Greater Macarthur Investigation Area

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 (GMIA) Final Draft
Last Saved:	11/9/2015 5:47 PM

Version	Date	Reviewed	Approved
Preliminary Draft	22/05/2015	CL	EC
Final Draft	11/09/2015	CL	EC

Disclaimer:

Whilst all care and diligence have been exercised in the preparation of this report, AEC Group Pty Ltd does not warrant the accuracy of the information contained within and accepts no liability for any loss or damage that may be suffered as a result of reliance on this information, whether or not there has been any error, omission or negligence on the part of AEC Group Pty Ltd or their employees. Any forecasts or projections used in the analysis can be affected by a number of unforeseen variables, and as such no warranty is given that a particular set of results will in fact be achieved.

Table of Contents

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, NSW Department of Planning & Environment (DPE) is undertaking a review of the Growth Centre Structure Plans. The growth centres are now referred to as Priority Growth Areas.

A Plan for Growing Sydney (The Plan) additionally envisages development of a framework to identify and investigate new growth centres. The South MacArthur Investigation Area is identified in The Plan as a potential growth area, known otherwise as the 'Greater Macarthur Investigation Area'.

For the purposes of this Study the North West Growth Centre (NWGC) and South West Growth Centre (SWGC) collectively are termed 'Priority Growth Areas' or 'the Study Area' and the Greater Macarthur Investigation Area (GMIA) is referred to as 'the Investigation 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 the need for GMIA to be designated for Greenfield urban development. In understanding the potential future role for GMIA as a priority growth area, this Study seeks to 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 to 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. This will accordingly be instructive on any potential role for Greater Macarthur Investigation Area (GMIA) as a new greenfield/release area.

1.2 Priority Growth Areas Context

North West Growth Centre

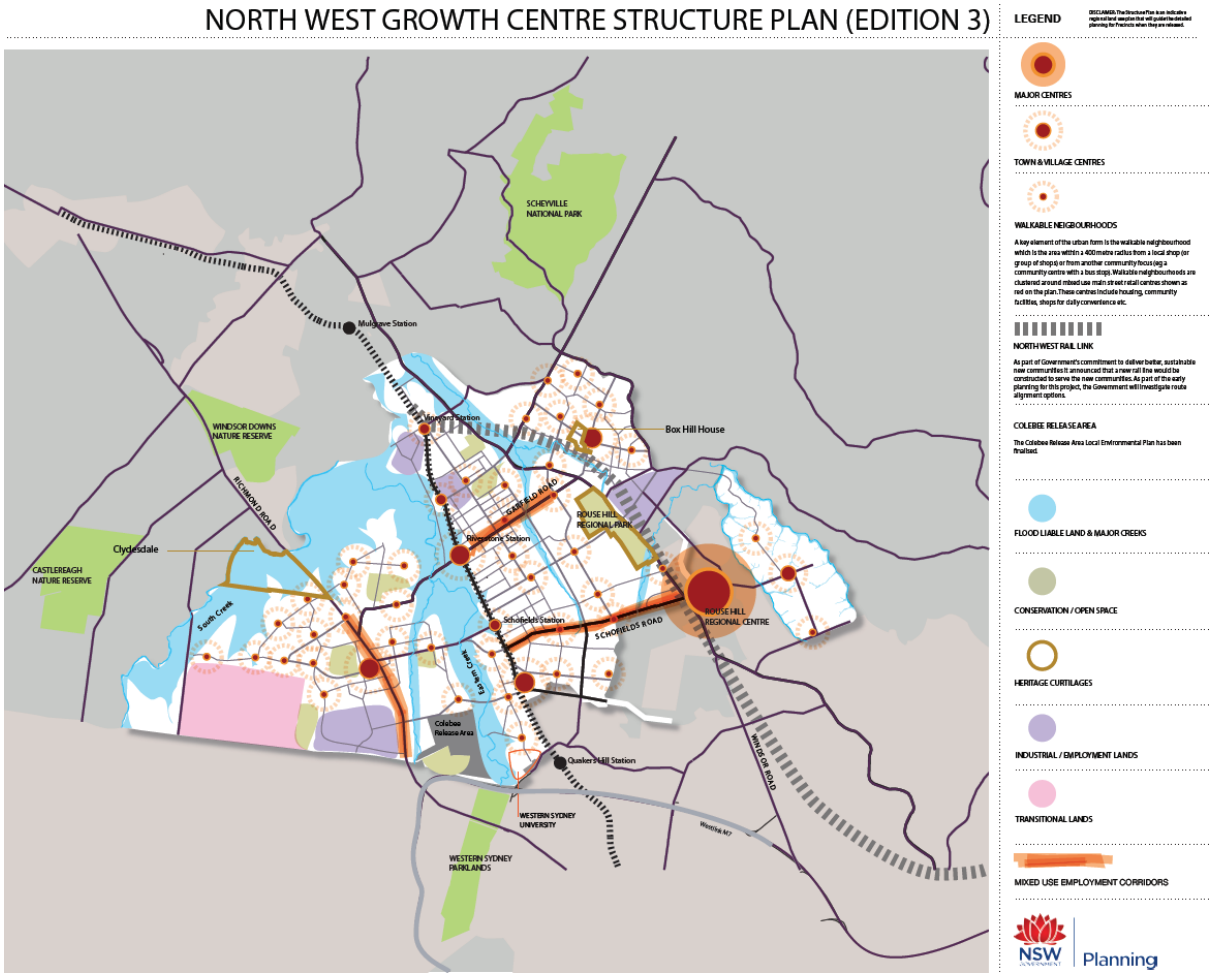
The North West Growth Centre (NWGC) is approximately 10,000ha in size and straddles the local government areas of The Hills Shire, Blacktown and Hawkesbury. There are 16 precincts within the NWGC, some of which have been released and rezoned.

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.

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

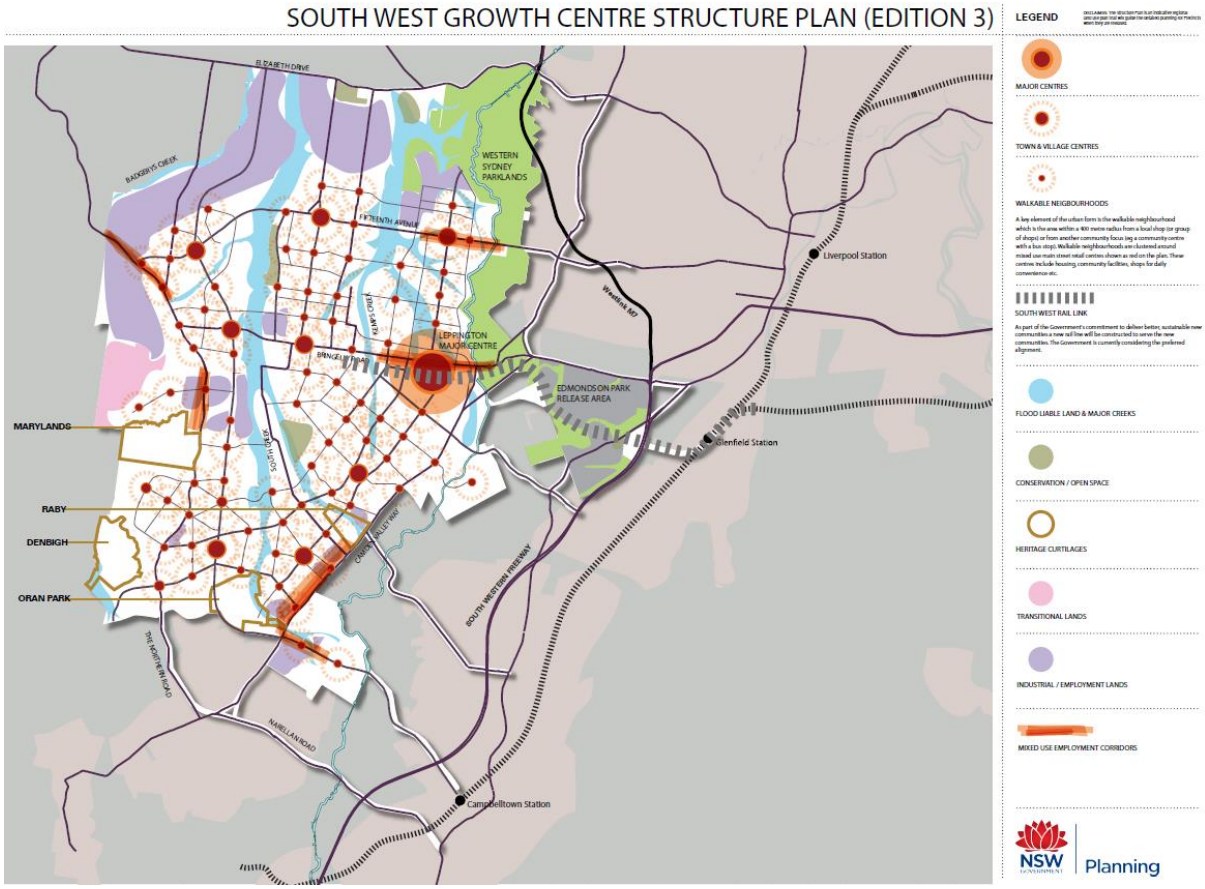
The South West Growth Centre (SWGC) is approximately 17,000ha in size and straddles the local government areas of Liverpool, Camden and Campbelltown. There are 18 precincts within the SWGC, some of which have been released and rezoned.

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 area builds. 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.

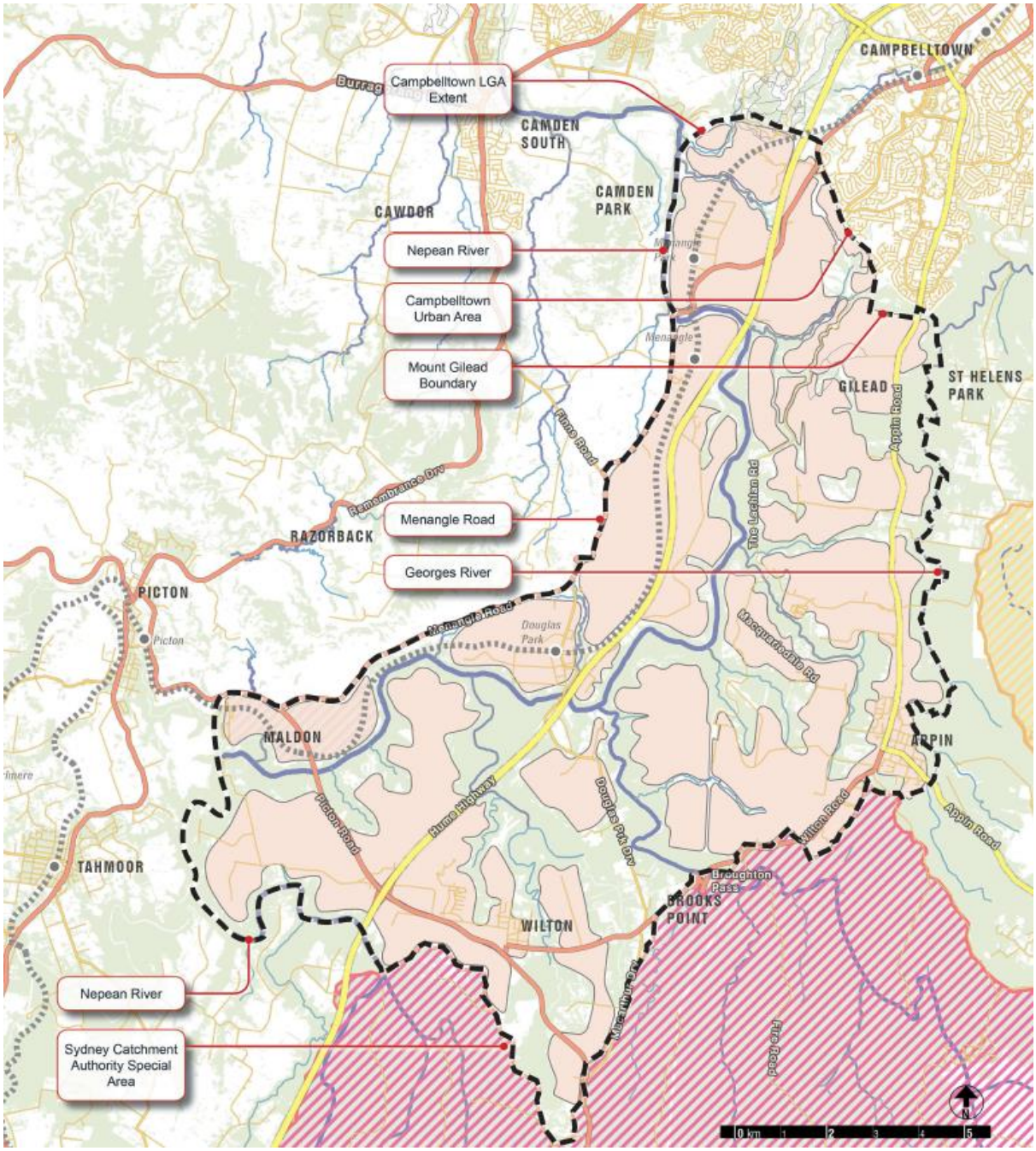
As the priority growth areas further develop and establish themselves as a residential regions of Western Sydney, associated population growth will naturally result in demand for goods and services. This will result in commensurate demand for local employment centres. Local employment growth will accordingly 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 Greater Macarthur Investigation Area

The Greater Macarthur Investigation Area (GMIA) is identified as an investigation area in A Plan for Growing Sydney (referenced as the South Macarthur Investigation Area). The geographical area for this investigation area was not therein defined.

Preliminary analysis by DPE and technical consultants has identified an 'urban capable' boundary for investigation. This 'urban capable' boundary is outlined below. Further work will follow to identify an 'urban suitable' boundary within which urban development could potentially be accommodated.

Figure 1.3: GMIA Urban Capable Boundary



Source: Urbis, EcoLogical, DPE

The Hume Highway bisects the GMIA, connecting it to the Illawarra region in the south and Sydney metropolitan in the north. Appin Road also provides access to GMIA by directly linking to the SWGC via the Turner Road precinct and ultimately connecting with The Northern Road and Camden Valley Way.

The Southern Highlands line linking Campbelltown and Goulburn stops in Menangle, Douglas Park, Picton and Tahmoor which are in the western part (and just outside) of GMIA.

Existing land uses are predominantly rural and agricultural in nature. Several urban development projects are in progress, including Appin Valley and Bingara Gorge. There are a number of rezoning applications for residential land uses (proposing more than 35,000 lots).

1.4 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 they 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).

One of the goals of A Plan for Growing Sydney is to deliver timely and well planned Greenfield precincts and housing, particularly in the North West and South West Growth Centres.

Direction 2.4 states that in consideration of significant Government investment in major infrastructure to support housing growth in the growth centres, Greenfield housing development is envisaged to continue to be primarily focused in the NWGC and SWGC. Investigations are identified to be underway for a potential new growth centre in the Macarthur area and if deemed suitable, a strategic framework is to be established to guide Government's long term investment or coordinate early private investment and enabling infrastructure.

In the spirit of Direction 2.4, this Study considers in the first instance, the capacity of NWGC and SWGC to accommodate projected dwelling growth. Impediment/s in said capacities are identified in ascertaining if the Investigation Area (GMIA) could play a role in accommodating (any) unmet dwelling demand.

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. Additionally the Study will assist DPE in understanding the need to plan for and designate new 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 Priority Growth Areas 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 and if there is a role for the Investigation Area (GMIA) to accommodate future housing demand.

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 greenfield 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.

1.5 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 as well as a separate examination into GMIA, three standalone reports are produced (for NWGC, SWGC and GMIA respectively). All three reports contain references to (where relevant) the overall Study Area and aggregate demand, with specific focus on the specific geographical subject area.

This report focuses on GMIA and its potential role in accommodating population and dwelling growth. In line with the Study methodology outlined in section 1.4, projected dwelling demand is at the outset assumed to be distributed to precincts in the NWGC and SWGC in line with Government prioritisation of Priority Growth Areas. Any 'overflow' (unmet demand) or supply shortfall is thereafter assessed for potential to be accommodated in GMIA.

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 GMIA to understand the characteristics of its residents and how these may have changed over time.

Chapter 4 investigates economic and market trends in GMIA 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 future housing 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 infrastructure and services availability as well as the ability of developers 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. Two growth scenarios are considered.

The capacity of the NWGC and SWGC and how well placed they are to respond to additional housing demand is important as this influences the nature of any potential role for GMIA to accommodate future housing demand.

Chapter 7 recaps historical growth of the Priority Growth Areas and their outlook to accommodate future dwelling growth. Projections of 'overflow demand' (i.e. demand that is unmet in the Priority Growth Areas) in each growth scenario are discussed in the context of various interventions to improve supply capacity in the NWGC and SWGC, including an alternate growth scenario where the urban footprint is expanded to include GMIA.

2. Legislative & Policy Framework

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.

The Plan states that the Government has already committed considerable investment in infrastructure to support housing growth in the Growth Centres. **Greenfield housing development will continue to be primarily focused in the North West Growth Centre and South West Growth Centre.**

The Plan acknowledges 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 Plan also acknowledges that the Government needs to plan for future growth and new areas beyond the North West and South West Growth Centres. The Plan stipulates investigations are underway for a potential new Growth Centre in the Macarthur area.

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.
- **Action 2.4.2: Develop a framework for the identification of New Growth Centres**
  The aim is to identify a framework for new Growth Centres is needed to improve the management of future land release, stimulate competition to keep downward pressure on prices and help prevent speculative investment and land-banking.

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.

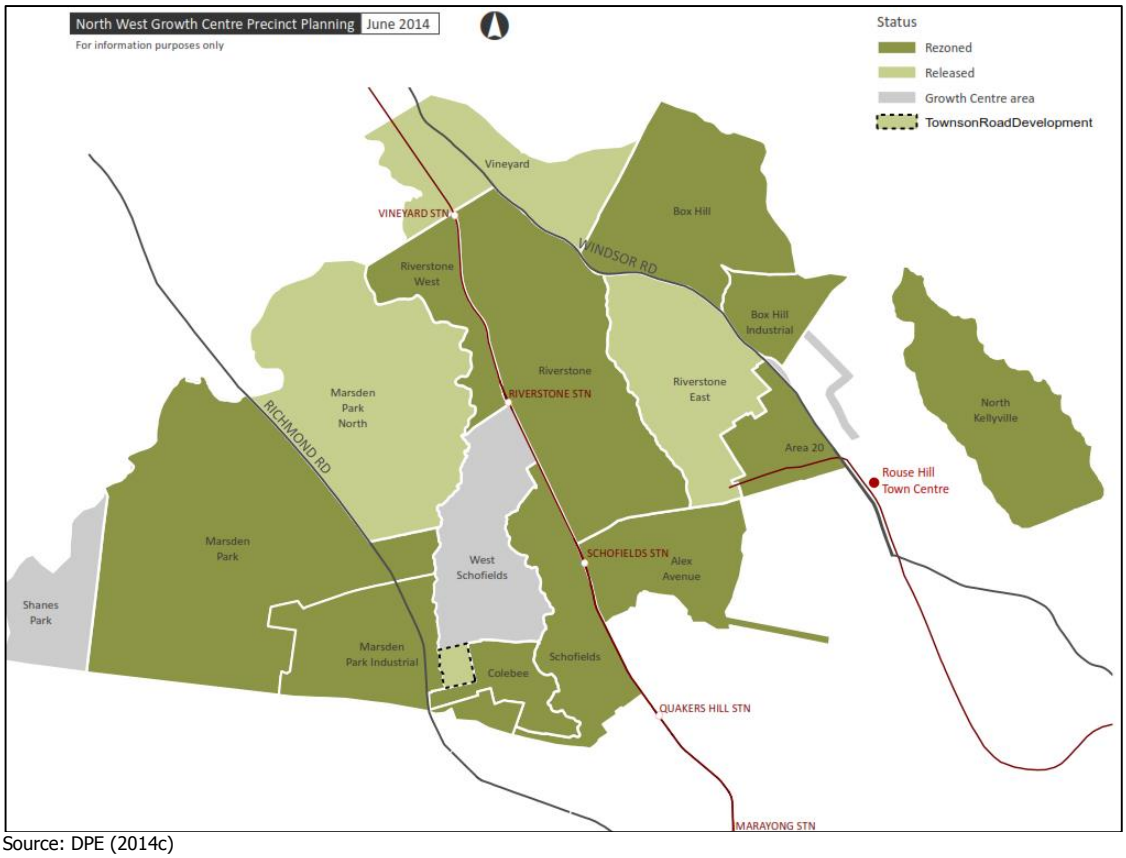
North West Growth Centre

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)

Table 2.2 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).

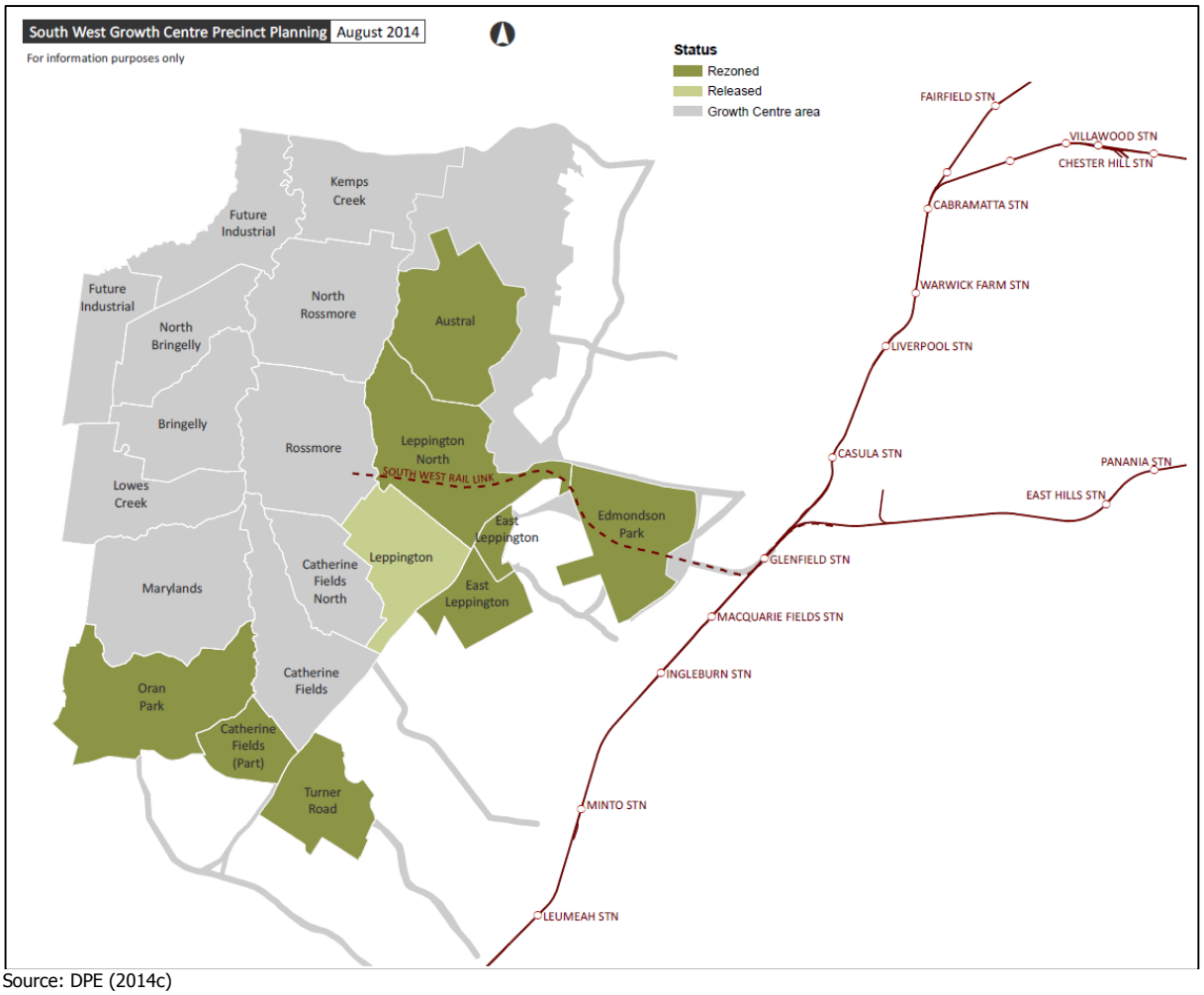
The above analysis suggests that in 2014 almost 2,700 dwellings exist in the rezoned precincts, with a modest number of new dwellings (773) added since 2011, the precincts of Colebee, North Kellyville and Alex Avenue contributing to most of this dwelling production.

South West Growth Centre

The South West Growth Centre (SWGC) comprises 18 precincts, of which seven precincts 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.

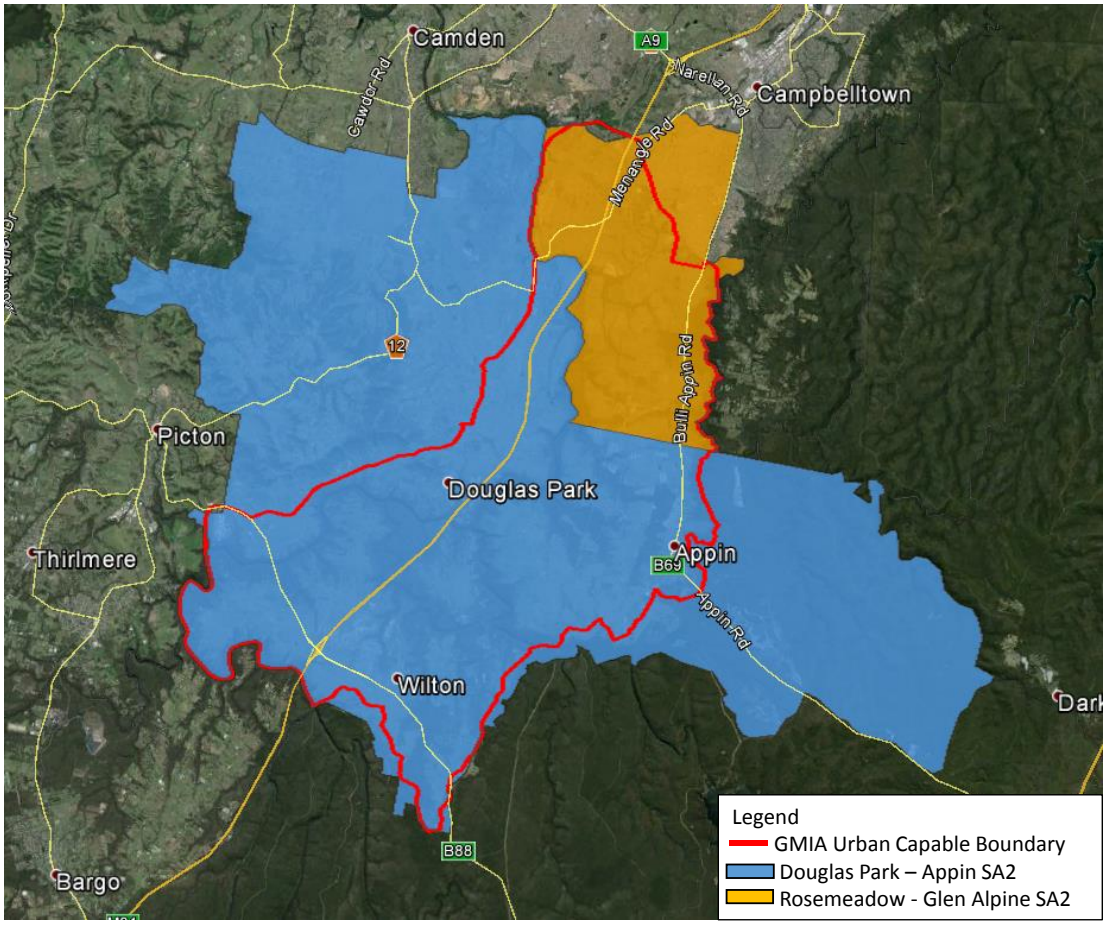
3. Greater Macarthur Investigation Area Today

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 GMIA in comparison to the broader region within the area is located, specifically the LGAs of Campbelltown and Wollondilly. Where relevant, comparisons to the NWGC and SWGC are made.

Figure 3.1: GMIA Analysis Area and 'Urban Capable Boundary'



Source: ABS, Google Earth Pro, AEC

The basis of the demographic analysis is the ABS geographical level known as Statistical Area Level 2 (SA2), which broadly comprises 2-3 suburbs. Whilst the two SA2s chosen (Douglas Park-Appin and Rosemeadow-Glen Alpine) do not directly align with the boundary of the GMIA, they are 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 LGAs which the GMIA straddles. 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.

"GMIA" and "GMIA Analysis Area" are used interchangeably in this chapter.

3.1.1 Historical Population Growth

Overall between 2001 and 2011 the population in the GMIA Analysis Area decreased from 27,331 to 27,065 persons, equating to a decrease of -266 or -1% over the period. Despite the reduction of population in the GMIA, the Campbelltown LGA experienced modest population growth between 2001 and 2011, an increase of just 440 persons (which equates to 0.3% growth).

In contrast Wollondilly LGA experienced much greater population growth, an increase 5,501 persons which is representative of a 14.8% increase.

Table 3.1: Historical Population Growth (2001-2011)

GMIA and LGAs	2001	2006	2011	Change (2001-2011)		
				No.	%	Avg. Annual
Greater Macarthur Investigation Area	27,331	27,258	27,065	-266	-1.0%	-0.1%
Campbelltown LGA	145,860	142,838	146,300	440	0.3%	0.5%
Wollondilly LGA	37,123	40,042	42,624	5,501	14.8%	1.3%

Source: ABS (2012a)

The average age of residents with the GMIA is 35.5 years, slightly higher than the NWGC (which is 35 years) and lower than the SWGC (which is 37.5 years). The GMIA has a relatively even distribution across the age cohorts. The predominant age group is 15-29 years (22.1%), followed by 0-14 years (22.0%) and 45-59 years (21.9%). This trend is mirrored in the Campbelltown and Wollondilly LGAs.

Where Residents Used to Live

In order to understand where current GMIA 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 GMIA 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, 76% of residents who currently reside in the GMIA lived there. A small proportion of current residents who currently reside in GMIA, previously lived in the suburbs of Bradbury, Wedderburn, St Helens Park and Airds (Bradbury-Wedderburn SA2).

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

GMIA Internal Migration (by SA2)					
1 Year Ago			5 Years Ago		
SA2 of Usual Residence	Persons	%	SA2 of Usual Residence	Persons	%
GMIA	23,259	91.5%	GMIA	18,001	76.0%
Bradbury-Wedderburn	233	0.9%	Bradbury-Wedderburn	665	2.8%
Claymore-Eagle Vale-Raby	145	0.6%	Campbelltown-Woodbine	335	1.4%
Leumeah-Minto Heights	136	0.5%	Leumeah-Minto Heights	322	1.4%
Campbelltown-Woodbine	134	0.5%	Claymore-Eagle Vale-Raby	315	1.3%
Mount Annan-Currans Hill	109	0.4%	Mount Annan-Currans Hill	262	1.1%
Picton-Tahmoor-Buxton	83	0.3%	Minto-St Andrews	244	1.0%
Minto-St Andrews	80	0.3%	Macquarie Fields-Glenfield	177	0.7%
Macquarie Fields-Glenfield	62	0.2%	Ingleburn-Denham Court	121	0.5%
Elderslie-Harrington Park	51	0.2%	Camden-Ellis Lane	120	0.5%
Camden-Ellis Lane	50	0.2%	Picton-Tahmoor-Buxton	119	0.5%
Rest of Australia	964	3.8%	Rest of Australia	2,508	10.6%
Overseas	111	0.4%	Overseas	486	2.1%
Not Stated	1,466		Not Stated	1,590	
Not Applicable	337		Not Applicable	1,955	
Total	27,220	100.0%	Total	27,220	100.0%

Source: ABS (2012a)

The table below demonstrates that five years ago, 65.3% and 21.0% of GMIA residents who currently reside in the GMIA lived in the Campbelltown LGA and Wollondilly LGA respectively. This is not surprising as these two LGAs transect the GMIA.

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

GMIA Internal Migration (by LGA)					
1 Year Ago			5 Years Ago		
LGA of Usual Residence	Persons	%	LGA of Usual Residence	Persons	%
Campbelltown	17,988	70.8%	Campbelltown	15,447	65.3%
Wollondilly	6,208	24.4%	Wollondilly	4,967	21.0%
Camden	214	0.8%	Camden	526	2.2%
Liverpool	115	0.5%	Liverpool	393	1.7%
Sutherland Shire	58	0.2%	Bankstown	144	0.6%
Bankstown	57	0.2%	Wollongong	128	0.5%
Wollongong	54	0.2%	Fairfield	105	0.4%
Fairfield	48	0.2%	Blacktown	97	0.4%
Blacktown	45	0.2%	Sutherland Shire	87	0.4%
Penrith	39	0.2%	Penrith	76	0.3%
Rest of Australia	585	2.3%	Rest of Australia	1,703	7.2%
Not stated	1,469		Not stated	1,955	
Not applicable	339		Not applicable	1,591	
Total	27,219	100.0%	Total	27,219	100.0%

Source: ABS (2012a)

GMIA 'Urban Capable Boundary'

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 1,811 dwellings (and more than 5,120 residents) in the area denoted by the 'urban capable boundary' (refer to Figure 1.3).

3.1.2 Household Structure

Table 3.4 demonstrates that overall the GMIA contains a high proportion of family households (80.5%) followed by lone households (13.3%). This demonstrates that families attracted to the GMIA, notably more consistent with the Wollondilly LGA.

Table 3.4: Household Composition (2011)

Household Type	GMIA	Campbelltown LGA	Wollondilly LGA
Family households	80.5%	76.2%	79.8%
Lone person households	13.3%	18.0%	15.6%
Group households	1.9%	2.1%	1.6%
Other households	4.3%	3.7%	2.9%
Total	100.0%	100.0%	100.0%

Source: ABS (2012a)

Table 3.5 indicates the majority of residents in GMIA own their home with a mortgage (48.2%), followed by those who own outright (25.8%) and those who rent (25.1%). Between 2001 and 2011 the proportion of those who own their own home has decreased marginally (from 27.6% to 25.8%).

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

Household Ownership	2001	2006	2011	Change (2001-2011)	
				No.	%
Owned outright	2,267	1,996	2,299	32	1.4%
Owned with a mortgage	3,745	4,315	4,166	421	11.2%
Rented	2,113	2,247	2,166	53	2.5%
Other tenure type	98	29	85	-13	-13.3%

Household Ownership	2001	2006	2011	Change (2001-2011)	
				No.	%
Total	8,223	8,588	8,647	424	5.2%

Source: ABS (2012a)

Table 3.6 below indicates the proportion of household income utilised for mortgage repayments or rent across the GMIA. With more than 32% 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)

	GMIA	Campbelltown LGA	Wollondilly LGA
Median weekly household income	1,527	1,722	1,248
Median weekly mortgage repayment	496	542	450
Median weekly rent	260	360	260
% of household income spent on mortgage	32.5%	31.5%	36.1%
% of household income spent on rent	17.0%	20.9%	20.8%

Source: ABS (2012a)

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

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

	GMIA	NWGC	SWGC	Greater Sydney
Median weekly household income	1,527	1,724	1,310	1,444
Median weekly mortgage repayment	496	607	566	542
Median weekly rent	260	400	315	355
% of household income spent on mortgage	32.5%	35.2%	43.2%	37.5%
% of household income spent on rent	17.0%	23.2%	24.1%	24.6%

Source: ABS (2012a)

While mortgage costs as a proportion of household incomes are high across the analysis regions, rental costs as a proportion of household incomes are notably lower (17%) as a proportion in GMIA compared to the comparison regions (23%-25%).

3.1.3 Dwelling Structure

Table 3.8 demonstrates the majority of houses in the GMIA are separate houses (90%), with small proportions of semi-detached (8%) houses and apartments (2%).

Table 3.8: Dwelling Structure (2001-2011)

Dwelling Type	2001		2006		2011		Change (2001-2011)	
	No.	%	No.	%	No.	%	No.	%
Separate house	7,219	87.9	7,460	86.9	7,768	89.8	549.8	2.1
Semi-detached, row or terrace house, townhouse	913	11.1	946	11.0	686	7.9	-227.7	-3.2
Flat, unit or apartment	64	0.8	150	1.7	170	2.0	105.9	1.2
Other dwelling	12	0.1	30	0.3	21	0.2	9.0	0.1
Total	**8,208**	**100.0**	**8,586**	**100.0**	**8,645**	**100.0**	**437.0**	5.3

Source: ABS (2012a)

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

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

Dwelling Type	GMIA		NWGC		SWGC	
	No.	%	No.	%	No.	%
Separate house	7,768	89.8	8,678	93.0	4,723	94.6
Semi-detached, row or terrace house, townhouse	686	7.9	201	2.2	120	2.4

Dwelling Type	GMIA		NWGC		SWGC	
	No.	%	No.	%	No.	%
Flat, unit or apartment	170	2.0	117	1.3	29	0.6
Other dwelling	21	0.2	336	3.6	120	2.4
Total	**8,645**	**100.0**	**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 broader Outer South West region is declining (albeit gradually) as a proportion of total new dwellings.

Table 3.10: Building Approvals, South West 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								
South West	1,216	66%	290	16%	332	18%	1,838	100%
Outer South West	1,094	76%	241	17%	97	7%	1,432	100%
2011-2012								
South West	1,053	74%	244	5%	33	21%	1,330	100%
Outer South West	1,380	79%	87	18%	398	2%	1,865	100%
2012-2013								
South West	2,084	85%	271	11%	87	4%	2,442	100%
Outer South West	1,185	68%	428	24%	138	8%	1,751	100%
2013-2014								
South West	2,376	65%	184	5%	1,088	30%	3,648	100%
Outer South West	1,619	79%	121	6%	301	15%	2,041	100%
2014-2015 (up to February)								
South West	2,033	89%	153	7%	110	5%	2,296	100%
Outer South West	1,261	71%	209	12%	295	17%	1,765	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. In the Outer South West SA4 a gradual increase in flays/units approved is observed.

Within a 4-year period, separate houses can be observed to be declining (albeit marginally) as a proportion of total dwellings approved, particularly in the Outer South West 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 GMIA (dominant age cohorts of 15-29 and 0-14 years), consistent with the broader LGAs.
- Large proportions of GMIA residents have lived in the general vicinity, notably the LGAs of Campbelltown and Wollondilly.
- Households types are dominated by families (around 80%), consistent with the LGAs.
- The rate of household ownership and houses owned outright was fallen marginally from 27.6% in 2001 to just under 25.8% in 2011. In contrast, the proportion of homes owned with a mortgage has risen over the same period, around 45% in 2001 to 48% in 2011.
- Housing costs are more than 32%, indicating little unexhausted capacity for households to pay higher prices. The proportion of household income spent of housing costs is even higher in the Wollondilly LGA, a function of the lower household income 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 GMIA 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 GMIA are clerical and administrative workers (17.2%), technicians and trade workers (16.3%) and professionals (15.0%).

Table 3.11: Employment by Occupation (2011)

Occupation	GMIA	Campbelltown LGA	Wollondilly LGA
Professionals	17.2%	18.5%	15.8%
Clerical and administrative workers	16.3%	15.1%	18.6%
Managers	15.0%	14.6%	15.5%
Technicians and trades workers	11.2%	8.7%	12.4%
Sales workers	10.4%	11.2%	9.8%
Labourers	10.2%	10.5%	9.4%
Community and personal service workers	10.1%	11.5%	10.0%
Machinery operators and drivers	9.6%	9.9%	8.4%
Total	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 GMIA are: agriculture, forestry and fishing (13.1%), mining (11.2%) and manufacturing (10.6%). These top three industries employment are also observed in both the SWGC and NWGC.

Table 3.12: Employment by Industry (2011)

Industry	GMIA	Campbelltown LGA	Wollondilly LGA
Agriculture, forestry and fishing	13.1%	14.4%	12.8%
Mining	11.2%	11.1%	10.1%
Manufacturing	10.6%	11.1%	10.2%
Electricity, gas, water and waste services	8.9%	7.1%	12.2%
Construction	8.1%	7.0%	8.4%
Wholesale trade	7.6%	8.7%	6.6%
Retail trade	6.2%	6.6%	5.8%
Accommodation and food services	6.2%	6.1%	4.8%
Transport, postal and warehousing	4.7%	4.6%	4.8%
Information media and telecommunications	4.4%	5.3%	4.4%
Financial and insurance services	4.1%	3.9%	4.5%
Rental, hiring and real estate services	3.9%	4.6%	2.4%
Professional, scientific and technical services	3.3%	3.6%	2.5%
Administrative and support services	1.5%	1.6%	0.8%
Public administration and safety	1.5%	1.4%	1.8%

Industry	GMIA	Campbelltown LGA	Wollondilly LGA
Education and training	1.4%	1.2%	1.4%
Health care and social assistance	1.2%	1.2%	1.7%
Arts and recreation services	1.0%	0.3%	2.5%
Other services	0.9%	0.2%	2.2%
Total	**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 GMIA in the context of the LGAs of Campbelltown and Wollondilly.

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 GMIA straddles the LGAs of Wollondilly and Campbelltown. The majority of the GMIA falls within the Wollondilly LGA. Self-sufficiency rates (as an aggregate of the two LGAs which it straddles) are in the order of 53.4%, described as follows:

Table 3.13: Self-Sufficiency Rates

	Labour Force	Employment (PoW)	Self-Sufficiency
Campbelltown LGA	70,235	40,093	57.1%
Wollondilly LGA	22,227	9,259	41.7%
Aggregate of 2 LGAs (of which GMIA is part)	92,462	49,352	53.4%

Source: ABS (2012)

Table 3.14: Self-Containment Rates

	Live and Work in LGA	Employed (PoUR)	Self-Containment
Campbelltown LGA	23,156	65,053	35.6%
Wollondilly LGA	6,578	21,291	30.9%
Aggregate of 2 LGAs (of which GMIA is part)	33,176	86,344	38.4%

Source: ABS (2012)

Notwithstanding the relatively modest self-sufficiency rates, self-containment rates are even lower, with just over 38% of GMIA residents working in either Campbelltown or Wollondilly LGAs.

In comparison to the NWGC and SWGC, self-sufficiency and self-containment rates are detailed in **Table 3.15**.

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

	Self-Sufficiency	Self-Containment
GMIA (aggregate of LGAs)		
Campbelltown LGA	57.1%	35.6%
Wollondilly LGA	41.7%	30.9%
Aggregate of 2 LGAs (of which GMIA is part)	53.4%	38.4%
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%

	Self-Sufficiency	Self-Containment
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:

- The top three industries of resident employment in the GMIA are: agriculture, forestry and fishing (13.1%), mining (11.2%) and manufacturing (10.6%). 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 GMIA LGA range between 41.7% and 57.1%, with an aggregate self-sufficiency rate at around 53.4%.
- Despite self-sufficiency rates around 53%, the aggregate of the LGAs (of which the GMIA is a part of) have a lower self-containment rate with 38.4% of local residents working in either the Wollondilly or Campbelltown 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.

3.3.1 Where Residents Work

The top five SA2 destinations SA2 residents travel to work are: Campbelltown-Woodbine, Rosemeadow-Glen Alpine, Douglas Park-Appin, Sydney-Haymarket and Ingleburn-Denham Court.

The analysis demonstrates the majority of residents work locally (29.2% in Campbelltown LGA, 7% in Wollondilly LGA and 6% in Camden LGA).

Table 3.16: Journey to Work, Douglas Park-Appin and Rosemeadow-Glen Alpine SA2

Destination SA2	Destination LGA	Major Employment Areas	No. of Employed Residents	% of Employed Residents
Campbelltown-Woodbine	Campbelltown	Campbelltown CBD, University of Western Sydney (Campbelltown Campus) and cluster of industrial uses along Blaxland Road	2,024	15.8%
Rosemeadow-Glen Alpine	Campbelltown	Macarthur Square Shopping Centre, Campbelltown Hospital, John Therry Catholic High School, Rosemeadow Public School, Ambarvale High School, Broughton Anglican College	859	6.7%
Douglas Park-Appin	Wollondilly	Boral Concrete Works (Maldon), Wollondilly Abattoir, Ingham Poultry Farm (Apin)	733	5.7%
Sydney-Haymarket-The Rocks	Sydney	Sydney CBD	621	4.9%
Ingleburn-Denham Court	Campbelltown	Large cluster of industrial uses along Williamson Road, Ingleburn. Some of the uses include: Storage King Ingleburn, Sonoco Consumer Packaging etc.	496	3.9%
Liverpool-Warwick Farm	Liverpool	Liverpool CBD; Sydney Southwest Private Hospital; Liverpool Hospital; industrial cluster along Cumberland Highway; Warwick Farm including: Office Works and auto repair services.	406	3.2%

Destination SA2	Destination LGA	Major Employment Areas	No. of Employed Residents	% of Employed Residents
Minto-St Andrews	Campbelltown		353	2.8%
Mount Annan-Currans Hill	Camden		321	2.5%
Mount Annan-Currans Hill	Camden		189	1.5%
Picton-Tahmoor-Buxton	Wollondilly		165	1.3%
Chipping Norton-Moorebank	Liverpool		159	1.2%
Parramatta-Rosehill	Parramatta		154	1.2%
Camden-Ellis Lane	Camden		144	1.1%
Elderslie-Harrington Park	Camden		111	0.9%
Elsewhere in NSW	-		5,488	42.9%
No fixed work address (GMA)	No fixed work address (GMA)		570	4.5%
Total			12,792	100.0%

Source: BTS (2014)

3.3.2 How Residents Travel To Work

The table below show the five top methods by which GMIA Analysis Area SA2 residents travel to work are: car (as driver), train and car (as passenger). In the interest of contextual comparison, SA2 areas for the NWGC and SWGC are also detailed.

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

Method of Travel to Work	GMIA		Priority Growth Areas	
	No. of Employed Residents	% of Employed Residents	NWGC	SWGC
Car as driver	9,247	72.3%	73.0%	67.9%
Train	1,462	11.4%	5.4%	3.9%
Car as passenger	845	6.6%	5.0%	5.1%
Worked at home	469	3.7%	6.3%	11.1%
Truck	303	2.4%	2.6%	7.4%
Walked only	169	1.3%	1.8%	2.8%
Bus	148	1.2%	4.5%	0.6%
Other mode	51	0.4%	0.8%	0.8%
Motorbike	50	0.4%	0.4%	0.4%
Other Method of Travel	20	0.2%	0.2%	0.0%
Taxi	15	0.1%	n/a	n/a
Tram	3	0.0%	n/a	n/a
Total	12,782	100.0%	100.0%	100.0%

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

Overwhelmingly, residents in the GMIA drive to work (more than 70%) with train and as a passenger in a car the next mode of travel (11.4% and 6.6% respectively). In comparison with the Priority Growth Areas:

- Train travel in GMIA is notably higher as a proportion (11.4%) compared to the NWGC and SWGC (5.4% and 3.9% respectively).
- Truck as a method of travel is notably higher in the SWGC (7.4%) compared to the other areas where it is less than 3%.
- Bus as a travel method is most highly represented in the NWGC (4.5%) compared to GMIA and SWGC (1.2% and 0.6% respectively).

3.4 Implications for Housing Demand

Key factors that influence GMIA 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 gradually changing. An increasing proportion by units/flats and apartments is observed and this is particularly notable around train stations and major transport nodes.
- A high proportion of residents working in the local South West region (>40%) - either in the Campbelltown, Wollondilly, Liverpool or Camden LGAs. A high proportion of residents (>70%) drive to work.
- Prevailing housing (mortgage) costs are at the upper end of affordability tolerance (circa 33%) indicating a third of household income is spent on mortgage cost and therefore there is little unexhausted household 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 shift in residential typologies away from separate houses to smaller and denser forms of dwellings. This shift in residential typology in GMIA is however less distinct and rapid in comparison to that which is occurring in the NWGC and SWGC.

4. Economic and Market Context

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).

Greater Macarthur Investigation Area

More specific to GMIA, housing affordability is a key driver underpinning its desirability with purchasers able to afford larger accommodation at current price levels. Market analysis undertaken suggests that purchasers in GMIA are generally those who have larger space requirements and who seek housing that provides 'more bang for buck'.

There are two major developments presently ongoing in GMIA - Appin Valley Estate and Bingara Gorge, with the cumulative capacity for nearly 1,500 lots.

Anecdotal evidence suggests that many of those purchasing in GMIA are families already living in Western Sydney (e.g. Campbelltown and Liverpool), Sutherland Shire and the South Coast where prices of 3-4 bedroom homes are beyond their financial capability. It is in the GMIA that many of these purchasers are able to find accommodation that meets their space and financial requirements. Those relocating from the Sutherland Shire and South Coast are also attracted to the GMIA due to its close proximity to the beaches with relatively good access to the Sydney's motorways (i.e. M7 Motorway).

Purchaser interest and demand in GMIA is reportedly dominated by owner occupiers and less by investors unlike in the NWGC and SWGC. Buyers typically look to purchase what they can afford, potentially compromising on requirements such as size, location and amenity. That said, at current price levels in GMIA buyers find themselves having to compromise less on space requirements.

Keen market conditions have led to commensurate developer interest and activity to assemble blocks and advance rezoning proposals. There are a number of planning proposals (at various stages) to rezone land within GMIA for urban development. Cumulatively, these planning proposals have the potential to accommodate more than 35,000 new dwellings.

4.2 Development Activity

Current residential development in the GMIA is dominated by Appin Valley (Walker Corporation) and Bingara Gorge (Lend Lease). Development interest is observed to be gathering momentum as a range of planning proposals for rezoning are progressed.

4.2.1 Development Pipeline

The residential subdivision projects ongoing in the GMIA (Bingara Gorge and Appin Valley) are in progress at various stages of delivery (from subdivision application to construction). Furthermore **Table 4.1** indicates that more than 35,000 potential dwellings are proposed in various rezoning proposals.

Table 4.1: Residential Planning Proposals (GMIA)

Development/Address	Suburb	Status	Potential Residential Lots
Mount Gilead	Gilead	Gateway determination	1,500
Menangle Park Cummins Road and Menangle Road	Menangle Park	Gateway determination	3,400
Menangle Village Extension Lot 201 Station Street	Menangle	Gateway determination	350
12 Bulli-Appin Road	Appin	Gateway determination	33
41 Appin Road, 50, 55 Macquariedale Road	Appin	Gateway determination	340
Brooks Point	Appin	Submission	Not stated
West Appin	Appin	Preliminary investigation	15,500-18,000
Wilton Junction New Town	Wilton	Submission	12,000

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

Development take-up is understood to be strong, with 336 lots in Appin Valley selling in a 12-18 month period reflecting an annual take-up of 200-300 lots. Rates of sale are expected to be higher in larger developments and where sales occur on several fronts. This strong annual take-up is indicative of the underlying strength of the market in GMIA.

There is moderate sales activity of large rural sites (>40ha) within the GMIA at prices ranging from $50,000/ha to $100,000/ha.

4.2.2 Market Activity

Appin Valley

Appin Valley Estate (by Walker Corporation) accommodates 336 lots ranging from 450sqm to 1,134sqm, and sold out in 12-18 months, reflective of a strong annual take-up of 200-300 lots. The most popular lot size in this estate is understood to be 700sqm priced at circa $280,000, which is comparably priced to some 400sqm lots in the SWGC. Notably in the GMIA market smaller lot sizes have not been as popular as the area typically appeals to those buyers in search of larger lots at price levels they can afford. Larger blocks (circa 700sqm) dominate lot production and represent around 70% of overall lots while smaller blocks (400-450sqm) represent about 30% of overall lots.

The range of lot sizes and price points from the Appin Valley latest release are $230,000 (400sqm), $280,000 (700sqm) and upwards of $299,000 (>800sqm). It is understood that since the first release of lots, prices have increased by approximately 12%, wherein 400sqm that currently sell for $230,000 were released in Stage 1 at $205,000. The 700sqm lots have experienced the same proportional increase, originally selling for $245,000 in the first release and now selling for $280,000.

Typical purchasers are not uncommonly first home buyers (including families relocating from areas such as Campbelltown as well as the South Coast) and investors. Anecdotal evidence suggests that approximately 80% of purchasers are owner occupiers. These buyers are attracted to the estate as the lots are affordable and in close proximity to beaches and the M7 Motorway. The majority of residents drive to work and typically work in the general region, in Campbelltown and Liverpool.

Bingara Gorge

Bingara Gorge (by Lend Lease) is another ongoing development in the GMIA. The estate contains approximately 1,100 lots which range from 400sqm-1,000sqm, the most popular lot sizes are those ranging from 600sqm-700sqm. It is understood that enquiries for lots over 1,000sqm is frequent however the estate does not provide for lots of this size. Nonetheless, it is indicative of market demand for large lots.

Bingara Gorge is marketed as a 'community development' focused around a golf course with higher sale prices commensurate with the lifestyle offer. The range of lot sizes and price points from Bingara Gorge the latest release are: $350,000 (400sqm) and $400,000-$500,000 (600sqm-700sqm). Many purchasers are understood to be families currently residing in the Sutherland Shire, there are also some from Sydney. They are attracted to the estate due to the availability of large lots at prices they can afford as well as its close proximity to beaches.

The Wilton Primary School in Bingara Gorge opened in 2011 and additionally making the development appealing to young families. The construction of a golf course and future planned village centre also cumulatively contribute to the appeal of Bingara Gorge.

4.2.3 Summary of Findings

There is very limited development in the pipeline the GMIA, reflective of the fact majority of the area is not zoned for urban development.

More than 35,000 dwellings are proposed to be developed over the next 25 years in a series of planning proposals. West Appin and Wilton Junction dominate these planning proposals with the potential cumulative capacity to accommodate 30,000 dwellings.

While market and development activity is modest by comparison to NWGC and SWGC, current development is met with keen market interest and acceptance. The prices at which developers are able to assemble sites underlies comparatively cheaper product pricing.

The profile of market activity in GMIA is distinct from those of the NWGC and SWGC where housing typologies are increasingly focused on smaller lot sizes. The profile of market demand in GMIA is reminiscent of the NWGC and SWGC as recent as 5-6 years ago with lots sized 600sqm-700sqm the most popular among purchasers. With vacant blocks priced at $300,000-$400,000 purchasers are able to procure a fairly sizable home within a budget of $550,000-$700,000.

4.3 Implications for Housing Demand

Market analysis reveals that current residential product in GMIA (albeit limited in quantum) offers an attractive value proposition particularly to those households priced out of the SWGC and South Coast markets and to those households not willing to compromise on space requirements.

Demand for larger lots (>600sqm) dominates the current market landscape in GMIA with larger residential types the most sought after. Medium sized lots (400sqm-500sqm) are also demanded however to a lesser degree with small lots (<300sqm) virtually non-existent. Price points are expected to be in the region of:

- **Large lots** (600sqm-800sqm)
  Prices in GMIA are likely to be circa $300,000-$400,000, comparatively lower than SWGC and NWGC where they are $600,000-$800,000. These are presently the most popular block type in GMIA.
- **Medium lots** (400sqm-500sqm)
  Prices in GMIA range from $250,000-$300,000 and are also comparatively lower than SWGC and NWGC where they are $450,000-$600,000.
- **Small lots** (250sqm-350sqm)
  These are not presently sought after in GMIA, understandably given the relatively good value-for-money proposition offered by medium and large lots.

  Notwithstanding current focus on lots in excess of 400sqm, there is still a role for smaller lots (250sqm-300sqm) to cater to small households and those who can less

afford larger homes. Prices points of $200,000-$300,000 could allow purchasers to acquire a home for under $500,000.

The observed market resistance to smaller product is reminiscent of market conditions in the Priority Growth Areas as recent as 5-6 years ago. Those market attitudes and preferences historically witnessed in the NWGC and SWGC have shifted substantially in favour of small lot housing and apartment living amid a growing housing affordability problem and changing lifestyle preferences.

Despite the distance of GMIA from the Sydney CBD, it particularly appeals to those who work in the South West subregion, i.e. Campbelltown, Camden, Wollondilly LGAs and to a lesser extent Liverpool LGA.

Multi-Unit Living

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.

Still very much a detached/separate house market, market resistance to lots smaller than 400sqm is observed in GMIA. Demand and marketability of residential units is related to the issue of choice, i.e. the price and availability of housing options in the vicinity. At present alternate housing options (e.g. detached dwellings) are available at a comparatively high value-for-money proposition and as a consequence market appetite for higher density residential product is marginal. Accordingly, in the immediate term apartment/unit developments are not expected to occur on a large scale.

5. Dwelling Distribution Analysis

This chapter examines how supply in the Priority Growth Areas 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.

One of the goals of A Plan for Growing Sydney is to deliver timely and well planned Greenfield precincts and housing, particularly in the North West and South West Growth Centres.

Direction 2.4 states that in consideration of significant Government investment in major infrastructure to support housing growth in the growth centres, Greenfield housing development is envisaged to continue to be primarily focused in the NWGC and SWGC.

In the interest of alignment with Direction 2.4, this Study considers in the first instance, the capacity of NWGC and SWGC to accommodate projected dwelling growth. Any identified impediment in said capacities is identified in ascertaining if the Investigation Area (GMIA) could play a role in accommodating (any) unmet dwelling demand.

This Chapter considers the supply capacity of the Priority Growth Areas in meeting housing demand. *Theoretical capacity*, *infrastructure capacity* and *market capacity* are different concepts and cumulatively influence an area's ability to meet dwelling demand.

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.

North West Growth Centre

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* (2011-14)

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

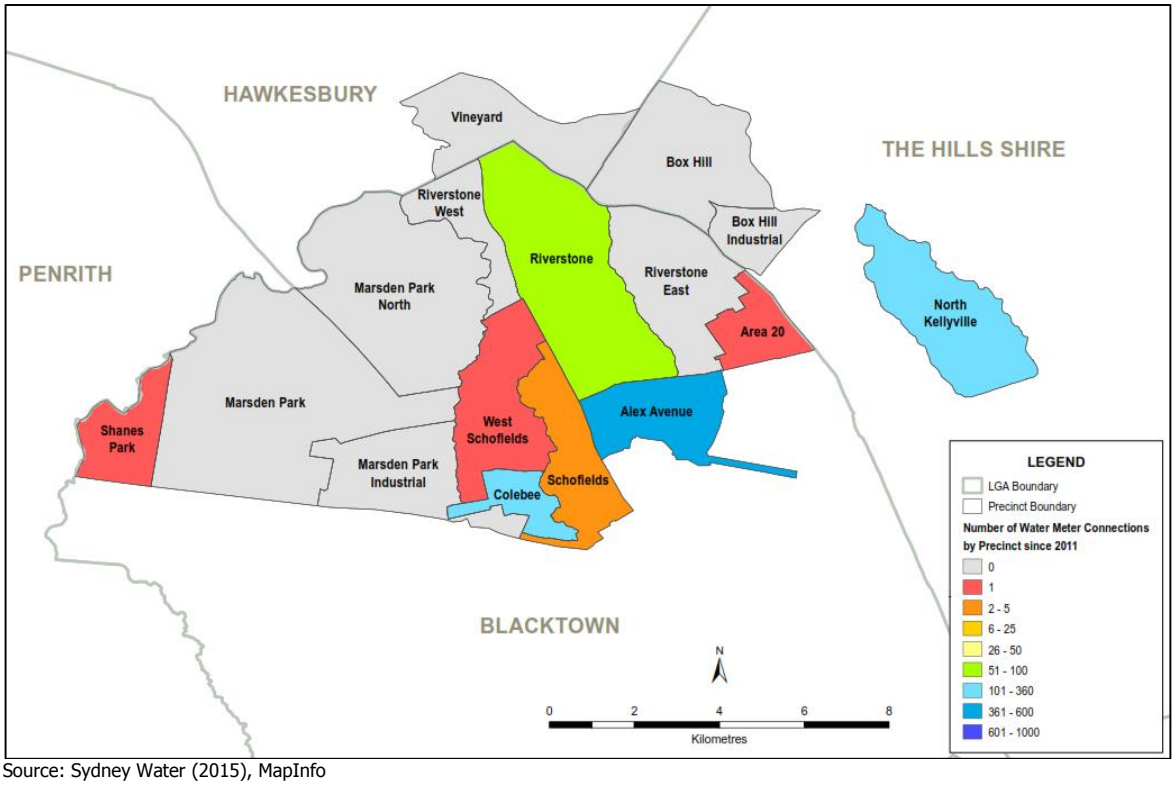
Precincts	Date Rezoned/ Released	2011	2012	2013	2014	Total (2011-14)
West Schofields (part)	18.03.2013	0	0	0	0	0
Vineyard	18.03.2013	0	1	0	0	1
Marsden Park North	Not applicable	0	0	0	0	0
Total		**0**	**1**	**0**	**0**	**1**
Not Released						
Shanes Park	Not applicable	0	0	0	0	0
West Schofields	Not applicable	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. Concentration of water meter connections are observed in Colebee and North Kellyville, followed by Alex Avenue and Riverstone.

Figure 5.1: Water Meter Connections, NWGC (2011-14)



Source: Sydney Water (2015), MapInfo

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, NWGC (2011-15)

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 planned for in the pipeline and at various stages in the NWGC, some of these 11,000 dwellings could be included in the building approvals data in **Table 5.2**.

South West Growth Centre

Table 5.3 outlines the number of dwelling completions (Sydney Water meter connections assumed as a proxy for new dwellings) since 2011.

Table 5.3: Net Additional Dwellings, SWGC* (2011-14)

Precincts	Date Rezoned/ Released	2011	2012	2013	2014	Total (2011-14)
Rezoned						
Edmondson Park	Council LEP	25	112	140	327	604
Oran Park	21.12.07	133	195	208	306	842
Turner Road	21.12.07	105	205	307	389	1,006
East Leppington	18.03.13	2	15	2	31	50
Austral and Leppington North	18.03.13	5	17	6	33	61
Catherine Fields (part)	20.12.13	0	0	0	0	0
Total		**270**	**544**	**663**	**1,086**	**2,563**
Released for Precinct Planning						
Leppington		0	0	0	0	0
Total		**0**	**0**	**0**	**0**	**0**
Not Released						
Kemps Creek		0	2	1	1	4
North Rossmore		0	0	0	0	0
Rossmore		0	2	5	0	7
Catherine Fields North		0	0	0	0	0
Catherine Fields		4	5	2	1	12
Marylands		0	0	0	0	0
Lowes Creek		0	0	0	0	0
Bringelly		1	0	2	0	3
North Bringelly		0	0	0	0	0
Total		**5**	**9**	**10**	**2**	**26**

*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 almost doubling in 2014 from 2013.

Figure 5.2 depicts the concentration of water meter connections by precinct since 2011. The number of water meter connections are dominated by precincts such as Turner Road, Oran Park and Edmondson Park.

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 5.4: Residential Building Approvals, SWGC (2011-15)

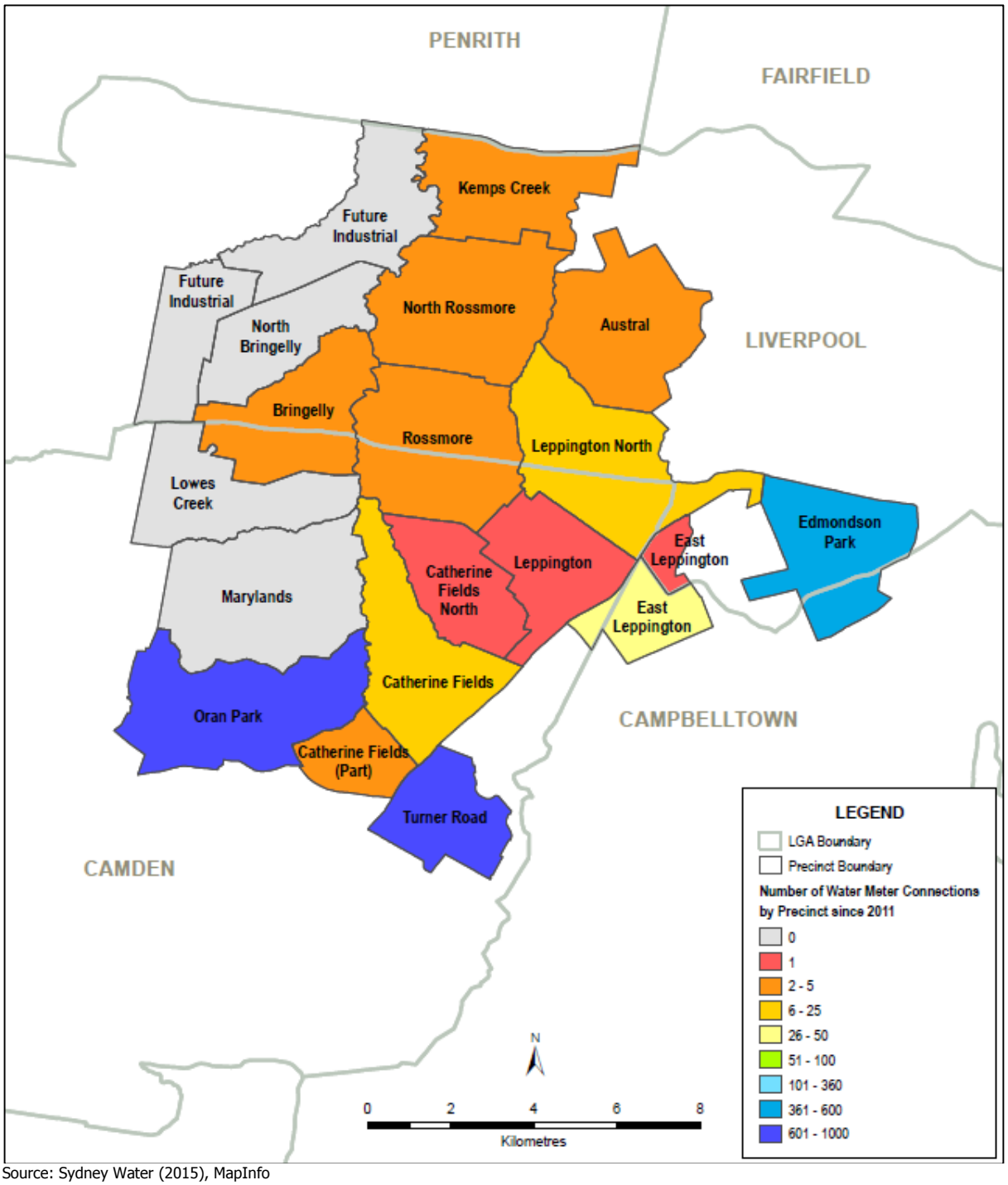
Precincts	2010-11	2011-12	2012-13	2013-14	2014-15*	Total (2011-15)
South West Growth Centre	370	504	834	829	812	3,349

*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.

There are more than 7,000 dwellings planned for in the pipeline and at various stages in the SWGC, some of these 7,000 dwellings could be included in the building approvals data in **Table 5.4**.

Figure 5.2: Water Meter Connections, SWGC (2011-14)



Source: Sydney Water (2015), MapInfo

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 constraints that 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, environmental and infrastructure constraints, etc.
- **Market capacity** refers to issues of commercial viability whether pricing levels, market acceptance/resistance, development costs, etc. make development a commercial proposition, i.e. if development is financially feasible.

While planning capacity (or sometimes referred to as "theoretical capacity") is important for development, 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.

The following sections outline dwelling potential of each Priority Growth Area, either as provided for under the Growth Centres SEPP or estimated during precinct planning. The current servicing capacity of these precincts are also summarised.

5.2.1 North West Growth Centre

Table 5.5 summarises the dwelling potential of each precinct in the NWGC, provided for in planning instruments or estimated during precinct planning. **Table 5.6** summarises current service capacity of these precincts.

Table 5.5: Dwelling Potential and Targets, NWGC

Precincts	SEPP (based on minimum density) [1]	Structure Plan Explanatory Notes[2]	Precinct Plan[3]
Rezoned			
Colebee	N/A	1,000	N/A
North Kellyville	3,614	4,500	5,185
Riverstone West	-	-	-
Riverstone	9,417	8,500	8,900
Alex Avenue	5,944	7,000	6,240
Marsden Park Industrial	-	-	1,228
Area 20	2,587	1,500	2,500
Schofields	2,857	5,000	2,811
Box Hill and Box Hill Industrial	9,703	10,000	9,652
Marsden Park	10,516	11,000	10,308
Total	**44,638**	**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 provisions under Growth Centres SEPP, does not include B zones (B1, B2, B4), 2 - NWGC Structure Plan (2010), 3 - Post-exhibition Planning Reports (various)
Source: DoP (2010), DoP (2008-2013)

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

Table 5.6: 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 existing 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.

5.2.2 South West Growth Centre

Table 5.7 summarises the dwelling potential of each precinct in the SWGC, extracted from GIS layers in planning instruments or estimates during precinct planning. **Table 5.8** summarises current servicing capacity of these precincts.

Table 5.7: Dwelling Potential and Targets, SWGC

Precincts	SEPP (based on minimum density) [1]	SEPP (based on maximum density)[2]	Structure Plan Explanatory Notes[3]	Precinct Plan[4]
Rezoned				
Edmondson Park	N/A	N/A	8,000	6,000
Oran Park		22,366	8,000	7,540

Precincts	SEPP (based on minimum density) [1]	SEPP (based on maximum density)[2]	Structure Plan Explanatory Notes[3]	Precinct Plan[4]
Turner Road		12,069	2,000	4,020
East Leppington	4,452		3,000	4,450
Austral & Leppington North	17,678		20,000	17,350
Catherine Fields (part)	3,831		8,000*	3,230
Total	**25,961**	**34,435**	**49,000**	**42,590**
Released for Precinct Planning				
Leppington			12,000	7,191
Total			**12,000**	**7,191**
Not Released				
Bringelly			5,000	
Bringelly North			5,000	
Catherine Fields			8,000*	
Catherine Fields North			9,500	
Kemps Creek			1,000	
Lowes Creek			2,000	
Marylands			9,000	
North Rossmore			6,500	
Rossmore			9,000	
Total			**55,000^**	

*Refers to overall total for Catherine Fields, ^Total includes Catherine Fields (part) which has already been rezoned
Notes: 1 - Residential Density provisions under Growth Centres SEPP, does not include B zones (B1, B2, B4), 2 Minimum Lot Size provisions under Growth Centres SEPP, does not include B zones (B1, B2, B4), 3 - SWGC Structure Plan (2010), 4 - Post-exhibition Planning Reports (various)
Source: DoP (2010), DoP (2008-2013)

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

Table 5.8: Infrastructure Servicing Provision and Timeframes, SWGC

Precincts	Immediate	Medium Term	Longer Term	Long Term		Unknown (developer-led)
	2014/15	2016-2020	2021-2025	2026-2030	2031-2035	
Rezoned						
Edmondson Park	7,937*	4,577				
Oran Park*	14,398					
Turner Road*	6,518					
East Leppington*	6,443					
Austral & Leppington North		6,185			16,623	
Catherine Fields (part)*	4,943					
Total	**40,239**	**10,762**	**-**	**-**	**16,623**	**-**
Released for Precinct Planning						
Leppington		1,950		2,394		
Total	**-**	**1,950**	**-**	**2,394**	**-**	**-**
Not Released						
Bringelly						5,000
Bringelly North						5,000
Catherine Fields						9,500
Catherine Fields North						9,500
Kemps Creek						1,000
Lowes Creek						2,000
Marylands						9,000
North Rossmore						6,500

Precincts	Immediate	Medium Term	Longer Term	Long Term		Unknown (developer-led)
	2014/15	2016-2020	2021-2025	2026-2030	2031-2035	
Rossmore						9,000
Total	**-**	**-**	**-**	**-**	**-**	**56,500**

*Reliant on developer-driven infrastructure provision
Source: Mott MacDonald (2015)

A large proportion of the immediate capacity is reliant on developer-driven infrastructure provision, particularly in the precincts of Edmondson Park (South), Oran Park, Turner Road, East Leppington and Catherine Fields (part).

Some immediate capacity is available in Edmondson Park (north) with availability in Austral & Leppington North available in the medium term (from 2016). Even though not rezoned, Leppington is understood to have medium term capacity from 2017.

5.3 Market Demand

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

There is strong demand for dwellings in both the NWGC and SWGC, 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 rezoned precincts where average densities range from 10dw/ha to 28dw/ha (SWGC) and from 10dw/ha to 30dw/ha (NWGC).

The following density targets are generally applied to residential zones in the Priority Growth Areas.

- 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 in the Priority Growth Areas 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 (250sqm-350sqm lots) as well as

residential units. In instances where apartments are developed, densities achieved could be well in excess of 100dw/ha or 120dw/ha.

Having consideration to what appears to be a structural shift in the market, subject to services capacity and availability, there is potential for the Priority Growth Areas to be developed more intensely and for a greater number of dwellings to be accommodated in line with changing market demand and preference.

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.

By applying higher average densities to precincts within the NWGC and SWGC, the total dwelling potential increases significantly assuming a build-out of the precincts, i.e. 100% of developable land is developed. By applying higher densities, the theoretical capacity of the Priority Growth Centres could be increased and increased substantially.

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, value expectations moving upwards with rezoning or upzoning of areas.

The following is a selection of common factors that affect the feasibility and deliverability of development, impacting on housing supply capacity in the NWGC and SWGC. An understanding of these factors is important in ascertaining if there is likely to be adequate supply capacity in the Priority Growth Areas or otherwise.

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 in a number of rezoned precincts in both the NWGC and SWGC where developers are observed to be actively assembling sites for development. These include:

- NWGC - Alex Avenue, North Kellyville, Area 20.
- SWGC - Edmondson Park, Oran Park, Turner Road.

Prices paid for sites are observed to be marginally higher in the NWGC (e.g. $2m/ha-$3m/ha in Alex Avenue) compared to the SWGC (e.g. $1.5m/ha-$2m/ha in Edmondson Park). This conceivably is reflective of the availability of suitable and development-ready sites in some precincts over others.

In contrast, some rezoned precincts are experienced modest transactional activity with limited site assembly activity observed. These precincts are typically characterised by small lot patterns and ownership fragmentation. Example precincts are Riverstone and Schofields (NWGC) and Austral & Leppington North (SWGC).

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 and Edmondson Park precincts where following rezoning 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 and 81% of households in SWGC cannot afford a new dwelling price of $500,000 without falling into mortgage stress[1].
- At the median household income of $1,724/week (NWGC) and $1,310/week (SWGC), households can only afford to purchase a dwelling at $465,000 and $360,000 respectively.

Households in SWGC also face challenges in their ability to pay more than what they are currently paying for housing.

- Approximately 81% of households in the SWGC cannot afford a new dwelling price of $500,000 without falling into mortgage stress.
- At the median household income ($1,310/week), a household can only afford to purchase a dwelling around $350,000.

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 in the Priority Growth Areas.

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.

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

[1] 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.

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.

Examples of developer-led infrastructure provision is occurring in Marsden Park, Colebee, Oran Park and Edmondson Park. Dwelling completions in these precincts are observed to be swift and contribute the greatest to housing supply.

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.

The implementation of the Housing Diversity package has offered some flexibility in the types of housing that are provided in the Priority Growth Areas. 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 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 dwelling numbers on the basis they are 'target densities' rather than minimum densities.

5.5 Implications for Housing Supply in Priority Growth Precincts

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 Priority Growth Areas. It is no surprise that precincts like Oran Park, Turner Road and East Leppington (SWGC) where large landholdings are under control of several major developers and precincts like Alex Avenue, Area 20 and Kellyville (NWGC) 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 Edmondson Park, Oran Park and Turner Road (SWGC) and

Colebee and North Kellyville (NWGC) recorded the highest number of water meter connections to 2011 and also benefit from notable development pipelines. By contrast, despite being rezoned for several years, precincts including Austral & Leppington North and Riverstone has been slower in take-up.

- **Availability of services and infrastructure**
  Some precincts have servicing capacity to accommodate the most immediate development (e.g. Alex Avenue, North Kellyville, Area 20, Edmondson Park north). In contrast precincts including Edmondson Park (South), Oran Park and Turner Road are not currently serviced and require developer-led provision of services infrastructure. Despite this, development in these precincts 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 Austral & Leppington North has some current services capacity, the precincts are constrained by existing lot and ownership patterns.

Two major factors are constraining housing supply in the Priority Growth Areas:

- **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**
  This 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 and Edmondson Park, prices for development sites are observed to be the highest paid (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 (NWGC) and Oran Park by Landcom/Greenfields Development Co. and Turner Road by Dartwest (SWGC). 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 Priority Growth Centres and their ability to accommodate projected growth. These then have implications for any potential role for the Greater Macarthur Investigation Area to accommodate housing demand. This is considered in the next chapter.

6. Projected Demand and Supply Capacity

This chapter considers projected housing demand against the capacity of the Priority Growth Areas 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 methodology outlined in Appendix A.

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 specifically investigates the future role for Greater Macarthur Investigation Area (GMIA), for overall context the demand projections (in aggregate) are reported for the Priority Growth Areas. Where the NWGC and SWGC are unable to accommodate projected demand, the 'Overflow' demand is identified for potential accommodation in GMIA (or GMIA Analysis Area as defined in section 3.1).

6.2 Senarios Examined

Two demand/growth 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
Scenario 2 (20%)	25,077	58,183	92,128	125,524	158,722	200,700	175,623

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 meet 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 Priority Growth Areas have the theoretical capacity to accommodate at least 160,000-170,000 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 then 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							
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
Total	**15,627**	**34,122**	**53,141**	**71,925**	**90,627**	**113,628**	**98,002**
With Capacity Constraints							
SWGC	5,348	6,948	17,320	27,906	38,446	55,546	50,199
NWGC	10,279	16,119	26,198	34,396	42,558	47,026	36,747
Total	**15,627**	**23,067**	**43,518**	**62,302**	**81,004**	**102,572**	**86,946**
Overflow							
SWGC	-	8,487	8,487	8,487	8,487	4,349	4,349
NWGC	-	2,569	1,137	1,137	1,137	6,707	6,707
Total	**-**	**11,056**	**9,624**	**9,624**	**9,624**	**11,056**	**11,056**

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

After entering the expected capacity to accommodate additional dwellings in each Priority Growth Area, demand for dwellings in the SWGC is projected to exceed capacity in 2016 by 4,349 dwellings, and likewise in the NWGC demand is projected to exceed capacity by 6,707 in 2016. This suggests an immediate supply issue (unmet demand of 11,056 dwellings in 2016).

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').

A summary of the projections is presented in **Table 6.3**. Where no constraints are present, dwelling demand in the SWGC is projected to be 97,755 additional dwellings between 2011 and 2036, while dwelling demand in the NWGC is projected to be 77,868 additional dwellings over the projection period.

Table 6.3. Distributed Projections of Dwellings, Scenario 2

Centre	2011	2016	2021	2026	2031	2036	Change (2011 to 2036)
Without Capacity Constraints							
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
Total	**15,627**	**48,733**	**82,678**	**116,074**	**149,272**	**191,250**	**175,623**
With Capacity Constraints							
SWGC	5,348	6,948	19,598	39,198	62,266	88,540	83,192
NWGC	10,279	16,119	37,225	42,037	43,160	47,026	36,747
Total	**15,627**	**23,067**	**56,823**	**81,235**	**105,426**	**135,566**	**119,939**
Overflow							
SWGC	-	16,455	22,317	21,538	17,179	14,563	14,563
NWGC	-	9,211	3,538	13,301	26,667	41,121	41,121
Total	**-**	**25,666**	**25,855**	**34,839**	**43,846**	**55,684**	**55,684**

Source: AEC, DPE (2014d)

After entering the expected capacity to accommodate additional dwellings in each Priority Growth Area, demand for dwellings in the SWGC is projected to exceed capacity in 2016 by 16,455 dwellings, and likewise in the NWGC demand is projected to exceed capacity by 9,211 in 2016. This suggests an immediate term supply issue (unmet demand of 25,666 dwellings) and cumulative unmet demand of 55,684 dwellings by 2036.

6.4 Implications for Future Growth

In order to distribute projected demand into individual precincts within the Priority Growth Areas, AEC have in consultation with Mott MacDonald and DPE, assessed the likely capacity (or market capacity) of each precinct to accommodate projected demand. 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 land rezoned (even though serviced and financially feasible) will be developed, particularly if development does not align with landowner objectives.

Theoretical Capacity v Market Capacity

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 **Error! Reference source not found.Table 5.6** and **Table 5.8**) to reflect commercial realities that subsist in each precinct.

In precincts where there is already substantial development activity and interest, higher percentages (75%-90%) are applied to reflect the 'market capacity' of these precincts. However in precincts where development activity has been modest despite being rezoned for urban development (whether due to difficulties of site amalgamation or services infrastructure lag), lower percentages are applied (50%). This reflects the reality that despite services capacity and financial feasibility of development, not all land will be developed.

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

- **Scenario 1 - 'Low growth' scenario** (10% redirection of residential demand)
  Cumulative total of 11,056 supply shortfall to 2036, with an immediate shortfall of 11,056 dwellings in 2016 (refer to **Table 6.2**).
- **Scenario 2 - 'High growth' scenario** (20% redirection of residential demand)
  Cumulative total of 55,684 supply shortfall to 2036, with an immediate shortfall of 25,666 dwellings in 2016 (refer to **Table 6.3**).

The misalignment of services infrastructure staging as well as fragmented and disparate lot patterns in some precincts cumulatively result in supply shortfalls in both growth scenarios.

Development is complex and subject to a myriad factors. Commercial pressures, site amalgamation issues and economic/market conditions have the ability to cumulatively influence the feasibility of development and dictate whether or not development proceeds and the type of development that proceeds.

It is important to recognise that despite being services-ready and financially feasible to develop, the reality is that not all zoned land will be developed. The non-alignment of owner objectives is obviously beyond the control of planning authorities.

Notwithstanding the complexities of development, planning controls have the ability to influence development feasibility through land use zoning and densities but also through the costs associated with design requirements and securing planning approvals. Flexible planning controls that enable development to respond to market need/demand can assist even where there might be other challenges.

In Greenfield areas the availability of services and road infrastructure is critical, the current lag in services infrastructure an apparent constraint on housing delivery.

There are a number of interventions that could be considered to improve the market capacity of the Priority Growth Areas, including designation of a new growth area for urban development. These are discussed in the next chapter.

7. Potential Role for Greater Macarthur

7.1 Historical Growth in the Priority Growth Areas

The completion of the South West Rail Link and imminent completion of the North West Rail Link has positioned both the SWGC and NWGC on new trajectories of growth.

The growth outlook for the Priority Growth Areas is good however this is challenged by a number of factors, including fragmented ownership patterns and lags in services infrastructure delivery.

Household affordability is a continuing challenge with many households compromising on size and spatial requirements in order to make purchases within their financial capacity. The implementation of the Housing Diversity Package was a welcomed policy amendment in 2014 with developers able to respond to 'meet the market' by providing a broader range of residential product including small lot housing and unit/apartments.

While medium sized lots (400sqm-450sqm) are still the dominant type of lot produced in the Priority Growth Areas, small lots (280sqm-380sqm) are rapidly becoming the most popular and selling swiftly upon release. Developers are consequently incorporating higher proportions of small lot housing into overall residential mix.

The Housing Diversity package has not only allowed developers to respond to affordability pressures faced by households, it has also assisted to ease commercial feasibility challenges that have resulted from expensive and difficult site amalgamations.

While many precincts have been rezoned in the Priority Growth Areas, not all precincts benefit from having immediate services infrastructure capacity and existing lot patterns that facilitate site assembly. Alex Avenue and North Kellyville (NWGC) and Edmondson Park (north) and Turner Road (SWGC) are examples of precincts that have immediate services capacity and where lot patterns and sizes (>2ha) lend themselves to site amalgamation, resulting in greater levels of development activity and interest.

In comparison to the SWGC (with more than 2,500 water meter connections in 2011-2014), growth in the NWGC has been more modest (less than 800 water meter connections in 2011-2014). With the exception of Austral & Leppington North, the other rezoned precincts in the SWGC have larger lot patterns which facilitate site amalgamation and appear to have more immediate availability of services infrastructure.

North West Growth Centre

While the NWGC benefits from major projects such as Elara (Marsden Park), Stonecutters Ridge (Colebee) and Skylands (Schofields) as well as a number of medium sized projects, a number of precincts are either not serviced or not due to be serviced until 2019 and beyond. An example is the former Defence site (>140ha) in the southern portion of the Schofields precinct which has the potential to accommodate over 1,000 dwellings however services infrastructure in that portion of the precinct is only available from 2021. Conversely precincts like Riverstone and the northern portion of Schofields have immediate availability of services infrastructure however these precincts pose challenges for site amalgamation due to lot and ownership patterns.

The modest number of dwelling completions (773) since 2011 is reflective of both the time lag of service infrastructure delivery as well as difficulties in site assembly.

There are a limited number of precincts that are services-ready and with lot patterns that lend themselves to site amalgamation. Alex Avenue and North Kellyville are two of these precincts where developer interest has expectedly been strong. The limited supply of suitable and services-ready sites is reflected in the prices achieved for these development sites, which are among the highest in the NWGC, in some cases exceeding $3m/ha.

While there are more than 11,000 dwellings in the pipeline (at various stages of planning), many of these sites are not able to be serviced immediately and require developer-led provision of services infrastructure. There are limited opportunities for this to occur with the limited number of large sites in the rezoned precincts.

There is anecdotal evidence that the SWGC is perceived to offer more opportunity to assemble services-ready development sites.

South West Growth Centre

Lot and ownership patterns in many precincts in the SWGC have facilitated the amalgamation of significant development sites and consequent delivery of housing. Development in Edmondson Park, Oran Park and Turner Road have cumulatively delivered 2,563 dwellings since 2011. This is in contrast to 773 dwellings in the NWGC over the same period.

Services infrastructure availability appears to be more aligned in the SWGC than the NWGC, with immediate capacity in three precincts - Edmondson Park, East Leppington, Austral & Leppington North and Leppington. Even though services are not immediately available in Oran Park (lag to 2018 and 2021) the progress of large development sites has enabled developer-led provision of infrastructure.

Following their rezoning in 2013, the other rezoned precincts of SWGC - Austral & Leppington North, Catherine Fields (part) and East Leppington are progressing at varying degrees. Stockland are progressing Willowdale (proposed 3,000 dwellings) while there is only modest development proposed in Austral & Leppington. There is limited immediate services infrastructure capacity at Austral & Leppington (300 lots) however the larger impediment to housing supply is difficulty with site amalgamation owing to the severely fragmented nature of lot ownership.

There are more than 7,000 dwellings in the pipeline (at various stages of planning), many of these are in precincts with reasonable services capacity.

7.2 Improving Capacity in the Priority Growth Areas

Chapter 6 identifies an immediate, short term supply issue in both Priority Growth Areas, a supply gap of more than 11,000 dwellings (low growth scenario) and more than 25,000 dwellings (high growth scenario) in 2016. This has ramifications for price levels - both of completed residential product and development sites. Lot take-up and price growth in the Priority Growth Areas has been phenomenal, households with limited ability to tolerate much more upward price movement, and as a result are gravitating to small lot housing and more dense forms of housing.

It is important for growth and land use planning to distinguish 'land supply' from 'lot production', the former referring to the process of rezoning land and thereby increasing the availability of land for urban development.

While land may be rezoned for urban development and as discussed earlier, numerous issues can hinder lot production. The 'disconnect' between land supply and lot production can be witnessed in numerous examples in the Priority Growth Areas where land is rezoned for development but remains undeveloped.

Services Infrastructure Capacity

It is critical that the release and rezoning of land is staged according to the capacity of services and utility infrastructure to accommodate development so as to facilitate the economic use of existing networks and resources.

Short term actions in the Priority Growth Areas are required to address:

- **Prioritise services infrastructure delivery**
  Align service and utility infrastructure capacity with lands with *actual* capacity for housing delivery. This applies to precincts where developer activity and interest is keen but also to precincts where there is known landowner and/or developer interest subject to servicing.

  Precincts that are challenged by lot and ownership patterns are likely to be developed incrementally and on a small scale. Those precincts that have the ability to deliver large scale housing should accordingly be prioritised.

- **Augment current services infrastructure capacity**
  Current services infrastructure capacity was planned predicated on target residential densities adopted during and post precinct planning. As a consequence and even though SEPP density controls are expressed as "minimum dwelling densities", there is a servicing capacity limit to densities higher than originally envisaged.

  Investigate 'ultimate servicing capacity' with service agencies to ascertain if existing networks are able to accommodate a greater number of dwellings. This would enable planning authorities to plan for and respond to developer interest in developing to greater densities, market conditions demonstrating a distinct structural shift toward more dense forms of housing.

In the longer term, coordination between agencies is needed to address current servicing time lags to ensure they are aligned and prioritised according to *actual* capacity of lands to be developed, i.e. considering lot and ownership fragmentation as well as appropriate residential typologies noting a shift in market preference toward smaller housing forms.

Planning for Higher Residential Densities

Minimum residential densities adopted during precinct planning in the Priority Growth Areas were based on the following density targets:

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

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.

Planning to facilitate higher densities (in line with market activity) and accordingly planning for the augmentation of services capacity could serve to fulfil two objectives:

- Development will continue to 'meet the market' by delivering smaller and more affordable product.
- Expand housing capacity as immediately required, particularly in those precincts where there is already a hive of development activity and demand for denser product.

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 prudent to make available 'more' land than is needed to meet projected demand.

After considering the market capacity (i.e. services constraints and ownership fragmentation) of the Priority Growth Areas, a short term supply issue (in 2016) appears to exist – a shortage of 11,056 dwellings in the low growth scenario and 25,666 dwellings in the high growth scenario. If unaddressed, by 2026 the shortage is projected to increase to 34,839 and to 55,684 dwellings by 2036 in the high growth scenario.

Should development to higher densities be able to be supported (and subject to services capacity), greater residential densities in the Priority Growth Centres could well meet projected demand to beyond 2036.

Unless there is a significant increase in the market capacity of the Priority Growth Areas (including an increase in services capacity to accommodate greater densities and infrastructure delivery to align with areas of developer interest), there would appear to be a case for expanding the urban footprint of Sydney's priority growth areas.

7.3 Expanding the Urban Footprint

The Greater Macarthur Investigation Area could offer a potential solution to meet the unmet demand of the Priority Growth Areas. Depending on the ultimate servicing capacity and staging strategy of the servicing agencies, the potential role of GMIA could conceivably be minor (circa 20,000 dwellings) or major (circa 40,000 dwellings).

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 would influence the price of housing. The availability of more urban land for development would help prevent 'runaway prices' and assist in keeping the prices of development sites and end residential product under control.

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. Where there is existing services infrastructure capacity in GMIA, those development proposals could be considered in order to facilitate delivery of new housing sooner rather than later.

'Overflow' of Demand to GMIA

Section 6.3 considered housing demand projections for the Priority Growth Areas in a low growth and a high growth scenario.

After considering known capacity constraints in each precinct of the Priority Growth Areas (reflecting services capacity and commercial realities), demand is projected to immediately exceed capacity in both low and high growth scenarios.

- **Low Growth scenario (Scenario 1)**
  Immediate overflow of 11,056 in 2016, capacity improving to meet projected need to 2036.
- **High Growth scenario (Scenario 2)**
  Immediate overflow of 25,666 in 2006, cumulatively increasing to 55,684 to 2036.

Table 7.1 outlines the 'overflow' of demand, i.e. projected demand unable to be met by the Priority Growth Areas, based on current servicing capacities and residential densities.

Table 7.1. Projections of 'Overflow' Dwelling Demand by Scenario

Scenario	2011	2016	2021	2026	2031	2036	Change (2011 to 2036)
Scenario 1 (10%)	-	11,056	9,624	9,624	9,624	11,056	11,056
Scenario 2 (20%)	-	25,666	25,855	34,839	43,846	55,684	55,684

Source: AEC, DPE (2014d)

There is an opportunity for future dwellings in the Priority Growth Areas to be delivered at higher densities. This would involve, *inter alia*, co-ordination of agencies and servicing strategies to facilitate development to greater densities as well as bringing forward services capacity particularly where there is known developer interest. If services capacity were able to be effectively increased to facilitate greater densities of housing supply, the role for GMIA could be relatively minor.

Depending on lead-in and response times of servicing agencies to planning for increased densities, GMIA could potentially play a role in accommodating the above 'demand overflow', i.e. demand that is unmet by the Priority Growth Areas.

The expansion of the urban footprint is not without significant and heavy capital cost. An advantage to permitting large scale residential development in GMIA is the ability and willingness of developers who control large landholdings to proceed with housing delivery and lead in the provision of infrastructure.

References

ABS (2012a). Census of Population and Housing, 2011. Cat No. 2001.0. ABS, Canberra.

ABS (2012b). *Census of Population and Housing: Meshblock Counts, 2011*. Cat No. 2074.0. ABS, Canberra.

ABS (2013). *2011 TableBuilder Pro, 2011 Third Release.* Cat. No. 2073.0, Australian Bureau of Statistics, Canberra.

ABS (2014). *Population by Age and Sex, Regions of Australia, 2013*. Cat. No. 3235.0, Australian Bureau of Statistics, Canberra.

ABS (2015). *Building Approvals, Australia, Feb 2015*. Cat. No. 8731.0, Australian Bureau of Statistics, Canberra.

BTS (2014). *2011 Journey to Work Data*. Bureau of Transport and Statistics, New South Wales Government, Sydney.

DoP (2008-2013). Various NWCG Precinct Post Exhibition Planning Reports, Department of Planning, Sydney.

DoP (2010). *North West Growth Centre - Structure Plan – Explanatory Notes*, Department of Planning, Sydney.

DPE (2014a). *A Plan for Growing Sydney*. NSW Department of Planning and Environment.

DPE (2014b). *Housing Diversity Sydney's Growth Areas – Finalisation Report.* Department of Planning & Environment.

DPE (2014c). North West Precinct Structure Plan. NSW Department of Planning and Environment.

DPE (2014d). *Population, Household and Dwelling Projections*. NSW Department of Planning and Environment.

DPE (2014e). *Western Sydney Growth Area Projections, Review of Growth Centre Lot Projections Sydney Water.* DPE.

Mott MacDonald (2015). *North West Growth Centre Infrastructure Masterplan*. As at 7 May 2015.

National Housing Supply Council (2013). *Housing Supply and Affordability Issues 2012-2013*. Commonwealth of Australia.

NSW Legislation (2015). *State Environmental Planning Policy (Sydney Region Growth Centres*) 2006. NSW Legislation.

Sydney Water (2015). *Sydney Water Metre Connection Data*. Sydney Water, Sydney.

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 across the Study Area (Priority Growth Areas which encompass the North West Growth Centre and South West Growth Centre).

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.

The projected dwelling demand (in aggregate) is an input into the third model - the distribution model.

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%	-

Indicator	2011	2016	2021	2026	2031	Avg Ann. Change
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 a policy change (specifically the release and rezoning of Greenfield land for urban development).

Scenario 1: 10% Capture in 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 and Investigation Area)						
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 in 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%

Indicator	2011	2016	2021	2026	2031	Avg Ann. Change
Dwellings	1,648,723	1,774,284	1,905,895	2,036,588	2,167,528	1.4%
Study Area (Priority Growth Areas and Investigation Area)						
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%
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.

PAGE LEFT INTENTIONALLY BLANK

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