Priority Growth Areas: NWGC

Housing Market Needs Analysis

Department of Planning & Environment

Final Draft

AECgroup

Outcome Driven

Document Control

Job ID:	17842SYD
Job Name:	Priority Growth Areas: Housing Market Needs Analysis
Client:	NSW Department of Planning & Environment
Client Contact:	Haley Rich
Project Manager:	Esther Cheong
Email:	esther.cheong@aecgroupltd.com
Telephone:	02 9283 8400
Document Name:	Priority Growth Areas Housing Market Needs Analysis (NWGC) Final Draft
Last Saved:	7/2/2017 5:40 PM

Version	Date	Reviewed	Approved
Working Draft v1	8/05/2015	CL	EC
Preliminary Draft v1	1/06/2015	CL	EC
Final Draft	31/07/2015	CL	EC

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1. Introduction

1.1 Study Background and Brief

Released in December 2014, A Plan for Growing Sydney (DPE, 2014a) identifies the importance of Sydney's North West and South West Growth Centres. Pursuant to Direction 2.4 to deliver timely and well planned greenfield precincts and housing, Department of Planning and Environment (DPE) is undertaking a review of the Growth Centre Structure Plans. These growth centres are now referred to as Priority Growth Areas.

For the purposes of this Study the North West Growth Centre (NWGC) and South West Growth Centre (SWGC) are collectively termed 'Priority Growth Areas' or 'the Study Area'.

As part of DPE's review of the Growth Structure Plans, AEC Group (AEC) has been commissioned to carry out a Housing Market Needs Analysis to assist DPE understand:

- Supply and demand of housing in the priority growth areas and in the broader context of Western Sydney.
- The drivers of housing demand and how they are likely to impact on the nature of future housing demand, and consequently the adequacy of existing land supply in the Priority Growth Areas.
- The capacity and adequacy of residential zoned land in the Priority Growth Areas to accommodate new dwellings.
- Constraints to housing supply and if they are related to the current planning framework or more broadly due to market and economic factors.
- Future housing demand (including quantum and type) for the Study Area toward 2036.

The analysis of patterns of supply and demand will assist DPE understand the adequacy of land provision (both rezoned and yet to be zoned) in the Priority Growth Areas.

1.2 Priority Growth Areas Context

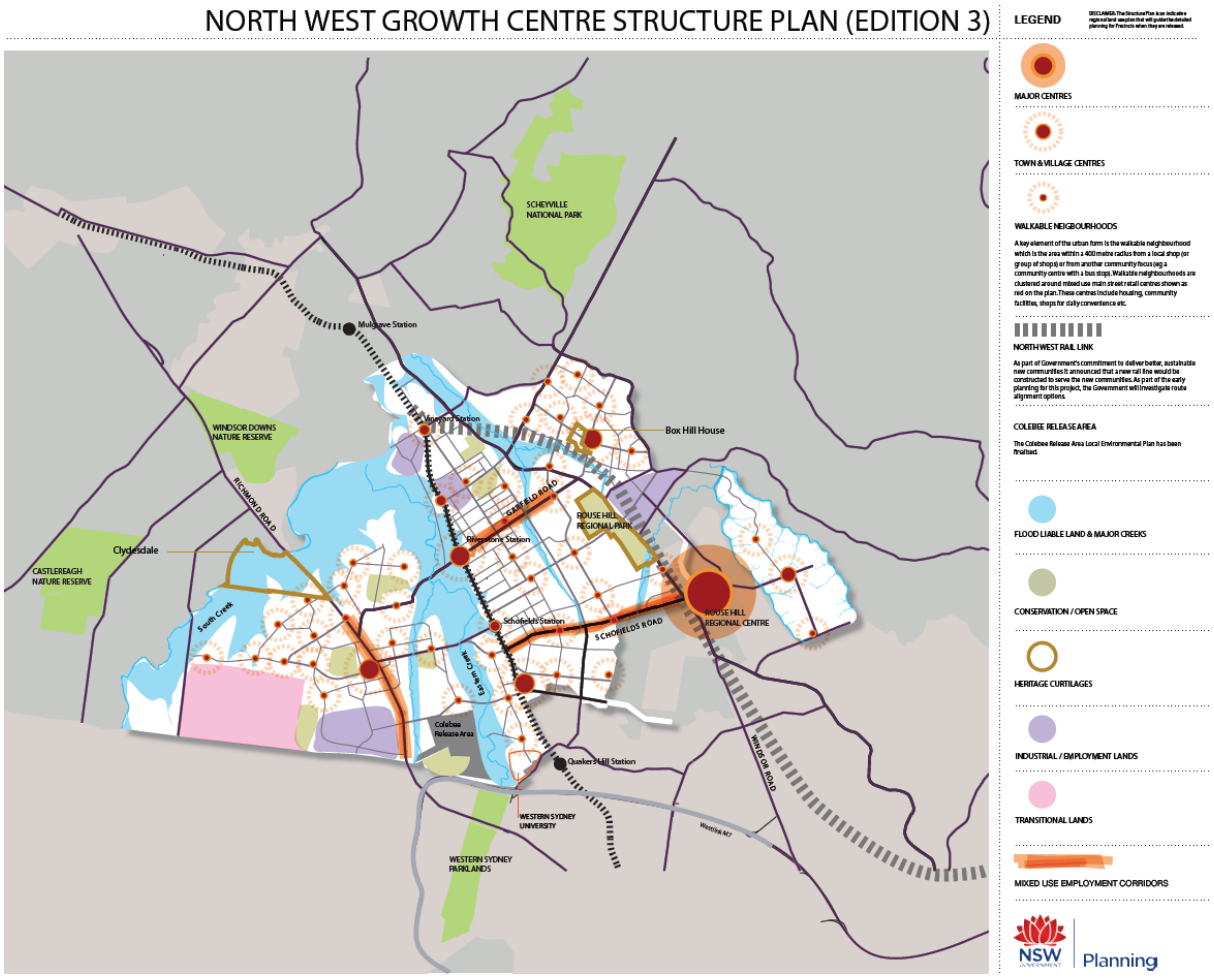
North West Growth Centre

The North West Growth Centre (NWGC) is approximately 10,000ha in size and straddles the local government areas of The Hills Shire, Blacktown and Hawkesbury. There are 16 precincts within the NWGC, some of which have been released and rezoned.

Since early planning commenced in 2005 to streamline the supply of greenfield land for urban development, various milestones have been achieved and 11 precincts have been rezoned for urban development.

Since rezoning of the first NWGC precinct (North Kellyville) in 2008, several rail infrastructure projects have commenced. The NWGC is now serviced by the Cumberland and North Shore, Northern & Western lines, the Quakers Hill to Vineyard rail duplication complete with a new train station at Schofields in service since October 2011. Delivered in two stages, the project is expected to provide capacity for additional peak service on the Richmond branch line to cater for future passenger demand. The proposed North West Rail Link (NWRL) terminates at Rouse Hill which is just outside the NWGC. An extension of the NWRL to Marsden Park to the west is planned through the Schofields train station to terminate at Cudgegong station in Area 20 precinct.

Figure 1.1: NWGC Structure Plan (edition 3)



Source: DoP (2010)

Several major employment hubs are located within and around the NWGC. Rouse Hill while located just outside the NWGC has significant retail facilities and is a major employer for the area. Similarly, those who work in Norwest and Bella Vista business parks which are outside the NWGC are also attracted to housing options in the NWGC.

South West Growth Centre

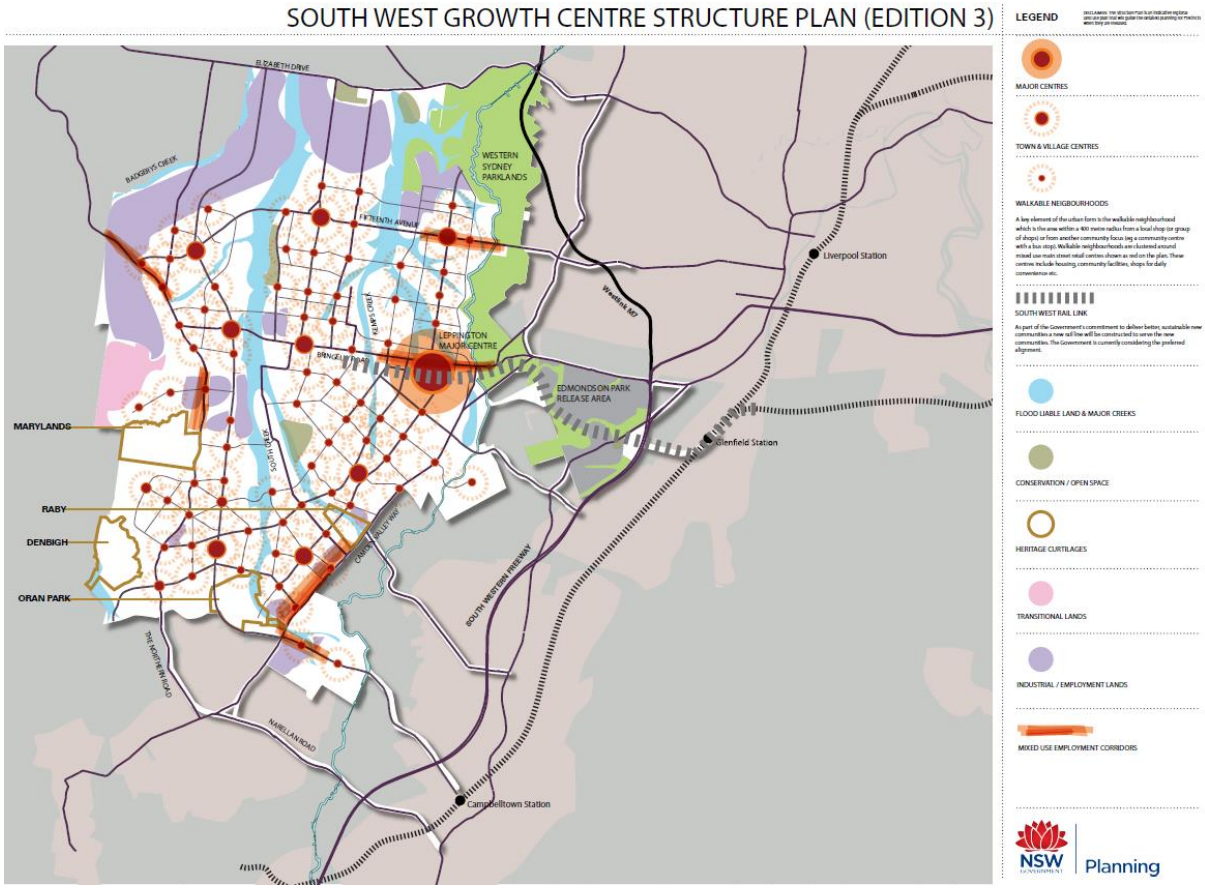
The South West Growth Centre (SWGC) is approximately 17,000ha in size and straddles the local government areas of Liverpool, Camden and Campbelltown. There are 18 precincts within the SWGC, some of which have been released and rezoned.

Since early planning commenced in 2005 (concurrent with the NWGC), seven precincts have been rezoned for urban development. The Leppington precinct is currently undergoing precinct planning.

Since the rezoning of the first SWGC precinct (Oran Park and Turner Road) in 2007, the South West Rail Link was commenced in 2011 and recently opened in February 2015. The rail line comprises 11.4km from Leppington to Glenfield via Edmondson Park and includes two new train stations - Leppington and Edmondson Park.

Several major employment hubs are located just outside the SWGC including Liverpool and Campbelltown CBDs which incorporate major hospital and retail precincts. Current agricultural and rural land uses in the local area also provide employment to current SWGC residents.

Figure 1.2: SWGC Structure Plan (edition 3)



Source: DoP (2010)

Continued Growth of the Priority Growth Areas

Development activity in the Priority Growth Areas has distinctly increased in the last 24 months as market acceptance and overall desirability of the areas build. The implementation of the housing diversity package has contributed to this.

Sales take-up and interest is reportedly strong with a distinct shift in the nature of market demand and household preference observed.

As the priority growth areas further develop and establish themselves as a residential regions of Western Sydney, associated population growth will naturally result in demand for goods and services. This will result in commensurate demand for local employment centres. Local employment growth will accordingly underpin demand for more housing, current market activity demonstrating that employment in close proximity to emerging residential areas is increasingly becoming a key factor for residents when choosing where to live.

1.3 Methodology and Approach

Overall Approach

DPE recognises that in assembling an evidence base to underpin strategic planning, an analysis of economic trends and influences is necessary to investigate the nature of population growth and how it could impact future expectations of land and housing requirements.

While this Study considers housing need, it is useful to recognise the distinction between housing demand and housing need.

- **Housing demand** is housing of the type and quality that households desire and can afford to buy/rent in the private market. Housing demand therefore considers both preference and the ability to pay. It can also be termed *effective demand*.
- **Housing need** is sometimes referred to as *underlying demand*. This is housing needed by households regardless of the ability to pay for housing. Housing need therefore also accounts for those households who are unable to resolve their situation without assistance.

An upshot of the housing supply challenge relates to housing choice and affordability. In reality though, effective demand (or housing demand as defined above) is complex and subject to a myriad factors.

Despite the permissibility of development, in some instances across Sydney, large scale residential development has been constrained. This could be due to a combination of factors including planning constraints (e.g. statutory requirements, difficulties with infrastructure provision, fragmentation of ownership), site and capacity constraints (e.g. bushfire, flooding, slope and landslip) and commercial pressures.

In combination, these factors have the potential to impede the supply response to demand pressures, the urban zoning of lands not always translating into development and housing delivery.

As a consequence, it is important that the projection of housing demand (top down approach) be supplemented with consideration of housing supply, including an analysis of current land use and ownership patterns, infrastructure capacity as well as appropriateness of planning controls. This will assist an understanding of the capacity of zoned lands and planning framework to accommodate projected growth (bottom up approach).

Key Objective and Project Scope

The overarching objective of the Study is to carry out economic and property market analysis to assist DPE with the review of the growth centre structure plans which will plan for and guide development that will accommodate future population growth in the Priority Growth Areas.

AEC's scope involves the following tasks:

- Review of background information and statutory planning framework.
- Identify economic and market trends that influence future population and housing requirements.
- Profile housing supply and current development activity in the Study Area.
- Review of capacity in the Priority Growth Areas to understand both planning and market capacity of zoned lands to accommodate future development.
- Project housing demand (based on different growth scenarios) for the Study Area having regard to:
    - Projected population growth.
    - Changes in households and socio-demographic profile.
    - Employment opportunities and growth.
    - Accessibility to and availability of transport networks, proximity to employment and key services and social infrastructure.
    - Affordability of housing.
- Assess and identify the capacity of the Priority Growth Areas (NWGC and SWGC) to accommodate projected housing demand.
- Make recommendations to facilitate and accommodate residential growth effectively in the Priority Growth Areas.

Land use planning is a complex matter, long term in nature and ultimately more influenced by structure change rather than market/cyclical factors. As a consequence, planning for immediate needs is categorically less complex than trying to predict what those needs might be in the future.

There is a continued expectation that the nature of residential demand and dwelling structure in the Priority Growth Areas will shift following the progress of development and release and rezoning of more precincts. This Study examines several aspirational growth scenarios, and in particular the housing required to support that growth.

1.4 Study Structure

AEC's brief aims to, *inter alia*, investigate market demand and need for housing and how they are likely to influence supply response and planning requirements, particularly in the Priority Growth Areas.

Capital in search of investment is mobile, and will gravitate to the most attractive investment opportunity. In order to understand if and how likely capital will be applied to the supply of housing in the Priority Growth Areas, it is necessary to understand:

- The nature of existing land use composition.
- Landownership and lot patterns.
- Market demand and activity.
- Development activity and opportunities.
- Infrastructure services availability and capacity.

Pursuant to distinct land use and structure planning process for each Priority Growth Area, two standalone reports are produced (for NWGC and SWGC respectively). Both reports contain references to (where relevant) the overall Study Area and aggregate demand, with specific focus on the specific priority growth area.

This report focuses on NWGC and its potential role in accommodating population and dwelling growth. In line with the Study methodology outlined in section 1.3 projected dwelling demand is at the outset distributed to precincts in the NWGC and SWGC in line with Government prioritisation of Priority Growth Areas. The respective capacities of each priority growth area to accommodate projected dwelling growth are then assessed.

Chapter 2 reviews current state and local policy context, focusing on delivery progress of the Priority Growth Areas.

Chapter 3 reviews the socio-demographic and socio-economic profile of the NWGC to understand characteristics of its residents and how these may have changed over time.

Chapter 4 investigates economic and market trends which influence market demand for housing and development. Market activity is investigated including residential product, take-up and price points. Development activity is also investigated by examining the level and nature of developer interest, site assembly and prices paid for development sites.

Chapter 5 seeks to understand how market demand can be met in the Priority Growth Areas and the likelihood of delivery within the rezoned precincts. The issue of housing supply and delivery is contingent on a number of factors. Critical to the equation is the issue of services availability as well as the ability to assemble sites competitively.

Chapter 6 projects housing demand (in aggregate) and distributes the aggregate demand to NWGC and SWGC based on a number of push/pull factors including the capacity of each priority growth area (from a theoretical, services and market capacity) to accommodate that demand.

Chapter 7 analyses the implications of the analysis in the preceding chapters, focusing on the 'deliverability' of housing supply to meet projected demand. The urban zoning of land does not necessarily translate into development and housing supply. It is therefore critical that lands targeted for housing supply and planning controls are tested to ensure alignment with market and commercial realities.

2. Legislative & Policy Framework

This chapter focuses on the policy framework that facilitates development and delivery of the Priority Growth Areas.

2.1 State Environmental Planning Policy (Sydney Growth Centres)

The Growth Centres SEPP is an environmental planning instrument prepared under the plan making provisions in the EP&A Act. The SEPP establishes the land use zoning and development controls for all the land within the Growth Centres. Consent authorities, such as local councils, must apply the provisions and consider the objectives of the Growth Centres SEPP when they make planning decisions about land within the Growth Centres.

Where a precinct has not yet been released for urban development and zoned under the Growth Centres SEPP the local planning controls contained within the relevant Council local environmental plan (LEP) apply. The Growth Centres SEPP also requires consent authorities to consider the intended future use of land as described by the Structure Plans and Explanatory Notes when assessing certain development applications within the Growth Centres to ensure development proposed to proceed in advance of precinct planning does not affect the future delivery of the Growth Centres.

Over time, as precincts are released and precinct planning is completed, land within the Growth Centres will be rezoned by making amendments to the SEPP. This will occur after the preparation of a Precinct Plan that is guided by the Growth Centres Structure Plans and the Development Code.

A number of mechanisms, plans and policies apply in conjunction with the Growth Centres SEPP to facilitate delivery of housing in Sydney's Growth Centres.

Structure Plans

Structure Plans have been prepared for both the North West and South West Growth Centres which form part of the Growth Centres SEPP. The Growth Centres Structure Plans are indicative regional land use plans that will guide the detailed planning for precincts when they are released. They also establish the general pattern of development within the Growth Centres over the next 30+ years.

Growth Centres Development Code

The Growth Centres Development Code is prepared in accordance with the EP&A Regulation. It outlines the precinct planning process and the requirements for preparing an Indicative Layout Plan (ILP) and Development Control Plan (DCP) for a precinct.

The Development Code informs and establishes environmental and urban form requirements to determine the future urban footprint of each precinct during precinct planning. The Development Code establishes policies at the regional and neighbourhood levels to promote best practice urban design by increasing housing choices, providing for employment, facilities and services at a local level and improving public transport access, maintaining the natural environment and providing, protecting and maintaining a range of open space opportunities throughout a precinct.

Special Infrastructure Contributions

A Special Infrastructure Contribution (SIC) applies to development within the North West and South West Growth Centres to contribute to the funding of infrastructure in the Growth Centres.

Sections 94ED to 94EM of the EP&A Act enable the collection of a SIC as a contribution towards the funding of regional infrastructure. It is based on the anticipated need for and cost of infrastructure. The types of infrastructure include: education; roads; emergency services and justice; health services; and conservation lands. The contribution applies to developable lands within the Growth Centres resulting in the costs of regional infrastructure, including conservation, being equitably shared across the Growth Centres.

Housing Diversity Package

In 2014 the Department of Planning and Environment introduced new planning controls to increase housing choice and improve affordability in the Growth Centres. The Department amended the Growth Centres State Environment Planning Policy (Growth Centres SEPP) and Growth Centre Precinct Development Control Plans (DCP) to provide consistent planning controls for the assessment and delivery of small lot housing.

The new controls seek to:

- Broaden the range of permissible housing types across the residential zones.
- Standardise and align minimum lot size and residential density controls.
- Include new definitions for studio dwellings and manor homes.
- Introduce new subdivision approval pathways that will make smaller lot housing products more price-competitive and commercially viable.

Table 2.1: SEPP Amendments

Category	SEPP Amendment
Permissible Dwelling Types	In some Precinct Plans, both the R2 and R3 zones have more than one residential density target that applies. As such, the land use tables for the R2 and R3 zones have been standardised to permit dwelling types that offer sufficient diversity to achieve the minimum densities and achieve reasonable amenity. For the R2 zone minimum densities are typically either 15 or 20 dwellings per hectare. Dual occupancies, dwelling houses, secondary dwellings, semi-detached dwellings and studio dwellings are permitted. In the R3 zone, densities are typically at least 25 dwellings per hectare and permitted dwelling types include dwelling houses, semidetached dwellings, manor homes, and studio dwellings in addition to more 'traditional' medium density housing like townhouses and apartments.
Lot Sizes	New clause 4.1AB sets minimum lot sizes for all dwelling types. The lot sizes also vary depending on the minimum density requirement. New clause 4.1AC sets minimum lot sizes for secondary dwellings in the R2 and R3 zones.
Location	Where land is located near parks, schools, or shopping centres: • Clause 4.1AE allows the minimum lot size for dwelling houses to be less than otherwise permitted under clause 4.1AD); and • Local provisions in Part 6 of each Precinct Plan allow attached dwellings and multi dwelling housing, and manor homes above 20 dwellings per hectare.
Approval Pathways	Mechanisms to allow the minimum lot size for dwellings houses to be varied by providing Building Envelope Plans or utilising the Integrated Housing approval pathway are now included within each of the Precinct Plans. • Clause 4.1AA allows a lot for a dwelling house to be between 225sqm and 300sqm if a Building Envelope Plan is provided with the subdivision application. The Building Envelope Plan must be considered in the approval of dwellings on those lots. • Alternatively, the subdivision and house design can be approved at the same time (this is referred to as Integrated Development). • For lots less than 225sqm, the Integrated Development pathway applies.

Source: DPE (2014b)

2.2 A Plan for Growing Sydney

A Plan for Growing Sydney (DP&E, 2014a) (the Plan) sets the strategic direction for Sydney towards 2031. The overarching vision us that by 2031, Sydney will be "a strong global city, a great place to live". The Plan is built around four key goals:

- A competitive economy with world-class services and transport.
- A city of housing choice with homes that meet our needs and lifestyles.
- A great place to live with communities that are strong, health and well connected.
- A sustainable and resilient city that protects the natural environment and has a balanced approach to the use of land and resources.

Of particular relevance to this analysis is Goal 2: Sydney's housing choices. The associated direction *2.4 Deliver timely and well planned greenfield precincts and housing* states that Greenfield development in new land releases is an important component of Sydney's overall housing supply. In recent years greenfield housing has made up almost a quarter of Sydney's housing growth. It helps provide Sydney's residents with a diversity of housing that suits different needs, budgets and lifestyle choices. Greenfield housing development will continue to be primarily focused in the North West Growth Centre and South West Growth Centre.

The Plan states that the Government has already committed considerable investment in infrastructure to support housing growth in the Growth Centres. It is acknowledged that the coordination and delivery of enabling infrastructure facilitates the development of greenfield sites into new housing supply and as such is critical to housing delivery.

The actions associated with Direction 2.4 are:

- **Action 2.4.1: Deliver Greenfield Housing Supply in the NWGC and SWGC**
  The aim is for Government to work with all stakeholders including local government, developers and the community to deliver new homes in the North West and South West Growth Centres.

  Structure planning and infrastructure investment in the Growth Centres will boost the supply of housing from greenfield development.

2.3 Delivery of the Priority Growth Areas

The North West and South West Growth Centres were established in 2005 to accommodate new communities, homes, employment areas, health and education facilities and key infrastructure facilities. Before releasing and rezoning areas for urban development, Government undertakes a process known as precinct planning. This process coordinates the planning and delivery of water, wastewater, recycled water, power, roads, transport and other services to ensure orderly and sustainable growth.

Precinct Acceleration Protocol (PAP) provisions allow consideration of landowner requests for rezoning provided there is no cost to taxpayers. The PAP was introduced to facilitate precinct releases within the Growth Centres ahead of their scheduled release by Government.

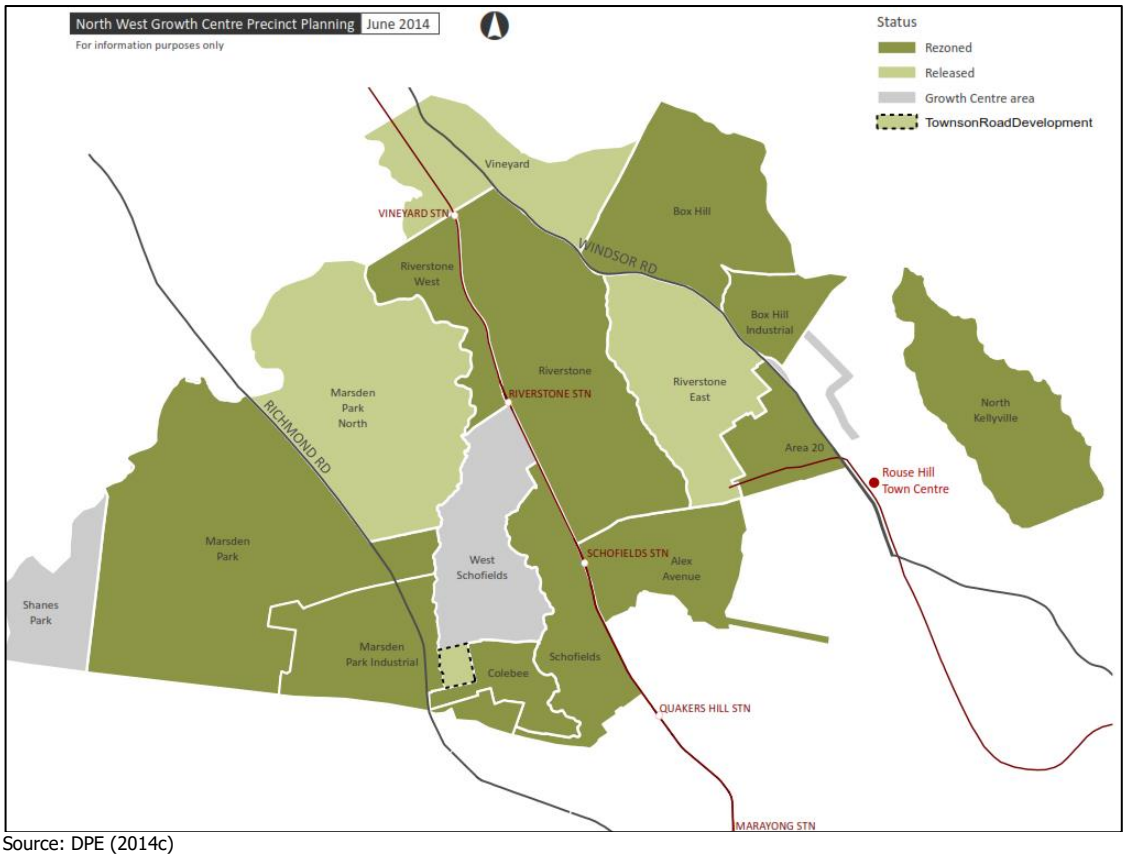
North West Growth Centre

The North West Growth Centre (NWGC) comprises 16 precincts. The planning status of these precincts can be one of three categories:

- **Rezoned**
  If, after relevant planning and consultation Ministerial approval is granted, a precinct is rezoned to allow for urban development to occur.
- **Released**
  A precinct is released by the Minister for Planning to allow DPE to undertake studies and consultation to prepare it for future urban development.
- **Not yet released**
  The potential of these precincts has not yet been investigated.

Figure 2.1 shows the status of each precinct within the NWGC.

Figure 2.1: NWGC Precinct Status



Source: DPE (2014c)

The table below outlines the progress of planning for delivery of the NWGC.

Table 2.2: Progress of Planning of NWGC

Precinct	Date	Dwelling Target*
Rezoned		
Colebee	Under Council's LEP prior to SEPP	1,000
North Kellyville	19.12.08	4,500
Riverstone West	07.08.09	Employment only
Riverstone	17.05.10	9,000
Alex Avenue	17.05.10	6,300
Marsden Park Industrial	18.11.10	1,200
Area 20	21.10.11	2,500
Schofields	11.05.12	2,950
Box Hill and Box Hill Industrial	5.05.13	9,652
Marsden Park	4.10.13	10,300
Total		**47,402**
Released for Precinct Planning		
Riverstone East		5,300
West Schofields (part)		400
Vineyard		2,500
Marsden Park North		4,000
Total		**12,200**
Not Released		
Shanes Park		500
West Schofields		1,600
Total		**2,100**

Source: DPE

A count of dwellings (and population) in each of the rezoned precincts using 2011 ABS mesh block data suggests that as at 2011 there were some 2,644 dwellings (and more than nearly 7,000 residents) in the rezoned precincts of NWGC.

Table 2.3: Dwelling and Population Counts*, NWGC, 2011 and 2014

Rezoned Precincts	Dwellings (2011)	Population (2011)	Sydney Water Meter Connections					Dwellings (2014)
			2007-10^	2011	2012	2013	2014	
Colebee	46	166	21	56	56	82	92	332
North Kellyville	323	837	0	0	19	87	241	670
Riverstone West	74	189	0	0	0	0	0	74
Riverstone	936	2,416	2	4	12	6	24	982
Alex Avenue	164	424	0	0	14	4	73	255
Marsden Park Industrial	207	337	0	0	0	0	0	207
Area 20	235	574	0	1	0	2	0	238
Schofields	268	787	0	0	0	0	0	268
Box Hill	281	873	0	0	0	0	0	281
Box Hill Industrial	61	186	0	0	0	0	0	61
Marsden Park	49	157	0	0	0	0	0	49
Total	**2,644**	**6,946**	**26**	**61**	**101**	**181**	**430**	**3,417**

*Precinct counts are an approximation from mesh block boundaries which do not necessarily align with precinct boundaries
^For context only, not added to 2011 dwelling count
Source: DPE (2012b), Sydney Water (2015)

While Riverstone had a large number of existing dwellings in 2011 (exceeding 900), the majority of these dwellings however, pre-date the rezoning of the precinct in May 2010. There were only 33 new water meter connections post-2011 (to 2014).

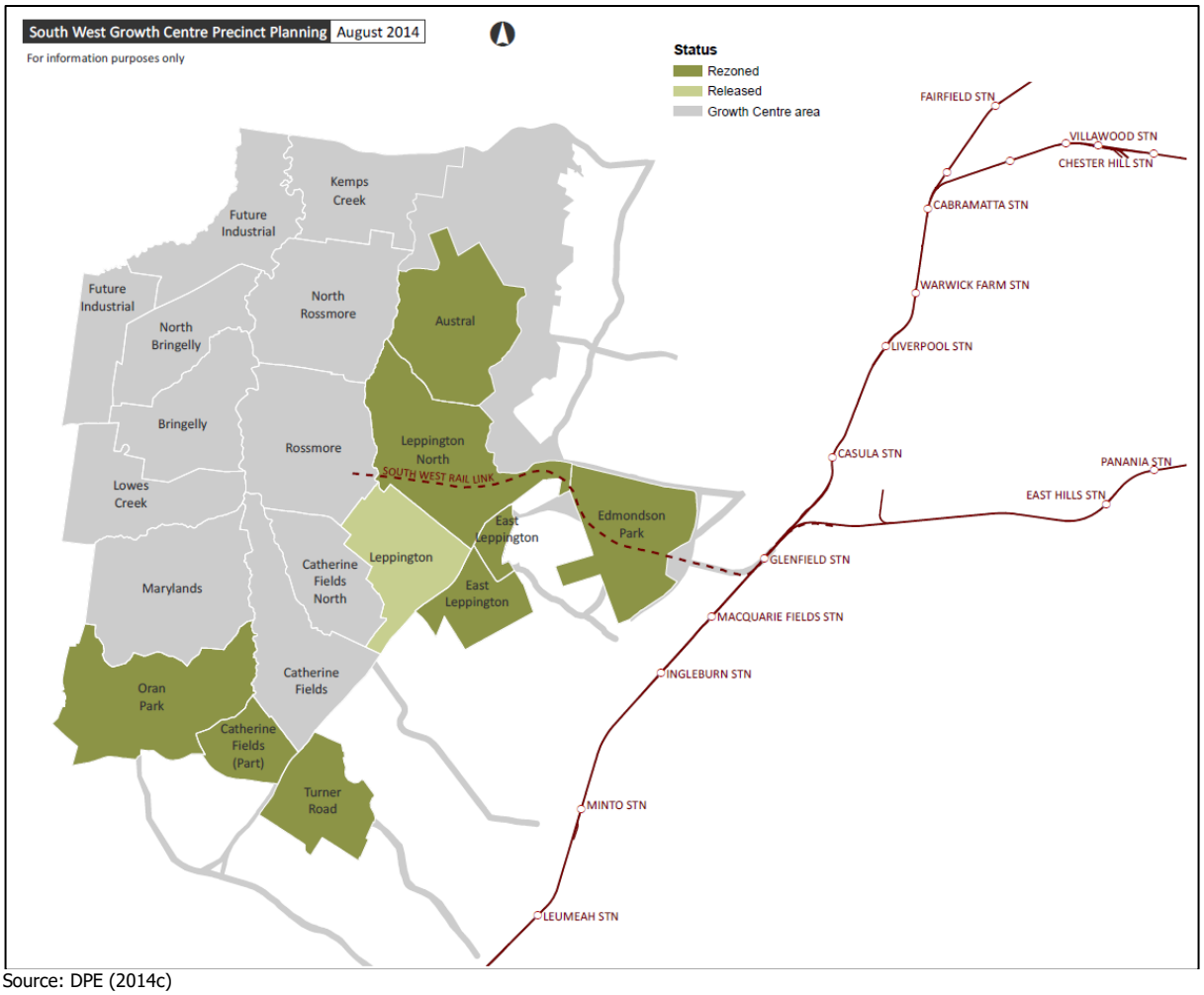
The above analysis suggests that in 2014 almost 2,700 dwellings exist in the rezoned precincts, with a modest number of new dwellings (773) added since 2011, the precincts of Colebee, North Kellyville and Alex Avenue contributing to most of this dwelling production.

South West Growth Centre

The South West Growth Centre (SWGC) comprises 18 precincts, of which seven have been rezoned for urban development.

Figure 2.2 shows the status of each precinct within the SWGC.

Figure 2.2: SWGC Precinct Status



Source: DPE (2014c)

Table 2.4 outlines the progress of planning for delivery of the SWGC.

Table 2.4: Progress of Planning of SWGC

Precinct	Date	Dwelling Target*
Rezoned		
Edmondson Park	Under Council's LEP prior to SEPP	6,000
Oran Park	21.12.07	7,540
Turner Road	21.12.07	4,020
East Leppington	18.03.13	4,450
Austral and Leppington North	18.03.13	17,350
Catherine Fields (part)	20.12.13	3,230
Total		**42,590**
Released for Precinct Planning		
Leppington		7,190
Total		**7,190**
Not Released		
Kemps Creek		1,000
North Rossmore		6,500
Rossmore		9,000
Catherine Fields North		9,500
Catherine Fields		5,000
Marylands		9,000
Lowes Creek		2,000

Precinct	Date	Dwelling Target*
Bringelly		5,000
North Bringelly		5,000
Total		**52,000**

Source: DPE

A count of dwellings (and population) in each of the rezoned precincts using 2011 ABS mesh block data suggests that as at 2011 there were some 1,700 dwellings (and nearly 5,100 residents) in the rezoned precincts of SWGC.

Water meter connections (Sydney Water) are used as a proxy for determining the number of dwelling completions - a total of 2,563 since 2011.

Table 2.5: Dwelling and Population Counts*, SWGC, 2011 and 2014

Rezoned Precincts	Dwellings (2011)	Population (2011)	Sydney Water Meter Connections					Dwellings (2014)
			2007-10^	2011	2012	2013	2014	
Edmondson Park	189	806	0	25	112	140	327	793
Oran Park	93	222	0	133	195	208	306	935
Turner Road	6	36	0	105	205	307	389	1,012
East Leppington	14	51	0	2	15	2	31	64
Austral & Leppington North	1,368	3,771	0	5	17	6	33	1,429
Catherine Fields (part)	57	194	0	0	0	0	0	57
Total	**1,727**	**5,080**	**0**	**270**	**544**	**663**	**1,086**	**4,290**

*Precinct counts are an approximation from mesh block boundaries which do not necessarily align with precinct boundaries
^For context only, not added to 2011 dwelling count
Source: DPE (2012b), Sydney Water (2015)

Although Austral and Leppington North together contained more than 1,300 dwellings in 2011, these dwellings pre-date the rezoning of the precinct which occurred in March 2013. Since then there have been less than 20 water meter connections (to 2014).

The above analysis suggests that in 2014 more than 4,200 dwellings exist in the rezoned precincts, with some 2,563 new dwellings added since 2011, the precincts of Edmondson Park, Oran Park and Turner Road dominating dwelling production (together these precincts delivered 1,446 dwellings).

Water meter connections (Sydney Water) are used as a proxy for determining the number of dwelling completions since 2011. There are limitations in taking this approach as the Sydney Water data (could potentially overlap with the 2011 ABS data and may not align exactly with DPE's precinct boundaries.

2.4 NWGC Residential Planning Controls

2.4.1 Growth Centres SEPP and Blacktown LEP

The Growth Centres Development Code guides the preparation of precinct plans, which are ultimately reflected in the Growth Centres SEPP planning controls. The Growth Centres SEPP is the overarching planning instrument that applies to rezoned precincts in the NWGC, with the exception of Colebee which is subject to Blacktown LEP.

Table 2.6: Residential Planning Controls in NWGC Rezoned Precincts

Precinct	Zones	Density Controls
Colebee	R3	250sqm (min lot size)
North Kellyville	R1	12.5dw/ha
	R2	10dw/ha
	R3	20dw/ha
Riverstone West	Not applicable (employment only)	
Riverstone	R2	15dw/ha, 20dw/ha
	R3	25dw/ha

Precinct	Zones	Density Controls
Alex Avenue	R2	15dw/ha 20dw/ha
	R3	25dw/ha 40dw/ha 45dw/ha
Marsden Park Industrial	R2	15dw/ha
	R3	30dw/ha
Area 20	R2	15dw/ha 20dw/ha
	R3	25dw/ha 40dw/ha 45dw/ha
Schofields	R2	15dw/ha 25dw/ha 30dw/ha
	R3	40dw/ha
Box Hill and Box Hill Industrial	R2	5dw/ha 15dw/ha
	R3	18dw/ha
Marsden Park	R2	11dw/ha 15dw/ha
	R3	25dw/ha-35dw/ha

Source: NSW Govt (2015), Blacktown City Council (2015)

2.4.2 Minimum Lot Size by Density Bands

Development control plans provide the planning, design and environmental objectives and controls against which development applications are assessed. In accordance with respective development control plans, minimum lot sizes for each dwelling type must comply with the minimum lot size provisions permitted by the Growth Centres SEPP. In certain density bands, variations to some lot sizes may be possible subject to Section 4 of the relevant Precinct Plan in the Growth Centres SEPP.

Blacktown City Council Growth Centre Precincts Development Control Plan 2010

Table 2.7 outlines the density controls as they apply to the precincts of Alex Avenue, Riverstone, Marsden Park Industrial, Area 20, Schofields and Marsden Park. The density controls are linked to minimum lot sizes - the minimum densities and minimum lot sizes working in tandem to control the number of dwellings (minimum and maximum).

Table 2.7: Blacktown DCP Minimum Lot Size by Density Bands

	R2 Low Density Residential						R3 Medium Density Residential			
Min Net Residential Target (dwellings/ha)	11	12.5	15	20	25	30	25	35	40	45
Dwelling House	360	300	300	300	300	300	300	300	300	300
With BEP**	360	300	250	225	225	225	225	225	225	225
As Integrated DA	360	300	250	200	125	125	125	125	125	125
Locational Criteria (BEP or Integrated DA)	300	N/A	225	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Studio Dwelling	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Secondary Dwelling	N/A	450	450	450	450	450	In principal lot			
Dual Occupancy	450	600	500	500	400	300	400	300	250	250
Semi-detached Dwelling	600	600	300	300	250	250	250	250	250	250
Attached Dwelling	600	X	1,500*	375	375	375	375	375	375	375
Multi Dwelling Housing	X	X	1,500*	1,500	375	375	375	375	375	375
Manor Homes	X	X	X	600	600	600	600	600	600	600
Residential Flat Buildings	X	X	X	X	X	X	2,000	1,000	1,000	1,000

*Attached dwellings and multi-dwelling housing is permissible on land zoned R2 with a minimum residential density of 15dw/ha subject to satisfying specific criteria, **Building Envelope Plan, "X" denotes non-permissible use
Source: DPE (2015a)

Box Hill/Box Hill Industrial Development Control Plan (2013)

Table 2.8 outlines the density controls as they apply to the precincts of Box Hill and Box Hill Industrial. The density controls are linked to minimum lot sizes - the minimum densities and minimum lot sizes working in tandem to control the number of dwellings (minimum and maximum) able to be delivered in any one area.

Table 2.8: Box Hill/Box Hill Industrial DCP Minimum Lot Size by Density Bands

	R2 Low Density Residential	R3 Medium Density Residential	R4 High Density Residential
Min Net Residential Target (dwellings/ha)	15	18	30
Dwelling House	300	300	300
With BEP**	250	225	225
As Integrated DA	250	225	125
Locational Criteria (BEP or Integrated DA)	225	N/A	N/A
Studio Dwelling	N/A	N/A	N/A
Secondary Dwelling	450	450	In principal lot
Dual Occupancy	500	500	300
Semi-detached Dwelling	300	300	250
Attached Dwelling	1,500*	1,500	375
Multi Dwelling Housing	1,500*	1,500	375
Manor Homes	X	X	600
Residential Flat Buildings	X	X	1,000

*Attached dwellings and multi-dwelling housing is permissible on land zoned R2 with a minimum residential density of 15dw/ha subject to satisfying specific criteria, **Building Envelope Plan, "X" denotes non-permissible use
Source: DoP (2014)

North Kellyville Development Control Plan (2014)

Table 2.9 outlines the density controls as they apply to the precinct of North Kellyville. The density controls are linked to minimum lot sizes - the minimum densities and minimum lot sizes working in tandem to control the number of dwellings (minimum and maximum) able to be delivered in any one area.

Table 2.9: North Kellyville DCP Minimum Lot Size by Density Bands

	R1 General Residential	R2 Low Density Residential	R3 Medium Density Residential
Min Net Residential Target (dwellings/ha)	12.5	10	20
Dwelling House	300	360	300
With BEP**	240	360	225
As Integrated DA	240	360	200
Studio Dwelling	N/A	N/A	N/A
Secondary Dwelling	450	450	In principal lot
Dual Occupancy	600	600	500
Semi-detached Dwelling	600	600	300
Attached Dwelling	1,500	X	375
Multi Dwelling Housing	1,500	X	1,500
Manor Homes	X	X	600
Residential Flat Buildings	4,000	X	2,000

*Attached dwellings and multi-dwelling housing is permissible on land zoned R2 with a minimum residential density of 15dw/ha subject to satisfying specific criteria **Building Envelope Plan "X" denotes non-permissible use
Source: DPE (2015b)

The target dwelling densities per hectare controls (**Table 2.6**) work concurrently with a suite of development controls which includes minimum lot size provisions (as detailed in **Table 2.7**, **Table 2.8** and **Table 2.9**) to guide development in a precinct. While the target dwelling densities per hectare are 'minimums', i.e. more dwellings are permitted, the minimum lot size provisions limit the (maximum) number of dwellings that can be developed in a precinct.

3. North West Growth Centre Today

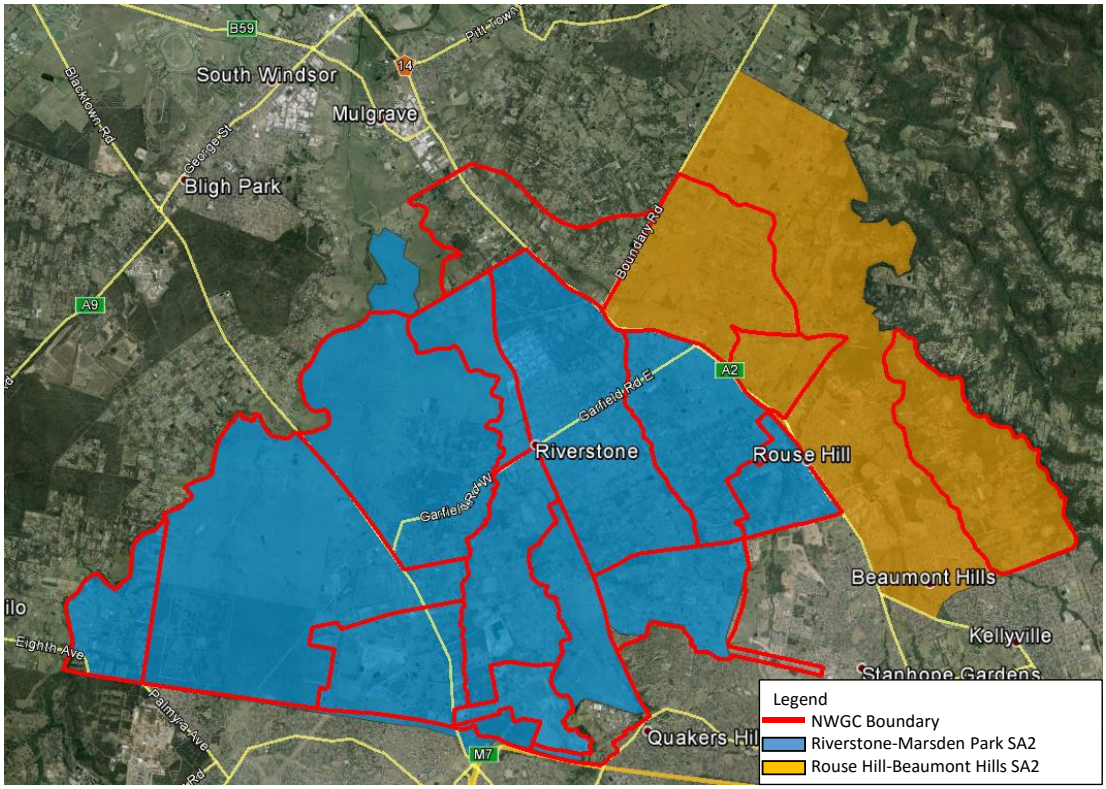
This chapter investigates the socio-demographic and socio-economic profile of NWGC residents and to understand how these characteristics have evolved over time. An appreciation of resident characteristics is essential for understanding their current and future housing needs.

3.1 Demographic Trends and Analysis

In order to understand the nature of housing demand in an area, it is useful to consider both the current and historical socio-demographic profile of residents. This is important as it provides insight into the current profile of residents and facilitates an understanding of how that profile might have evolved over time.

This section provides a snapshot of the socio-demographic profile of the NWGC in comparison to the broader region within which the priority growth area is located, specifically the LGAs of Blacktown, Hawkesbury and The Hills Shire. Where relevant, comparisons to the NWGC and SWGC are also made.

Figure 3.1: NWGC Analysis Area



Source: ABS, Google Earth Pro, AEC

The basis of the demographic analysis is the Australian Bureau of Statistics (ABS) geographical level known as Statistical Area Level 2 (SA2), which broadly comprises 2-3 suburbs.

Whilst the two SA2s chosen (Riverstone-Marsden Park and Rouse Hill-Beaumont Hills) do not directly align with the boundary of the NWGC, these geographies have been chosen as they represent the smallest unit at which the ABS provides time series data. In order to provide a broader set of comparisons where possible the SA2s have been compared to the Local Government Areas (LGAs) which the NWGC straddles. Accordingly, the limitations of non-aligned boundaries of the data and analysis areas are acknowledged.

The Bureau of Transport Statistics (BTS) 2011 Journey to Work Data (JTW) has also been used to inform this socio-demographic analysis to ascertain where residents in the SA2s travel to for work and by what mode of transport.

3.1.1 Historical Population Growth

Overall between 2001 and 2011 population in the NWGC increased from 20,890 persons to 29,244 persons, equating to an increase of 8,354 or 40% over the period. This represents an annual average increase of 1.2%.

In comparison, the Blacktown LGA is experienced the greatest annual average increase of 2.1% followed by the Hills Shire LGA (1.3%). The Hawkesbury LGA experienced the lowest annual average rate of growth at 0.4%.

Table 3.1: Historical Population Growth (2001-2011)

NWGC and LGAs	2001	2006	2011	Change (2001-2011)		
				No.	%	Avg. Annual
North West Growth Centre	20,890	27,576	29,244	8,354	40.0%	1.2%
Blacktown LGA	256,364	272,329	301,894	45,530	17.8%	2.1%
Hawkesbury LGA	61,073	60,921	62,218	1,145	1.9%	0.4%
The Hills Shire LGA	139,404	158,737	169,521	30,117	21.6%	1.3%

Source: ABS (2012a)

The average age of residents within the NWGC is 35 years, slightly younger than the SWGC (37.5 years). The dominant age group is 0-14 years (25.4%), followed by those aged 30-44 (24.1%). This trend is replicated across the Blacktown, Hawkesbury and Hills Shire LGAs, demonstrating there is a relatively young population residing in these areas. In comparison the SWGC has a more even distribution across the age cohorts and the population is generally older than the NWGC.

Where Residents Used to Live

In order to understand where current NWGC residents lived before, we have relied on ABS internal migration data. Internal migration is best defined as "the movement of people from one defined area to another within a country". In this case, we have looked at two types ABS geographic areas to determine the location of where NWGC residents lived one and five years ago, these include SA2 areas (which broadly comprise 2-3 suburbs) as well as local government areas.

Table 3.2 finds that five years ago, 71.1% of residents who currently reside in the NWGC lived there. A small proportion of current residents who currently reside in NWGC, previously lived in the suburbs of Kellyville, Quakers Hill, Acacia Gardens and Glenwood.

Table 3.2: NWGC Internal Migration 1 and 5 Years Ago (by SA2), 2011

NWGC Internal Migration (by SA2)					
1 Year Ago			5 Years Ago		
SA2 of Usual Residence	Persons	%	SA2 of Usual Residence	Persons	%
NWGC	25,249	90.6%	NWGC	18,341	71.1%
Kellyville	221	0.8%	Kellyville	633	2.5%
Quakers Hill - Acacia Gardens	190	0.7%	Quakers Hill - Acacia Gardens	455	1.8%
Parklea - Kellyville Ridge	155	0.6%	Glenwood	281	1.1%
Glenwood	115	0.4%	Dural - Kenthurst - Wisemans Ferry	233	0.9%
Castle Hill	88	0.3%	Parklea - Kellyville Ridge	226	0.9%
Pitt Town - McGraths Hill	69	0.2%	Castle Hill	220	0.9%
Dural - Kenthurst - Wisemans Ferry	67	0.2%	Pitt Town - McGraths Hill	167	0.6%
Lalor Park - Kings Langley	65	0.2%	Baulkham Hills (West) - Bella Vista	160	0.6%
Baulkham Hills (West) - Bella Vista	55	0.2%	Hassall Grove - Plumpton	143	0.6%
Baulkham Hills (East)	47	0.2%	Lalor Park - Kings Langley	139	0.5%
Rest of Australia	1,337	4.8%	Rest of Australia	3,936	15.3%
Overseas	200	0.7%	Overseas	871	3.4%
Not Stated	1,151		Not Stated	1,302	
Not Applicable	398		Not Applicable	2,299	
Total	29,407	100.0%	Total	29,406	100.0%

Source: ABS (2012a)

The table below demonstrates that five years ago, 47.8% and 36.4% of NWGC residents who currently reside in the NWGC lived in the Hill Shire LGA and Blacktown LGA respectively. This is not surprising as these two LGAs transect the NWGC.

Table 3.3: NWGC Internal Migration 1 and 5 Years Ago (by LGA), 2011

NWGC Internal Migration (by LGA)					
1 Year Ago			5 Years Ago		
LGA of Usual Residence	Persons	%	LGA of Usual Residence	Persons	%
The Hills Shire (A)	16,163	58.0%	The Hills Shire (A)	12,334	47.8%
Blacktown (C)	10,367	37.2%	Blacktown (C)	9,405	36.4%
Hawkesbury (C)	176	0.6%	Hawkesbury (C)	394	1.5%
Penrith (C)	105	0.4%	Penrith (C)	313	1.2%
Parramatta (C)	93	0.3%	Hornsby (A)	301	1.2%
Hornsby (A)	77	0.3%	Parramatta (C)	281	1.1%
Holroyd (C)	52	0.2%	Holroyd (C)	149	0.6%
Liverpool (C)	31	0.1%	Fairfield (C)	88	0.3%
Blue Mountains (C)	26	0.1%	Liverpool (C)	87	0.3%
Wyong (A)	24	0.1%	Ryde (C)	74	0.3%
Rest of Australia	743	2.7%	Rest of Australia	2,380	9.2%
Not stated	1,151		Not applicable	2298	
Not applicable	398		Not stated	1302	
Total	29,406	100%	Total	29,406	100%

Source: ABS (2012a)

3.1.2 Household Structure

Table 3.4 below demonstrates that overall the NWGC contains a high proportion of family households (80.7%) followed by lone households (13.9%) and group households (1.8%). This demonstrates that families attracted to the NWGC are broadly consistent with the Blacktown and The Hills Shire LGAs and notably more than the Hawkesbury LGA.

Table 3.4: Household Composition (2011)

Household Type	NWGC	Blacktown LGA	Hawkesbury LGA	The Hills Shire LGA
Family households	80.7%	79.3%	74.0%	84.5%
Lone person households	13.9%	15.7%	19.6%	11.7%
Group households	1.8%	2.2%	2.3%	1.6%
Other households	3.6%	2.8%	4.1%	2.2%
Total	100.0%	100.0%	100.0%	100.0%

Source: ABS (2012a)

Table 3.5 indicates the majority of residents in NWGC own their home with a mortgage (48.3%), followed by those who own outright (29.3%) and those who rent (22%). Between 2001 and 2011 the proportion of those who own their own home has decreased.

Table 3.5: Household Ownership, NWGC (2001-2011)

Household Ownership	2001	2006	2011	Change (2001-2011)	
				No.	%
Owned outright	2,697	2,500	2,730	33	1.2%
Owned with a mortgage	2,488	4,423	4,502	2,014	80.9%
Rented	1,453	1,804	2,050	597	41.1%
Other tenure type	116	31	47	-69	-59.5%
Total	6,754	8,758	9,329	2,575	38.1%

Source: ABS (2012a)

Table 3.6 indicates the proportion of household income utilised for mortgage repayments or rent across the NWGC. With more than 35% of median household incomes spent on mortgage repayments, the table indicates there is little unexhausted capacity for households to pay higher prices to purchase housing.

Table 3.6: Household Income and Housing Costs (2011)

	NWGC	Blacktown LGA	Hawkesbury LGA	The Hills Shire LGA
Median weekly household income	1,724	1,386	1,380	2,040
Median weekly mortgage repayment	607	525	507	643
Median weekly rent	400	300	280	450
% of household income spent on mortgage	35.2%	37.9%	36.8%	31.5%
% of household income spent on rent	23.2%	21.6%	20.3%	22.1%

Source: ABS (2012a)

For contextual purposes, **Table 3.7** compares NWGC household incomes and housing costs against those of SWGC and Greater Sydney.

Table 3.7: Household Income and Housing Costs, NWGC, SWGC, Greater Sydney (2011)

	NWGC	SWGC	Greater Sydney
Median weekly household income	1,724	1,310	1,444
Median weekly mortgage repayment	607	566	542
Median weekly rent	400	315	355
% of household income spent on mortgage	35.2%	43.2%	37.5%
% of household income spent on rent	23.2%	24.1%	24.6%

Source: ABS (2012a)

While mortgage costs as a proportion of household incomes are high across the analysis regions, mortgage costs as a proportion of household incomes are lower (35.2%) as a proportion in NWGC compared to the comparison regions (35%-38%).

3.1.3 Dwelling Structure

Table 3.8 demonstrates the majority of houses in the NWGC are separate houses (93%), with small proportions of semi-detached (2.2%) houses and apartments (1.3%).

Table 3.8: Dwelling Structure (2001-2011)

House Type	2001		2006		2011		Change (2001-2011)	
	No.	%	No.	%	No.	%	No.	%
Separate house	6,254	92.3	8,299	94.8	8,678	93.0	2,424.0	38.8%
Semi-detached, row or terrace house, townhouse	118	1.7	128	1.5	201	2.2	83	70.3%
Flat, unit or apartment	70	1.0	18	0.2	117	1.3	47	67.1%
Other dwelling	336	5.0	314	3.6	336	3.6	0	0.0%
Total	6,778	100.0	8,759	100.0	9,332	100.0	2,554	37.7%

Source: ABS (2012a)

For contextual purposes, **Table 3.9** compares the dwelling structure of NWGC against that of SWGC.

Table 3.9: Dwelling Structure, NWGC, SWGC (2011)

Dwelling Type	NWGC		SWGC	
	No.	%	No.	%
Separate house	8,678	93.0	4,723	94.6
Semi-detached, row or terrace house, townhouse	201	2.2	120	2.4
Flat, unit or apartment	117	1.3	29	0.6
Other dwelling	336	3.6	120	2.4
Total	**9,332**	**100.0**	**4,993**	**100.0**

Source: ABS (2012a)

New residential building approvals data in **Table 3.10** suggest the number of separate houses in the Outer West is declining (albeit gradually) as a proportion of total new dwellings. In contrast, the transition of Baulkham Hills and Hawkesbury away from separate houses is more notable over 2010-2015.

Table 3.10: Building Approvals, SA4 statistical areas (2010-2015)

SA4 Geography	Detached Houses		Semi-detached, row/terrace houses, townhouses		Flats, units, attached dwellings		Total Residential	
	No.	%	No.	%	No.	%	No.	%
2010-2011								
Baulkham Hills and Hawkesbury	616	72%	178	21%	65	8%	859	100%
Blacktown	1,172	74%	205	13%	204	13%	1,581	100%
Outer West and Blue Mountains	622	62%	249	25%	135	13%	1,006	100%
2011-2012								
Baulkham Hills and Hawkesbury	538	51%	286	22%	238	22%	1,062	100%
Blacktown	1,112	78%	287	1%	21	1%	1,420	100%
Outer West and Blue Mountains	968	82%	146	6%	67	6%	1,181	100%
2012-2013								
Baulkham Hills and Hawkesbury	686	47%	347	24%	412	29%	1,445	100%
Blacktown	1,479	68%	494	23%	197	9%	2,170	100%
Outer West and Blue Mountains	1,056	64%	170	10%	412	25%	1,638	100%
2013-2014								
Baulkham Hills and Hawkesbury	1,046	67%	121	8%	404	26%	1,571	100%
Blacktown	1,647	59%	668	24%	484	17%	2,799	100%
Outer West and Blue Mountains	1,268	71%	153	9%	356	20%	1,777	100%
2014-2015 (up to February)								
Baulkham Hills and Hawkesbury	658	37%	20	1%	1115	62%	1,793	100%
Blacktown	1,470	67%	503	23%	226	10%	2,199	100%
Outer West and Blue Mountains	933	79%	114	10%	134	11%	1,181	100%

Source: ABS (2015)

While not all residential buildings approved will eventuate into construction and delivery of new housing, the above market activity by dwelling type is indicative of the market sentiment and composition of new dwellings.

Within a 4-year period, separate houses can be observed to be declining as a proportion of total dwellings approved, particularly in the Baulkham Hills and Hawkesbury SA4. By contrast, units and apartments have increased in prominence over the same period.

Key findings of the socio-demographic analysis include:

- Relatively young demographic in NWGC than the SWGC (dominant age cohorts of 0-14 and 30-44), consistent with the broader LGAs.
- Large proportions of NWGC residents have lived in the general vicinity, notably the LGAs of The Hills Shire and Blacktown.
- Households types are dominated by families (around 80%), broadly consistent with the LGAs.
- The rate of household ownership and houses owned outright was fallen from around 40% in 2001 to just under 30% in 2011. In contrast, the proportion of homes owned with a mortgage has risen over the same period, around 37% in 2001 to 48% in 2011.
- Housing costs are more than 35%, indicating little unexhausted capacity for households to pay higher prices. The proportion of household income spent of housing costs is marginally lower in The Hills Shire LGA, a function of the more affluent profile of resident households.
- The separate house is still the overwhelming type of dwelling in the NWGC and broader LGAs, however this type of house is declining as a proportion of new buildings.

Notwithstanding current dwelling structure, it is expected that over time there will be a shift towards more dense forms of housing particularly given the already high proportions of household income spent on mortgage costs.

3.2 Employment Characteristics

In order to better understand the employment profile (industry and occupation types) of NWGC residents, Australian Bureau of Statistics data (ABS, 2012) was examined. Employment self-sufficiency and self-containment rates are also examined in the NWGC with respect to the broader LGAs within which it is located.

3.2.1 Employment By Occupation

Table 3.11 indicates a large proportion of residents in the NWGC are professionals (19.9%), clerical and administrative workers (17.4%) and managers (15.6%).

Table 3.11: Employment by Occupation (2011)

Occupation	NWGC	Blacktown LGA	Hawkesbury LGA	The Hills Shire LGA
Professionals	19.9%	17.8%	15.4%	28.5%
Clerical and administrative workers	17.4%	18.7%	15.7%	17.7%
Managers	15.6%	9.2%	12.8%	17.5%
Technicians and trades workers	15.2%	13.8%	19.1%	11.3%
Sales workers	9.7%	9.5%	8.9%	10.0%
Labourers	7.8%	10.7%	9.7%	4.6%
Community and personal service workers	7.3%	9.1%	9.8%	7.2%
Machinery operators and drivers	7.2%	11.2%	8.5%	3.2%
Total	100.0%	100.0%	100.0%	100.0%

*Place of Usual Residence data
Source: ABS (2012)

3.2.2 Employment by Industry

Table 3.12 demonstrates the top three industries of employment in the NWGC are agriculture, forestry and fishing (11.6%), mining (11.3%) and manufacturing (10.8%). The proportion of residents employed in retail trade is notably most significant (10.2%) in The Hills Shire LGA compared to the NWGC and indeed the other LGAs.

Table 3.12: Employment by Industry (2011)

Industry	NWGC	Blacktown LGA	Hawkesbury LGA	The Hills Shire LGA
Agriculture, forestry and fishing	11.6%	11.1%	10.7%	11.3%
Mining	11.3%	7.2%	12.8%	8.3%
Manufacturing	10.8%	13.1%	11.0%	8.5%
Electricity, gas, water and waste services	9.1%	11.7%	9.5%	11.2%
Construction	7.6%	5.8%	8.4%	9.5%
Wholesale trade	7.0%	6.5%	5.0%	7.2%
Retail trade	6.9%	5.6%	4.6%	10.2%
Accommodation and food services	5.6%	6.4%	8.8%	4.8%
Transport, postal and warehousing	5.3%	7.7%	5.0%	3.5%
Information media and telecommunications	4.6%	5.4%	5.3%	4.6%
Financial and insurance services	4.6%	6.0%	2.4%	6.5%
Rental, hiring and real estate services	4.5%	3.9%	5.0%	3.9%
Professional, scientific and technical services	2.9%	3.4%	2.6%	2.9%
Administrative and support services	2.0%	2.0%	1.7%	2.6%
Public administration and safety	1.9%	0.5%	2.8%	0.6%
Education and training	1.7%	1.2%	1.5%	1.9%
Health care and social assistance	1.3%	1.1%	1.6%	1.3%
Arts and recreation services	1.3%	1.2%	1.2%	1.0%
Other services	0.1%	0.1%	0.3%	0.1%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**

*Place of Usual Residence data
Source: ABS (2012)

3.2.3 Employment Self-Sufficiency and Self-Containment

This analysis is carried out at the LGA level, examining self-sufficiency and self-containment of the NWGC in the context of the LGAs of Blacktown, Hawkesbury and The Hills Shire.

SELF-SUFFICIENCY V SELF-CONTAINMENT RATES

Self-sufficiency and self-containment measures the health of a local economy based on the number of jobs that it can provide. Self-sufficiency measures the number of local jobs versus the labour force (i.e. the number of local jobs divided by the labour force). Self-containment is a similar measure but provides an understanding of where local resident workers are employed. Self-containment is calculated by dividing the number of local resident workers by those who also work locally.

The NWGC straddles the LGAs of Blacktown, Hawkesbury and The Hills Shire. Self-sufficiency rates (as an aggregate of the three LGAs which it straddles) are in the order of 60%, described as follows:

Table 3.13: Self-Sufficiency Rates

	Labour Force	Employment (PoW)	Self-Sufficiency
Blacktown LGA	144,093	81,866	56.8%
Hawkesbury LGA	32,686	21,283	65.1%
The Hills Shire LGA	91,136	56,846	62.4%
Aggregate of 3 LGAs (of which NWGC is part)	267,915	159,995	59.7%

Source: ABS (2012)

Notwithstanding the relatively modest self-sufficiency rates, self-containment rates are even lower, with just 44% of NWGC residents working in either Blacktown, Hawkesbury or The Hills Shire LGAs.

Table 3.14: Self-Containment Rates

	Live and Work in LGA	Employed (PoUR)	Self-Containment
Blacktown LGA	41,125	133,783	30.7%
Hawkesbury LGA	15,363	31,175	49.3%
The Hills Shire LGA	26,984	87,359	30.9%
Aggregate of 3 LGAs (of which NWGC is part)	110,931	252,317	44.0%

Source: ABS (2012)

For contextual purposes, self-sufficiency and self-containment rates for NWGC and SWGC are detailed in **Table 3.15**. Self-containment rates in NWGC are marginally lower than those in SWGC.

Table 3.15: Self-Sufficiency and Self-Containment Rates across Aggregate LGAs

	Self-Sufficiency	Self-Containment
NWGC (aggregate of LGAs)		
Blacktown LGA	56.8%	30.7%
Hawkesbury LGA	65.1%	49.3%
The Hills Shire LGA	62.4%	30.9%
Aggregate of 3 LGAs (of which NWGC is part)	59.7%	44.0%
SWGC (aggregate of LGAs)		
Camden LGA	54.4%	30.7%
Campbelltown LGA	57.1%	35.6%
Liverpool LGA	66.3%	31.5%
Aggregate of 3 LGAs (of which SWGC is part)	60.7%	46.4%

Source: ABS (2012)

Key findings of the socio-economic analysis include:

- Top three industries of employment in the NWGC are agriculture, forestry and fishing (11.6%), mining (11.3%) and manufacturing (10.8%), with a lower representation in those typically serviced-based industries such as retail trade, accommodation and food services, financial and insurance services.
- Self-sufficiency rates across each NWGC LGA range between 55% and 65%, with an aggregate self-sufficiency rate at around 60%.
- Despite self-sufficiency rates around 60%, the aggregate of the LGAs (of which the NWGC is a part of) has a lower self-containment rate with 44% of local residents working in either Blacktown, Hawkesbury or The Hills Shire LGAs.

3.3 Journey to Work Analysis

This analysis provides an understanding of where current residents travel to for work. It is a truism that people prefer to live close to (or within good access of) where they work and in housing that meets their needs and what they can afford.

The analysis of BTS Journey to Work data indicates where residents in the SA2s examined work and their respective modes of travel to work.

3.3.1 Where Residents Work

The top five SA2 destinations SA2 residents travel to work are: Riverstone-Marsden Park (Blacktown LGA), and Rouse Hill-Beaumont Hills, Baulkham Hills (West)-Bella Vista and Castle Hill (all in The Hills Shire LGA). Only a small proportion of residents travel to Sydney CBD for work. This demonstrates the majority of residents work locally (21.8% in SA2s of the Blacktown LGA and 7.7% in SA2s of The Hills Shire LGA).

Table 3.16: Journey to Work, Riverstone-Marsden Park and Rouse Hill-Beaumont Hills SA2

Destination SA2	Destination LGA	Major Employment Areas	No. of Employed Residents	% of Employed Residents
Rouse Hill-Beaumont Hills	The Hills Shire	Rouse Hill Town Centre, Rouse Hill High School, medical centres along Windsor Road	1,674	11.5%
Riverstone-Marsden Park	Blacktown	Marsden Park Business Park, Glendenning Holdings and Peek Farms (both chicken farms)	1,118	7.7%
Baulkham Hills (West)-Bella Vista	The Hills Shire	Bella Vista and Norwest Business Park, surrounding light industrial area, Norwest Hospital	759	5.2%
Castle Hill	The Hills Shire	Castle Hill Major Centre, Castle Towers Shopping Centre, Castle Hill High School	739	5.1%
Sydney-Haymarket-The Rocks	Sydney		678	4.7%
Blacktown (East)-Kings Park	Blacktown		514	3.5%
Parramatta-Rosehill	Parramatta		501	3.5%
Lalor Park-Kings Langley	Blacktown		310	2.1%
Macquarie Park-Marsfield	Ryde		277	1.9%
Homebush Bay-Silverwater	Auburn		176	1.2%
Windsor-Bligh Park	Hawkesbury		135	0.9%
No fixed work address (GMA)	No fixed work address (GMA)		791	5.5%
Elsewhere in NSW	Unknown		6,831	47.1%
Total			14,503	100.0%

Source: BTS (2014)

3.3.2 How Residents Travel To Work

The table below show the five top methods by which SA2 residents get to work are: car (as driver), train, car (as passenger), truck and walk. 6.3% of residents work at home. In the interest of contextual comparison, SA2 areas for the SWGC are also detailed.

Table 3.17: Method of Travel to Work, NWGC, SWGC, 2011

Method of Travel to Work	NWGC		SWGC	
	No. of Employed Residents	% of Employed Residents	No. of Employed Residents	% of Employed Residents
Car as driver	10,591	73.0%	4,826	67.9%
Train	784	5.4%	791	11.1%
Car as passenger	728	5.0%	523	7.4%
Worked at home	911	6.3%	361	5.1%
Truck	370	2.6%	278	3.9%
Walked only	263	1.8%	201	2.8%
Bus	646	4.5%	57	0.8%
Other mode	122	0.3%	40	0.6%
Motorbike	53	0.4%	25	0.4%
Other Method of Travel	38	0.8%	7	0.1%
Taxi	-	-	3	0.0%
Tram	-	-	0	0.0%
Total	14,506	100.0%	7,112	100.0%

*primary method of travel data
Source: ABS (2012)

Overwhelmingly, residents in the NWGC drive to work (more than 70%) with train and as a passenger in a car the next mode of travel (5.4% and 5.0% respectively). In comparison with the Priority Growth Areas:

- Train travel in SWGC is notably higher as a proportion (11.1%) compared to the NWGC (5.4%).
- Bus as a travel method is most highly represented in the NWGC (4.5%) compared to SWGC (0.8% respectively).

3.4 Implications for Housing Demand

Key factors that influence NWGC land and housing demand include:

- Relatively young age profile with overwhelming composition of family households with children of school age.
- While the detached house is the dominant residential typology, this is changing. An increasing dominance by units/flats and apartments is observed and this is particularly notable around train stations and major transport nodes.
- A higher representation of white collar workers in the NWGC with 30% of residents working locally, either in the Blacktown or The Hills Shire LGAs. A higher proportion of residents (>70%) drive to work.
- Prevailing housing (mortgage) costs are at the upper end of affordability tolerance (circa 35%) indicating little unexhausted capacity to pay additional for housing without falling into mortgage stress.

Key implications for housing demand are those of choice and affordability. It is therefore unsurprising that new buildings approvals indicate a distinct shift in residential typologies away from separate houses to smaller and denser forms of dwellings.

4. Economic and Market Context

This chapter investigates the trends that influence market and development activity in the NWGC. Market signals are useful in helping us understand any imperfections that may exist in the development process.

4.1 Economic Trends and Drivers

The long term outlook for the Sydney residential market is good, underpinned by strong fundamentals including:

- Strong population growth.
- Low interest rates.
- Relatively low unemployment rates.
- Historic undersupply resulting in significant housing shortfall and pent up demand.

These core fundamentals ultimately form the core drivers to demand. It is widely accepted that dwelling completions over the last decade have fallen well below the number needed to meet underlying demand. This has resulted in rapidly rising house and rental prices as competition is fierce between purchasers and renters alike.

The growing housing affordability issue in Sydney has been the subject of much commentary and analysis. The changing dynamic of housing affordability has evoked responses from both households and the development industry with respect to demand and supply respectively.

Recognising the finite ability of households to pay for housing, industry innovation has assisted with the challenges of housing affordability. Research into the supply responses to changes in affordability identifies a notable shift to smaller dwellings and lot sizes, also occurring amid rising land prices and more widespread development contributions (NHSC, 2013).

North West Growth Centre

More specific to the NWGC, housing affordability has been a key driver underpinning its success as buyers find it difficult to secure suitable housing at a price they can afford elsewhere in metropolitan Sydney. Strong demand and limited supply have propelled property prices particularly in the inner and middle ring suburbs of Sydney, resulting in many buyers forced to seek housing in more affordable areas, including the NWGC.

Enquiries and discussions with selling agents suggest strong buyer demand is outstripping available supply in NWGC. New subdivisions are generally met with overwhelming response, subdivided blocks generally selling immediately and well ahead of schedule. This has led to strong price growth and keen competition as land is released for off-the-plan sale.

These keen market conditions have led to commensurate developer interest and activity to assemble blocks for development. The price of englobo parcels of land has increased many fold and are in some instances impeding the feasibility of development. High landowner expectations and fragmented ownership patterns have cumulatively affected the cost to acquire development sites, thereby necessitating a more intensive subdivision and use of land that results in higher revenue per square metre of site area.

Implementation of State Government's housing diversity package resulted in an amendment to the Growth Centres SEPP in August 2014 - this policy intended at assisting with the supply of housing, placing downward pressure on house prices and facilitating greater housing choice for residents. In the context of site assembly issues and the high cost of land, this amendment to the Growth Centres SEPP has been welcomed and well received by the market.

Purchaser interest and demand in NWGC is reportedly from owner occupiers and investors alike and are very much subject to affordability constraints. Buyers typically look to purchase what they can afford, potentially compromising on requirements such as size, location and amenity.

4.2 Development Activity

There are a number of developments at various stages across the NWGC. Development activity is observed to be gathering momentum as a range of developments including several large planned communities are progressed. There is notably an increase in the provision of small lot housing and medium density development, conceivably reflective not only of the current level of confidence in the market but also present and growing market acceptance and capacity for multi-dwelling living in a Greenfield environment.

4.2.1 Development Pipeline

There are a number of residential subdivision projects in the NWGC either in the planning or delivery stage. More than 11,000 dwellings (dwellings in residential subdivisions, attached dwellings, units, etc.) are observed to be in the pipeline at various stages of planning and delivery. Not all of these will eventuate into construction and delivery of dwellings however are a good indication of present market sentiment.

Table 4.1 indicates that more than 11,000 dwellings are progressed and are at various stages, from early planning and applications to construction. It is not an exhaustive list and represents notable projects either mooted or approved for development.

Table 4.1: Residential Development Pipeline

Development/Address	Suburb	Status	Residential Lots
Alex Avenue			**1,353***
84-88 Schofields Rd	Schofields	Approval	109
48-50 Schofields Rd	Schofields	Approval	51
112 Hambledon Rd	Schofields	Approval	10
54 Pelican Rd	Schofields	Superlot application	N/A
34 Pelican Rd	Schofields	Superlot application	N/A
38 Pelican Rd	Schofields	Superlot application	N/A
60 Pelican Rd	Schofields	Application	400 units
116 Hambledon Rd 70-74 Schofields Rd	Schofields	Application	70
North Park Schofields 34-36 Schofields Rd	Schofields	Application	183
279 Railway Terrace	Schofields	Application	48 units
64 Schofields Rd 105-107 Hambledon Rd	Schofields	Application	55
118 Alex Ave	Schofields	Application	29
126 Alex Ave	Schofields	Application	30
130 Alex Ave	Schofields	Application	33
Pelican Rd	Schofields	Application	270 units
92 Hambledon Rd	Schofields	Construction	32
94 Hambledon Rd	Schofields	Construction	33
Schofields			**1,131**
Skylands Estate Bridge St/Veron Rd	Schofields	Various stages of delivery	224 835 units/townhse
Burawa Rise 26-48 Argowan Rd	Schofields	Approval	26
25 Grange Ave	Schofields	Application	26
19 Argowan Rd	Schofields	Application	20
Riverstone			**1,189**
57-65 Junction Rd	Schofields	Approval	48
56, 63, 68, 73 Boundary Rd	Schofields	Application	136
58-72 Boundary Rd	Schofields	Application	163
22 Boundary Rd	Schofields	Application	198 units
135 St Albans Rd	Schofields	Application	23
59 Westminster St	Schofields	Application	27

Development/Address	Suburb	Status	Residential Lots
32 Boundary Rd	Schofields	Application	35
127 Garfield Rd East	Riverstone	Application	27 villas, 1 twnhse
88 McCulloch St	Riverstone	Application	17
41 Brighton St 44 Riverstone Rd	Riverstone	Application	32
93 Brighton St	Riverstone	Application	21
2 William St	Riverstone	Application	39
17 Brighton St 20 Riverstone Rd	Riverstone	Application	48
Eden Grange Estate 11 Piccadilly St 90 Brighton St	Riverstone	Construction	150
65 Piccadilly St	Riverstone	Construction	11
170 Riverstone Rd	Riverstone	Construction	29
Grantham Estate 144 Princes St	Riverstone	Construction	288
Paradise Haven 24-26 St Albans Rd	Schofields	Construction	6 attached dual occupancies
Marsden Park			**2,000**
Elara	Marsden Park	Construction	2,000
Marsden Park Industrial			**650**
Greenway Living	Marsden Park	Construction	650
Colebee			**915**
Stonecutters Ridge	Colebee	Construction	904
Greenway Estate	Colebee	Application	11
Area 20			**2,131***
96 Cudgegong Rd 88 Rouse Rd	Rouse Hill	Approval	10 superlots
9 Terry Rd	Rouse Hill	Approval	256 units
103 Schofields Rd	Rouse Hill	Application	103 units
822 Windsor Rd	Rouse Hill	Application	295 units
Cudgegong Rd	Rouse Hill	Application	12
44 Cudgegong Rd	Rouse Hill	Application	300 units
60 Cudgegong Rd 99-107 Rouse Rd	Rouse Hill	Application	64 attached 550 units
828 Windsor Rd	Rouse Hill	Application	256 units
38 Terry Rd	Rouse Hill	Application	15
56 Cudgegong Rd	Rouse Hill	Planning	280 units
North Kellyville			**1,838**
4-6 Hillview Rd	Kellyville	Approval	42
1 Barry Rd	Kellyville	Approval	29
6-16 Hillview Rd	Kellyville	Approval	82
Melia 151 Samantha Riley Drive	Kellyville	Approval	48
Hilview Rise 7 Hillview Rd	Kellyville	Approval	74
45-49 Foxall Rd	Kellyville	Approval	29
Applegum Terrace	Kellyville	Approval	72 units
The North Village 133 Samantha Riley Dr	Kellyville	Application	209
49 Withers Rd	Kellyville	Application	43 units
3 Celia Rd	Kellyville	Application	46
13 Curtis Rd	Kellyville	Application	15
11 Curtis Rd	Kellyville	Application	25
22-24 Barry Rd	Kellyville	Application	27

Development/Address	Suburb	Status	Residential Lots
Bellerive Rise 6-8 Foxall Rd	Kellyville	Application	97
3 Withers Rd	Kellyville	Application	45
Oaktree Estate 1-19 Barry Rd	Kellyville	Application	129
Gumnut Cl 8-10 Gum Nut Cl	Kellyville	Application	29
27-31 Foxall Rd	Kellyville	Application	39
Gardener's Ridge 6 Stringer Rd	Kellyville	Construction	74
8-10 Arnold Ave	Kellyville	Construction	35
11 Hexzlett Rd	Kellyville	Construction	40 units
26-28 Withers Rd	Kellyville	Construction	68
Stringer Rd	Kellyville	Various stages	150
Dahlia Residences 40-48 Hezlett Rd	Kellyville	Construction	171
Foxall Rd, Samantha Riley Dr	Kellyville	Planning	260
Box Hill/Box Hill Industrial			**259**
58 The Water Lane	Rouse Hill	Approval	89
93-103 Boundary Rd	Box Hill	Application	170

*Does not include residential lots within proposed superlot subdivisions
Source: Cordell Connect, AEC

Development take-up has historically been 8-10 lots per month (per development) with rates of sale higher in larger developments where sales occur on several fronts. In recent times, development take-up has been more akin to 20-40 lots per month, indicative of the strength in the market as momentum and interest in the NWGC continues to build.

4.2.2 Market Activity

This section contains a summary of market activity observed within precincts zoned for urban development in the NWGC. There are a range of ongoing residential subdivisions which are aimed at a variety of buyer groups.

Alex Avenue

There is notable development activity in the suburb of Schofields that is within the precinct of Alex Avenue. Over 1,300 dwellings[1] are recorded to be at various stages in the development pipeline. Several unit developments are among these, proposing a total of more than 700 units in 5-6 storey buildings.

Site assembly by developers has been keen - the lot patterns in Alex Avenue (generally 2ha-4ha lots) appealing to a range of small and medium size developers. Prices paid for sites are observed to be within the upper end of the range observed for the NWGC as a whole, ranging from $2m/ha to $3m/ha of site area.

Schofields

Villawood's Skylands is presently the most prominent project in the Schofields precinct, its design and layout focused around the Schofields train station. Other subdivisions in the precinct are comparatively minor. Together, these developments have the potential to produce more than 1,100 dwellings.

The largest landholding in the precinct is Defence's former Aerodrome site in the southern portion of the precinct, with the theoretical capacity to accommodate in the region of 1,000 dwellings. Whilst understood to have been sold, development has not as yet been progressed.

There is moderate sales activity of small infill sites (2,000sqm-4,000sqm) within the precinct at prices ranging from $2m/ha to $3.5m/ha.

[1] Excluding those that could be provided within superlots under application for subdivision

Riverstone

Developments in Riverstone are progressed on a mix of Greenfield and infill sites, some 1,200 dwellings observed to be in the pipeline. Owing to the existing lot patterns, site assembly and consequently development activity is observed to be more sporadic and on a smaller scale.

Residential product is mostly dominated by residential lot subdivisions (350sqm-450sqm) with several unit developments proposing 5-6 storey apartment buildings. Two developments currently underway are Eden Grange Estate and Grantham Estate.

- **Eden Grange Estate**
  Progressed over 3 stages, this development is now marketing Stage 3. Take-up of the lots is commented to be strong with a distinct increase in sale prices achieved in Stage 1 and Stage 3 (e.g. 480sqm block in Stage 1 sold for $250,000 while a 420sqm block in Stage 3 achieved $430,000).
- **Grantham Estate**
  This development is progressing well with all 283 lots understood to have been sold, all three stages reportedly selling swiftly (within 3 weeks of marketing). Price points have increased strongly between stages - Stage 1 ($275,000-$315,000), Stage 2 ($325,000-$345,000) and Stage 3 (circa $365,000). It is further understood that Stage 3 lots are being on-sold in the secondary market for $420,000 (circa 15% increase on the original sale price).

  The purchaser profile is varied, a large proportion of purchasers already living in the local area and who work locally. Marketing agents once again identify affordability issues driving the product sought and prices paid.

Owing to lot and ownership patterns (1ha-2ha), site assembly activity is observed to be moderate with prices paid for Greenfield sites in the order of $1.5m/ha to $2.0m/ha. Several infill development projects are also observed to be progressed in the Riverstone precinct, where a large single dwelling may be acquired for construction of townhouses/ villas.

Marsden Park

Marsden Park precinct is dominated by Stockland's Elara development (2,000 lots). Progressed on a 178ha development block, the development will provide for open space, neighbourhood shopping centre, community facilities and a primary school. A number of land releases have been well taken up, all 48 lots in Stage 1 selling on the first day of release.

Informal discussions with the marketing office identifies there is generally strong demand for all residential product, the most popular product generally those lots between 350sqm and 375sqm as these lots are affordable and also able to accommodate a double garage.

A mix of small and medium sized lots is envisaged for future stages, recognising the major driver of price affordability.

Marsden Park Industrial

Lots at Greenway Living are currently under construction, providing some 650 lots on completion. A focus on medium sized lots is observed (400sqm-450sqm), these comprising around 70% of total lots. Small lots (330sqm-375sqm) and large lots (650sqm-800sqm) are provided for in equal proportions, at around 15% each.

Informal discussions with the marketing office identifies a distinct and shifting preference to smaller lots owing to a common budget of $500,000 to $550,000 for many purchasers. Many purchasers are anecdotally observed to originate from the local area, including Deane Park and Plumpton. There is also keen investor interest observed.

Colebee

Development in the Colebee precinct is dominated by Stonecutters Ridge (904 lots) which has been completely sold. Focused around the 18-hole Greg Norman designed Stonecutters Ridge Golf Course, lot sizes range between 390sqm and 650sqm and commenced first sales in 2011.

Small lots (300sqm-380sqm) were recorded to have sold in 2014 for $300,000-$330,000 while medium lots (400sqm-480sqm) sold for $330,000-$450,000. Larger lots (>600sqm) sold for more than $600,000.

Area 20

There is a reasonable amount of development in the pipeline in the precinct of Area 20, more than 2,100 dwellings are at various stages of planning and delivery. A notable observation is that more than 90% of dwellings in the pipeline are comprised of units.

Only some portions of the Area 20 precinct are zoned for urban development, resulting in a distinctly tiered market for vacant sites. Development sites with the potential for residential development are observed to have sold for $2m/ha-$2.2m/ha while similar sized rural sites (not zoned for urban development) have sold for $0.8m/ha-$1.2m/ha.

North Kellyville

A large number of small subdivisions are in the pipeline in this precinct. Lot patterns (generally 2ha-4ha) result in progress of developments by a disparate number of developers, acquisition of sites observed to be at prices within $1.5m/ha to $2.5m/ha.

There are a handful of developments in delivery in the precinct with strong interest and demand also reported. All 60 lots in the Ashmore Park project are reportedly sold, with completion only due at the end of 2015. The average block size is understood to be 375sqm with an average sale price of $487,000.

Box Hill/Box Hill Industrial

A small number of developments are in the pipeline (total potential of 250 dwellings) with none released for sale as yet. There is a moderate amount of site acquisition activity observed, prices ranging from $0.8m/ha to $1.2m/ha.

4.2.3 Summary of Findings

More than 11,000 dwellings are in the development pipeline across the zoned precincts of the NWGC. Around 50% of these dwellings are either in early planning or have been submitted for approval. It is reasonable to conclude that only a proportion of the 11,000 dwellings in the pipeline will eventually be delivered.

Market demand and interest for residential blocks and dwellings are without exception observed to be strong across projects that have been released for sale. Informal discussions with marketing agents consistently identify that small lots (250sqm-350sqm) are the most marketable due to affordable price points.

Each rezoned precinct is notably subject to different market conditions in regard to site assembly and development activity:

- **Acquisition of development sites and prices paid**
  - Alex Avenue stands out with respect to prices achieved for development sites at $2m/ha-$3m/ha.
  - In contrast, prices in Area 20, Riverstone and North Kellyville are more moderate at $1.5m/ha-$2.5m/ha and comparatively low in Box Hill/Box Hill Industrial at $0.8m/ha-$1.2m/ha.
  - Prices paid for sites are observed to be the lowest in as yet un-rezoned precincts of Vineyard, Marsden Park North and Riverstone East, i.e. $0.5m/ha-$0.7m/ha.
- **Volume of development activity**
  Alex Avenue, Area 20, Marsden Park and North Kellyville currently witness the highest volume of development activity (number of dwellings).

Progress and volume of development activity is underpinned by the ability to assemble sites at competitive prices, availability of services infrastructure and development capability of land - landowner and price expectations commensurate with these factors.

A myriad factors influence the supply of housing. These and the market signals observed in this section will be further examined in section 5.5.

4.3 Implications for Future Housing Demand

This section discusses the findings of the market analysis, particularly as they have implications for future planning of the NWGC. For ease of analysis, residential product is categorised into three (as per ABS categories): detached, semi-detached/row housing and flats/units.

Residential Subdivisions (Detached Dwellings)

Since the amendment of the Growth Centres SEPP in August 2014 there has been a distinct shift (both in market preference and lot production) towards smaller housing types.

An analysis of market activity reveals a significantly price sensitive market, households generally purchase according to their financial capacity often in compromise of spatial and size requirements. Our enquiries note the following market observations of detached blocks:

- **Small lots** (<350sqm)
  Due to the large popularity of these smaller block types (owing to affordability reasons), price growth and buyer competition is strong, and particularly considering the financial capacity of many households for housing that costs no more than $500,000-$550,000.

  Small lot types (250sqm-350sqm) are generally sold for between $1,000/sqm and $1,250/sqm of site area which equates to between $300,000 and $400,000. After building construction and other costs, total cost of a dwelling potentially falls within the $500,000-$650,000 affordability range.

  The proportion of small lots in new and pipeline subdivisions is increasing, in some projects comprising more than 50% of total lots proposed (notably in Area 20). While fast gaining acceptance for affordability reasons, small lots are at present still in the minority, comprising approximately 20%-25% of detached lots. There is an expectation that the proportion of small lots will increase over time.

- **Medium lots** (350sqm-450sqm)
  Prices range between $1,000/sqm and $1,250/sqm of site area which equate to between $450,000 and $550,000. After building construction and other costs, total cost of a dwelling approaches $700,000 or more.

  The proportion of medium lots varies between subdivisions, in some cases up to 70% of total lots and in some cases as low as 20%. Historically produced in larger proportions, these lot types are generally sold for at similar rates (on a rate per square metre of site area) as small lots.

  Despite the high total cost of a dwelling, this range of block size is still the most dominant, with generally more than 60%-70% of detached blocks offered within this size bracket.

- **Large lots** (>500sqm)
  Prices range between $800/sqm and $900/sqm of site area, equating to between $580,000 and $780,000. After building construction and other costs, total cost of a dwelling could well exceed $1 million.

  Despite the affordability challenges associated with larger lots, a perceived scarcity of larger lots (for example, a 600sqm corner block) has resulted in premium prices paid (more than $1,500/sqm of site area paid in Greenway Living in Marsden Park).

  There is still a market for larger lots (exceeding 600sqm), however these larger lots are increasingly being produced in declining proportions (ranging from 10% to no more than 30% of overall lots).

The sustained and strong price growth of new housing in the NWGC has been accompanied by growing popularity of smaller housing types (250sqm-350sqm) and has resulted in a growing appeal of multi-unit living (flats and apartments). Notwithstanding the appeal of attached/unit living, detached houses still dominate the residential typology (70%-80%) and is expected to continue into the future.

Semi-detached/Row Housing

Semi-detached, row housing or terraces are seen as a compromise on being able to afford a house (with an element of yard space), albeit with narrower site and building dimensions. Townhouses and row housing currently offered are generally single storey. Research and enquiries suggest that this will shift over time and the market will demand two storey townhouses despite the increased cost to construct an additional storey (circa $50,000 at present).

The proportion of townhouses/row housing of total residential product at present ranges between 20% and 35%, with some projects envisaging higher proportions for future stages.

Multi-Unit Living (Flats/Units)

Multi-unit living is perceived to be associated with a low maintenance and convenience lifestyle that is accessible to a range of amenity and entertainment options. Acknowledging that many people are drawn to multi-unit living for these lifestyle reasons, equally important are the issues of choice and affordability.

Traditionally a detached/separate house market, the NWGC has experienced market resistance to medium and high density living in the past which then influenced the limited provision of apartments. A number of residential unit developments are already progressed in the NWGC priced between $480,000 and $500,000 (2 bedroom unit) and upwards of $550,000 (3 bedroom unit). The prices achieved and marketability of residential units is related to the issue of choice, i.e. the price and availability of housing options in the vicinity.

Where alternate housing options (e.g. detached dwellings) are available at a comparatively high value-for-money proposition, market appetite for higher density residential product declines in comparison. For example, where 3 bedroom detached dwellings are available at a $500,000-$550,000 price point, the attractiveness of a new 2 bedroom unit at $500,000 is low. Conversely, if 3 bedroom homes are sold at $900,000, residential units at $500,000 (albeit offering smaller accommodation) increase in attractiveness.

Notwithstanding the factors of affordability and choice, the completion of the NWRL is likely to also drive demand for smaller dwelling types, attracting a different buyer profile (e.g. single and couple person households and those with no children) who would otherwise be attracted to separate/ detached housing in the NWGC.

The proportion of multi-unit living as a total of overall dwelling type is marginal. Over time this is expected to approach 10%.

Market Densities

The observations of market activity are summarised below by precinct:

- **North Kellyville**
  Detached dwellings are dominant (70%-80%) with the number of units observed at minimal levels. Medium sized detached blocks are dominant (around 70%) however small lots are distinctly on the rise, currently around 15%.
- **Riverstone**
  There is modest amount of ongoing activity in this precinct, detached blocks dominant (medium and large lots) with a nominal amount of units currently progressed.
- **Alex Avenue**
  A large number of dwellings are in the pipeline with a large number of small detached lots (<350 lots) offered. Large numbers of units are also proposed.
- **Area 20**
  This precinct is observed to be progressed with the highest densities a combination of a higher proportion of small detached blocks (<350sqm) and a higher proportion of unit developments.

- **Marsden Park Industrial**
  There are no units observed in the pipeline, however current developments contain a majority of medium lots (70%) with equal proportions of large and small lots.
- **Schofields**
  There are a number of unit developments observed in the precinct, with semi-detached and row housing in relatively high proportions compared to other precincts.

There is minimal market activity in Box Hill/Box Hill Industrial precincts. Colebee is largely developed, with the majority of lots sized at over 300sqm.

5. Dwelling Distribution Analysis

This chapter examines how supply in the NWGC has been distributed, seeking to understand the specific factors which have influenced the development or lack thereof in the various rezoned precincts.

The distribution of dwellings is influenced by supply and demand factors. **The primary driver of dwelling supply is market demand**. Developers are demand-led, responding to market need and effective demand for residential product.

In many cases effective demand, rather than underlying demand, is relevant for development feasibility. The ability of households to pay for housing underpins the type and nature of development the market can respond with. That said, there are many other factors that can facilitate or impede dwelling supply, these are discussed in section 5.5.

5.1 Historical Supply

Supply activity in the Priority Growth Areas has increased particularly over the last two years, following the progress of statutory planning, rezoning and infrastructure provision. The process of infrastructure and development planning requires substantial lead-in time hence the 'lumpiness' of developer response is to be expected.

Table 5.1 outlines the number of dwelling completions (Sydney Water meter connections assumed as a proxy for new dwellings) since 2011.

Table 5.1: Net Additional Dwellings, NWGC*

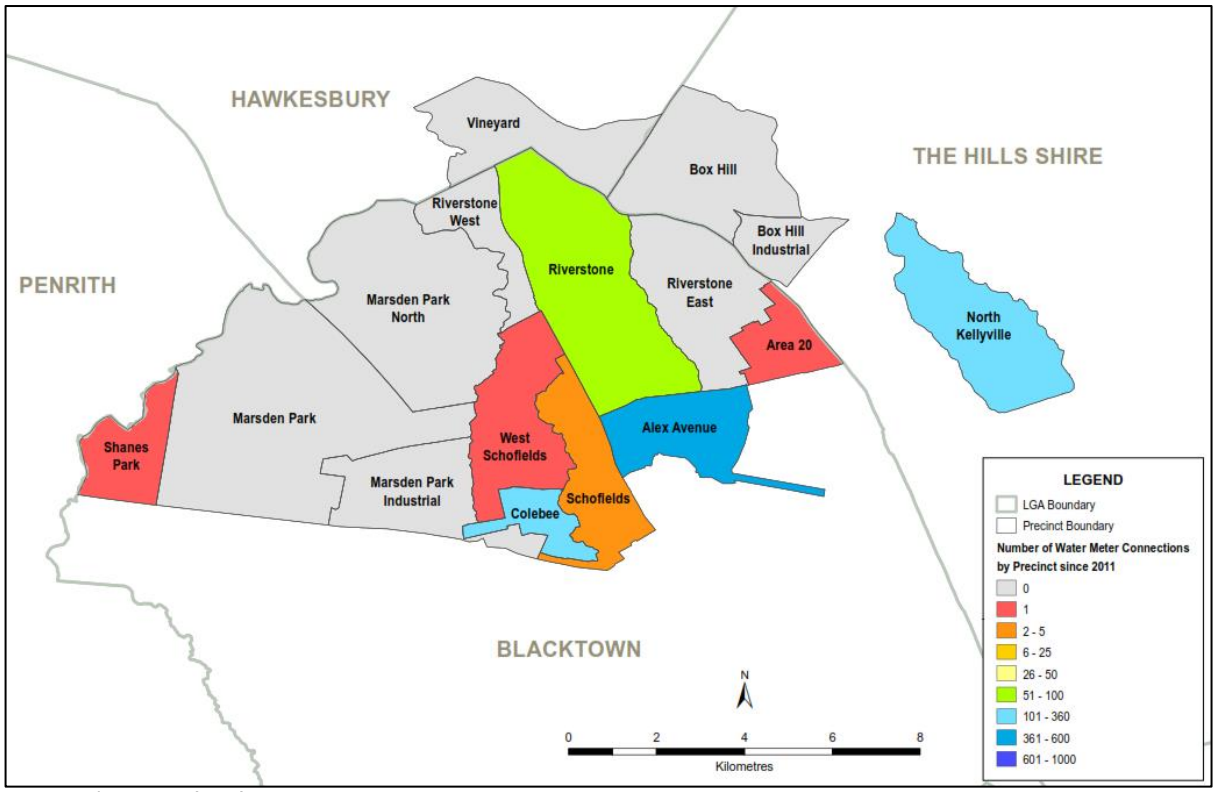
Precincts	Date Rezoned/ Released	2011	2012	2013	2014	Total (2011-14)
Rezoned						
Colebee	Council LEP	56	56	82	92	286
North Kellyville	19.12.2008	0	19	87	241	347
Riverstone West	07.08.2009	0	0	0	0	0
Riverstone	17.05.2010	4	12	6	24	46
Alex Avenue	17.05.2010	0	14	4	73	91
Marsden Park Industrial	18.11.2010	0	0	0	0	0
Area 20	21.10.2011	1	0	2	0	3
Schofields	11.05.2012	0	0	0	0	0
Box Hill and Box Hill Industrial	5.05.2013	0	0	0	0	0
Marsden Park	4.10.2013	0	0	0	0	0
Total		**61**	**101**	**181**	**430**	**773**
Released for Precinct Planning						
Riverstone East	18.03.2013	0	0	0	0	0
West Schofields (part)	18.03.2013	0	0	0	0	0
Vineyard	18.03.2013	0	1	0	0	1
Marsden Park North	Not applicable	0	0	0	0	0
Total		**0**	**1**	**0**	**0**	**1**
Not Released						
Shanes Park	Not applicable	0	0	0	0	0
West Schofields	Not applicable	0	1	0	0	1
Total		**0**	**1**	**0**	**0**	**1**

*based on water meter connections by suburb, approximations are made into individual precincts
Source: Sydney Water (2015)

The number of water meter connections indicate that supply is gaining momentum with dwelling connections more than doubling in 2014 from 2013.

Figure 5.1 depicts the concentration of water meter connections by precinct since 2011.

Figure 5.1: Water Meter Connections, NWGC (2011-2014)



Source: Sydney Water (2015), AEC

Building approvals data can be a useful indication for expected dwelling supply, recognising that not all dwellings approved will be delivered. **Table 5.2** details the number of residential building approvals from 2010-2015 (February 2015).

Table 5.2: Residential Building Approvals

Precincts	2010-11	2011-12	2012-13	2013-14	2014-15*	Total (2011-15)
North West Growth Centre	211	158	243	569	826	2,007

*to February 2015
Source: ABS (2015)

Acknowledging that not all dwellings approved will eventuate into construction and eventual completion, the number of residential building approvals is a useful indicator for trends in historical supply activity. The volume of dwelling approvals is distinctly on the rise since 2010.

While there are more than 11,000 dwellings (detailed in **Table 4.1**) planned for in the pipeline and at various stages, some of these 11,000 dwellings could be included in the building approvals data in **Table 5.2**.

5.2 Capacity of Housing Supply

A common misconception is that if land is zoned, vacant and undeveloped that it will be available for immediate development. In practice, this can be far from reality as the development potential of land is often influenced collectively by environmental, market or ownership factors that can together, impede development.

The adequacy of land release is crucial for the supply of housing. From first principles the supply of housing directly impacts the cost/price of housing. A constrained supply of land will drive up landowner expectations, potentially making site assembly cost prohibitive. This then leads to a constrained supply of completed dwellings, also driving up the price of those limited housing that is completed.

The capacity of urban zoned land to accommodate new development can be thought of as two-fold: planning capacity and market capacity.

- **Planning capacity** refers to the physical ability of land to be developed, taking into account permissibility under planning framework.
- **Market capacity** refers to issues of commercial viability whether pricing levels, market acceptance/resistance, availability of services infrastructure, development costs which are influenced by environmental and site constraints, etc. make development a commercial proposition, i.e. if development is financially feasible.

While planning capacity (or "theoretical capacity") is important for understanding development potential, this section investigates '**market capacity**' by considering the availability of services/utility infrastructure, and making observations on development activity, site assembly efforts and the nature of existing uses and lot patterns.

Table 5.3 summarises the dwelling potential of each precinct, either as provided for under the Growth Centres SEPP or estimated during precinct planning. **Table 5.4** summarises current service capacity of these precincts.

Table 5.3: Dwelling Potential and Targets, NWGC

Precincts	Growth Centres SEPP			Structure Plan Explanatory Notes[3]	Precinct Plan[4]
	Net Residential Development Area (ha)	Based on minimum density[1]	Based on maximum density[2]		
Rezoned					
Colebee	Not applicable	Not applicable	Not applicable	1,000	Not applicable
North Kellyville	346	3,614		4,500	5,185
Riverstone West	-	-		-	-
Riverstone	577	9,417		8,500	8,900
Alex Avenue	301	5,944		7,000	6,240
Marsden Park Industrial	-	-		-	1,228
Area 20	92	2,587		1,500	2,500
Schofields	160	2,857		5,000	2,811
Box Hill and Box Hill Industrial	619	9,703		10,000	9,652
Marsden Park	632	10,516	132	11,000	10,308
Total	**2,727**	**44,638**	**132**	**48,500**	**46,824**
Released for Precinct Planning					
Riverstone East				6,000	
West Schofields (part)				400	
Vineyard				2,500	
Marsden Park North				4,000	
Total				**12,900**	
Not Released					
Shanes Park				500	
West Schofields				2,000	
Total				**2,500**	

Notes: 1 - Residential Density (RDN) provisions under Growth Centres SEPP, does not include B zones (B1, B2, B4), 2 Minimum Lot Size (LSZ) provisions under Growth Centres SEPP, does not include B zones (B1, B2, B4), 3 - NWGC Structure Plan (2010), 4 - Post-exhibition Planning Reports (various)
Source: DoP (2010), DoP (2008-2013)

In most of the rezoned precincts, dwellings per hectare density controls are used. This means that development to higher densities will only be permitted subject to minimum lot size requirements and the availability of transport and services infrastructure.

Minimum lot size controls effectively 'cap' the density of precincts to a maximum number of dwellings. Refer to section 2.4 for a discussion on maximum densities.

The deliverability of housing is very much dependent on the availability of services and utilities infrastructure. As outlined in section 5.2, proponents of large developments (>1,000 lots) have better capacity for undertaking both trunk and lead-in infrastructure works. Depending on the scale of development, proponents of smaller developments are in some cases able to tolerate the upfront cost of lead-in works.

The availability of services to support housing supply in the NWGC is summarised into the following timeframes:

Table 5.4: Infrastructure Servicing* Provision and Timeframes, NWGC

Precincts	Immediate	Medium Term	Longer Term	Long Term		Beyond 2036
	2014/15	2016-2020	2021-2025	2026-2030	2031-2035	
Rezoned						
Colebee	1,000					
North Kellyville	4,499					
Riverstone West	-					
Riverstone	8,532					
Alex Avenue	6,300					
Marsden Park Industrial**	600	678				
Area 20	2,500					
Schofields	1,927		1,373			
Box Hill/Box Hill Industrial	4,341					
Marsden Park**	2,398		2,398	2,398	3,106	
Total	**32,097**	**3,333**	**3,771**	**2,398**	**3,106**	**-**
Released for Precinct Planning						
Riverstone East	4,352	481	1,167			
West Schofields (part)	-	-	897			
Vineyard	1,380	1,520	654			
Marsden Park North**	-	3,220	1,380			
Total	**5,732**	**5,221**	**4,098**	**-**	**-**	**-**
Not Released						
Shanes Park	-					1,679
Schofields West	-				405	
Total	**-**	**-**	**-**	**-**	**405**	**1,679**

*Based on Sydney Water services (sewer and water) and predicated on electricity to follow as required
**Not available, based on developer-led provision of infrastructure
Source: Mott MacDonald (2015)

Based on the above timing of servicing availability, only the precincts of Alex Avenue, Riverstone and Area 20 have immediate capacity (electrical, sewer and water) to deliver 100% of the planned, minimum number of dwellings.

The precinct of North Kellyville and Riverstone have immediate services capacity to deliver around 90% of the planned, minimum number of dwellings. Box Hill/Box Hill Industrial has less than 50% of immediate services capacity while Schofields has less than 70% of immediate services capacity to deliver the planned, minimum number of dwellings.

5.3 Market Demand

This section examines how market demand influences housing supply and the distribution of dwellings within the NWGC.

Chapter 4 identified strong demand for dwellings in the NWGC, in many instances lots selling off-the-plan within a few weeks of marketing. Owing to affordability and lifestyle reasons, purchaser preference is also observed to have shifted to smaller, denser product.

Looking forward, while smaller and denser residential product is expected to increase, detached houses are still expected to form the majority of dwelling type, followed by row housing/semi-detached/townhouses and then by units/apartments.

Planning (Target) Densities

'Target density' controls are generally used in the rezoned precincts (except Colebee) where average densities range from 10dw/ha (North Kellyville) to 30dw/ha (Area 20).

The following density targets are applied to residential zones in each precinct.

- Low density - 12.5dw/ha to 20dw/ha.
- Medium density - 20dw/ha to 40dw/ha.
- High density - 40dw/ha to 45dw/ha.

Indicative lot sizes envisaged by density provisions in the Growth Centres Development Code are classified below:

- Townhouses, semi-detached and detached small dwellings (up to 350sqm).
- Detached medium dwellings (350sqm-450sqm).
- Detached large dwellings (450sqm).

Development at higher densities than the target density controls is permitted however the maximum number of dwellings is controlled by stipulated minimum lot sizes in each precinct. Higher density development is not anticipated to occur unless access to transport, employment and other services are available.

Market Densities

Analysis of market activity (refer to section 4.2) suggests that residential typologies are becoming increasingly focused on smaller lot sizes, as market acceptance of small lot housing and denser product is growing.

Greater densities are observed to be pursued in precincts where there are higher density zones (R3 and R4), and these are generally to higher densities than the planned (target) densities.

This further suggests that previous average densities of 15dw/ha (450sqm) are increasing in proportion in favour of 20dw/ha-30dw/ha densities (250sqm-350sqm lots) and as well as residential units. In instances where apartments are developed, densities achieved are well in excess of 50dw/ha or 60dw/ha.

Having consideration to what appears to be a structural shift in the market, the following market densities to 2036 are envisaged in the residential zones for each of the precincts.

Table 5.5: Market Densities in Residential Zones (Looking Forward to 2036)

Precincts/Zones (Densities*)	Dwelling Type (%)			Detached Dwellings (%)		
	Detached	Semi-detached/ Row Housing	Flats/ Units	Small Lots (<350sqm)	Medium Lots (350-450sqm)	Large Lots (>500sqm)
Colebee						
R3	100%	0%	0%	0%	50%	50%
North Kellyville						
R1 (M)	65%	25%	10%	25%	65%	10%
R2 (K)	80%	20%	0%	25%	65%	10%
R3 (Q)	65%	25%	10%	25%	65%	10%
Riverstone						
R2 (O)	65%	35%	0%	25%	65%	10%
R2 (Q)	65%	35%	0%	25%	65%	10%
R2 (M)	65%	35%	10%	25%	65%	10%
R3 (T)	60%	25%	15%	30%	60%	10%

Precincts/Zones (Densities*)	Dwelling Type (%)			Detached Dwellings (%)		
	Detached	Semi-detached/ Row Housing	Flats/ Units	Small Lots (<350sqm)	Medium Lots (350-450sqm)	Large Lots (>500sqm)
Alex Avenue						
R2 (O)	65%	35%	0%	30%	60%	10%
R2 (Q)	65%	35%	0%	30%	60%	10%
R3 (T)	50%	20%	30%	70%	25%	10%
R3 (W)	50%	20%	30%	70%	25%	10%
R3 (X)	50%	20%	30%	70%	25%	10%
Marsden Park Industrial						
R2	70%	30%	0%	25%	65%	10%
R3	60%	25%	15%	30%	60%	10%
Area 20						
R2 (O	50%	50%	0%	35%	55%	10%
R2 (Q)	50%	50%	0%	40%	55%	5%
R3 (T)	50%	20%	30%	70%	25%	5%
R3 (X)	50%	20%	30%	70%	25%	5%
Schofields						
R2 (O)	70%	30%	0%	25%	65%	10%
R2 (T)	70%	30%	0%	25%	65%	10%
R2 (U)	70%	30%	0%	25%	65%	10%
R3 (W)	60%	25%	15%	30%	60%	10%
Box Hill/Box Hill Industrial						
R2 (O)	90%	10%	0%	10%	70%	20%
R2 (C)	90%	10%	0%	10%	70%	20%
R3 (P)	65%	25%	10%	20%	70%	10%
R4 (P)	55%	30%	15%	30%	60%	10%
R4 (Q)	55%	30%	15%	30%	60%	10%
R4 (U)	55%	30%	15%	30%	60%	10%
Marsden Park						
R2 (O)	90%	10%	0%	10%	70%	20%
R2 (L)	90%	10%	0%	10%	70%	20%
R3	65%	25%	10%	20%	70%	10%
Riverstone East						
Low Density	90%	10%	0%	0%	70%	30%
Medium Density	80%	20%	0%	10%	70%	20%
High Density	0%	40%	60%	20%	70%	10%
Vineyard						
Low Density	100%	0%	0%	0%	0%	100%
Medium Density	100%	0%	0%	0%	0%	100%

*K=10dw/ha, L=11dw/ha, M=12.5dw/ha, O=15dw/ha, P=18dw/ha, Q=20dw/ha, T=25dw/ha, U=30dw/ha, V=35dw/ha, W=40dw/ha, X=45dw/ha
Source: DPE, AEC

Nominal densities of 30dw/ha are assumed in the business zones and higher densities of 50dw/ha are assumed in those business zones in close proximity to a train station. Much higher densities are assumed in Area 20 business zones (110dw/ha and 320dw/ha) where there are already a significant number of apartment/unit developments progressed.

Subject to services capacity and availability, there is potential for NWGC to be developed more intensely and for a greater number of dwellings to be accommodated in line with changing market demand and preference. These implications are examined next.

Potential for Greater Intensity of Development

The evolution of market demand and housing need has meant that land already zoned for development, if increased densities could be achieved, has latent potential to accommodate a greater number of dwellings.

The residential mix in **Table 5.5** is calculated to equate to average dwelling densities by precinct in **Table 5.6**. The average densities are then applied to the respective developable areas to calculate the total dwelling potential assuming a build-out of the precincts, i.e. 100% of developable land is developed.

Table 5.6: Market Densities and Built-out Capacity by Precinct (100% developed)

Precinct	Zone	Developable Area (ha)	Average Density (dw/ha)	Dwellings	Precinct Plan Dwellings
Rezoned					
Colebee	R3	-	14.1	1,164	1,000
North Kellyville	R1	32.7	26.7	873	
	R2	309.9	20.9	6,485	
	R3	7.6	26.7	203	
	B1	2.1	30.0	63	
	B2	3.9	30.0	117	
	Total	356.2	21.9	7,741	5,185
Riverstone	R2	523.8	23.3	12,220	
	R3	56.2	29.4	1,650	
	B1	4.7	30.0	141	
	Total	940.9	24.1	14,011	8,900
Alex Avenue	R2	243.3	23.5	5,721	
	R3	58.3	37.5	2,189	
	B2	9.5	50.0	475	
	B4	2..4	50.0	120	
	Total	313.5	29.0	8,505	6,240
Marsden Park Industrial	R2	17.8	22.5	401	
	R3	29.4	29.4	863	
	Total	47.2	27.2	1,264	1,228
Area 20	R2	32.6	26.0	848	
	R3	85.9	37.3	3,201	
	B2	1.9	110.0	209	
	B4	2.2	320.0	704	
	Total	122.6	78.5	4,962	2,500
Schofields	R2	153.5	22.5	3,458	
	R3	6.4	29.4	188	
	B1	0.4	50.0	20	
	B2	4.2	50.0	210	
	Total	164.5	24.5	3,876	2,811
Box Hill/Box Hill Industrial	R2	445.2	18.1	8,039	
	R3	144.7	26.5	3,838	
	R4	33.5	30.2	1,010	
	B2	13.0	30.0	390	
	Total	636.4	21.8	13,276	9,652
Marsden Park	R2	496.5	18.1	8,965	
	R3	115.1	26.5	3,053	
	B2	17.1	30.0	513	
	B4	5.3	30.0	159	
	Total	634.0	20.7	12,690	10,308
Total		**3,215.3**	**20.6**	**67,489***	**47,824**

Precinct	Zone	Developable Area (ha)	Average Density (dw/ha)	Dwellings	Precinct Plan Dwellings
Unrezoned**					
Riverstone East		334.8	20.0	6,126	6,000
Vineyard		256.0	11.3	2,880	2,500
Marsden Park North		395.7	11.3	4,451	4,000
Shanes Park		116..4	11.3	1,310	500
West Schofields		200.4	11.3	2,255	2,000
Total		**1,303.3**	**13.1**	**17,022**	**15,000**
Total (Rezoned and Unrezoned)				**84,511**	**62,824**

*Dwellings in Colebee were planned for under the Blacktown LEP and have been included in the table without an analysis of market densities
**Developable areas in the unrezoned precincts have been reduced by 20% to allow for other (non-residential) uses
Source: DPE, AEC

By applying higher average densities, the theoretical capacity of the NWGC has increased from a minimum of 62,824 dwellings to 84,511 dwellings.

5.4 Factors Affecting Housing Supply

There are a considerable number of factors affecting the deliverability of new/additional housing and rarely is a single factor the only cause for low housing supply activity. It is important to understand that urban land is subject to pressures for development which directly affect their land values and feasibility of developing into higher and better uses. Landowner expectations are often directly linked to planning controls, their value expectations moving upwards with rezoning or upzoning of areas.

The following are a selection of common factors that affect the feasibility and deliverability of development.

Land Value and Site Assembly

In order to economically acquire and develop land the proposed use must translate into a higher value than the existing use including any improvements on the land (or 'As Is' value). Development will only occur where the proposed use is valuable enough to displace the existing use. While existing improvements may be dated and due for replacement, they may still be providing a good level of functional utility and thereby be relatively valuable.

As a consequence, the acquisition of land can be a high-risk and high-resource activity for developers, particularly where numerous parcels of land have to be amalgamated prior to development. Further exacerbating the issue of site fragmentation is that in many Greenfield areas, while land may be appropriately zoned for urban development, an 'agenda of development' may not necessarily align with that of landowners who have other interests for their landholdings.

There is notable sales activity of development sites (2ha-4ha) in Alex Avenue and prices paid are among the highest in the NWGC, in the order of $2m/ha-$3m/ha of site area. In comparison, prices paid for sites in other rezoned precincts (e.g. Area 20 and Riverstone) are slightly lower ($1.5m/ha-$2.2m/ha), conceivably reflective of development-ready status of some precincts over others.

Landowner expectations are often directly linked to planning controls and regardless of financial feasibility, value expectations moving upwards with rezoning or upzoning of areas to accommodate higher densities. This is distinctly observed in the Alex Avenue precinct where following rezoning in 2010 and the *immediate* availability of services infrastructure, landowner expectations have swiftly adjusted upwards.

Underlying and Effective Demand

Residential markets are diverse. Market acceptance for higher density product is good within capital cities (and inner suburbs within those cities), hence end sale prices of the completed product justify the higher cost of construction.

Equally important is the issue of choice. If low density residential product in the area surrounding is available at relatively cheap prices, underlying demand for higher density product at higher prices will arguably be limited.

In many cases effective demand, rather than underlying demand, is relevant for development feasibility. The ability of households to pay for housing underpins the type and nature of development the market can respond with.

An analysis of household income bands provides insight into the financial ability of households in NWGC to pay for housing (cost of purchase or rent).

- Approximately 73% of households in the NWGC cannot afford a new dwelling price of $500,000 without falling into mortgage stress[2].
- At the median household income ($1,727/week), a household can only afford to purchase a dwelling at $465,000.

This analysis is important as an understanding of the extent and nature of market capacity/ability to pay for new housing is important as this underpins the feasibility of new development.

Development Costs

The cost of construction varies across residential typologies and can increase substantially for example, as buildings become taller. Service requirements will dictate that more lifts will be required so that vertical transportation times are not compromised.

In deciding the amount of capital to apply to a site, i.e. how intensely the site should be developed, developer capital will be applied to the point where incremental revenue is equal to incremental cost.

Where higher density product is demanded by the market, i.e. higher prices are able to be achieved, more intense use of land will be pursued.

Depending on existing lot and ownership patterns, the cost of site assembly can be prohibitive for development.

Funding and Availability of Infrastructure

In Greenfield locations, the availability of trunk and lead-in infrastructure can be a major impediment to development proceeding. While there is nothing precluding a prospective developer from assuming the provision of necessary infrastructure to facilitate development of a site, the uncertainty and heavy capital cost associated with infrastructure provision not only contributes to a perception of increased risk, it is beyond the financial capacity of many developers.

In precincts where large landholdings are in the control of major developers, the provision of trunk and lead-in infrastructure is in many cases incorporated as part of development, and further to the Precinct Acceleration Protocol (PAP) provisions. This can assist to accelerate delivery where there would otherwise have been a lag in infrastructure provision.

In precincts where lot and ownership patterns are fragmented, the ability of developers to assemble a large development block is limited, hence there is low likelihood of developer-led infrastructure provision, e.g. in the Riverstone precinct.

Planning and Development Controls

Planning and development controls have the ability to affect feasibility and housing supply through changes in land use zoning and densities but also through costs associated with design requirements and securing planning approvals (including developer contributions). Codes for parking, open space, sustainability, etc. all have the ability to influence the cost of development.

[2] It is generally accepted that housing cost (rent or mortgage cost) should not exceed 30% of a household's gross income. This measure varies depending on the scale of the household's income, e.g. it could be higher for households on higher incomes.

The implementation of the Housing Diversity package has offered some flexibility in the types of housing that are provided in the NWGC. While there is still a compliance-based cost to ensuring built form accords with development controls, financial feasibility is offset by swifter take-up by the market on release.

In comparison with planning densities (target minimum densities), market demand for higher density product is strong. Even though current planning densities are meant as 'minimums', i.e. more dwellings can be supported, infrastructure services can be an impediment as agencies are understood to have planned for dwellings numbers on the basis they are 'target densities' rather than minimum densities.

5.5 Implications for Housing Supply

Residential Densities

Many developers are increasingly seeking to develop sites to a denser form than was envisaged by density controls in the Growth Centres SEPP, in some cases to double or treble the site's original planning capacity. Our market analysis suggests that this is due to a combination of factors:

- **Housing affordability and choice**
  - Affordability where many households can only afford $500,000-$550,000.
  - Preference shift to low maintenance housing options.
- **Development feasibility**
  The high cost of land and with market expectations of development sites at their current levels, development feasibility can be delicate. The offer of a diverse and viable product not only ensures market appeal it also helps developers achieve a commercial return in a competitive environment of high land cost.

Services Capacity and Site Amalgamation

Development activity is occurring at distinct and difference paces in the NWGC. It is no surprise that precincts like Alex Avenue, Area 20 and North Kellyville with immediate services capacity are witnessing a hive of development activity. The level and nature of development activity can be profiled according to the following drivers of supply:

- **Availability of sites at competitive prices**
  Existing lot and ownership patterns underpin the ability of developers to assemble sites. Precincts like Colebee and North Kellyville recorded the highest number of water meter connections to 2011 (Figure 5.1) and also benefit from notable development pipelines. By contrast, despite being rezoned for several years, precincts including Riverstone has been slower in take-up.
- **Availability of services and infrastructure**
  Alex Avenue, North Kellyville and Area 20 have servicing capacity to varying degrees to accommodate immediate development (refer to **Table 5.4**). In contrast precincts including Marsden Park and Colebee are not currently serviced and require developer-led provision of services infrastructure. Despite this, development in Marsden Park and Colebee has occurred owing to large tracts of land controlled by several key developers who have been able to lead in the provision of services infrastructure. While Riverstone has services capacity, the precinct is constrained by existing lot and ownership patterns.

  While Riverstone has some current services capacity, the precinct is constrained by existing lot and ownership patterns.

Development sites in the NWGC are observed to be sold as englobo sites without development approval. Many of these sites are chicken or vegetable farms transitioning to urban development.

A major factor constraining the delivery of housing is the process of site assembly. Fragmented ownership patterns and unrealistic vendor expectations can make the acquisition of land a high-risk and high-resource activity for developers, particularly where numerous parcels of land have to be amalgamated prior to development and those

sites that are improved with existing buildings.

Limited availability of services infrastructure influences the prices of land where services are available. As an example, owing to immediate availability of services infrastructure throughout the precinct in Alex Avenue, prices for development sites in Alex Avenue are observed to be the highest paid in the NWGC (in excess of $3m/ha in some instances).

There is an apparent misalignment between planning capability of land and services availability in some rezoned precincts. For example, the southern portion of Schofields which is largely in single ownership (former Defence site) only has services capacity in 2021.

Where large Tier 1 developers are able to assemble large sites in these precincts, developer-led provision of infrastructure is certainly achievable, e.g. Marsden Park by Stockland and Colebee by Medallist. Furthermore, some precincts not as yet rezoned are observed to have almost immediate capacity (4,300 lots in 2016 in Riverstone East, 1,400 lots immediately in Vineyard).

The various constraints on housing supply (current services capacity and lot/ownership patterns) have cumulative implications on the NWGC and its ability to accommodate projected growth. This is considered in the next chapter.

6. Projected Demand and Supply Capacity

This chapter considers projected housing demand against the capacity of the NWGC to meet said demand.

6.1 Introduction

Projections of housing demand for the North West Growth Centre (NWGC) and South West Growth Centre (SWGC) were developed using the methodology outlined in Appendix A. Combined the NWGC and SWGC are referred to as 'the Priority Growth Areas'.

In brief, three models were used in developing these projections.

- A 'ratio model', which takes official projections from DPE (2014d) for metropolitan Sydney and applies a shock to the official projections that results in population and households being transferred to the Priority Growth Areas from the rest of metropolitan Sydney.
- An 'equation model', which uses historic econometric relationships for metropolitan Sydney local government areas between changes in dwelling stock and factors such as relative prices, distance friction (to the CBD), changes in households, and employment patterns. These relationships are then applied to the Priority Growth Areas to project dwelling demand, using results from the ratio model.
- A 'distribution model', which distributes Priority Growth Areas dwelling demand projections from the equation model to each of the NWGC, SWGC using qualitative weighted distribution criteria regarding the anticipated 'attractiveness' of each centre relative to each other.

While this report addresses the North West Growth Centre specifically, for overall context the demand projections (in aggregate) are reported for the combined Study Area (both NWGC and SWGC).

6.2 Senarios Examined

Two demand scenarios were modelled within the ratio model, with the results then run through the equation model and distribution model to project aggregate dwelling demand for the Study Area:

- **Scenario 1**: is based on an expectation that there is a modest 10% capture of new housing demand and consequently residential activity in the rest of metropolitan Sydney, which results in redistribution of dwelling demand to the Study Area as a result of progression/preparation of the Priority Growth Area for development. This is termed the 'Low Growth Scenario'.
- **Scenario 2**: is premised on there being a 20% capture of new housing demand and consequent residential activity in the rest of metropolitan Sydney, which is redistributed to the Study Area. This is termed the 'High Growth Scenario'.

A detailed summary of the results of these two scenarios for the Study Area (in aggregate) is provided in **Appendix A**.

Table 6.1. Projections of Dwelling Demand by Scenario for Study Area (in Aggregate)

Scenario	2011	2016	2021	2026	2031	2036	Change (2011 to 2036)
Scenario 1 (10%)	**25,077**	**43,572**	**62,591**	**81,375**	**100,077**	**123,078**	**98,001**
SWGC	5,348	15,434	25,806	36,392	46,932	59,895	54,548
NWGC	10,279	18,688	27,335	35,533	43,695	53,733	43,454
Scenario 2 (20%)	**25,077**	**58,183**	**92,128**	**125,524**	**158,722**	**200,700**	**175,623**
SWGC	5,348	23,402	41,915	60,736	79,445	103,103	97,755
NWGC	10,279	25,331	40,763	55,338	69,827	88,147	77,868

Source: AEC, DPE (2014d)

Following the projection of aggregate dwelling demand, the capacity of each priority growth area over the projection period to accommodate projected demand is considered. Any shortfall in capacity to accommodate the projected demand results in unmet demand, termed 'Overflow'. Each demand scenario is presented and discussed separately.

6.3 Dwelling Demand Projections

Even though the rezoned precincts of NWGC have the theoretical capacity to accommodate at least 45,000-47,000 new dwellings (based on SEPP minimum densities and post-exhibition precinct plans), lack of available services infrastructure and difficulties in site assembly by developers could have the potential to thwart housing development activity.

This section attempts to reflect the market realities of housing supply, applying capacity constraints where they are known services infrastructure lags and/or where land is held in fragmented ownership, lack of available services infrastructure and issues of financial feasibility can cumulatively impact the capacity of land to deliver new housing. Notwithstanding financial feasibility, owner objectives need to be aligned for developers to successfully acquire sites for development.

For the purposes of applying capacity constraints, the following factors are considered:

- Availability of services infrastructure.
- Existing lot and ownership patterns.
- Current development activity and development pipeline.
- Nature and magnitude of development interest.

Two growth scenarios are modelled:

- **Low Growth Scenario** where 10% of new dwelling demand in metropolitan Sydney is assumed to be captured for redistribution in the combined Study Area (priority growth areas).
- **High Growth Scenario** where 20% of new dwelling demand in metropolitan Sydney is assumed to be captured for redistribution of the combined Study Area (priority growth areas).

6.3.1 Scenario 1 (Low Growth Scenario)

Dwelling Projections

Dwelling projections by Priority Growth Area were initially undertaken without consideration of capacity constraints ('Without Capacity Constraints'). These were compared to projections incorporating expected capacity constraints in SWGC and NWGC to identify a projected overflow of demand (i.e. unmet demand) for dwellings in the Study Area ('Overflow').

Any overflow for either the SWGC or NWGC was reallocated in the first instance to the other priority growth area where there was spare capacity (e.g., if the SWGC was over capacity, the overflow was reallocated to the NWGC if it had remaining capacity).

Table 6.2. Distributed Projections of Dwellings, Scenario 1

Priority Growth Area	2011	2016	2021	2026	2031	2036	Change (2011 to 2036)
Without Capacity Constraints							
NWGC	10,279	18,688	27,335	35,533	43,695	53,733	43,454
With Capacity Constraints							
NWGC	10,279	16,119	26,198	34,396	42,558	47,026	36,747
Overflow							
NWGC	-	2,569	1,137	1,137	1,137	6,707	6,707

*Totals may be different due to rounding
Source: AEC, Mott Macdonald (2015), DPE (2014d)

A summary of demand projections is presented in **Table 6.2**. Where no capacity constraints are present, dwelling demand in the NWGC is projected to be 43,454 additional dwellings over the projection period.

After applying capacity constraints to accommodate additional dwellings, demand is projected to exceed capacity by 2,569 in 2016. This suggests an immediate supply issue (unmet demand of 2,569 dwellings in 2016), with total unmet demand (overflow) increasing to 6,707 dwellings over the projection period.

Detached houses were the predominant dwelling type in the Study Area in 2011, making up 80% or more of dwellings in each priority growth area. Projections by dwelling type are outlined in **Table 6.3**, and show that while detached houses are projected to remain the dominant type of dwelling in each centre, semi-detached dwellings and flats/units are projected to contribute an increasing share of dwellings compared to 2011.

The method used for projecting dwellings by dwelling type is outlined in **Appendix A**.

Table 6.3. Distributed Projections of Dwellings by Type, NWGC, Scenario 1

Dwelling Type	2011	2016	2021	2026	2031	2036	Change (2011 to 2036)
Without Capacity Constraints							
Detached House	9,559	17,152	24,608	31,342	37,715	45,144	35,585
Semi-Detached House	222	622	1,362	2,377	3,698	5,706	5,484
Flats/ Units	129	242	459	760	1,155	1,757	1,628
Other Dwelling Type	370	672	906	1,053	1,127	1,127	757
Total	**10,279**	**18,688**	**27,335**	**35,533**	**43,695**	**53,733**	**43,454**
With Capacity Constraints							
Detached House	9,559	14,833	23,523	30,258	36,630	39,937	30,378
Semi-Detached House	222	499	1,363	2,377	3,699	4,592	4,371
Flats/ Units	129	207	460	761	1,156	1,424	1,295
Other Dwelling Type	370	580	852	999	1,073	1,073	703
Total	**10,279**	**16,119**	**26,198**	**34,396**	**42,558**	**47,026**	**36,747**

Source: AEC, ABS (2015), DPE (2014d)

Population Projections

In Scenario 1, subject to capacity constraint assumptions, the NWGC population is projected to increase to just over 130,000 residents by 2036, lower than if unconstrained at over 150,000 residents.

The method used to project population is outlined in **Appendix A**.

Table 6.4. Distributed Projections of Population, NWGC, Scenario 1

Priority Growth Area	2011	2016	2021	2026	2031	2036	Change (2011 to 2036)
Without Capacity Constraints	30,406	54,452	78,890	101,926	124,623	151,832	121,426
With Capacity Constraints	30,406	46,967	75,609	98,665	121,381	132,881	102,475

Source: AEC, ABS (2013), DPE (2014d)

Population projections by five yearly age groupings for 2011, 2021 and 2036 are presented in **Table 6.5**. The method used to develop projections of population by age is outlined in **Appendix A**.

Table 6.5. Distributed Projections of Population by Age, NWGC, Scenario 1

Age	Population			Percent of Total		
	2011	2021	2036	2011	2021	2036
Without Capacity Constraints						
0-4	2,372	6,181	11,016	7.8%	7.8%	7.3%
5-9	2,713	7,172	13,459	8.9%	9.1%	8.9%

Age	Population			Percent of Total		
	2011	2021	2036	2011	2021	2036
10-14	2,566	6,393	12,539	8.4%	8.1%	8.3%
15-19	2,123	5,031	9,929	7.0%	6.4%	6.5%
20-24	1,809	4,176	7,657	6.0%	5.3%	5.0%
25-29	1,546	3,692	6,367	5.1%	4.7%	4.2%
30-34	1,957	5,110	8,548	6.4%	6.5%	5.6%
35-39	2,744	7,148	12,343	9.0%	9.1%	8.1%
40-44	2,628	6,625	12,931	8.6%	8.4%	8.5%
45-49	2,214	5,593	11,084	7.3%	7.1%	7.3%
50-54	1,883	4,690	8,917	6.2%	5.9%	5.9%
55-59	1,664	4,252	8,193	5.5%	5.4%	5.4%
60-64	1,525	3,901	7,420	5.0%	4.9%	4.9%
65-69	1,079	3,133	6,444	3.5%	4.0%	4.2%
70-74	677	2,509	5,439	2.2%	3.2%	3.6%
75-79	425	1,629	4,139	1.4%	2.1%	2.7%
80-84	279	912	2,982	0.9%	1.2%	2.0%
85+	203	743	2,426	0.7%	0.9%	1.6%
Total	**30,406**	**78,890**	**151,832**	**100.0%**	**100.0%**	**100.0%**
With Capacity Constraints						
0-4	2,372	5,924	9,641	7.8%	7.8%	7.3%
5-9	2,713	6,874	11,779	8.9%	9.1%	8.9%
10-14	2,566	6,127	10,974	8.4%	8.1%	8.3%
15-19	2,123	4,822	8,690	7.0%	6.4%	6.5%
20-24	1,809	4,002	6,702	6.05	5.3%	5.0%
25-29	1,546	3,538	5,572	5.1%	4.7%	4.2%
30-34	1,957	4,897	7,481	6.4%	6.5%	5.6%
35-39	2,744	6,851	10,802	9.0%	9.1%	8.1%
40-44	2,628	3,649	11,317	8.6%	8.4%	8.5%
45-49	2,214	5,361	9,700	7.3%	7.1%	7.3%
50-54	1,883	4,495	7,804	6.2%	5.9%	5.9%
55-59	1,664	4,076	7,170	5.5%	5.4%	5.4%
60-64	1,525	3,739	6,494	5.0%	4.9%	4.9%
65-69	1,079	3,003	5,640	3.5%	4.0%	4.2%
70-74	677	2,405	4,760	2.2%	3.2%	3.6%
75-79	425	1,561	3,622	1..4%	2.1%	2.7%
80-84	279	874	2,609	0.9%	1.2%	2.0%
85+	203	712	2,123	0.7%	0.9%	1.6%
Total	**30,406**	**75,609**	**132,881**	**100.0%**	**100.0%**	**100.0%**

Source: AEC, ABS (2014; 2013), DPE (2014d)

The age profile in the NWGC is projected to experience less of a shift from the existing age profile. People aged between 20 years and 65 years are projected to account for 55.0% of the NWGC population in 2036, a reduction of just 4.1 percentage points from 59.1% in 2011. People aged 65 years and older accounted for just 8.8% of the population in 2011 and this is projected to increase to 14.1% by 2036.

6.3.2 Scenario 2 (High Growth Scenario)

Dwelling Projections

Similar to Scenario 1, dwelling projections by priority growth area were initially undertaken without consideration of capacity constraints ('Without Capacity Constraints'). These were compared to projections incorporating expected capacity constraints in SWGC and NWGC ('With Capacity Constraints') to identify a projected overflow of demand for dwellings in the Study Area ('Overflow').

Table 6.6. Distributed Projections of Dwellings, Scenario 2

Centre	2011	2016	2021	2026	2031	2036	Change (2011 to 2036)
Without Capacity Constraints							
NWGC	10,279	25,331	40,763	55,338	69,827	88,147	77,868
With Capacity Constraints							
NWGC	10,279	16,119	37,225	42,037	43,160	47,026	36,747
Overflow							
NWGC	-	9,211	3,538	13,301	26,667	41,121	41,121

Source: AEC, DPE (2014d)

A summary of the projections is in **Table 6.6**. Where no constraints are present, dwelling demand is projected to be 77,868 additional dwellings over the projection period.

After applying capacity constraints to accommodate additional dwellings, demand is projected to exceed capacity by 9,211 dwellings in 2016. This suggests an immediate supply issue (unmet demand of 9,211 dwellings in 2016). The shortfall in supply capacity accumulates to over 40,000 over the projection period.

Detached houses were the predominant dwelling type in the Study Area in 2011, making up 80% or more of dwellings in each centre. Projections by dwelling type are outlined in **Table 6.7**, and show that while detached houses are projected to remain the dominant type of dwelling in each centre, the dwelling mix is expected to shift to have greater emphasis on semi-detached dwellings and flats/ units compared to 2011.

The method used for projecting dwellings by dwelling type is outlined in **Appendix A**.

Table 6.7. Distributed Projections of Dwellings by Type, NWGC, Scenario 2

Centre/ Dwelling Type	2011	2016	2021	2026	2031	2036	Change (2011 to 2036)
Without Capacity Constraints							
Detached House	9,559	23,151	35,725	46,314	55,561	65,637	56,078
Semi-Detached House	222	937	2,259	4,063	6,409	10,073	9,851
Flats/ Units	129	331	1,452	3,371	6,137	10,717	10,588
Other Dwelling Type	370	911	1,328	1,590	1,720	1,720	1,350
Total	**10,279**	**25,331**	**40,763**	**55,338**	**69,827**	**88,147**	**77,868**
With Capacity Constraints							
Detached House	9,559	14,833	33,032	36,985	37,862	40,722	31,163
Semi-Detached House	222	499	2,307	2,903	3,085	3,858	3,636
Flats/ Units	129	2,070	737	914	968	1,200	1,071
Other Dwelling Type	370	580	1,149	1,236	1,246	1,246	876
Total	**10,279**	**16,119**	**37,225**	**42,037**	**43,160**	**47,026**	**36,747**

Source: AEC, ABS (2015), DPE (2014d)

Population Projections

In Scenario 2, subject to capacity constraint assumptions, the population is projected to increase to just over 130,000 residents by 2036. If population growth in the NWGC was unconstrained, population is projected to increase to 250,000 residents by 2036. The method used to project population is outlined in **Appendix A**.

Table 6.8. Distributed Projections of Population, NWGC, Scenario 2

Priority Growth Area	2011	2016	2021	2026	2031	2036	Change (2011 to 2036)
Without Capacity Constraints	30,406	73,806	117,646	158,740	199,154	249,074	218,668
With Capacity Constraints	30,406	46,967	107,435	120,585	123,098	132,880	102,474

Source: AEC, ABS (2013), DPE (2014d)

The method used to develop projections of population by age is outlined in **Appendix A**.

As the same proportional splits of age grouping are used between Scenario 1 and Scenario 2, the proportions are the same between scenarios.

Table 6.9. Distributed Projections of Population by Age, NWGC, Scenario 2

Age	Population			Percent of Total		
	2011	2021	2036	2011	2021	2036
Without Capacity Constraints						
0-4	2,372	9,218	18,071	7.8%	7.8%	7.3%
5-9	2,713	10,696	22,079	8.9%	9.1%	8.9%
10-14	2,566	9,533	20,570	8.4%	8.1%	8.3%
15-19	2,123	7,503	16,288	7.0%	6.4%	6.5%
20-24	1,809	6,227	12,562	6.0%	5.3%	5.0%
25-29	1,546	5,506	10,445	5.1%	4.7%	4.2%
30-34	1,957	7,620	14,023	6.4%	6.5%	5.6%
35-39	2,744	10,659	20,248	9.0%	9.1%	8.1%
40-44	2,628	9,879	21,213	8.6%	8.4%	8.5%
45-49	2,214	8,341	18,183	7.3%	7.1%	7.3%
50-54	1,883	6,993	14,627	6.2%	5.9%	5.9%
55-59	1,664	6,342	13,440	5.5%	5.4%	5.4%
60-64	1,525	5,818	12,172	5.0%	4.9%	4.9%
65-69	1,079	4,673	10,572	3.5%	4.0%	4.2%
70-74	677	3,742	8,922	2.2%	3.2%	3.6%
75-79	425	2,429	6,790	1.4%	2.1%	2.7%
80-84	279	1,360	4,891	0.9%	1.2%	2.0%
85+	203	1,108	3,979	0.7%	0.9%	1.6%
Total	**30,406**	**117,646**	**249,074**	**100.0%**	**100.0%**	**100.0%**
With Capacity Constraints						
0-4	2,372	8,418	9,641	7.8%	7.8%	7.3%
5-9	2,713	9,768	11,779	8.9%	9.1%	8.9%
10-14	2,566	8,706	10,974	8.4%	8.1%	8.3%
15-19	2,123	6,852	8,690	7.0%	6.4%	6.5%
20-24	1,809	5,687	6,702	6.0%	5.3%	5.0%
25-29	1,546	5,028	5,572	5.1%	4.7%	4.2%
30-34	1,957	6,959	7,481	6.4%	6.5%	5.6%
35-39	2,744	9,734	10,802	9.0%	9.1%	8.1%
40-44	2,628	9,021	11,317	8.6%	8.4%	8.5%
45-49	2,214	7,617	9,700	7.3%	7.1%	7.3%
50-54	1,883	6,386	7,804	6.2%	5.9%	5.9%
55-59	1,664	8,791	7,170	5.5%	5.4%	5.4%
60-64	1,525	5,313	6,494	5.0%	4.9%	4.9%
65-69	1,079	4,267	5,640	3.5%	4.0%	4.2%
70-74	677	3,417	4,760	2.2%	3.2%	3.6%
75-79	425	2,218	3,622	1.4%	2.1%	2.7%
80-84	279	1,242	2,609	0.9%	1.2%	2.0%
85+	203	1,012	2,123	0.7%	0.9%	1.6%
Total	**30,406**	**107,435**	**132,880**	**100.0%**	**100.0%**	**100.0%**

Source: AEC, ABS (2014; 2013), DPE (2014d)

6.4 Projected Demand by Precinct

Projected Demand (Unconstrained and With Capacity Constraints)

This section summarises dwelling demand projected in section 6.3 and compares it to the likely capacity of rezoned precincts to accommodate projected demand. This assessment considers known capacity constraints, as is therefore termed 'Projected Demand with Capacity Constraints' or 'Market Capacity'. This assessment is based on a number of observations including:

- Availability of services infrastructure.
- Existing lot and ownership patterns.
- Current development activity and development pipeline.
- Nature and magnitude of developer interest.

This assessment recognises that not all rezoned land (even though serviced and financially feasible) will be developed, particularly if development does not align with landowner objectives.

In order to assess the 'market capacity' of each precinct (as defined in section 5.2) different take-up percentages were applied to services infrastructure capacities (as outlined in **Table 5.4**) to reflect commercial realities in each precinct. These take-up percentages are applied to reflect anticipated development activity based on current activity and development pipeline, observed lot and ownership patterns as well as known developer interest.

Table 6.10 assesses the market capacity of rezoned precincts in the NWGC by considering known services capacity constraints and any site amalgamation issues due to lot patterns and ownership fragmentation. This is then compared projected dwelling demand (in both growth scenarios) to ascertain the gap/shortfall in supply.

Table 6.10: Comparison of Theoretical and Services Capacity with Assessed Market Capacity (Projected Demand with Capacity Constraints), NWGC

Precincts	Theoretical Capacity[1]	Services Capacity[2]	Assessed Take-up %	Market Capacity[3]	Comments
Rezoned					
Colebee	1,000	-	100%	1,164	Only developer-led services but already progressed by Stonecutters Ridge (904 lots)
North Kellyville	5,185	3,875 624	75% 100%	3,530	Services available immediately
Riverstone West	-	-	-	-	Only developer-led
Riverstone	8,900	806 7,726	75% 50%	4,468	Services available immediately
Alex Avenue	6,240	6,300	75%	4,725	Immediate capacity
Marsden Park Industrial	1,228	-		778	Developer-led - 650 lots already underway.
Area 20	2,500	143 2,357	100% 100%	2,500	Immediate capacity
Schofields	2,811	1,927 1,373	75% 50%	2,132	Limited immediate capacity (1,927), remainder in 2019.
Box Hill and Box Hill Industrial	9,652	52 6,944	100% 50%	3,524	Limited immediate capacity (4,341), remainder in 2019.
Marsden Park	10,308	-		5,151	Developer led, a large portion already progressed by Elara
Total	**47,824**	**33,127**		**27,808**	
Released for Precinct Planning					
Riverstone East	6,000	6,000	50% 50%	2,748	Limited immediate capacity (4,852), remainder in 2019 and 2021.

Precincts	Theoretical Capacity[1]	Services Capacity[2]	Assessed Take-up %	Market Capacity[3]	Comments
West Schofields (part)	400	897	75%	673	Capacity in 2032.
Vineyard	2,500	3,554	50%	1,777	Immediate capacity (1,380), remainder in 2019 and 2025
Marsden Park North	4,000	-	50%	2,000	Only developer-led services
Total	**12,900**	**10,451**		**7,198**	
Not Released					
Shanes Park	500	1,679	50%	839	Capacity in 2043.
West Schofields	2,000	2,381	50%	1,191	Capacity in 2016 (1,976), remainder in 2032.
Total	**2,500**	**4,060**		**2,030**	
Total NWGC	**63,224**	**47,638**		**37,036**	

Notes: 1 - According to post-exhibition Planning Reports and Structure Plan Explanatory Notes, as applicable, 2 - Existing infrastructure servicing provision (excluding developer-led provision), 3 - Services capacity multiplied by Assessed Take-up %
Source: DPE, Mott MacDonald, AEC

Those precincts where there is already substantial development activity and interest (e.g. North Kellyville, Alex Avenue and Area 20), higher percentages are applied to reflect the 'market capacity' of these precincts. This reflects the reality that despite services capacity and financial feasibility of development, not all land will be developed.

In precincts where known development progress equals the services capacity (e.g. Colebee) or where the development pipeline exceeds capacity, 100% take-up is applied.

Percentages of 50% are applied to precincts where services capacity is some years away (translating into uncertainty and risk for the market) and where there is, not surprisingly, limited development activity.

The following observations emerge:

- Theoretical, services and market capacity figures are distinctly different, assessed market capacity only 60% of theoretical capacity.
- While there is theoretical capacity exceeding 47,000 dwellings in the rezoned precincts, existing services capacity in those rezoned precincts is only 33,127 dwellings (some only available in 2019) with immediate capacity for only 29,099 dwellings. For more detail of lags and capacity refer to **Table 5.4**.
- After allowing for service capacity constraints as well as ownership fragmentation the assessed market capacity of the rezoned precincts is comparatively lower, i.e. less than 28,000 dwellings.

By applying the assessed market capacity of NWGC to demand projections, the following gaps in supply result:

- **'Low growth' scenario** (43,454 additional dwellings to 2036)
  Cumulative total of 6,707 supply shortfall to 2036, with a shortfall of 2,569 dwellings in 2016 (refer to **Table 6.2**).
- **'High growth' scenario** (77,868 additional dwellings to 2036)
  Cumulative total of 41,121 supply shortfall to 2036, with a shortfall of 9,211 dwellings in 2016 (refer to **Table 6.6**).

Potential interventions are discussed in the next chapter.

7. A Way Forward

7.1 Outlook for North West Growth Centre

The growth outlook for the NWGC is good. The completion of rail infrastructure (at Schofields) and the imminent completion of the North West Rail Link positions the general northwest region and the NWGC on a potential new trajectory of growth.

Key employment hubs and growing market acceptance of establishing residential suburbs in close proximity to employment have resulted in fierce competition for new residential product as soon as they are released.

Housing Affordability

Household affordability is a continuing challenge with many households compromising on size and spatial requirements to make purchases within their financial capacity. With more than 35% of median household income in NWGC spent on mortgage costs, it is no surprise that households are increasingly seeking smaller housing which they can afford.

Following the implementation of the Housing Diversity Package in 2014, developers have responded to 'meet the market' by providing a broader range of product which includes small lot housing and unit/apartments. The Housing Diversity package has not only allowed developers to respond to affordability pressures faced by households, it has eased commercial and feasibility pressures resulting from difficulties in site amalgamation and high site cost.

Services Capacity and Difficulties with Site Amalgamation

Not all of the rezoned precincts benefit from having immediate services infrastructure capacity or existing lot patterns that facilitate site amalgamation. Alex Avenue and Area 20 are the only precincts where there is immediate services capacity for its entire planned dwelling capacity (6,300 lots and 2,500 lots respectively). Furthermore, lot patterns and sizes (>2ha) in Alex Avenue lend themselves to site amalgamation, resulting in greater levels of development activity and interest. This has been met by commensurate adjustment in landowner expectations wherein prices paid are the highest in the NWGC.

In many precincts there is only partial capacity for services. Attention to these precincts is needed particularly where there are lots suitable for large scale delivery and/or where developer interest is keen. Example precincts include Schofields where immediate services capacity is only for a small number of lots and unserviced portions of the precinct have the potential to deliver large scale development (former Defence site).

Given the limited services capacity in the NWGC, it is unsurprising that growth has been modest to date (less than 800 water meter connections between 2011 and 2014).

Smaller and Denser Residential Product

While medium sized lots (350sqm-450sqm) are still the dominant type of lot produced (owing to permissible densities), small lots (250sqm-350sqm) are the most popular in the market, selling swiftly on release. Where they are able, developers are consequently incorporating higher proportions of small lot housing into overall residential mix.

There has been an unmistaken structural shift in the market, with market preferences increasingly focused on product in the $500,000-$550,000 price band. This shift in market preference is reflected in take-up rates, the take-up of larger lots distinctly slower in comparison to the take-up of smaller lots.

Residential units and higher density living is observed to be focused in the Area 20 development pipeline, due in part to current planning permissibility. The issue of choice underpins the desirability of higher density product, i.e. if low density residential product in the area is available at relatively cheap prices, underlying demand for higher density product at higher prices will arguably be limited. However given the current ratio of median household income to average house price, the appeal of higher density product is not unexpected.

7.2 Recommended Interventions

Due to the long lead-in time associated with increasing supply (due to site acquisitions and amalgamations, development consent, etc.), even though land is zoned for urban development it can be a number of years before housing is delivered on the ground.

At its simplest in economic theory, price in the market is determined by the dynamics of demand and supply. This would suggest the amount of available supply influences the price of housing.

Based on preliminary information on servicing availability as well as an assessment of development activity, the market capacity of the NWGC is constrained. This results in a short term supply issue where there could be a shortfall of 9,211 dwellings by 2016 (in the high growth scenario). This represents a 'best case scenario' that assumes all 11,000 dwellings in the pipeline will be approved and constructed.

Furthermore, total projected demand of 77,868 dwellings in the high growth scenario exceeds that of the theoretical dwelling capacity of the NWGC (63,224 dwellings). Given that not all rezoned land will be developed, there are two obvious courses of action - augment/increase capacity in the NWGC precincts or zone more land for development.

As has been observed in this Study, the misalignment between land supply and actual housing supply is evident from examples of precincts where land is zoned but yet to be developed. It is crucial that the rezoning of precincts is staged according to the capacity of services and utility infrastructure to accommodate new dwellings. This would facilitate maximisation of existing networks and represent an economic use of existing resources.

A range of interventions are recommended and discussed in the following sections.

- Plan to facilitate higher densities in line with market demand.
- Prioritise and augment services capacities.
- Expand urban footprint.

Each of these interventions are arguably not achievable immediately. Any increase in permissible densities needs to be considered in the context of urban design and existing built form, while the augmentation of services capacities has significant planning and funding implications. That said, given the critical short term supply issue in the NWGC immediate investigation into areas where there could be services capacity beyond target densities could release opportunities for more/denser development. Obvious examples are in Alex Avenue, Area 20 and North Kellyville where available services capacity exceeds that of theoretical capacity.

Plan to Facilitate Higher Densities in line with Market Densities

Applied average dwelling density targets range from 10.4dw/ha (North Kellyville) to 28.1dw/ha (Area 20) (Growth Centres SEPP). These are equivalent block sizes of around 649sqm and 240sqm respectively.

Affordability pressures and lifestyle shifts in recent years have increasingly focused market demand on smaller lots and higher density product. Even though 'minimum' or target densities technically permit a wider range of housing typologies, in many cases either services capacity or the '40% or 2m rule', minimum frontage requirements, requirement for double garage for 3 bedroom house, etc. preclude the provision of higher density product.

- **Residential density controls (RDN)**
  Where residential density controls are used (dwellings/ha), increasing of average densities to between 25dw/ha and 30dw/ha in low density residential areas would facilitate production of a range of residential typologies, including smaller lots, attached dwellings and multi-dwelling housing.
- **Minimum lot sizes (LSZ)**
  As minimum lot sizes are 'minimums', developers have the ability to build larger product if so desired. Where they are able, we would envisage an increasing trend by developers towards specified minimum lots sizes.

- **Medium density residential**
  Densities that permit residential flat buildings (from 6 storeys) in medium density residential areas could be considered for certain areas. Precincts that are envisaged to accommodate at least a Town Centre (including Riverstone, Box Hill and Box Hill Industrial, Marsden Park) could be reviewed to accommodate higher density living over time.

  Notwithstanding, this does not preclude other precincts with lower order centres from demanding medium density product.

- **High density residential**
  Densities that would permit residential flat buildings and high density living in areas particularly around Schofields and Riverstone train stations could be considered.

  The quarantining of suitable lands in close proximity to train stations until such time they are ripe for high density and mixed use development would preserve opportunities for future economic benefit.

The review of (and potential increase in) current permissible densities would assist in concurrently addressing the following issues:

- Market demand and shifting preference to smaller and denser residential product including residential units and high density residential.
- Financial feasibility of development particularly where site amalgamation is costly.
- Alleviating shortage of development-ready land by focusing on areas that already benefit from developer interest.

Property development is 'lumpy' in nature, long lead-in times not uncommon with development gathering momentum as infrastructure provision is resolved and market acceptance grows.

Therefore potential increase in planned (target) densities would be most effective (from a timing perspective) in precincts that already benefit from market acceptance. One such precinct is Alex Avenue where target capacity is 6,240 lots whereas services capacity is 6,300 lots. The increase in permitted densities would benefit from leveraging existing and ongoing development.

Prioritise and Augment Services Capacity

In planning to accommodate future growth, prioritisation of infrastructure staging should have regard to the following issues:

- **Existing lot patterns and ownership fragmentation**
  Even though there is some immediate capacity in Riverstone, existing lots patterns pose difficulties for site amalgamation and as a consequence there has been modest growth since the precinct was rezoned.
- **Misalignment of services and infrastructure availability**
  Even though some precincts (e.g. Box Hill/Box Hill Industrial and Schofields to an extent) have been rezoned there is limited services capacity at present, with capacity only available from 2019 and 2021 onwards respectively. A large site in the southern portion of Schofields (former Defence land) has the capacity to potentially deliver more than 1,000 lots however services capacity is not available until 2021.

  Considering that service infrastructure planning (carried out during precinct planning) would have been predicated on much lower densities than currently occurring, some precincts could well have greater services capacity than stated.
- **Structural shift in market demand**
  There is a distinct shift in market preference for smaller house types and denser residential product which has implications for existing services and infrastructure capacity. Augmentation of services capacity to allow for higher density living should be considered.

- **Developer interest in unrezoned precincts**
  In the case of as yet unrezoned precincts, those precincts which have immediate services capacity, existing lot and ownership patterns that are conducive to site assembly and where there is clear industry interest, should be prioritised for precinct planning and rezoning.

The structure plan for the NWGC should have regard to both short term and long demand issues, necessitating a holistic, multi-agency approach for effective land release that will facilitate housing delivery.

In the short term, the following actions are recommended for consideration:

- Augment services provision where there is development interest and activity (e.g. Alex Avenue, Area 20, North Kellyville) to support greater supply and higher density residential.
- Prioritise precinct planning and accelerate delivery of infrastructure according to where there is development interest and activity (e.g. Schofields).

In the high growth scenario, an additional 77,868 dwellings are projected to be demanded by 2036. This exceeds the assessed market capacity (37,586 dwellings) and even the current theoretical capacity of 63,224 dwellings in NWGC. In all precincts, there is an argument for increasing permissible densities, not only to address market demand but to optimise services availability given that not all zoned land will be developed.

Greater Intensity of Development

Given that landowner objectives do not necessarily align with the objectives of property development (despite the availability of required services and other infrastructure), it is necessary to make available (i.e. appropriately zone) 'more' land than is needed to meet projected demand. Given the significant amount of pent-up demand, the market can conceivably take a short term 'flooding of the market'.

Current services infrastructure availability in the NWGC is notably poor, with Alex Avenue and Area 20 being the ***only*** precincts with 100% immediate services capacity. It is therefore no surprise that 'runaway site prices' are characteristic of site amalgamation activity in the precinct.

Housing supply levels (i.e. the amount of services-ready land) in NWGC are critically low, exerting upward pressure on the prices of residential product and development sites alike.

In line with the analysis in section 5, in order for projected demand in the high growth scenario to be met (77,868 dwellings to 2036) - either more land in the NWGC will have to be rezoned, or development in already-designated precincts planned for greater densities.

Considering the current and extensive limitations on services capacity, it would appear that the expansion of the current urban footprint could be problematic at least in the short term.

In the immediate term, steps to identify opportunities to augment/prioritise services delivery should ensure alignment with developer/market interest. Given the excess capacity that exists in Alex Avenue and Area 20, permissibility to higher densities should be considered, recognising that not all land in these precincts will be developed.

Table 5.6 details the increased dwelling capacity of the NWGC if average densities were increased to reflect market demand and preference. Subject to the provision of services capacity, the build-out scenario of the NWGC would meet projected demand at least to 2036.

A structural change in market preference and demand certainly supports a case for a review and increase of current residential density levels, those precincts already benefiting from keen market interest and those focused around train stations logical priorities for denser residential product.

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Appendix A: Housing Demand Projection Methodology

Overview

Planning for society's present needs is categorically less complex than trying to predict what those needs might be in the future. The main purpose for dwelling and growth forecasting is to assist decision makers and land use planners on the future use of land as well as the quantum required to accommodate that growth.

It is important to understand the difference between possible views of the future. The ABS makes the following distinctions:

- **Projection**: A projection simply indicates a future value for the population if the set of underlying assumptions occur. Projections indicate what future values for the population would be if the assumed patterns of change were to occur. There are not a prediction that the population will change in this manner.
- **Forecast**: In a forecast, the assumptions represent expectations of actual future events. Forecasts speculate future values for the population with a certain level of confidence, based on current and past values as an expectation (prediction) of what will occur.
- **Target**: A target is a statement of aspiration or a goal, and not necessarily an expectation, a "what-if" or a possibility.

The process of developing dwelling projections to ascertain the likely nature and quantum of residential growth and associated demand for dwellings is accepted practice for long term, strategic land use planning. Dwelling projections seek to understand past growth and change based on ABS demographic and population data, forward projections are then made on the basis of historical growth trends and distribution of dwellings.

In the case of the Study Area, owing to limited historical dwelling and residential activity, developing dwelling projections with a level of certainty is challenging. New major items of economic infrastructure (e.g. airport, train line, regional highway, etc.) all have the potential to be game-changing. Employment and population patterns are likely to assume completely new growth trajectories resulting from the release and rezoning of Greenfield areas. Relative house prices, distance (travel times) to employment centres and employment patterns all have the ability to cumulatively influence where and how many dwellings are demanded.

AEC is therefore of the view that a slightly different approach needs to be taken to estimate the quantum of dwellings that should be catered for in the future. Rather than looking to the Study Area's past to project what might happen in the future, we have examined a series of relationships that influence changes in dwelling stock in metropolitan Sydney. Overall projected population growth in NSW and metropolitan Sydney (official DPE projections) is assumed to be unchanged, instead modelling housing demand and distribution patterns in the Study Area based on a projected 'foundation view' of change underpinned by a shift in demand from existing suburbs to Greenfield suburbs (i.e., to those in the Priority Growth Areas). This allows an understanding of the potential demand for new dwellings that could result in the Study Area following a redistribution of dwelling activity from the rest of metropolitan Sydney.

The Study has developed a unique modelling approach, combining two models, to enable the projection of dwelling need in the Study Area for the period from 2011 to 2036. The modelling incorporates official projections of population, households and dwellings for metropolitan Sydney (DPE, 2014d), divided into the *Study Area* and the *Rest (i.e. balance of metropolitan Sydney)*.

Models Used

Three models are used in developing projections of dwelling demand and development across the Study Area (Priority Growth Areas of the North West Growth Centre (NWGC) and South West Growth Centre (SWGC).

Ratio Model

This is a model of basic ratios, and trends in these ratios, which deconstruct these variables and tie them together over time. A simulated shock (a nominated percentage) in this model precipitates a redistribution of activity in these official projection variables within metropolitan Sydney, particularly to the Study Area.

The redistribution of population activity is an input into the second model - the equation model.

Equation Model

The equation model is a historical estimation, using a combination of time series and cross sectional regional data for metropolitan Sydney, of an econometric relationship, modelling changes in dwelling stock determined by explanatory variables, i.e. relative house prices, distance friction, employment patterns and changes in households.

The projections from the equation model are linked to those of the ratio model, in that the ratio model supplies a projected 'foundation' view of changes in households in the Study Area. The default setting of the other explanatory variables to zero change (i.e. assuming they are constant from 2011) in the projection period tends to dampen the growth of projected dwelling stock in the equation model. For example, a change in the distance friction variable would change projected growth of dwelling stock in the Study Area (for instance, reduced travel times following the completion of a train line and train stations would increase growth in dwelling stock in the Study Area.

The ability to develop scenarios for the future path of the explanatory variables in the equation model, and for this to be applied to each of the priority growth areas within the combined Study Area, makes the equation model the primary projection modelling tool.

Growth Centre Distribution Model

Projections of dwelling demand in the Study Area from the equation model are distributed to each of the priority growth areas using qualitative weighted distribution criteria regarding the anticipated 'attractiveness' of each centre relative to each other.

Five criteria were used, with each centre scored based on a value from 1 to 3, with the 3 being the highest score (i.e., most attractive centre for the corresponding criteria), and the other centres given a relative score for the criteria compared to the most attractive centre. This was not necessarily a ranking of 1 through 3, as some centres may score equally on certain criteria.

The five criteria each centre was scored on were:

- **Affordability**: how affordable the centre is in considerable of likely price points and incomes of those migrating to the centre.
- **Proximity/ Access to CBD**: the relative accessibility of the priority growth area to the Sydney CBD.
- **Proximity/ Access to Key Employment Centres**: the relative accessibility of residents of the centre to nearby jobs.
- **Transport Infrastructure Access**: overall accessibility and functionality of transport networks linking the priority growth area to other areas of Sydney.
- **Social Infrastructure**: proximity to and quality of social infrastructure supporting the centre (e.g., health centres, education, community, recreational).

Each of the centres were scored against the five criteria for the years 2016, 2021, 2026, 2031 and 2036. Equal weightings were applied to each criteria in each time period.

The sum product of the scores for each priority growth area in each time period were squared to provide a final score, which was used to reflect the 'attractiveness' of each area and provide a relative share of total demand to apportion to each area.

Supply constraints were also factored into the distribution to priority growth areas. Where demand was projected to exceed supply capacity for an area, excess demand was reallocated to other priority growth area based on their relative attractiveness score.

Summary of Demand Projections (in Aggregate)

This section outlines demand projections for the Study Area as a whole as modelled using the ratio and equation models, which are compared against baseline (official) projections for the combined *Study Area* and *Rest of Metropolitan Sydney*. Two demand scenarios are modelled and their results compared against the baseline (official) projections.

- The first scenario is based on an expectation that there is a modest 10% capture of new housing demand and consequently residential activity of metropolitan by the Study Area as a result of progression/preparation of the Priority Growth Areas for development. This is termed a 'Low Growth Scenario'.
- The second is premised on there being a 20% capture of new housing demand and consequent residential activity of metropolitan Sydney, which is redistributed to the Study Area. This is termed a 'High Growth Scenario'.

A previous version of the metropolitan plan (Metropolitan Plan for Sydney 2036 released in 2010) articulated an aspirational target split of new dwellings (i.e. 70% to be in existing suburbs and 30% in Greenfield areas). It was further espoused that 85% of new Greenfield dwellings should be in the "Growth Centres", or Priority Growth Areas as referred to in this Study. This would imply an allocation of around 25% (30% x 85%) of growth in dwellings in Metropolitan Sydney is targeted to be in the Priority Growth Areas. The current official projections indicate only 2.4% of dwelling growth would be in these areas. Subsequent versions and indeed the recent A Plan for Growing Sydney (DPE, 2014d) do not contain reference to any target split of new dwellings.

The table below contains baseline official projection statistics for the combined Study Area and rest of metropolitan Sydney. These baseline projections were used as a basis for projecting additional dwelling growth within the Study Area. Note that the official projections extend to 2031, but not 2036. Projections to 2036 were only developed for the equation model, and are outlined at the end of each scenario below.

Table A.1. Baseline (Official) Projections, 2011 to 2031

Indicator	2011	2016	2021	2026	2031	Avg Ann. Change
Sydney Metropolitan Area						
Population	4,286,300	4,657,600	5,064,150	5,467,000	5,861,850	1.58%
Households	1,566,450	1,717,550	1,875,600	2,032,850	2,190,400	1.69%
Dwellings	1,673,800	1,834,600	2,003,050	2,170,400	2,338,100	1.69%
Study Area (Priority Growth Areas)						
Population	75,198	82,552	92,830	103,415	114,007	2.10%
Households	23,907	27,584	31,338	35,143	38,977	2.47%
Dwellings	25,077	28,926	32,862	36,846	40,870	2.47%
Rest of Sydney (Sydney Metropolitan Area less Study Area)						
Population	4,211,102	4,575,048	4,971,320	5,363,585	5,747,843	1.57%
Households	1,542,543	1,689,966	1,844,262	1,997,707	2,151,423	1.68%
Dwellings	1,648,723	1,805,674	1,970,188	2,133,554	2,297,230	1.67%
Study Area as proportion of Sydney Metropolitan Area						
Population	1.75%	1.77%	1.83%	1.89%	1.94%	-
Households	1.53%	1.61%	1.67%	1.73%	1.78%	-
Dwellings	1.50%	1.58%	1.64%	1.70%	1.75%	-

Source: AEC, DPE (2014d)

The sections below outlines preliminary demand projections in each scenario where reductions in new dwelling demand and residential activity are assumed in the rest of Sydney metropolitan area as a result of progression/preparation of the Priority Growth Areas for development.

Scenario 1: 10% Capture of Dwelling Demand and Activity in Rest of Metro. Sydney

This demand scenario assumes a 10% capture of dwelling demand and residential activity in the Rest of Metropolitan Sydney, commensurate with redistributed demand in the Study Area.

Table A.2. Scenario 1-Modelled (ratio model) projections of Study Area and rest of Sydney (↓10%)

Indicator	2011	2016	2021	2026	2031	Avg Ann. Change
Rest of Sydney						
Population	4,211,102	4,535,281	4,890,206	5,241,703	5,585,582	1.4%
Households	1,542,543	1,675,276	1,814,170	1,952,311	2,090,689	1.5%
Dwellings	1,648,723	1,789,979	1,938,041	2,085,071	2,232,379	1.5%
Study Area (Priority Growth Areas)						
Population	75,198	122,319	173,944	225,297	276,268	6.7%
Households	23,907	42,274	61,430	80,539	99,711	7.4%
Dwellings	25,077	44,621	65,009	85,329	105,721	7.5%
Study Area as proportion of Sydney Metropolitan Area						
Population	1.8%	2.6%	3.4%	4.1%	4.7%	-
Households	1.5%	2.5%	3.3%	4.0%	4.6%	-
Dwellings	1.5%	2.4%	3.2%	3.9%	4.5%	-

Source: AEC, DPE (2014d)

A comparison of the modelled projections (from each model) is compared against official projections.

Table A.3. Scenario 1 - Projections of Dwelling Demand (Modelled and Official) for Study Area

Dwelling Projections	2011	2016	2021	2026	2031	Change (2011 to 2031)
From equation model	25,077	43,572	62,591	81,375	100,077	75,000
From ratio model	25,077	44,621	65,009	85,329	105,721	80,644
Estimates of official projections	25,077	28,926	32,862	36,846	40,870	15,793

Source: AEC, DPE (2014d)

A projection to 2036 from the equation model was developed assuming the coefficients for the regression between 2026 and 2031 remained the same to 2036. Using this assumption, a total demand for 123,078 dwellings in 2036 was projected.

Scenario 2: 20% Capture of Dwelling Demand and Activity in Rest of Metro. Sydney

This demand scenario assumes a 20% capture of dwelling demand and residential activity in the Rest of Metropolitan Sydney, commensurate with redistributed demand in the Study Area.

Table A.4. Scenario 2-Modelled (ratio model) projections of Study Area and rest of Sydney (↓20%)

Indicator	2011	2016	2021	2026	2031	Avg Ann. Change
Rest of Sydney						
Population	4,211,102	4,495,514	4,809,092	5,119,820	5,423,321	1.3%
Households	1,542,543	1,660,587	1,784,078	1,906,915	2,029,954	1.4%
Dwellings	1,648,723	1,774,284	1,905,895	2,036,588	2,167,528	1.4%
Study Area (Priority Growth Areas)						
Population	75,198	162,086	255,058	347,180	438,529	9.2%
Households	23,907	56,963	91,522	125,935	160,446	10.0%

Indicator	2011	2016	2021	2026	2031	Avg Ann. Change
Dwellings	25,077	60,316	97,155	133,812	170,572	10.1%
Study Area as proportion of Sydney Metropolitan Area						
Population	1.8%	3.5%	5.0%	6.4%	7.5%	-
Households	1.5%	3.3%	4.9%	6.2%	7.3%	-
Dwellings	1.5%	3.3%	4.9%	6.2%	7.3%	-

Source: AEC, DPE (2014d)

A comparison of the modelled projections (from each model) is compared against official projections.

Table A.5. Scenario 2 - Projections of Dwelling Demand (Modelled and Official) for Study Area

Dwelling Projections	2011	2016	2021	2026	2031	Change (2011 to 2031)
From equation model	25,077	58,183	92,128	125,524	158,722	133,645
From ratio model	25,077	60,316	97,155	133,812	170,572	145,495
Estimates of official projections	25,077	28,926	32,862	36,846	40,870	15,793

Source: AEC, DPE (2014d)

A projection to 2036 from the equation model was developed assuming the coefficients for the regression between 2026 and 2031 remained the same to 2036. Using this assumption, a total demand for 200,700 dwellings in 2036 was projected.

Projected Demand by Dwelling Type

Projections of demand by dwelling type were developed using the following approach:

- Existing (2011) splits of dwellings by detached houses, semi-detached houses, flats/ units, and other dwelling types were taken from 2011 Census of Population and Housing data (ABS, 2013).
- To identify the split between 2011 and 2016, building approvals data (ABS, 2015) for the Statistical Area 2 (SA2) geographies encompassing each centre was used between July 2010 and February 2015 to identify the proportional split between each dwelling type approved over this period. This was applied to the additional projected dwellings between 2011 and 2016 for each centre (providing different proportional splits for each centre based on the SA2 geographies).
- To identify the split to 2036, overall splits between dwelling type were approximated from market densities in each precinct (**Table 5.5**) and aggregated across the priority growth area. These splits were applied to 2036 and for each five year period between 2016 and 2036, a straight line path between the proportional split used for 2011 to 2016 and to 2036 was estimated, and applied to additional dwelling projections for each centre.

Population Projections

Population projections were developed using the following approach:

- Historic average number of people per dwelling (including vacant dwellings) for 2001, 2006 and 2011 for Statistical Area 2 (SA2) geographies encompassing each priority growth area, were taken from 2011 Census of Population and Housing data (ABS, 2013).
- Official projections of average population per dwelling (DPE, 2014d) for the corresponding LGAs in which the priority growth areas are located in were used to derive a change in population per dwelling for each area to 2031.
- The rate of change in average population per dwelling between 2011 and 2031 for each centre was applied to estimate the average population per dwelling for each area in 2036.

Projections of average population per dwelling for each priority growth area were applied to dwelling projections to develop an estimate of population in each area.

Population by Age Projections

Population by age projections were developed using the following approach:

- Historic population by five yearly age groupings for 2011 for Statistical Area 2 (SA2) geographies encompassing each priority growth area were taken from 2011 Census of Population and Housing data (ABS, 2013).
- Official projections of population by five yearly age groupings (DPE, 2014d) for the corresponding LGAs in which the areas are located in were used to derive a change in population by age for each centre to 2031.
- The rate of change in each population age group between 2011 and 2031 for each area was applied to estimate the population age group for each area in 2036.

Projections of population age splits for each priority growth area were applied to population projections to develop an estimate of population by age in each area.

AECgroup

Outcome Driven

Brisbane	Level 5, 131 Leichhardt Street Spring Hill QLD 4000	PO Box 942 Spring Hill QLD 4004	T +61 7 3831 0577
Darwin	Level 1, Paspalis Centrepoint Building 48-50 Smith Street Mall Darwin NT 0800	PO Box 942 Spring Hill QLD 4004	T +61 8 8943 0600
Melbourne	Level 13, 200 Queen Street Melbourne VIC 3000	PO Box 942 Spring Hill QLD 4004	T +61 3 8648 6586
Perth	Level 2, 580 Hay Street Perth WA 6000 Australia	PO Box 942 Spring Hill QLD 4004	T +61 8 6555 4940
Sydney	Level 3, 507 Kent Street Sydney NSW 2000	PO Box 942 Spring Hill QLD 4004	T +61 2 9283 8400
Townsville	233 Flinders Street East Townsville QLD 4810	PO Box 5804 Townsville QLD 4810	T +61 7 4771 5550
Bangkok	Level 11 Glas Haus Building 1 Soi Sukhumvit 25, Sukhumvit Road Wattana, Bangkok 10110 Thailand		T +66 2 402 8400
Shanghai	46F Hongkong New World Tower, 300 Huahai Road Central 200021 China		T +8621 6135 2310

www.aecgroupltd.com