

Boroondara Housing Capacity Analysis

Expert Evidence of Julian Szafraniec's

City of Boroondara

April 2016



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SGS Economics and Planning Pty Ltd
ACN 007 437 729
www.sgsep.com.au
Offices in Canberra, Hobart, Melbourne and Sydney

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1 INTRODUCTION

1.1 Instructions

I, Julian Szafraniec, have been instructed by the City of Boroondara to provide expert evidence to the Managing Residential Development Advisory Committee in relation to the SGS-authored Boroondara Housing Capacity Analysis report (dated July 2015).

My instructions with regard to this statement were to:

- Summarise key findings with reference back to the Boroondara Housing Capacity Analysis report.

The report formed an input into the development of the new Boroondara Housing Strategy and an audit of the application of residential zones. However, I have not been involved, or instructed, to provide evidence in regard to the development of this broader strategy or zoning application.

I was Project Director and lead author of the Boroondara Housing Capacity Analysis report (July 2015). I was assisted in the preparation of the report by SGS staff members acting under my express instructions.

The preparation and opinions in this statement, however, remain my own.

1.2 Credentials

My full name is Julian Wincenty Szafraniec. I am a Principal of SGS Economics & Planning Pty Ltd, based in the firm's Melbourne office at Level 14, 222 Latrobe Street, Melbourne.

I hold the following academic qualifications:

- Bachelor of Economics (Econometrics) (Honours) (Monash University)

I have experience in applying economic theories and models to urban and regional issues across Australia and internationally. I have provided advice to all tiers of government and the private sector, related to the dynamics of housing, transport, retailing, employment and the general economy.

I have previously presented expert evidence at Planning Panels Victoria hearings.

Some of my relevant housing experience includes:

- Project director on the Greater Dandenong Housing Analysis Study. This included a housing capacity, feasibility and alignment analysis, along with scenario testing to help inform the most appropriate application of the new Residential Zones in Greater Dandenong (2014).
- Lead analyst on the \$1.8 million Housing Capacity Assessment Study in Victoria undertaken by the State Government (2010). The project sought to define the housing capacity and likely take-up in each council across Melbourne and ultimately was intended to help set realistic growth targets.
- Core contributor to the award winning report on Infrastructure Investment and Housing Supply completed for the National Housing Supply Council (2013). The innovative study investigated the role of major transport infrastructure in helping to unlock housing supply in established urban areas.
- Recently led several studies for local government on housing market feasibility, housing capacity/supply, demand and development trends. These include Ballarat, Boroondara, Moonee Valley, Darebin, Stonnington, Melbourne and Nillumbik.
- Written several papers on housing policy issues particularly looking at the form and challenges around middle ring 'compact housing' development.

2 SUMMARY OF SGS CAPACITY REPORT

2.1 Instruction for the Boroondara Housing Capacity Analysis Report

In April 2015 the City of Boroondara commissioned SGS Economics and Planning (SGS) to estimate the potential housing capacity within the municipality under the current planning zone controls. The Boroondara Housing Capacity Analysis report (July 2015) is attached and should be read in conjunction with this evidence statement.

The study involved two stages assessing potential capacity within 'Residential Areas' (NRZ, GRZ, RGZ) and Commercial Areas (C1Z, MUZ). Capacity was to be estimated based on a two-step process which determined the amount of 'available land' and then 'potential yield' (or total capacity) of that land based on a set of agreed assumptions and attributes. This approach is further summarised in Section 2 of the attached Boroondara Housing Capacity Analysis report (July 2015) with Figure 1 providing an overview of the approach.

It is important to note, this definition of *capacity* does not consider economic or technical feasibility of redevelopment or whether landowners are willing/able to develop their site. It is a theoretical capacity estimate based on the planning controls and the redevelopment of all available land. Typically, only a small portion of this dwelling capacity is likely to be realised in any one year or location.

2.2 Summary of findings

Key findings from the analysis included:

- Approximately **37 per cent of land** within zones which allow for residential development (either as-of-right or subject to a planning permit) is potentially available for additional housing development. This estimate removes local roads, footpaths, parks and lots that would not reasonably be developed (i.e. recently developed site, community assets, heritage controls, etc). Vacant sites were then added back in. It does not mean the owner is ready or willing to develop, or that a planning permit has/would be issued. This component of the analysis is detailed in Section 2.2 of the Boroondara Housing Capacity Analysis report (July 2015) with Figure 2 and Table 4 providing a summary of the available land results.
- It is estimated that this available land could yield approximately **62,500 additional dwellings**, if developed to its full capacity based on the current planning controls. Similar caveats apply as with the available land and this assessment does not consider economic or technical feasibility. This component of the analysis is detailed in section 2.3 of the Boroondara Housing Capacity Analysis report (July 2015) with Table 9, 10 and 11 and Figure 12 providing a summary of the results. Key sources of capacity within Boroondara included:
 - The NRZ3 contains almost 30 per cent of net capacity (17,857 dwellings) which could be achieved through low yield incremental infill development.
 - Land which is zoned C1Z, contains approximately 35 per cent of net dwelling capacity (21,710 dwellings). This would be achieved through higher density mixed use and shop-top developments.
 - On a suburb basis Hawthorn (12,812 additional dwellings), Camberwell (11,890 additional dwellings), and Kew (10,758 additional dwellings) have the greatest net dwelling capacity.

The following tables and map reproduce the key findings of the SGS Boroondara Housing Capacity Analysis report (July 2015).

TABLE 1 (TABLE 1) SUMMARY OF CAPACITY ANALYSIS, BY ZONE

	Land (HA)		Lots		Dwellings	
	Total	Available	Total	Available	Total (2012)	Net Capacity
NRZ3	3,619	1,296	43,892	14,963	45,223	17,857
GRZ1	513	234	6,546	2,835	7,115	8,064
GRZ2	86	19	929	194	1,766	1,906
GRZ3	180	59	2,664	734	5,719	5,378
GRZ4 supersized*	27	9	32	10	373	811
GRZ4 land in centres	15	10	153	82	340	2,369
GRZ5	76	43	1,177	505	1,545	2,569
RGZ1	39	12	439	127	2,197	1,706
C1Z	166	87	3855	927	3,934	21,710
MUZ	2	1	23	12	179	176
Total	4,722	1,770	59,710	20,387	68,391	62,546

Source: SGS Economics and Planning, 2015

* This only includes 32 supersized lots in GRZ4 zones.

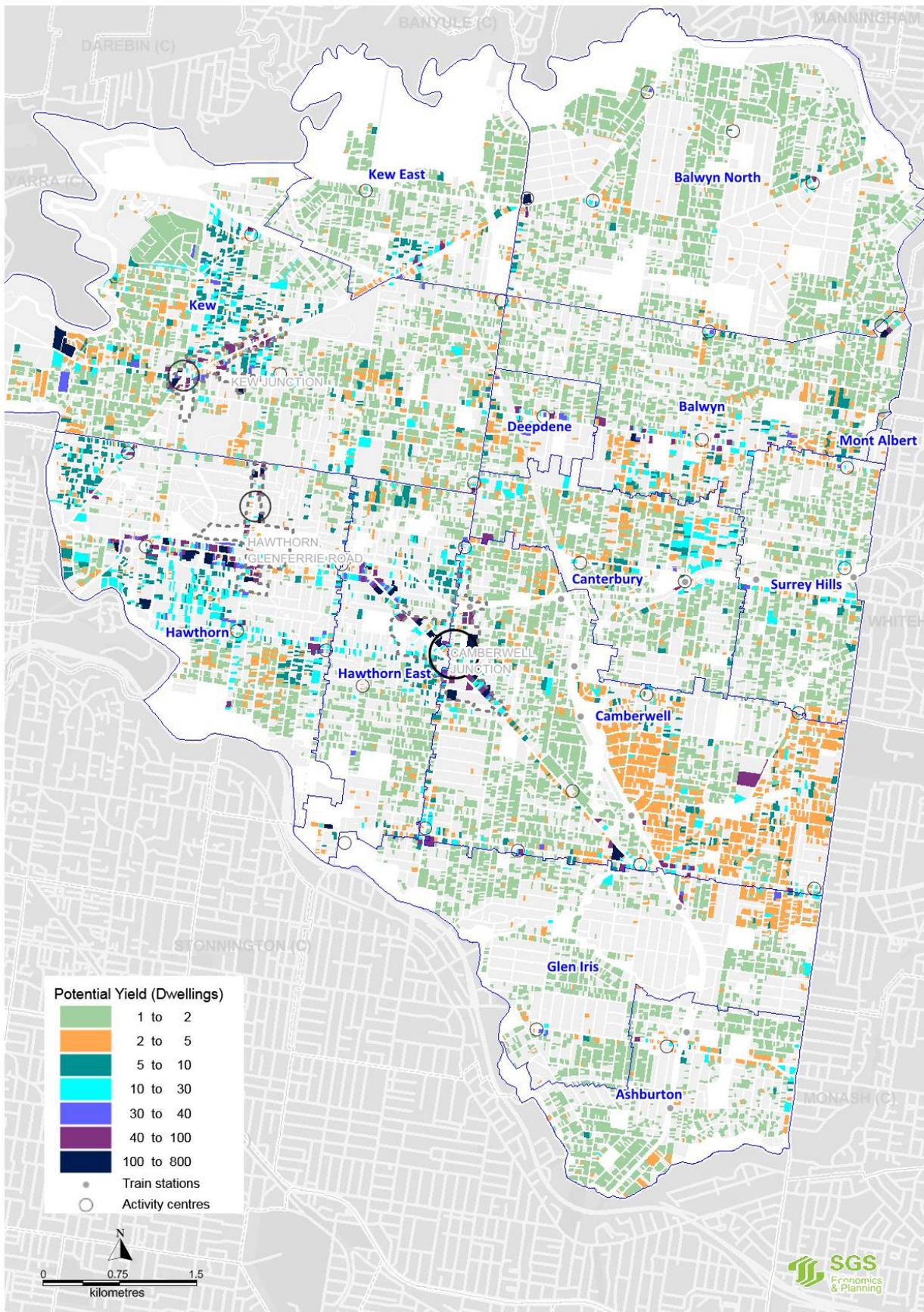
TABLE 2 (TABLE 2) SUMMARY OF CAPACITY ANALYSIS, BY SUBURB

Suburb*	Land (HA)		Lots		Dwellings	
	Total	Available	Total	Available	Total (2012)	Net Capacity
Ashburton	241	93	3,036	1,156	3,071	1,936
Balwyn	409	167	5,517	1,960	5,583	5,351
Balwyn North	689	231	7,945	2,941	7,585	3,885
Camberwell	670	303	8,601	3,484	8,135	11,890
Canterbury	282	123	3,033	1,224	2,958	2,662
Deepdene	73	28	985	310	981	1,007
Glen Iris	458	129	6,070	1,625	5,980	2,648
Hawthorn	445	133	6,168	1,322	11,676	12,812
Hawthorn East	287	97	4,422	1,105	6,576	5,601
Kew	730	284	8,292	3,020	10,329	10,758
Kew East	196	82	2,356	1,071	2,405	1,939
Surrey Hills	242	100	3,285	1,170	3,112	2,057
Total	4,722	1,770	59,710	20,387	68,391	62,546

Source: SGS Economics and Planning, 2015

* There is a small section of Mont Albert within Boroondara. For capacity and forecasting purposes, this has been merged with Balwyn and is not separately itemised.

FIGURE 1 (FIGURE 12) POTENTIAL YIELD



Source: SGS Economics and Planning

Contact us

CANBERRA

Level 6, 39 London Circuit
Canberra ACT 2601

+61 2 6263 5940
sgsact@sgsep.com.au

HOBART

PO Box 123
Franklin TAS 7113

+61 421 372 940
sgstas@sgsep.com.au

MELBOURNE

Level 14, 222 Exhibition Street
Melbourne VIC 3000

+61 3 8616 0331
sgsvic@sgsep.com.au

SYDNEY

209/50 Holt Street
Surry Hills NSW 2010

+61 2 8307 0121
sgsnsw@sgsep.com.au



Boroondara Housing Capacity Analysis

Technical Report

City of Boroondara
July 2015



Independent insight.



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1 INTRODUCTION

The City of Boroondara has recently applied the new residential zones across its municipality. SGS Economics and Planning (SGS) has been commissioned by the City of Boroondara to estimate the current potential housing capacity within the municipality under the new residential zones and commercial zones.

This report documents the data sources used, assumptions and high level results of the analysis which has now been completed.

1.1 Scope and policy context

The analysis has assessed the potential for additional housing (i.e. net housing capacity) within the following locations:

- All land within Neighbourhood Residential Zone 3 (NRZ3)
- All land within General Residential Zone 1/2/3/5 (GRZ1/2/3/5)
- All land within General Residential Zone 4 (GRZ4)
 - 32 *supersized* lots within General Residential Zone 4 (GRZ4) were assessed on a lot by lot basis
 - Residential land in commercial centres and corridors
- All land within Residential Growth Zone (RGZ1)
- All land within Commercial 1 Zone (C1Z)
- All land within Mixed Use Zone (MUZ)

The following provides a brief overview of the relevant key planning controls that will impact the type and scale of residential development under each zone. To determine the potential for additional housing these controls have been converted into a series of specific assumptions based on both prescriptive controls (i.e. max 2 dwellings per lot) and the planning intent of each zone.

Neighbourhood Residential Zone (NRZ)

The Neighbourhood Residential Zone recognises areas of predominantly single and double storey development and limits opportunities for increased residential development.

Zone	Maximum site coverage	Height Restrictions*	# dwellings per lot
Neighbourhood Residential Zone 3	60%	8m (mandatory)	Max of 2 dwellings

* subject to site specific exemptions

General Residential Zone (GRZ)

The General Residential Zone aims to provide housing diversity that respects the preferred neighbourhood character of the area, and supports moderate housing change.

Zone	Maximum site coverage	Height Restrictions*	# dwellings per lot
General Residential Zone 1	60%	9m (mandatory)	1+ dwellings
General Residential Zone 2	60%	10.5m (mandatory)	1+ dwellings
General Residential Zone 3	60%	10.5m (mandatory)	1+ dwellings
General Residential Zone 4	60%	9m (discretionary)**	1+ dwellings
General Residential Zone 5	60%	9m (discretionary)**	1+ dwellings

* subject to site specific exemptions

** Pursuant to ResCode Standard B7- Building height objective

Residential Growth Zone (RGZ)

The Residential Growth Zone encourages a scale of development that provides a transition between areas of more intensive use and development and areas of restricted housing growth.

Zone	Maximum site coverage	Height Restrictions*	# dwellings per lot
Residential Growth Zone	60%	13.5m (discretionary)	1+ dwellings

* subject to site specific exemptions

Mixed Use Zone (MUZ)

The Mixed Use Zone seeks to provide a range of residential, commercial, industrial and other uses that ensure the ongoing mixed-use function of an area. The opportunity for higher density housing exists in this zone.

Zone	Maximum site coverage	Height Restrictions
Mixed Use Zone	70%	9m (discretionary)*

* Pursuant to ResCode Standard B7- Building height objective

Commercial 1 Zone (C1Z)

The Commercial 1 Zone aims to deliver a range of retail, office, business, entertainment and community uses to create vibrant commercial centres. High density housing is encouraged where it is complementary to the role and scale of the commercial centre.

Zone	Maximum site coverage	Height Restrictions
Commercial 1 Zone	None	Subject to site specific DDO controls*

*Detailed DDO controls of each site are provided in Appendix

1.2 Key data sources

A range of datasets have been drawn on during the project. Most of these have been sourced from Council and are specific to one issue (i.e. single dwelling covenants). These have been discussed briefly at relevant points in analysis.

Two key datasets have been sourced from the Department of Environment, Land, Water and Planning (DELWP) to form the basis of the analysis. Additional information regarding these datasets are available on the DELWP website (delwp.vic.gov.au).

Housing Development Data (HDD)

The HDD is a spatial dataset containing a highly accurate count of existing dwellings, vacant residential lots and residential developments. The data is collected annually on a lot by lot basis through an analysis of Government spatial datasets including aerial photography, property boundaries, business registers, planning permit information and other key databases. The most recent year of data available is 2012 and it tracks development back to 2004.

The 2012 HDD layer of dwelling stock has been used as the starting point for this capacity analysis.

2014 Urban Development Program (UDP)

The UDP for metropolitan Melbourne annually monitors major residential redevelopment projects in established areas, the supply of broadhectare residential land, and industrial land. For major residential redevelopment projects, the UDP tracks developments of 10 dwellings or more. Recently completed projects and developments which are either planned or expected to commence construction over the next 10 years are included.

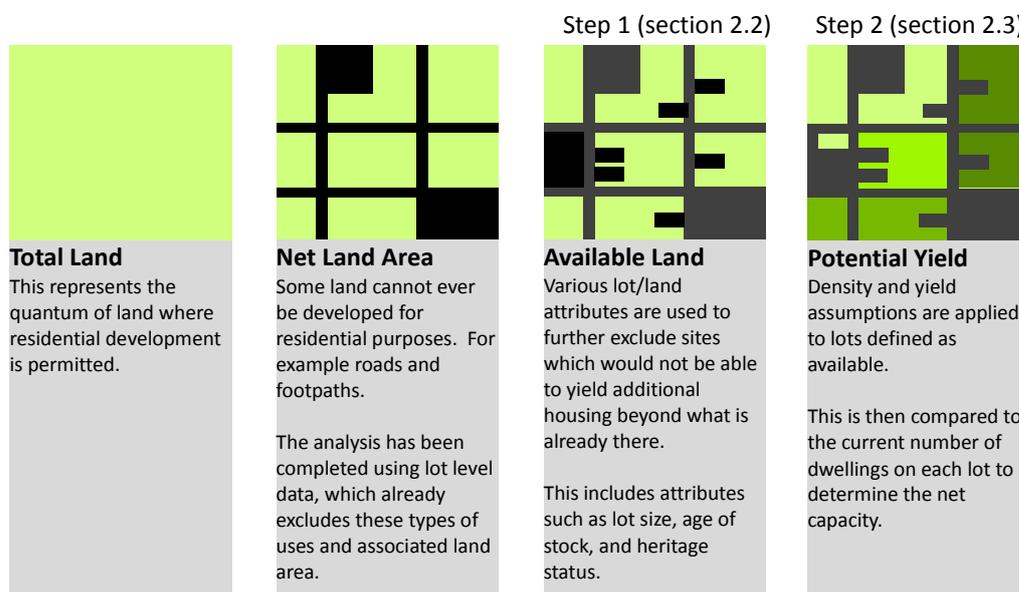
SGS has used the information regarding *major residential redevelopment projects* to understand recent development activity and potential yield on key sites.

2 CAPACITY ANALYSIS

2.1 Summary of findings

The capacity for additional housing has been calculated using a detailed and transparent approach which can be broadly summarised in two stages: *Available Land* and *Potential Yield*. This process and the associated assumptions are detailed in this chapter and are summarised in the diagram below.

FIGURE 1. APPROACH OVERVIEW



The analysis in this report provides a summary of additional dwelling capacity in Boroondara on land which is available and where residential development is permitted. When reviewing these results a number of definitions should be considered:

- **Total land** refers to all land, road areas, lots and pathways on land where residential development is permitted. The analysis excludes land in the Public Use Zone (PUZ), Priority Development Zone (PDZ) and Comprehensive Development Zone (CDZ). These zones allow for residential uses but are not considered to contribute significantly to overall capacity.
- **Available land** is derived after all constraints have been considered, and excludes all non-developable areas based on a defined set of assumptions.
- **Lots** may have no dwellings (i.e. vacant or non-residential), one dwelling or multiple dwellings (i.e. apartments). A lot does not directly translate to rateable properties.
- **Total dwellings** refer to all housing stock within each zone as of 2012. This existing housing may be on available or unavailable land.
- **Net dwelling capacity** refers to the potential yield on available land (i.e. after all constraints are considered) minus existing dwellings. This is a definition of capacity which does not consider economic or technical feasibility of redevelopment or whether landowners are willing/able to develop their site. Typically, only a small portion of net dwelling capacity is likely to be realised in any one year.

These definitions are detailed in subsequent sections.

Available land and available lots

Available land is those lots that have been deemed as being able to accommodate additional housing. Available land has been identified at the lot level through a spatial query using Council's property database.

This step allows assessment to account for site-scale encumbrance such as site value, built year, ownership, plan titles, etc. that are tied to a land title or are only apparent at a lot level.

Net Capacity

Table 1 and Table 2 show net dwelling capacity for housing in Boroondara by zone and suburb respectively.

Approximately 37% of land within zones which allow for residential development (either as-of-right or subject to a planning permit) is available for additional housing development. This land could yield approximately 62,500 additional dwellings, if developed to its full capacity. The NRZ3 contains almost 30% of net capacity which could be achieved through low yield incremental infill development. This zone represents 70% of all residential zoned land and 70% of the current dwelling stock in residential zones. GRZ4 supersized lots also have significant net dwelling capacity compared to current dwelling stock. Land which is zoned C1Z, contains approximately 35% of net dwelling capacity which would be achieved through higher density mixed use and shoptop developments. Development in this zone represents the most substantial degree of intensification with net dwelling capacity significantly exceeding current dwelling stock.

TABLE 1. SUMMARY OF CAPACITY ANALYSIS, BY ZONE

	Land (HA)		Lots		Dwellings	
	Total	Available	Total	Available	Total (2012)	Net Capacity
NRZ3	3,619	1,296	43,892	14,963	45,223	17,857
GRZ1	513	234	6,546	2,835	7,115	8,064
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GRZ4 supersized*	27	9	32	10	373	811
GRZ4 land in centres	15	10	153	82	340	2,369
GRZ5	76	43	1,177	505	1,545	2,569
RGZ1	39	12	439	127	2,197	1,706
C1Z	166	87	3855	927	3,934	21,710
MUZ	2	1	23	12	179	176
Total	4,722	1,770	59,710	20,387	68,391	62,546

Source: SGS Economics and Planning, 2015

* This only includes 32 supersized lots in GRZ4 zones.

On a suburb basis Hawthorn, Camberwell, and Kew have the greatest net dwelling capacity. The results are evident in the land availability map (Figure 2) and potential yield results (Figure 12). The final result of the available land analysis is presented in Figure 2 below. This highlights that after removing land subject to the constraints and adding in vacant lots, around 37 per cent of land zoned NZR3, GRZ1-5, RGZ1, C1Z and MUZ in Boroondara is potentially *available* for future housing development based on the defined assumptions. This is a total land area of 1,770 hectares.

TABLE 2. SUMMARY OF CAPACITY ANALYSIS, BY SUBURB

Suburb*	Land (HA)		Lots		Dwellings	
	Total	Available	Total	Available	Total (2012)	Net Capacity
Ashburton	241	93	3,036	1,156	3,071	1,936
Balwyn	409	167	5,517	1,960	5,583	5,351
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Total	4,722	1,770	59,710	20,387	68,391	62,546

Source: SGS Economics and Planning, 2015

* There is a small section of Mont Albert within Boroondara. For capacity and forecasting purposes, this has been merged with Balwyn and is not separately itemised.

2.2 Available land

Available land represents all land (except in the PUZ, PDZ and CDZ) that has the potential to generate additional housing supply for Boroondara. This does not mean that it is necessarily feasible or that property owners are ready or willing to develop these sites. Typically only a small portion of available lots are likely to change in any one year.

GRZ4 (Supersized lots)

GRZ4 supersized lots were assessed individually by Council based on a review of existing uses and development and planning permit activity. Further details of these 32 supersized lots are outlined in Appendix 4.1. Vacant lots are generally considered as available land unless they fall into a category which would make them an unavailable lot.

GRZ4 (Residential land in centres)

GRZ4 lots located within designated activity centres, structure plan boundaries and neighbourhood centres envisage a built form outcome that is consistent with a surrounding or nearby C1Z land. These sites are typically covered by a structure plan, or existing or proposed Design and Development Overlay (DDO) that provides guidance on the desired built form outcomes. In the case of DDO16 (which applies to neighbourhood centres and commercial corridors), the built form outcome would be consistent with the development outcomes for adjoining commercial zoned land.

Available land is based on a series of lot attributes and assumptions which are documented in Table 3 and detailed later in this section.

TABLE 3. SUMMARY OF AVAILABLE LAND ASSUMPTIONS

Criteria	Data Source	Method	NRZ3	GRZ1	GRZ2	GRZ3	GRZ4*	GRZ4**	GRZ5	RGZ1	MUZ	C1Z	Vacant
Single Dwelling Covenants	Council GIS layer	Lots under layer	x	x	x	x	x	x	x	x	x	x	+
Strata	Council rates data	Plan Description = Strata	x	x	x	x			x	x			
	HDD layer	Existing Dwelling = 4+	x	x	x	x			x	x			
Heritage	Council property GIS layer and HDD layer	lots <800sqm AND heritage grading = significant	x	x	x	x			x	x			
	Council property GIS layer and HDD layer	lots <700sqm AND heritage grading = contributory	x	x	x	x			x	x			+
Infrastructure	Council facility GIS layer	Defined as:											
		Education facility	x	x	x	x			x	x			
		Aged Care facility	x	x	x	x			x	x			
		Child Care facility	x	x	x	x			x	x			
	Council supplied PDF maps	Public Open Space	x	x	x	x			x	x			
	Council supplied PDF maps	Key Assets						x			x	x	
Small lots	Council zoning GIS layer and HDD layer	Zone = NRZ3 and lot size < 650	x										+
		lot size < 500		x	x	x			x	x			+
		Lot size <300							x			x	x
'Shared' lots	Council property GIS layer	SGS audit of driveways/ shared private areas.	x	x	x	x		x	x	x	x	x	
Recent development	Council rates data and Council zoning GIS layer	built year > 1995 and Zone = NRZ3	x										+
	Council rates data	built year > 2000		x	x	x			x	x	x	x	+
	HDD (2004-2012) projects layer	Total project yield > 0	x	x	x	x			x	x	x	x	
	2014 UDP- Major Redevelopment Sites	Development status = Completed***	x	x	x	x			x	x	x	x	
Capital Improved Value Ratio	Council rates data	SV**** < \$5M AND CIV**** ratio >5 OR SV > \$5M AND CIV ratio >1.5						x			x	x	

x = Exclusions = Inclusions = Not Applicable

Source: SGS Economics and Planning, 2015

* GRZ4 supersized lots were assessed individually by council based on a review of existing uses and development. Refer to Appendix for additional details regarding each individual lot.

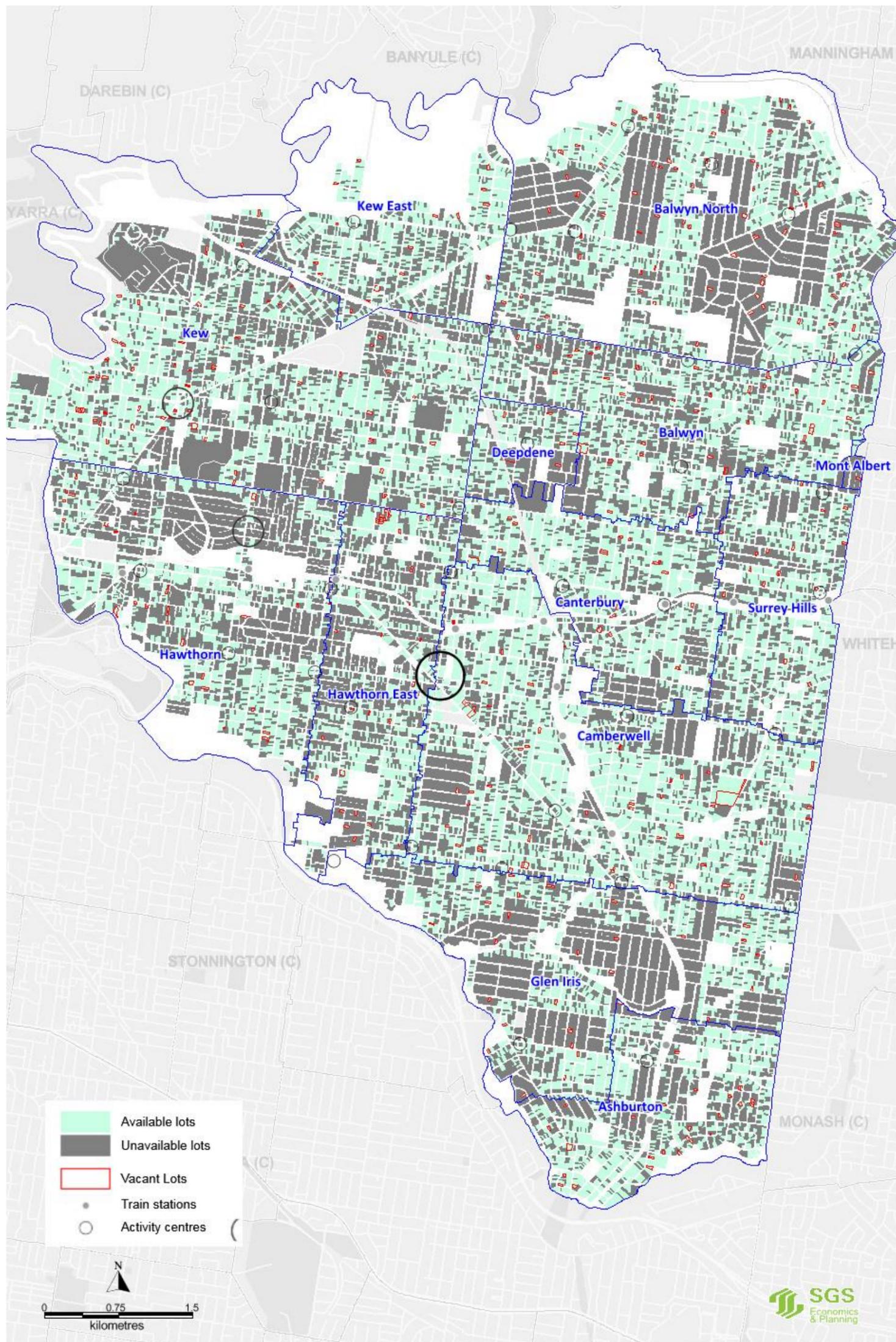
** GRZ4 land in commercial centres and corridors

*** UDP status was reviewed against actual dwellings counts to ensure alignment between the HDD and 2014 UDP datasets.

****SV = Site Value; CIV = Capital Improved Value

A map of the available land analysis is presented in Figure 2 below. This highlights that after removing land subject to constraints and adding in vacant lots, around 37% of land zoned NZR3, GRZ1-5, RGZ1, C1Z and MUZ in Boroondara is potentially *available* for future housing development based on the defined assumptions. This is a total land area of 1,770 hectares.

FIGURE 2. AVAILABLE AND UNAVAILABLE LOTS



Source: SGS Economics and Planning, 2015

Table 4 provides a breakdown of land (hectares) that is unavailable by a specific criteria. It should be noted that one land parcel could be unavailable by multiple criteria, therefore the numbers in this table are not additive.

TABLE 4. SUMMARY OF AVAILABLE LAND AND CONSTRAINTS, BY LAND AREA (HA)

Criteria	Data source / method	NRZ3	GRZ1	GRZ2	GRZ3	GRZ4*	GRZ4	GRZ5	RGZ1	MUZ	C1Z	Total	
	Total land area	3,619	513	86	180	27	15	76	39	2	166	4,722	
	Net land area	2,903	420	73	146	25	12	68	36	2	141	3,826	
Single Dwelling Covenants	Council GIS layer	Lots under layer.	433	15	0	0	-	-	0	0	-	0	448
Strata	Council rates data	Plan Description = Strata	68	21	1	7	-	-	4	2	-	-	103
	HDD layer	Existing Dwelling = 4+	66	22	29	39	-	-	6	16	-	-	178
Heritage	Council property GIS layer and HDD layer	lots <800sqm AND heritage grading = significant	11	2	9	1	-	-	0	0	-	-	23
	Council property GIS layer and HDD layer	lots <700sqm AND heritage grading = contributory	116	9	2	2	-	-	0	0	-	-	129
Infrastructure	Council facility GIS layer	Defined as: Education facility	47	31	1	0	-	-	0	2	-	-	81
		Aged Care facility	2	0	0	1	-	-	0	0	-	-	3
		Child Care facility	26	12	0	0	-	-	1	0	-	-	39
		Public Open Space	30	0	0	0	-	-	0	0	-	-	30
	Council PDF maps	Key Assets	-	-	-	-	-	0	-	-	0	6	6
Small lots	Council zoning GIS layer and HDD layer	Zone = NRZ3 and lot size < 650	863	-	-	-	-	-	-	-	-	-	863
		lot size < 500	-	76	15	39	-	-	13	5	-	-	148
		lot size < 300	-	-	-	-	-	1	-	-	0	35	35
'Shared' lots	Council property GIS layer	SGS audit of driveways/ shared private areas.	55	18	3	4	-	0	3	1	0	0	2565
Recent development	Council rates data and Council zoning GIS layer	built year > 1995 and Zone = NRZ3	375	-	-	-	-	-	-	-	-	-	375
	Council rates data	built year > 2000	-	32	11	7	-	0	4	0	0	4	58
	HDD (2004-2012) projects layer	Total project yield > 0	169	19	2	7	-	0	5	2	0	5	209
	2014 UDP- Major Redevelopment Sites	Development status = Completed**	2	0	22	0	-	0	1	1	0	2	29
Capital Improved Value Ratio	Council rates data	SV> \$5M AND CIV ratio >5 OR SV< \$5M AND CIV ratio >5	-	-	-	-	-	0	-	-	0	3	4
		Vacant Land***	29	3	0	1	-	0	0	0	-	2	35
		Total available land	1,296	234	19	59	9	10	43	12	1	87	1,770

Source: SGS Economics and Planning, 2015

* GRZ4 supersized lots were assessed individually by council based on a review of existing uses and development. Refer to Appendix for additional details regarding each individual lot.

** UDP status was reviewed against actual dwellings counts to ensure alignment between the HDD and 2014 UDP datasets.

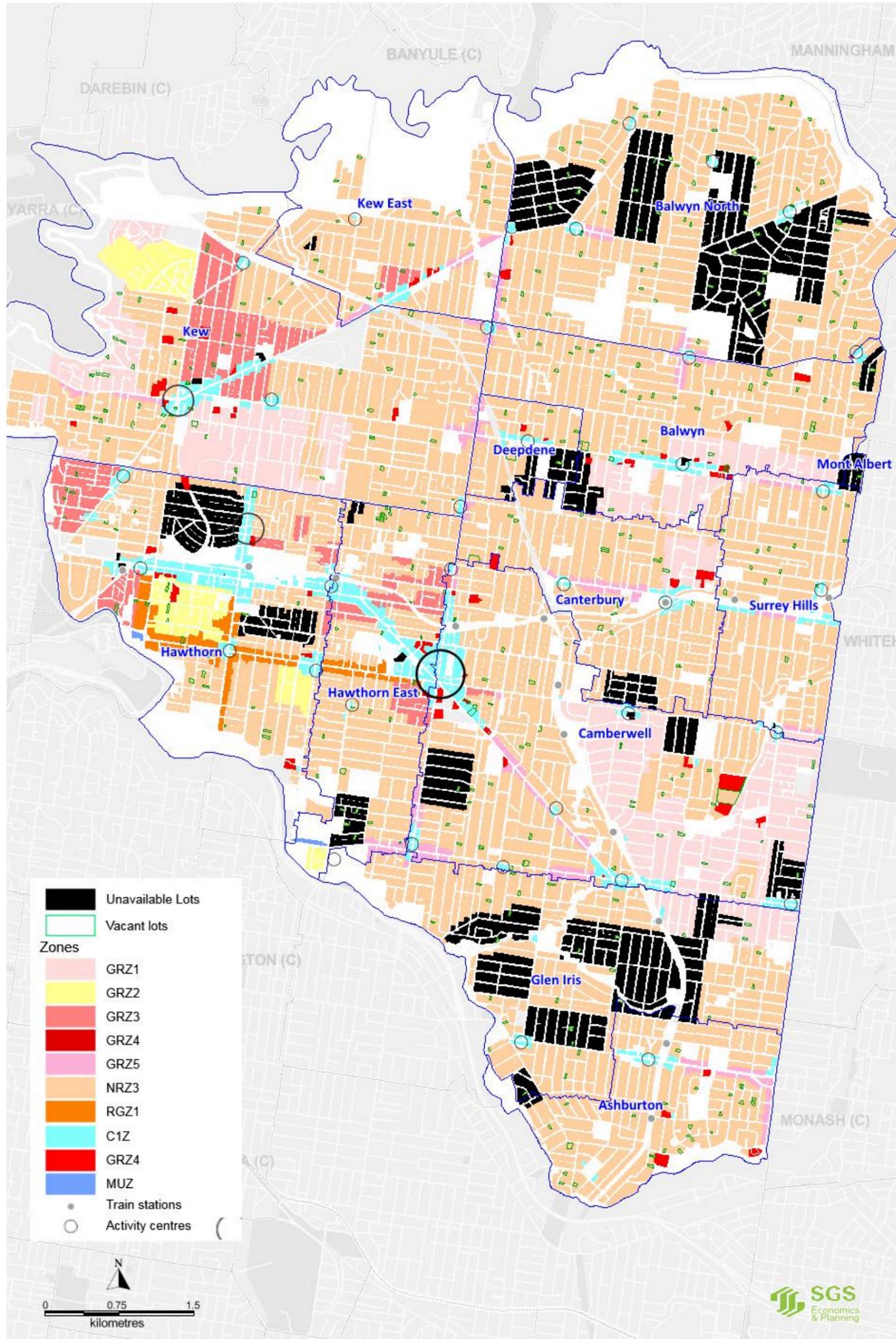
*** Vacant Land refers to Vacant and Available Land. The difference between Vacant and Unavailable land is marginal therefore not included in this table.

Single Dwelling Covenant

Figure 3 below illustrates residential lots subject to a single dwelling covenant (highlighted in black). Single dwelling covenants are a restriction on the property title and are not controlled by Council. Council has not completed a full search of all titles and as such, there may be other single dwelling covenants that Council is not aware of. Vacant lots subject to a single dwelling covenant were added back to available land with a potential capacity of one dwelling.

These lots are mostly located within the suburbs of Hawthorn, Glen Iris, Balwyn North and Deepdene and primarily fall within NRZ3 areas. Only one lot in C1Z falls under this criteria.

FIGURE 3. SINGLE DWELLING COVENANT



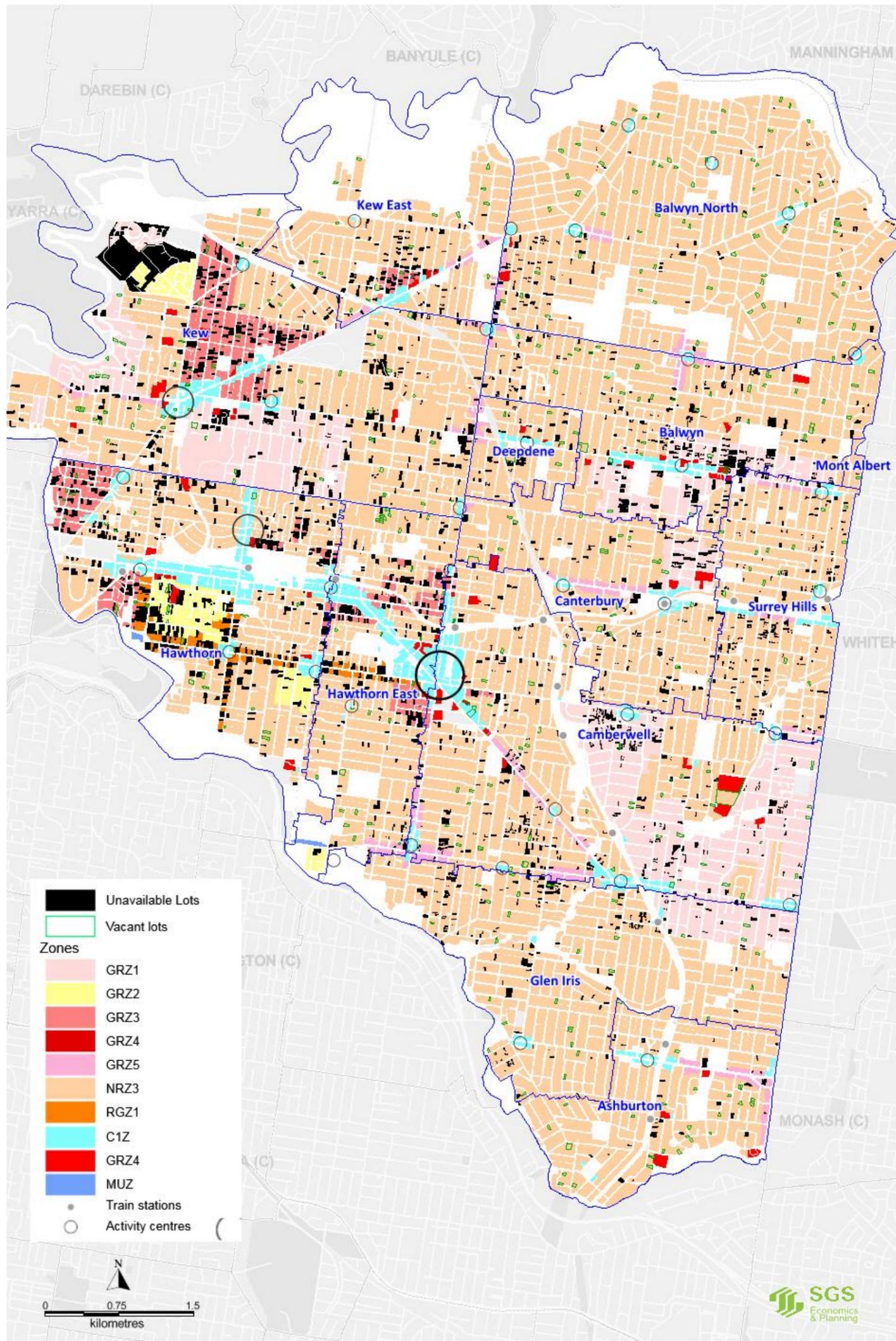
Source: SGS Economics and Planning, 2015

Strata and multiple ownership shared lots

Strata lots were initially identified using the property rating dataset provided by Council. This only includes a small proportion of residential lots. SGS further incorporated a layer that identifies residential lots that are currently occupied by four or more dwellings as a proxy for lots that are likely to be controlled by multiple owners. This only applies to residential zones - RGZ1, GRZ1/2/3/5 and NRZ3. For GRZ4 (land in centres) strata lots were not excluded. However, sites with a high CIV/SV ratio or recently developed were excluded in this zone, which, in effect, captures most lots that are subject to strata title.

Figure 4 below illustrates strata and possible multiple ownership lots which are unavailable (highlighted in black).

FIGURE 4. STRATA AND PROXY FOR MULTIPLE OWNERSHIP LOTS

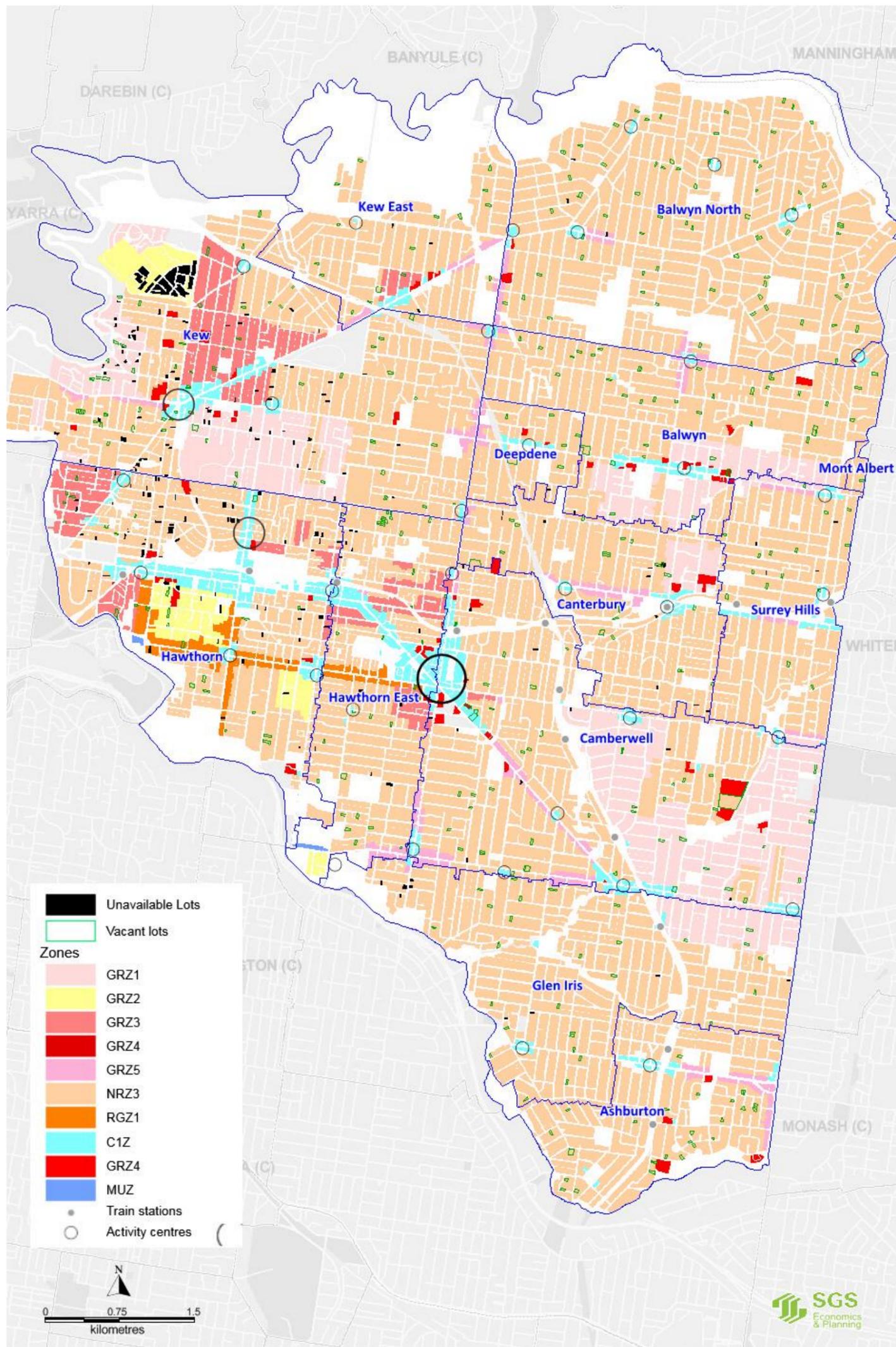


Source: SGS Economics and Planning, 2015

Individually significant heritage sites

Individually significant heritage sites have been identified using the heritage grading layer provided by Council. Given the heritage value of these properties, they typically provide limited redevelopment potential. Lots that are smaller than 800 square metres have been deemed unavailable as they are very unlikely to see any additional development. Figure 5 below illustrates the location of these individually significant heritage sites (highlighted in black). This only applies to residential zones - RGZ, GRZ1/2/3/5 and NRZ3 in the LGA. These unavailable lots are largely in the GRZ in Kew and sporadically across Hawthorn.

FIGURE 5. INDIVIDUALLY SIGNIFICANT HERITAGE ON LOTS LESS THAN 800 SQUARE METRES



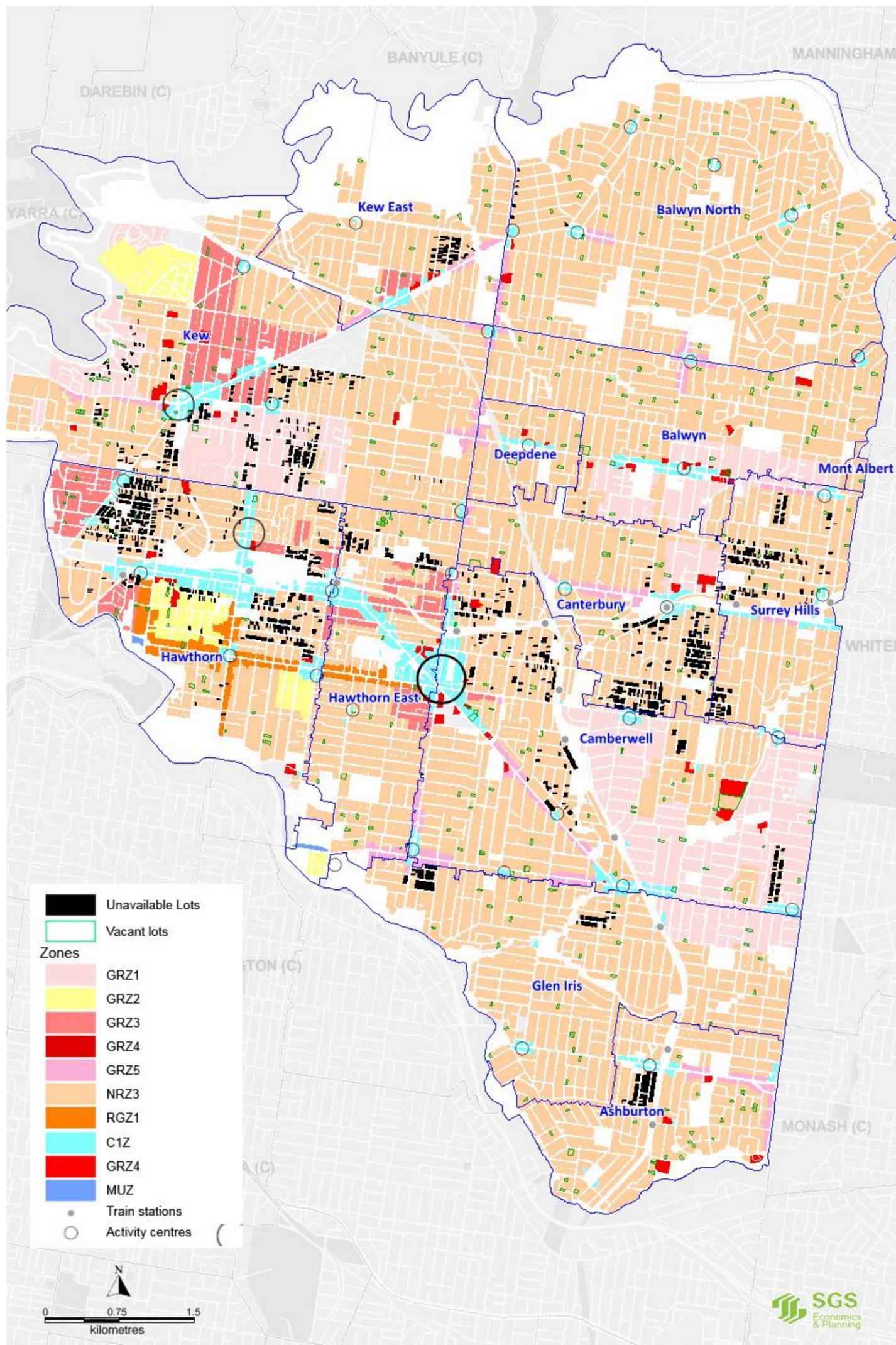
Source: SGS Economics and Planning

Contributory heritage places

Contributory heritage places have been identified using the heritage grading layer provided by Council. Lots that are smaller than 700 square metres have been deemed unavailable as they are unlikely to see additional redevelopment given the heritage value of these places. Vacant residential lots within these areas were added back to available land with a potential capacity based on the respective zone controls. This only applies to residential zones - RGZ, GRZ1/2/3/5 and NRZ3 in the LGA.

Figure 6 shows the locations of these contributory heritage places that are smaller than 700 square metres (highlighted in black). They are clustered along the fringes of Kew Junction and Glenferrie Activity Centres. Significant clusters are also identified in Canterbury and Surrey Hills. Balwyn North, Balwyn and Deepdene in the north are mostly unaffected by this constraint. There are a number of small isolated clusters such as in Ashburton, Glen Iris and Kew East.

FIGURE 6. CONTRIBUTORY HERITAGE PLACE ON LOTS LESS THAN 700 SQUARE METRES

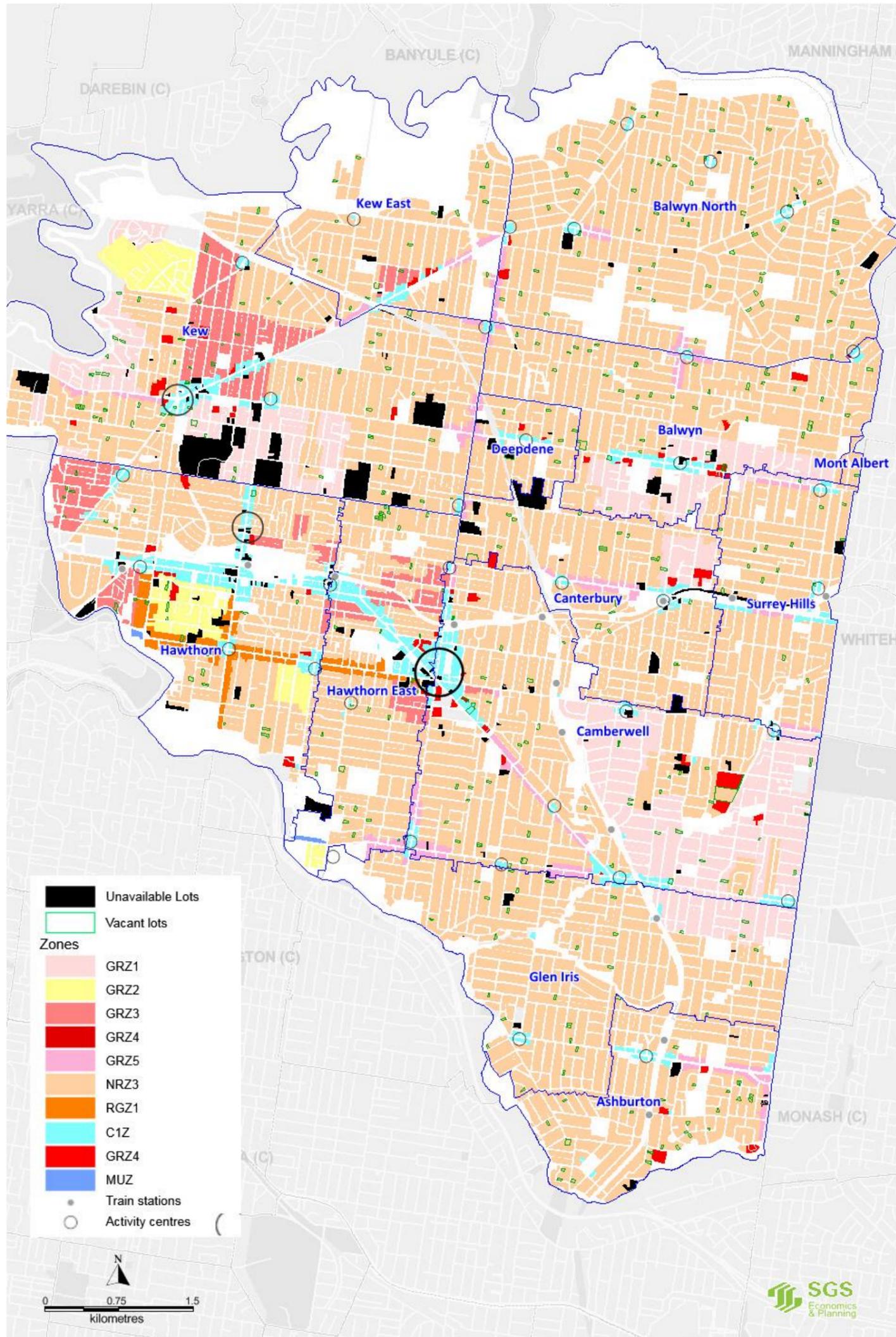


Source: SGS Economics and Planning, 2015

Community infrastructure and key assets

Figure 7 below illustrates specific lots that are currently being used for education, aged care, childcare purposes and public open spaces (highlighted in black). It also shows key assets mostly in commercial zones in Camberwell Junction, Kew Junction, Glenferrie and Maling Road. These sites were identified from a range of Council community infrastructure GIS layers and PDF Maps. These sites serve as community infrastructure for the public and are not considered as sites suitable for new housing development. This applies to all residential and commercial zones in the LGA.

FIGURE 7. COMMUNITY INFRASTRUCTURE AND KEY ASSETS



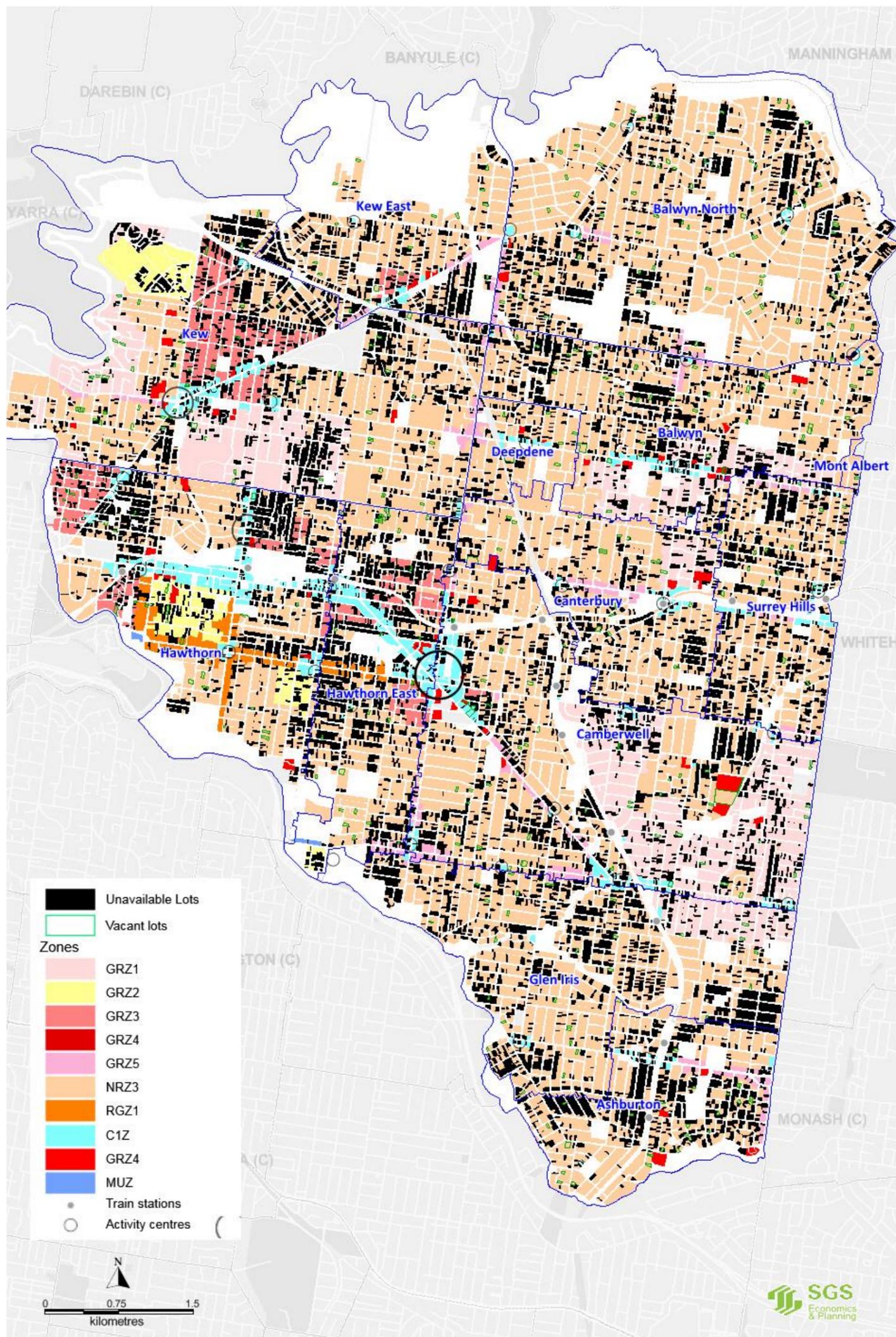
Source: SGS Economics and Planning, 2015

Small lots not available for subdivision or more intensive development

Small lots have limited development potential. Lots within the NRZ3 that are less than 650 square metres have been removed from the available land. Lots less than 500 square metres in all other residential zones, and lots less than 300 square metres in MUZ, CIZ and GRZ4 land near centres, have also been removed from the available land. Lots of these sizes are generally considered not suitable for subdivision therefore are excluded from capacity considerations. Odd sized lots such as driveways, shared private space, and non-developable areas were also identified and removed from available land. Vacant residential lots within these areas were added back to available land with a potential capacity based on respective zone controls. This constraint applies to all residential lands in the LGA. Commercial zoned lots that are small or narrow are given further development thresholds based on practical parking provision and are further detailed in section 2.3 (commercial zones) of this report.

Figure 8 below illustrates the distribution of small lots identified (highlighted in black). These small lots fall within most parts of the municipality.

FIGURE 8. SMALL LOTS



Source: SGS Economics and Planning, 2015

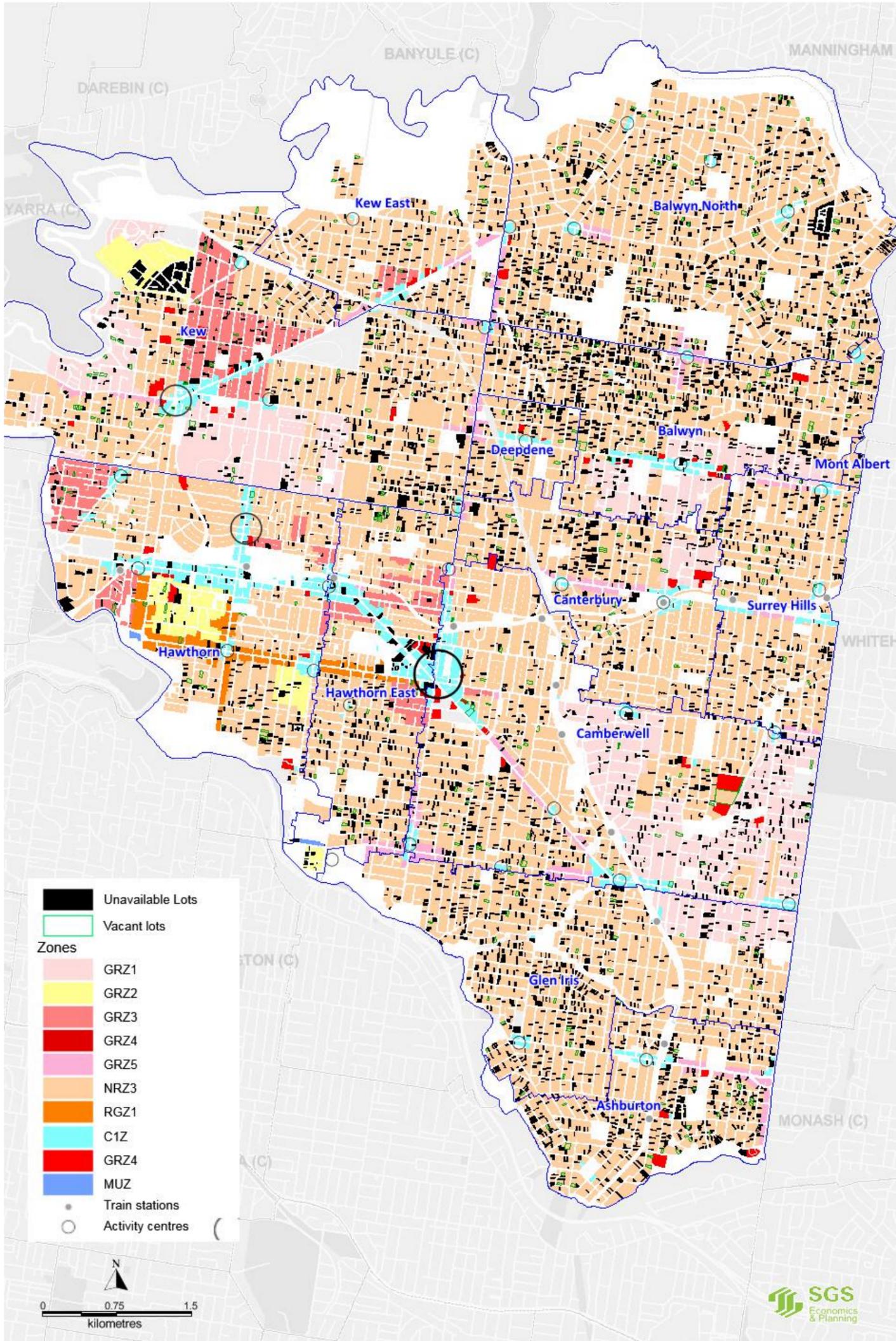
Recently completed buildings

Buildings that were recently completed are unlikely to be redeveloped and have been excluded from the capacity analysis. This applies to all residential land in the LGA (except the 32 GR4 supersized lots). These sites were identified using a number of data sources and are listed below:

- NRZ3: completed after 1995 (supplied by Council via rates database)
- GRZ/RGZ/C1Z/MUZ: completed after 2000 (supplied by Council via rates database)
- NRZ3/GRZ/RGZ/C1Z/MUZ: completed between 2004-2012 (supplied by DEWLP - HDD projects layer)
- NRZ3/GRZ/RGZ/C1Z/MUZ: completed between 2012-2014 (supplied by DEWLP – 2014 UDP)

Suburbs such as Hawthorn, northern parts of Camberwell and western parts of Canterbury are less constrained by this criteria as shown in the figure below. Conversely, Balwyn North and Balwyn have an even distribution of recently developed lots.

FIGURE 9. RECENTLY COMPLETED BUILDINGS

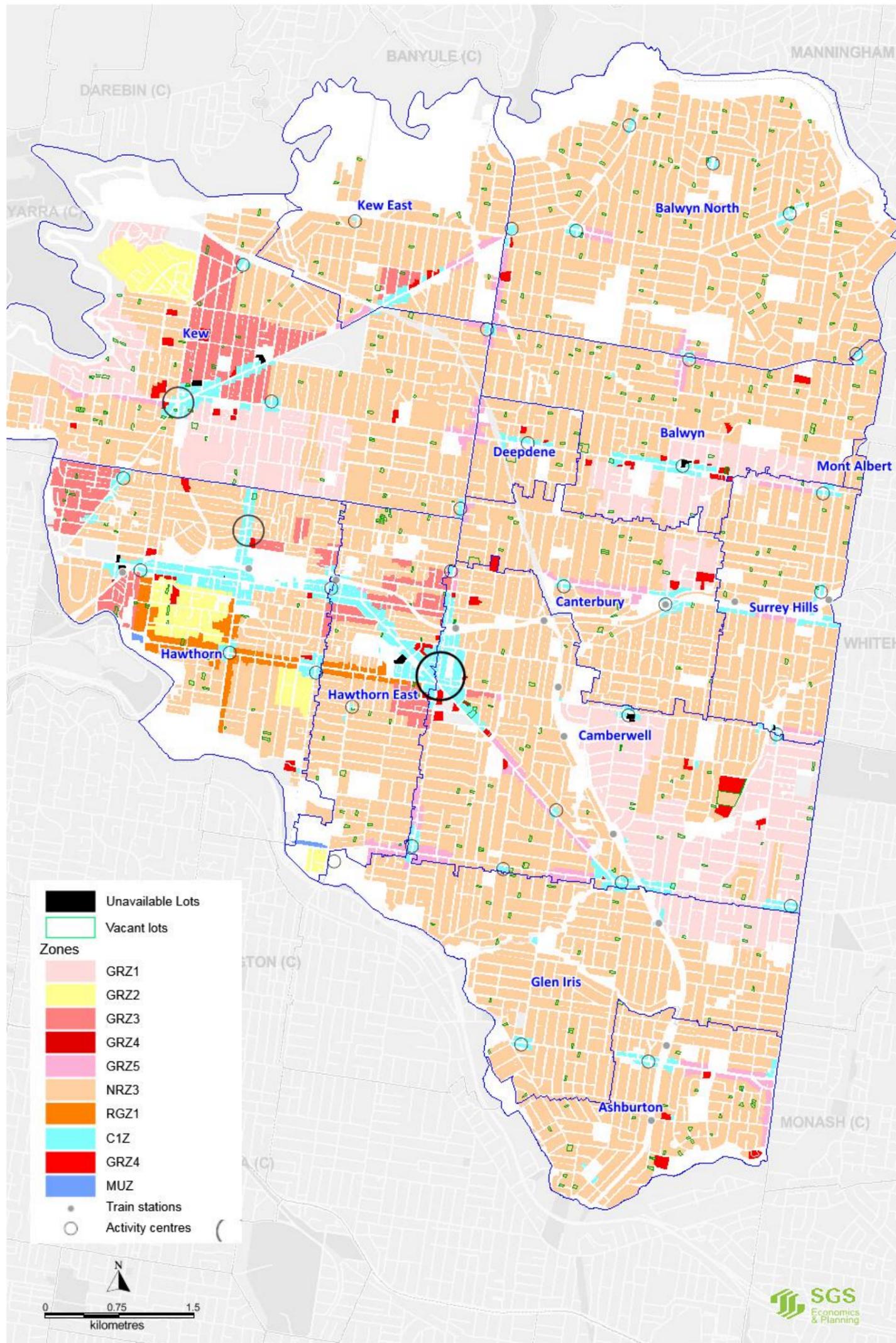


Source: SGS Economics and Planning, 2015

Significant Capital Improvement Value

Consistent with past practice, comparison of a land parcel's site value (SV) and Capital Improved Value (CIV) is used to identify developable land. It is a simple way to identify developable land based on low CIVs relative to SVs. However, it does not take into account other economic aspects such as feasibility, sales or rent revenues. For this analysis, SGS has filtered out sites with high CIV in comparison to SV. These sites are unlikely to be redeveloped due to significant investment and subsequently higher capital improved value. Further details of this analysis are provided in Appendix 4.2 of this report. Only commercial lots in Camberwell Junction, Kew Junction, Glenferrie and Balwyn activity centres are assessed for this criteria.

FIGURE 10. SIGNIFICANT CAPITAL IMPROVED VALUE RATIO



Source: SGS Economics and Planning, 2015

2.3 Potential Housing Yield

As with most established parts of Melbourne, to accurately calculate the total potential number of additional dwellings within a location a comparison of the total capacity (or potential yield) to the existing stock is required. This is referred to as net capacity, as presented in the diagram below.



Using the outputs of the lot level available land analysis SGS has applied a series of yield and site density assumptions which reflect the zoning controls based on both prescriptive controls (i.e. max 2 dwellings per lot) and the planning intent of each zone (i.e. site density).

Site Density

Site density (or simply 'density' as referred to in this report) is a measure which is only based on the land area available for the residential dwelling itself and therefore does not include surrounding open space, roads, footpaths or other land required to support residential uses. For this reason a site density figure for the same type of development is typically higher than broader density measures which include other land uses within their calculation.

SGS has completed extensive analysis of development typologies by site density. From this analysis we have found that each development form typically falls within a particular density range. These ranges overlap, meaning multiple development forms can be achieved at one specific density. This has been used to inform the potential yield assumptions applied to various residential zoned land.

		Detached			Semi-detached			Apartment			
Site density (dwellings per hectare)		< 10	10 - 15	15 - 20	20 - 30	30 - 40	40 - 60	60 - 100	100 - 200	200 - 400	> 400
Land consumed (sqm)		< 1,000	670 - 1000	500 - 670	330 - 500	250 - 330	170 - 250	100 - 170	50 - 100	30 - 50	> 30
Detached	VERY LOW DENSITY DETACHED Typical lot size: > 2,000 sqm	■									
	LOW DENSITY DETACHED Typical lot sizes: 1,000 to 2,000 sqm	■	■								
	DETACHED Typical lot sizes: 500 to 1,200 sqm		■	■							
Semi-detached	SMALL LOT DETACHED Typical lot sizes: 300 to 600 sqm			■	■	■					
	'VILLA' Typically 1 - 2 storey detached			■	■	■	■				
	'TOWNHOUSE' Typically 1 - 3 storey attached			■	■	■	■	■			
Apartments	'WALK UP' APARTMENT Typically 2 - 3 storey apartment					■	■	■	■		
	LOW-RISE APARTMENT Typically 4 - 8 storey apartment							■	■	■	■
	MID-RISE APARTMENT Typically 9 - 15 storey apartment								■	■	■
	HIGH-RISE APARTMENT Typically 15 storeys of over									■	■
	MIXED USE DEVELOPMENT Varies with height and mix										■

Source: SGS Economics and Planning, 2015

Residential zones

The following table provides a summary of potential yield assumptions that were applied to the available land for various residential zoned areas. For the C1Z, MUZ and GRZ4 lots in commercial areas, a separate built form analysis have been used to derive the potential yield for lots in these areas.

TABLE 5. SUMMARY OF POTENTIAL YIELD ASSUMPTIONS

Zone	Total Capacity Assumption	Reasoning
NRZ3		
<650 sqm AND Vacant	1 dwelling	Predominantly detached housing areas with limited opportunities for increased residential development. It has a maximum of 2 dwellings allowed per lot and an 8 metre mandatory height limit. However, larger lots could be subdivided to effectively deliver more dwellings. This is only likely on larger lots (i.e. >1500 sqm).
650 sqm - 1500sqm	2 dwellings	
>1500sqm	Lot size divided by 500sqm	
GRZ1		
500 sqm – 1000sqm	40 dwellings per hectare	Seeks to provide a diversity of housing types and moderate housing change. Has a mandatory height control of 9m. A site density of between 40 to 75 dwellings per hectare has been applied which aligns with the <i>townhouse</i> development typology. The application of this has been scaled based on lot size to reflect the increased likelihood of larger sizes being more intensely utilised.
>1,000sqm	75 dwellings per hectare	
within Heritage Overlay	2 dwellings	Heritage Overlay areas will have additional requirements which is likely to limit the potential to accommodate more than one additional dwelling.
GRZ2/3		
Available	100 dwellings per hectare	Has a mandatory height control of 10.5m. A site density of 100 dwellings per hectare has been applied which aligns with the top end of townhouse developments and small 'walk up' apartments.
within Heritage Overlay	2 dwellings	See GRZ1.
GRZ4 (supersized lots)		
Available	100 dwellings per hectare	Has a discretionary height control of 9m. A site density of 100 dwellings per hectare has been applied which aligns with the top end of townhouse developments and small 'walk up' apartments. This assumes higher densities would be concentrated toward the centre of the site with low densities on the periphery.
GRZ5		
Available	60 dwellings per hectare	Has a discretionary height control of 9m. A site density of 60 dwellings per hectare has been applied which aligns with the townhouse development typology.
within Heritage Overlay	Same as GRZ1	See GRZ1
RGZ1		
Available	150 dwellings per hectare	Encourages a scale of development that provides a transition between areas of more intensive use. Has a discretionary height restriction of 13.5m. A site density of 150 dwellings per hectare has been applied which aligns with low rise apartments typology.

Source: SGS Economics and Planning, 2015

Total capacity for each lot, calculated using the assumptions, was compared to the existing dwellings on each lot to calculate a net capacity. For example, an 800sqm lot within the NRZ3 could produce the following results depending on the existing stock:

TABLE 6. EXAMPLE OF NET DWELLING CAPACITY APPROACH

Existing Stock	Total Capacity	Net Capacity
Vacant lot	2 dwellings	2 dwellings
1 dwelling	2 dwellings	1 dwelling
2 dwellings	2 dwellings	0 dwellings
3 dwellings	2 dwellings	0 dwellings

Commercial zones

The following built form assumptions have been applied to commercial zones and GRZ4 (sites in commercial centres and corridors). These assumptions have been made to translate a particular site into a dwelling capacity estimate. These assumptions apply to lots that are available and are not affected by smaller and narrow lots.

It is assumed that all lots have site coverage and building efficiency of 70% and 80%, respectively. Each site has a specific building height control that allows for an estimate of gross residential floorspace for each lot. Non-residential development, such as ground floor retail and first floor offices, and upper storey setbacks are deducted from the gross floorspace to estimate the total developable floorspace in each lot. An average dwelling size of 80 square metres is then applied onto the developable floorspace to estimate total dwelling yield.

It should be noted that C1Z and GRZ4 lots that do not have or have unclear land use policy guidance are given numbers that best reflect the average control. A summary of these assumptions are provided in Table 7 and further detailed in Table 14 and Table 15 of Appendix 3.4 and 3.5. A map of Camberwell Junction is given as an example of how height controls apply to different sections of the precinct (shown in Figure 11).

TABLE 7. SUMMARY OF BUILT FORM ASSUMPTIONS

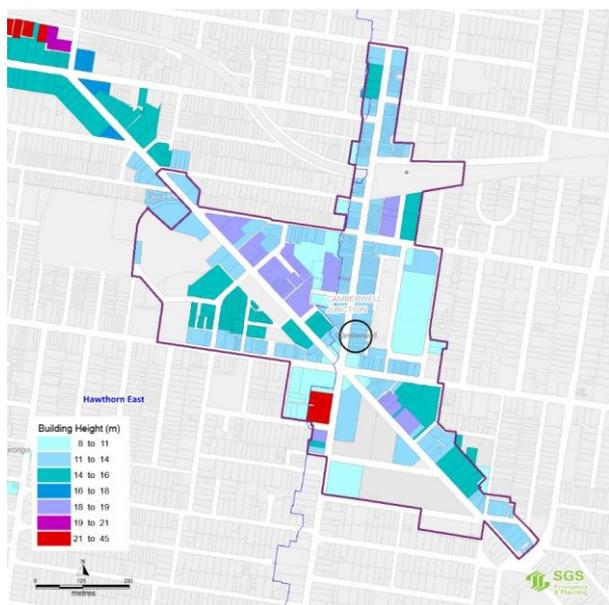
	Site Coverage	Building Efficiency	Average Dwelling Size	Building Height	Non-residential development	Street Wall Height	Upper Storey Setbacks*
Lots with prescribed controls							
All Zones	70%	80%	80sqm	Depending on schedule, up to 45m	First floor OR First two floors employment	Up to 18m	Up to 10m
Lots without prescribed controls							
GRZ4	70%	80%	80sqm	9m	None	7m	3m
C1Z	70%	80%	80sqm	9m	Ground floor non-residential	None prescribed	0
MUZ**	-	-	-	-	-	-	-

Source: SGS Economics and Planning, 2015, City of Boroondara

* This refers to levels beyond street wall height. Specific setbacks have been converted to percentages for ease of calculations. Lots without prescribed controls have been given estimates based on average values. See Table 14 and Table 15 of Appendix 3.4 and 3.5.

**2 (unavailable) lots in MUZ did not have prescribed control and does not affect this stage of the analysis.

FIGURE 11. BUILT FORM ASSUMPTIONS – BUILDING HEIGHT



Source: SGS Economics and Planning, 2015

This analysis recognises that smaller and narrow lots are difficult and expensive to redevelop into medium/high density apartments, particularly in commercial areas where these dwelling typologies are permitted. Where applicable, practical considerations such as car parking, access to upper levels (lifts and stairs) and efficient building design dictate the number of feasible dwellings on these sites (as opposed to the potential yield based on built form). SGS has derived a set of dwelling benchmarks for lots that fall under this category (see Table 8). Further details of this analysis are outlined in Appendix 3.2

TABLE 8. MAXIMUM NUMBER OF DWELLINGS BASED ON PRACTICAL PARKING PROVISION

Lot Size	Lot Width (m)	Feasible Dwellings
All sizes	<3	0
	3 to 5	1
	5 to 8	2
	8 to 12	3
	12+	No limit
Less than 500sqm	12+	4

Source: SGS Economics and Planning, 2015

Figure 10 below illustrates the spatial distribution of the net dwelling capacity that can be realised under current planning controls. Table 9 and Table 10 summarises the net dwelling capacity by zone and by suburb.

In particular, the eastern part of Camberwell will have significant capacity to accommodate medium density development (between 2 to 5 dwellings per lot). Some higher yield clusters can potentially be accommodated close to activity centres in Kew, Hawthorn and Camberwell Junction.

Approximately 23% of net dwelling capacity is made up of low yield lots (1 additional dwelling), and will yield approximately 15,500 dwellings out of the approximately 62,500 additional dwellings. This covers approximately 70% of all developable lots and are spread widely across the LGA.

High density lots (between 40 to 100 dwellings per lot) cover almost 11% of all developable commercial lots. Some lots that are larger or have higher maximum height controls can yield up to 600 dwellings per lot and can be found mostly around Camberwell Junction and Glenferrie Road.

TABLE 9. NET DWELLING CAPACITY, BY ZONE

	Current Dwellings Stock (2012)		Net Capacity	
	Total	Available Land	Dwellings	Per cent
NRZ3	45,222	14,963	17,857	29%
GRZ1	7,115	2,835	8,064	13%
GRZ2	1,766	194	1,906	3%
GRZ3	5,719	734	5,378	9%
GRZ4*	374	8	811	1%
GRZ4**	340	15	2,369	4%
GRZ5	1,545	505	2,569	4%
RGZ1	2,197	127	1,706	3%
C1Z	3,934	166	21,710	35%
MUZ	179	2	176	0%
Total	68,391	19,549	62,546	100%

Source: SGS Economics and Planning 2015

* 32 supersized lots

** Residential land in commercial centres and corridors

TABLE 10. NET DWELLING CAPACITY, BY SUBURB

Suburbs	Current Dwellings Stock (2012)		Net Capacity	
	Total	Available Land	Net Capacity	Per cent
Ashburton	3,071	1,156	1,936	3%
Balwyn*	5,583	1,960	5,351	9%
Balwyn North	7,585	2,941	3,885	6%
Camberwell	8,135	3,484	11,890	19%
Canterbury	2,958	1,224	2,662	4%
Deepdene	981	310	1,007	2%
Glen Iris	5,980	1,625	2,648	4%
Hawthorn	11,676	1,322	12,812	20%
Hawthorn East	6,576	1,105	5,601	9%
Kew	10,329	3,020	10,758	17%
Kew East	2,405	1,071	1,939	3%
Surrey Hills	3,112	1,170	2,057	3%
Total	68,391	20,388	62,546	100%

Source: SGS Economics and Planning 2015

* There is a small section of Mont Albert within Boroondara. For capacity and forecasting purposes, this has been merged with Balwyn and is not separately itemised.

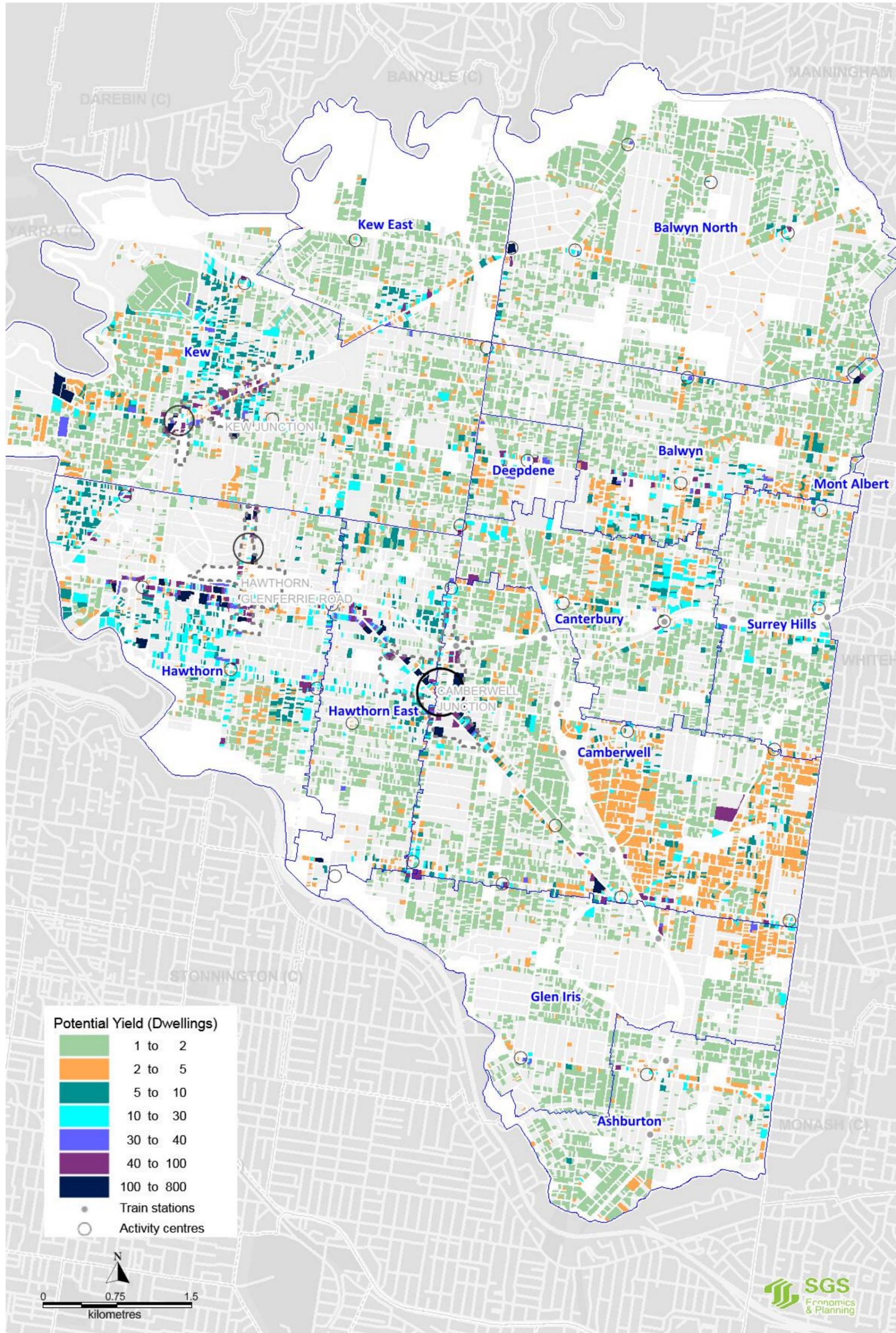
TABLE 11. NET DWELLING CAPACITY, BY ZONE AND SUBURB

Suburb	NRZ3	GRZ1	GRZ2	GRZ3	GRZ4	GRZ5	RGZ1	C1Z	MUZ	Total
Ashburton	1,116	0	0	0	285	320	0	215	0	1,936
Balwyn*	1,680	1,466	0	0	495	117	0	1,593	0	5,351
Balwyn North	3,001	0	0	0	90	246	0	548	0	3,885
Camberwell	2,273	3,610	0	51	826	452	0	4,678	0	11,890
Canterbury	1,404	627	0	0	67	240	0	324	0	2,662
Deepdene	376	39	0	0	32	96	0	464	0	1,007
Glen Iris	1,388	680	0	0	0	218	0	362	0	2,648
Hawthorn	910	0	1,509	1,441	464	0	1,421	7,067	0	12,812
Hawthorn East	1,027	0	62	1,054	177	273	285	2,547	176	5,601
Kew	2,545	1,629	335	2,639	489	325	0	2,796	0	10,758
Kew East	977	0	0	193	189	123	0	457	0	1,939
Surrey Hills	1,160	13	0	0	66	159	0	659	0	2,057
Total	17,857	8,064	1,906	5,378	3,180	2,569	1,706	21,710	176	62,546

Source: SGS Economics and Planning 2015

* There is a small section of Mont Albert within Boroondara. For capacity and forecasting purposes, this has been merged with Balwyn and is not separately itemised.

FIGURE 12. POTENTIAL YIELD



Source: SGS Economics and Planning

3 APPENDIX

3.1 GRZ4 (supersized lots) available land assessment

A lot by lot assessment of GRZ4 supersized lots was completed by Council to determine if they had potential for further development (i.e. identified as 'available land'). These lots are quite large and have a number of unique attributes which means they cannot simply be assessed using standard attributes used for other residential zoned areas. Results of this assessment are further illustrated in Figure 13.

TABLE 12. GRZ4 SUPERSIZED LOTS, AVAILABLE LAND ASSESSMENT

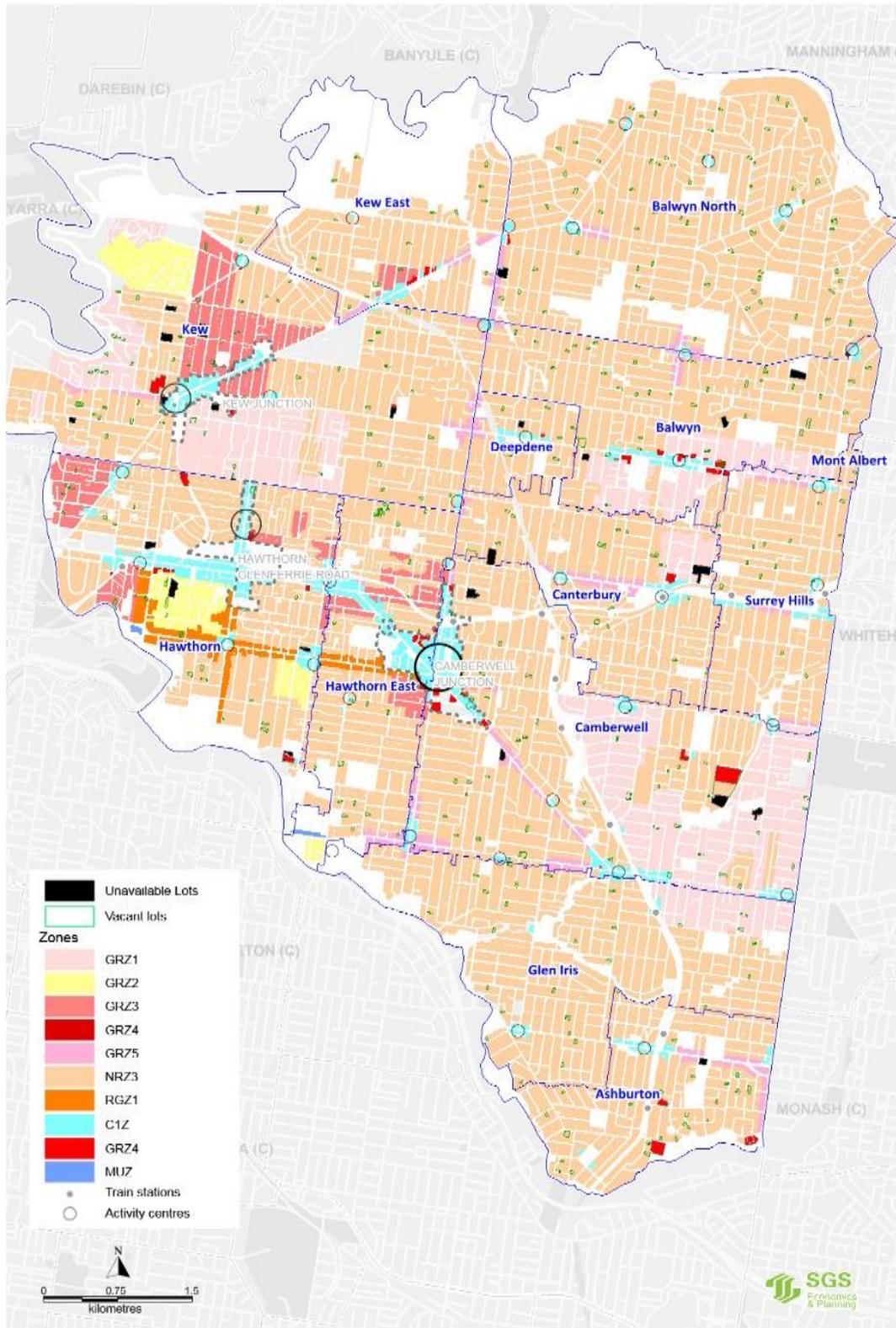
No.	Address	Precinct No.	Site details	Available land
1	1 Clayton Road, Balwyn	Precinct 68	<ul style="list-style-type: none"> – St. Catherine's Aged Care Facility (Balwyn) – Residential Aged Care – 10,673sqm 	No
2	2 Berwick Street, Camberwell	Precinct 43	<ul style="list-style-type: none"> – Benetas Broughton Hall - Formerly Tara – Residential Aged Care – 8,570sqm 	No
3	141 Highfield Road, Camberwell	Precinct 48	<ul style="list-style-type: none"> – Uniting Aged Care Tanderra – Residential Aged Care – 5,243sqm 	Yes
4	19-21 Canterbury Road, Camberwell	Precinct 33	<ul style="list-style-type: none"> – Bapcare – Residential Aged Care – 11,386sqm 	No
5	16 Cornell Street, Camberwell	Precinct 48	<ul style="list-style-type: none"> – Nazareth House Residential Care Home – Residential Aged Care – 21,138sqm 	Yes
6	18 Barry Street, Kew	Precinct 8	<ul style="list-style-type: none"> – Carnsworth Nursing Home – Residential Aged Care – 8,440sqm 	No
7	286 High Street, Ashburton	Precinct 67	<ul style="list-style-type: none"> – Samarinda Lodge Aged Care Facility and Aged Services – Residential Aged Care – 4,143sqm 	No
8	16 Fellows Street, Kew	Precinct 8	<ul style="list-style-type: none"> – Gracecourt hostel – Aged Care and Retirement Village – 4,984sqm 	No
9	41-45 Yarrbat Avenue, Balwyn	Precinct 12	<ul style="list-style-type: none"> – The Connault Nursing Home – Residential Aged Care – 5,022sqm 	No
10	440 Camberwell Road, Camberwell	Precinct 16	<ul style="list-style-type: none"> – Regis Shenley Manor 	No

No.	Address	Precinct No.	Site details	Available land
			Nursing Home – Residential Aged Care – 4,358sqm	
11	49 Lyndon Street, Camberwell	Precinct 55	– Lyndon Aged Care – Residential Aged Care – 13,403sqm	No
12	97 Elgin Street, Hawthorn	Precinct 26	– St. Joseph's Aged Care Facility – Residential Aged Care – 5,811sqm	No
13	6 - 14 Studley Park Road, Kew	Precinct 15 & 8	– Villa Maria (St. Pauls College, Children's Respite Centre and administration offices) – 16,269sqm	Yes
14	23 Maleela Avenue, Balwyn	Precinct 19	– Balwyn Manor – Supported Residential Aged Care Services – 3,852sqm	No
15	7-9 Hunter Street, Hawthorn	Precinct 17	– Hawthorn Grange – Supported Residential Aged Care Services – 3,421sqm	No
16	79 Stevenson Street, Kew	Precinct 15	– Highgrove – Supported Residential Aged Care Services – 3,085sqm	No
17	24 Nicholson Street, Balwyn (1102 Burke Road Balwyn North)	Precinct 2	– Eva Tilley Memorial Hostel – Residential Aged Care – 8,501sqm	No
18	2 Caravan Street, Balwyn (280-290 Belmore Road)	Precinct 68	– Justin Villa – Residential Aged Care – 17,302sqm	No
19	12 Pretoria Street, Balwyn	Precinct 2	– Westbury Private Nursing Home – Residential Aged Care – 3,298sqm	No
20	1-12 Bills Street, Hawthorn	Precinct 52	– DHS Public Housing Estate – 5,460sqm	Yes
21	1-9 Alamein Avenue, Ashburton	Precinct 67	– DHS Public Housing Estate – 5,314sqm	Yes
22	2-18 Markham Avenue, Ashburton	Precinct 67	– DHS Public Housing Estate – 14,570sqm	Yes
23	114 Victory Boulevard, Ashburton	Precinct 67	– DHS Public Housing Estate – 8,095sqm	Yes
24	138C Barkers Road, Hawthorn	Precinct 26	– Former California Hotel Site	Yes

No.	Address	Precinct No.	Site details	Available land
			– 6,974sqm	
25	6 Rochester Road, Canterbury	Precinct 34	– Airdrie House Society / Bass Care – Residential Aged Care – 6,748sqm	Yes
26	20-26 Manningtree Road, Hawthorn	Precinct 39	– Moorfields Community for Adult Care (Uniting Aged Care) – Residential Aged Care – 10,086sqm	No
27	22-24 Gellibrand Street, Kew	Precinct 16	– Kew Gardens Aged Care – Residential Aged Care – 4,518sqm	No
28	253 Cotham Road & 14-18 Cecil Street, Kew	Precinct 11	– Prague House – Department of Human Services – Residential Aged Care – 5,584sqm (2 allotments)	No (253 Cotham Rd) Yes (14-18 Cecil St)
29	27 Shierlaw Avenue, Canterbury	Precinct 34	– Faversham House – Bass Care & Boroondara Aged Services Society – Residential Aged Care – 16,161sqm	No
30	6-8 Joffre Street, Camberwell	Precinct 58	– Condare Court – Residential Aged Care – 6,228sqm	No
31	55-59 Walpole Street, Kew	Precinct 9	– Baptcare Karana Community – Residential Aged Care – 7,490sqm	No
32	53 Walpole Street, Kew	Precinct 9	– Bet Nachman Synagogue of Kew – Synagogue and associated buildings – Plans to construct community housing for congregation members – 3,770sqm	No

Source: City of Boroondara

FIGURE 13. GRZ4 (SUPERSIZED) LOTS, AVAILABLE LAND MAP



Source: SGS Economics and Planning 2015

3.2 Narrow and small lots assessment

The assessment assumes that lot width and size constraints generally affect those that are less than 500sqm in size or are less than 12 metres in width. In order to determine the potential dwelling yield on these sites, SGS has derived a set of benchmarks to inform the number of feasible dwellings on these lots. Overall, it assumes that 1 additional dwelling is feasible for every 3-4 metres increase in width up to 12 metres. Lots that are less than 500 sqm are limited to a maximum of 4 dwellings, indicating the number of practical parking spaces which could be provided on these lots.

TABLE 13. MAXIMUM NUMBER OF DWELLINGS BASED ON PRACTICAL PARKING PROVISION

Lot Size	Lot Width (m)	Feasible Dwellings
All sizes	<3	0
	3 to 5	1
	5 to 8	2
	8 to 12	3
	12+	No limit
Less than 500sqm	12+	4

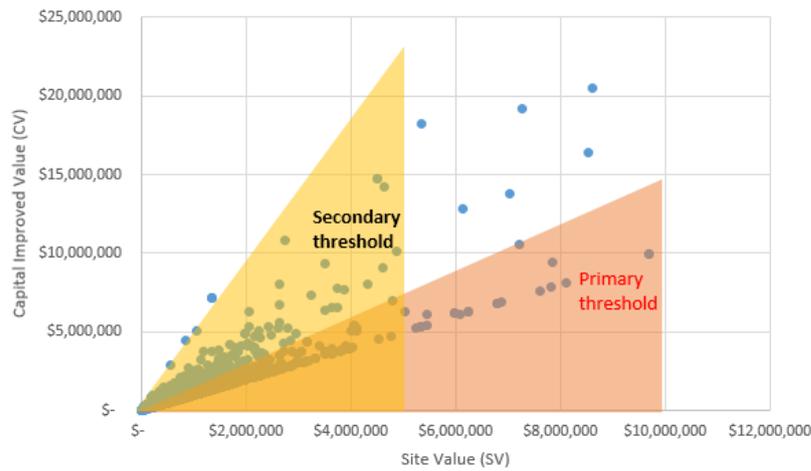
Source: SGS Economics and Planning 2015

3.3 Capital Improved Value Ratio

Developable parcels are frequently identified as those where improvement value is less than land value. Other ratios and simple adjustments are common as well. In this study, a comparison of a land parcel's site value (SV) and Capital Improved Value (CIV) is used to identify developable land.

In this case, SGS applied a linear regression to examine the relative relationship between SV and CIV. Regressions show that CIVs across Boroondara are approximately 1.5 times the SV in most cases. This ratio is used as the primary threshold for identifying developable lots in the LGA. As a large number of lots in Boroondara have a lower SV and are likely to yield higher CIV than the expected, a secondary threshold is applied to allow us to be more conservative with the assumptions. Generally speaking, lots that have SVs less than \$5M and have CIVs 5 times or less than the SV are considered developable. Lots that have SVs greater than \$5M and have CIVs close to the expected value (1.5 times) are also considered developable. Lots that do not fall under the Primary or Secondary Thresholds are not considered as developable due to significantly improved property values. This method is illustrated in the figure below.

FIGURE 14. IDENTIFYING DEVELOPABLE LAND USING SITE VALUE AND CAPITAL IMPROVED VALUE



Source: SGS Economics and Planning 2015

3.4 Upper level setback assumptions

Upper level setbacks for each lot are taken into account when estimating potential yield. It specifies the distance between building and lot boundary at upper storeys. Upper storeys refer to building storeys that have a building height greater than the prescribed street wall height. This is to ensure that upper storey facades are set back from the street frontage to achieve specific urban design outcomes. For this study, SGS converted the setback distances into percentages that reflect a smaller proportion of the building footprint. This percentage is then applied to upper storeys where setbacks apply. This conversion is outlined in Table 14 below.

TABLE 14. UPPER LEVEL BUILDING FOOTPRINT BASED ON UPPER LEVEL SETBACKS

Lot size	Upper storey setbacks (in metres)		
	3m	3m - 6m	6m -10m
Upper storey setbacks (as % of building footprint)			
<1000sqm	95%	85%	80%
1000sqm	95%	90%	90%
1500sqm	95%	95%	90%
>1500sqm	100%	95%	90%

Source: SGS Economics and Planning 2015

3.5 Design and Development Overlay (DDO) summary

DDOs identify areas which are affected by specific design and built form controls covering new development. In Boroondara, 38 commercial (and associated GRZ4) precincts are subject to DDO controls. These controls include overall building heights, street wall heights and upper storey setbacks. Land use may be used to define a precinct such as in DDO12. These planning controls are taken into consideration when estimating dwelling yield for each precinct. Where street wall height and upper storey setbacks are not provided, a default street wall height of 7m (2 storeys) and 5m upper storey setback is applied. Specific controls for each site are outlined in Table 15 below.

TABLE 15. PROXY FOR UPPER LEVEL SETBACKS

Precincts	Street wall height (m)	Min upper storey setback (m)	Building height (m)	Employment use	
				Ground floor	1st floor
GRZ4 (if not otherwise prescribed)	7	3	9	None	None
C1Z (if not otherwise prescribed)	0	0	9	Non-residential	None
MUZ (if not otherwise prescribed)	NA	NA	NA	NA	NA
DDO16-Ashburton-Area1	8	0	8	Retail	None
DDO16-Ashburton-Area2	8	5	11	Retail	None
DDO16-Ashburton-Area3	9	5	11	Retail	None
DDO16-Ashburton-Area4	11	0	11	Retail	None
DDO16-Ashwood-Area1	8	3	11	Retail	None
DDO16-Auburn-Area1	11	0	11	Retail	None
DDO16-Auburn-Area2	11	5	14.5	Retail	None
DDO16-Balwyn-Area1	13	6	16	Retail	None
DDO16-Balwyn-Area2	9	5	11	Retail	None
DDO16-Balwyn-Area3	9	0	9	Retail	None
DDO16-Balwyn-Area4	11	0	11	Retail	None
DDO16-BalwynEast-Area1	8	5	14.5	Retail	None
DDO16-BalwynEast-Area2	8	5	11	Retail	None
DDO16-Bellevue-Area1	8	3	11	Retail	None
DDO16-BelmoreHeights-Area1	8	3	11	Retail	None
DDO16-BelmoreHeights-Area2	8	3	14.5	Retail	None
DDO16-Boroondara-Area1	8	0	8	Retail	None
DDO16-Boroondara-Area2	8	3	11	Retail	None
DDO16-BurwoodVillage-Area1	8	5	11	Retail	None
DDO16-BurwoodVillage-Area2	9	5	11	Retail	None
DDO16-CanterburyVillage-Area1	9	5	11	Retail	None
DDO16-CanterburyVillage-Area2	8	0	8	Retail	None
DDO16-ChurchStreet-Area1	8	0	8	Retail	None
DDO16-ChurchStreet-Area2	11	0	11	Retail	None
DDO16-ChurchStreet-Area3	11	5	14.5	Retail	None
DDO16-CothamVillage-Area1	11	0	11	Retail	None
DDO16-CothamVillage-Area2	11	5	14.5	Retail	None
DDO16-CothamVillage-Area3	8	3	11	Retail	None
DDO16-Deepdene-Area1	8	3	11	Retail	None
DDO16-DickensCorner-Area1	8	5	14.5	Retail	None
DDO16-DickensCorner-Area2	9	5	11	Retail	None
DDO16-DickensCorner-Area3	8	5	19	Retail	None
DDO16-DickensCorner-Area4	8	5	14.5	Retail	None
DDO16-EastCamberwell-Area1	8	3	11	Retail	None
DDO16-EastCamberwell-Area2	8	0	8	Retail	None
DDO16-GlenferrieHill-Area1	11	0	11	Retail	None
DDO16-GlenferrieHill-Area2	11	3	14.5	Retail	None

Precincts	Street wall height (m)	Min upper storey setback (m)	Building height (m)	Employment use	
				Ground floor	1st floor
DDO16-GolfLinksVillage-Area1	8	3	11	Retail	None
DDO16-Greythorn-Area1	8	5	14.5	Retail	None
DDO16-Greythorn-Area2	8	5	11	Retail	None
DDO16-HarpVillage-Area1	11	5	19	Retail	None
DDO16-HarpVillage-Area2	11	5	14.5	Retail	None
DDO16-HarpVillage-Area3	9	5	11	Retail	None
DDO16-HarpVillage-Area4	9	0	9	Retail	None
DDO16-HarpVillage-Area5	11	0	11	Retail	None
DDO16-Hartwell-Area1	11	5	22	Retail	None
DDO16-Hartwell-Area2	8	5	14.5	Retail	None
DDO16-Hartwell-Area3	8	5	11	Retail	None
DDO16-Hartwell-Area4	11	0	11	Retail	None
DDO16-Hartwell-Area5	8	0	8	Retail	None
DDO16-Hartwell-Area6	11	5	14.5	Retail	None
DDO16-MiddleCamberwell-Area1	8	5	14.5	Retail	None
DDO16-MiddleCamberwell-Area2	8	0	8	Retail	None
DDO16-MiddleCamberwell-Area3	8	5	11	Retail	None
DDO16-MontAlbertTT-Area1	8	5	11	Retail	None
DDO16-MontAlbertTT-Area2	9	5	11	Retail	None
DDO16-MountStreet-Area1	8	5	11	Retail	None
DDO16-NorthBalwyn-Area1	9	3	14.5	Retail	None
DDO16-NorthBalwyn-Area2	9	3	11	Retail	None
DDO16-RiversdaleVillage-Area1	9	0	9	Retail	None
DDO16-RiversdaleVillage-Area2	9	5	11	Retail	None
DDO16-RiversdaleVillage-Area3	8	5	11	Retail	None
DDO16-SouthCamberwell-Area1	11	0	11	Retail	None
DDO16-SouthCamberwell-Area2	11	3	14.5	Retail	None
DDO16-Stradbroke-Area1	11	0	11	Retail	None
DDO16-SurreyHills-Area1	8	5	11	Retail	None
DDO16-SurreyHills-Area2	8	0	8	Retail	None
DDO16-ThroughRoad-Area1	8	3	11	Retail	None
DDO16-ThroughRoad-Area2	11	0	11	Retail	None
DDO16-UpperGlenIris-Area1	9	3	11	Retail	None
DDO16-UpperGlenIris-Area2	11	3	14.5	Retail	None
DDO16-WillsmereVillage-Area1	8	3	11	Retail	None
DDO16-BurwoodCamberwellRoad-Area1	8	5	11	Retail	Office
DDO16-BurwoodCamberwellRoad-Area2	11	5	17	Retail	Office
DDO16-BurwoodCamberwellRoad-Area3	11	5	14.5	Retail	Office
DDO16-BurwoodCamberwellRoad-Area4	11	3	19	Retail	Office
DDO16-BurwoodCamberwellRoad-Area5	11	3	30	Retail	Office
DDO16-BurwoodCamberwellRoad-Area6	8	0	8	Retail	Office

Precincts	Street wall height (m)	Min upper storey setback (m)	Building height (m)	Employment use	
				Ground floor	1st floor
DDO16-BurwoodCamberwellRoad-Area7	11	5	22	Retail	Office
DDO16-CanterburyRoad-Area1	9	0	9	Res prohibited	Res prohibited
DDO16-CanterburyRoad-Area2	9	3	11	Res prohibited	Res prohibited
DDO16-CanterburyRoad-Area3	11	0	11	Res prohibited	Res prohibited
DDO16-CanterburyRoad-Area4	11	3.5	14.5	Res prohibited	Res prohibited
DDO16-Tooronga-Area1	16	3	19	Res prohibited	Res prohibited
DDO16-Tooronga-Area2	16	0	16	Res prohibited	Res prohibited
DDO16-Tooronga-Area3	8	0	16	Res prohibited	Res prohibited
DDO16-Tooronga-Area4	8	3	16	Res prohibited	Res prohibited
DDO14-KewJunction-Precinct1A	18	8	28.5	Retail	Office
DDO14-KewJunction-Precinct1B	7	5	11	Retail	Office
DDO14-KewJunction-Precinct1C	11	5	18	Retail	Office
DDO14-KewJunction-Precinct2A	11	5	18	Retail	Office
DDO14-KewJunction-Precinct2B	11	5	14.5	Retail	Office
DDO14-KewJunction-Precinct2C	7	5	11	Retail	Office
DDO14-KewJunction-Precinct3	11	5	18	Retail	Office
DDO12-WestHawthorn-Precinct1	7	5	16	Retail	Non Res
DDO12-WestHawthorn-Precinct3	7	5	11	Retail	Non Res
DDO12-WestHawthorn-Precinct4A	12	5	18	Retail	Non Res
DDO12-WestHawthorn-Precinct4B	12	5	18	Retail	Non Res
DDO12-WestHawthorn-Precinct5	7	5	9	Retail	Non Res
DDO12-WestHawthorn-Precinct6	10	5	16	Retail	Non Res
CamberwellJunctStructurePlan1	7	5	11	Retail	Office
CamberwellJunctStructurePlan2	7	5	9	Retail	Office
CamberwellJunctStructurePlan3	7	5	11	Retail	Office
CamberwellJunctStructurePlan4	7	5	14	Retail	Office
CamberwellJunctStructurePlan4A	7	5	14	Retail	Office
CamberwellJunctStructurePlan5	7	5	18	Retail	Office
CamberwellJunctStructurePlan6	7	5	21	Retail	Office
DDO15-AllPrecincts Area 1a	7.5	10	21.5	Retail	Office
DDO15-AllPrecincts Area 1	11	5	21.5	Retail	Office
DDO15-AllPrecincts Area 2	11	5	18	Retail	Office
DDO15-AllPrecincts Area 3	11	5	32	Retail	Office
DDO15-AllPrecincts Area 4	11	5	42.5	Retail	Office
DDO15-AllPrecincts Area 5-1	7	5	18	Retail	Office
DDO15-AllPrecincts Area 5-2	7	5	32	Retail	Office
DDO15-AllPrecincts Area 5-3	7	5	44	Retail	Office
DDO15-AllPrecincts Area 5-4	7	5	45	Retail	Office

Source: City of Boroondara

Contact us

CANBERRA

Level 6, 39 London Circuit
Canberra ACT 2601

+61 2 6263 5940
sgsact@sgsep.com.au

HOBART

Unit 2, 5 King Street
Bellerive TAS 7018

+61 (0)439 941 934
sgstas@sgsep.com.au

MELBOURNE

Level 5, 171 La Trobe Street
Melbourne VIC 3000

+61 3 8616 0331
sgsvic@sgsep.com.au

SYDNEY

209/50 Holt Street
Surry Hills NSW 2010

+61 2 8307 0121
sgsnsw@sgsep.com.au

