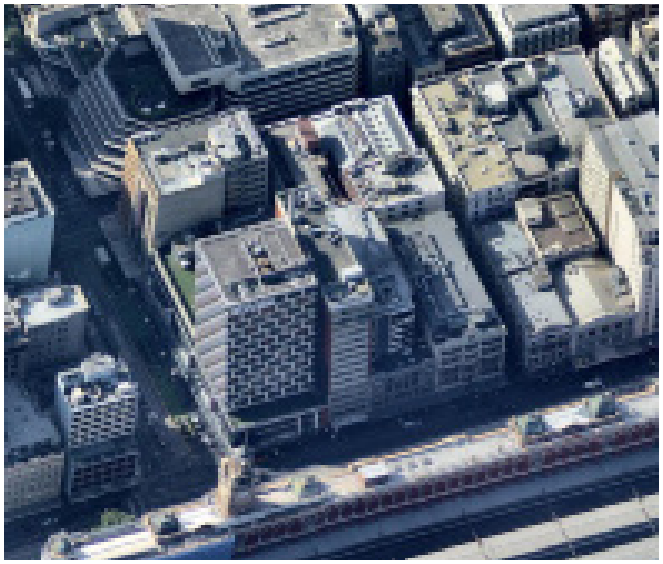


Figure 15 Example of 507 residents / hectare in Hoddle Grid (Source: Nearmap incorporating 2016 Census data)

Sandridge Non-core

206 residents per gross hectare
Below example: 245 residents per gross hectare

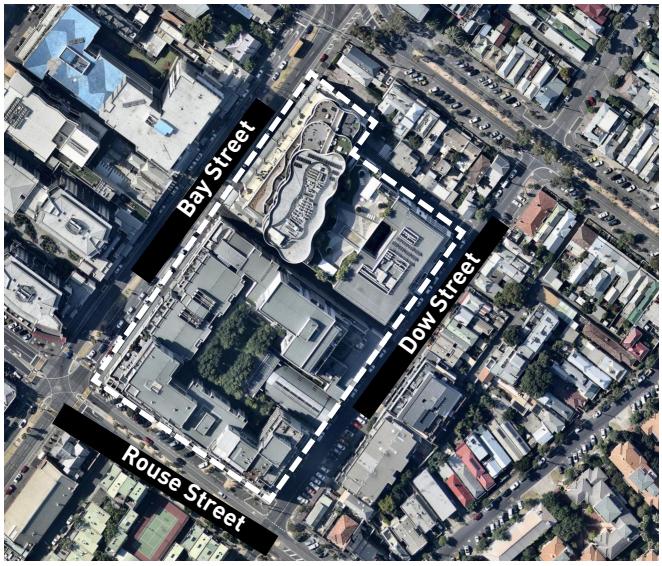


Figure 16 Example of 245 residents / hectare in Port Melbourne (Source: Nearmap incorporating 2016 Census data)

Wirraway Non-core

176 residents per gross hectare
Below example: 185 residents per gross hectare

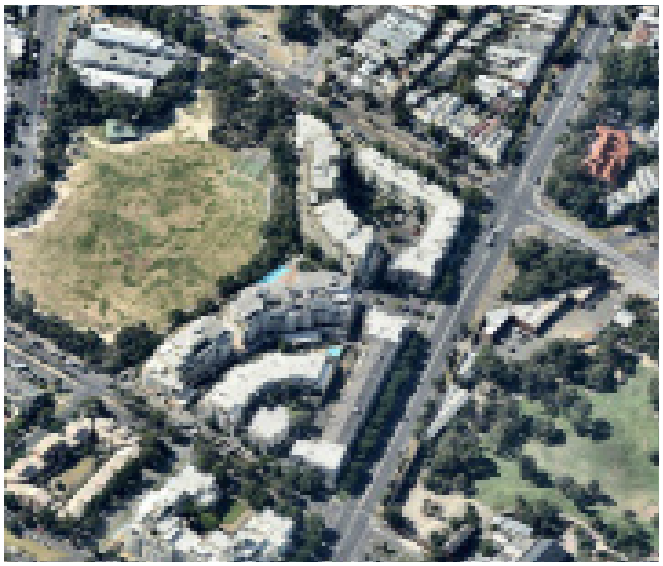


Figure 17 Example of 185 residents / hectare in Port Melbourne
(Source: Nearmap incorporating 2016 Census data)

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