



LAKE
MACQUARIE
CITY

NORTH WEST LAKE MACQUARIE CATALYST AREA

Background report
2022 Snapshot

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1 Socio-economic context

The North West Lake Macquarie C (catalyst area) extends across Argenton, Boolaroo, Cardiff, Glendale, Speers Point and Teralba statistical localities boundaries (Figure 1). At the 2016 census, around 16,392 people and 7086 dwellings¹ were accommodated in the catalyst area. By the 2021 census, 17,871 people and 7713 dwellings.



Figure 11: Catalyst area - Geographical Area Localities (REMPAN, 2016)

Figure 2 shows the population age profile for the catalyst area in 2016 and 2021 which illustrates a noticeable spike in 0-9 years and 30-60 age groups. The median age for the catalyst area is 39 years.

¹ Derived from REMPLAN statistical localities (2016)

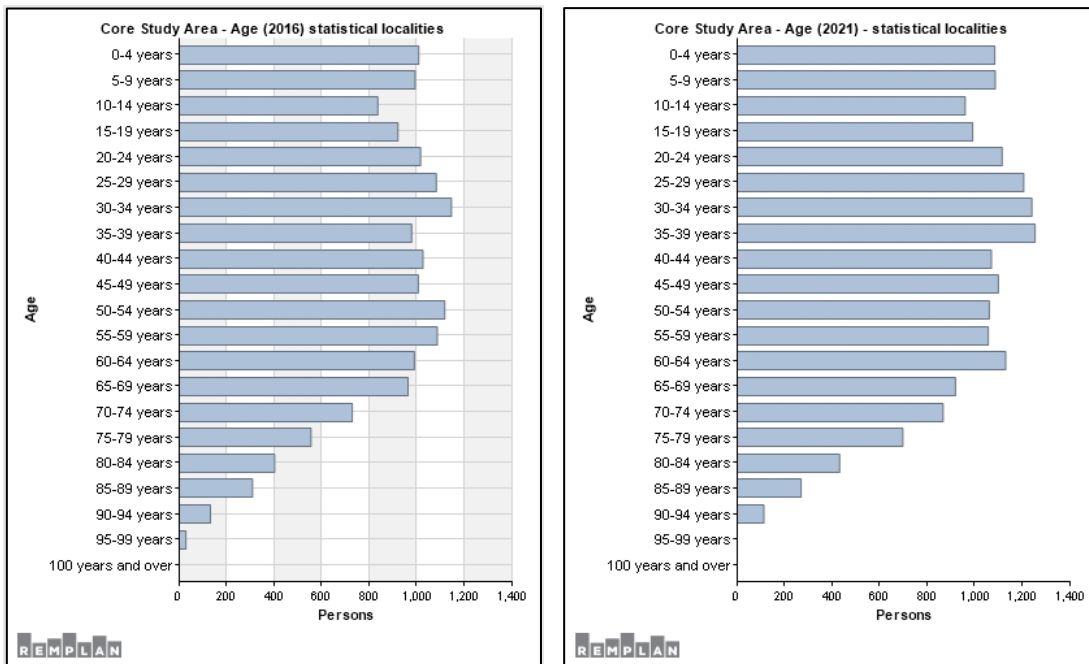


Figure 2: Population age profile – 2016 (left) and 2021 (right)

Households with families are characterised by two and four-person households (Figure 3). As of 2021, households are characterised by mainly two-person households.

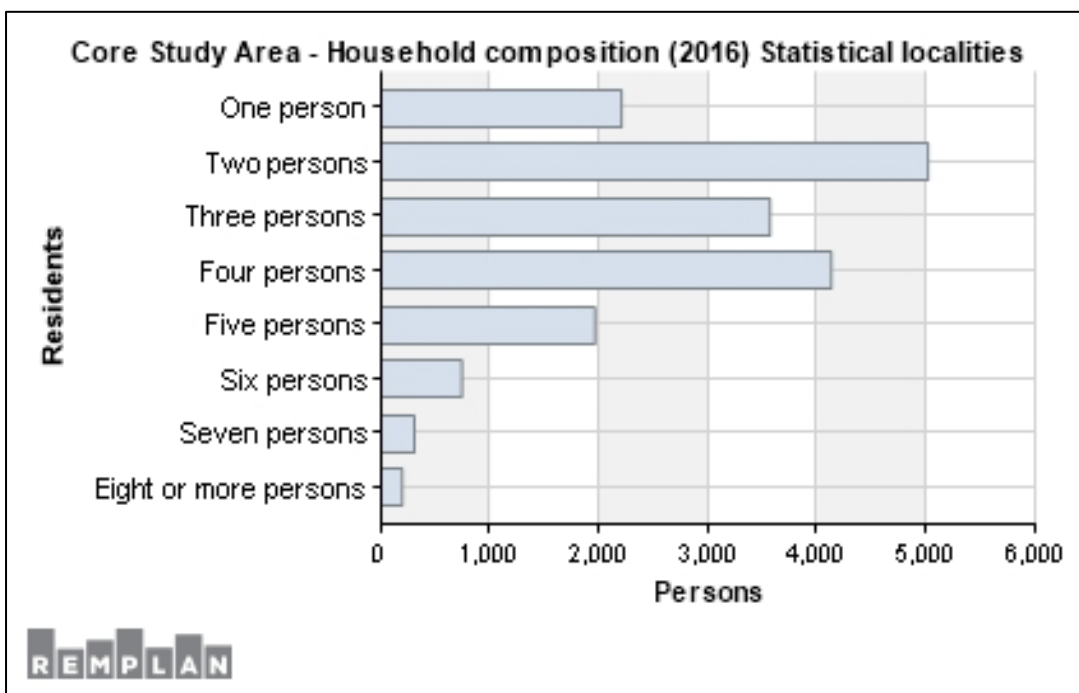


Figure 3: Household composition

1.1 Economy, employment and education

In 2021, there were 14,175 jobs in the catalyst area, 19 per cent of the total 73,233 jobs in Lake Macquarie.

The largest employment sectors within the catalyst area are in health care and social assistance (14 per cent), followed by retail trade (13.7 per cent) and construction (13.5 per cent). Retail and health care and social assistance industries are mostly located within the Glendale and Cardiff economic centres while the construction sector is concentrated in the Cardiff advanced industry precinct, Boolaroo and Teralba industrial areas. Refer Figure 4.

Other noticeable industries include manufacturing (9.8 per cent), public administration and safety (9.3 per cent), other services (6.2 per cent) and accommodation and food services (5.8 per cent).

Around 44.5 per cent of people have completed year 12 or equivalent, with 19 per cent of people completing their bachelor's degree. Approximately 68.5 per cent of the population is employed in full or part-time work.

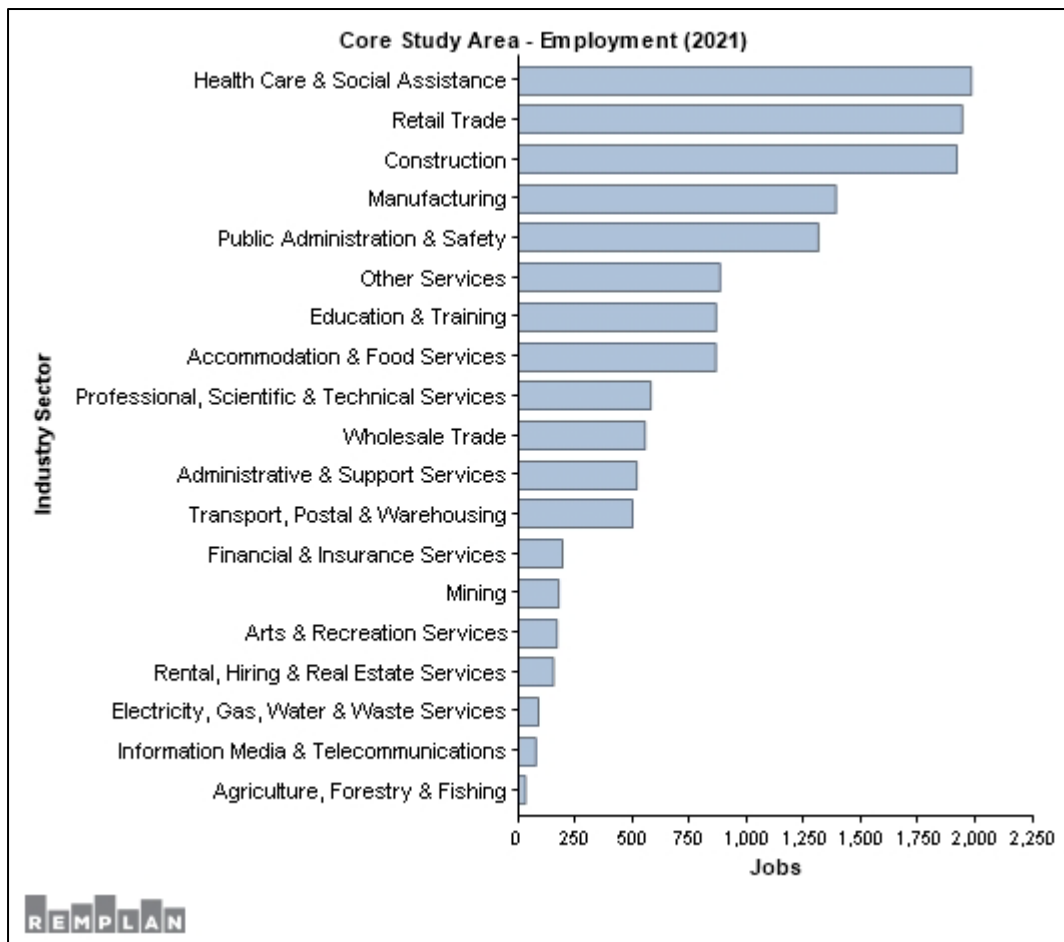


Figure 4: Industry of employment (2021)

1.1.1 Economic output

In 2021, \$4.9 billion of economic output was generated in the . This is 20 per cent of the total economic output of \$24.4 billion for all of Lake Macquarie.

The economic output of the catalyst area was centred around industries of manufacturing (\$1.2 billion), construction (\$932 million), rental, hiring and real estate services (\$448 million) and public administration and safety (\$289 million). This compares to the economic output for the whole of Lake Macquarie City which was centred around four key industries: construction, manufacturing, mining and rental, hiring and real estate services.

In 2021, \$2.4 billion of economic output was generated in the Cardiff advanced industry precinct which is 10 per cent of the whole of Lake Macquarie's economic output. All four of the industry economic generators and related supply chain industries were located within the precinct. This precinct is the second largest location for employment in Lake Macquarie, after Charlestown.

The Cardiff advanced industry precinct offers a diversity of industries, however land supply is almost exhausted, limiting further expansion and diversification. A key challenge for the precinct will be managing national declines in manufacturing and mining support services, while being able to utilise existing developed land that can transition into advanced, technological and clean technologies to support ongoing growth of the .

Mining is the sixth largest industry sector in Lake Macquarie, however national and global mega trends will continue to see a gradual decline with the closure of mining activities. This provides opportunities to diversify the economy.

1.1.2 Manufacturing

The largest industry sector in the area in terms of economic output is manufacturing at \$1.2 billion (2021), which is 24 per cent of all economic output for this area. This compares to just 12 per cent of economic output for Lake Macquarie overall. This economic output is primarily located in the Cardiff Advanced Industry precinct (\$868 million). Manufacturing also tends to generate a higher economic output compared to other industries due to its supportive relationships with other industries and supply chains. These support services and industries include construction, mining, agriculture, wholesale trade, transport, postal and warehousing, food services, electricity, gas, water and waste services, professional, scientific and technical services and other services such as personal, repair and maintenance services.

1.1.3 Construction

Construction is the second largest industry sector to contribute to economic output of the in 2021. The industry generated \$932 million which is 19 per cent of economic output in the area, which is identical to the 19 per cent of the economic output for Lake Macquarie overall. This economic output is primarily located within the Cardiff Advanced Industry precinct (\$535 million) and contains construction services, residential, heavy/civil and non-residential construction companies.

1.1.4 Rental, Hiring and Real Estate Services, Public Administration and Safety, and Health Care and Social Assistance

Population serving industries like rental, hiring and real estate services (\$448 million), public administration and safety (\$351 million), health care and social assistance (\$269 million) when combined, were the next highest generators of economic output in 2021. These combined industries produced \$1 billion which is 21 per cent of economic output for the area. This is identical when compared to the 21 per cent of total economic output for Lake Macquarie.

The precincts with the highest economic output containing these industries include Boolaroo-Speers Point precinct at \$243 million (Lake Macquarie Administration Building and Depot), Cardiff Advanced Industry precinct at \$235 million (hiring of equipment, strata or renting), and Cardiff Mixed Use precinct at \$206 million (health, social services, car hire and renting or strata).

1.1.5 Retail Trade and Financial Services

The industries of retail and financial services when combined were the next highest generators of economic output in the in 2021. These combined industries accounted for \$312 million or 12 per cent for the area, with the Lake Macquarie average being 9 per cent at \$2.3 billion.

The precincts with the highest economic output containing these industries include the Glendale Retail and Sport precinct at \$156 million and Cardiff Mixed Use precinct at \$51 million. These locations are consistent with Cardiff and Glendale being the primary retail and financial service clusters within the .

1.1.6 Mining

Mining was the next major generator of economic output for the , accounting for \$239 million (5 per cent) in 2021. This is relatively a minor output when compared to the overall economic output for Lake Macquarie at \$3.1 billion (12.5 per cent).

Precincts where mining activity were highest included the Cockle Creek West precinct at \$43 million (Glencore mining site and Metromix quarry) and the Cardiff Advanced Industry precinct at \$128 million (primarily exploration and mining support services).

1.1.7 Education and Training and Professional and Scientific Services

The industries of education and training and professional and scientific services when combined generated \$179 million or 7.9 per cent of economic output for the in 2021. This was lower than the Lake Macquarie average of \$1.8 billion or 7.7 per cent of total economic output. Glendale-Argenton Renewal Corridor at \$65 million provides the largest economic output for these industries as all levels of education facilities are located within the precinct (i.e. primary, secondary and tertiary schools). The Teralba precinct contains the highest economic output for professional and scientific services at \$28 million, as Umwelt Australia is located within this location.

1.1.8 Arts and Recreation Services

Although, the arts and recreation services provide a somewhat lower economic output for Lake Macquarie at \$152 million (0.6 per cent) there are some noticeable economic drivers within the contributing \$31 million (0.6 per cent) of economic output in 2021.

The Glendale Retail and Sport Precinct in which the Hunter Sport Stadium is located provided the largest economic output at \$13 million. Boolaroo-Speers Point precinct contains Speers Point Park and Multi-Arts Pavilion and contributed \$11 million to the economic output.

1.1.9 Tourism

The tourism economic output for Lake Macquarie in 2021 was \$337 million (1.4 per cent). The contributed \$71 million (1.4 per cent) of total output. The three largest economic tourism industries within the were accommodation and food services (\$17 million), retail and trade (\$15 million) and manufacturing (\$12 million). These industries were located within the Cardiff Advanced Industry precinct and the Glendale Retail and Sport precinct, as these areas produce food or drink products, retail and services.

Table 1 provides a comparison of the largest industries producing economic output compared to employment within the precincts. Figure 5 provides the jobs per sector and industry of these areas.

Table 1: Economic output and jobs in the catalyst area

Precinct	Output	Per cent of city	Jobs	per cent of city	Largest output industry in precinct	Largest employer industry in precinct
Boolaroo-Speers Point and Cockle Creek Precincts	\$900M	3.7 per cent	2875	3.9 per cent	Public administration and safety \$299M or 33 per cent of output	Public administration and safety 1097 jobs or 48 per cent of employment
Cardiff Advanced Industrial Precinct	\$2.4B	10 per cent	5405	8.3 per cent	Manufacturing \$868M or 35 per cent of output	Construction 1128 jobs or 21 per cent of employment
Cardiff Mixed use Precinct	\$414M	1.7 per cent	2069	2.8 per cent	Health Care and Social Assistance \$109M or 26 per cent of output	Health care and social assistance 804 jobs or 39 per cent of employment
Cockle Creek West and Teralba Precinct	\$252M	1 per cent	712	0.9 per cent	Construction \$97M or 38 per cent of output	Construction 174 jobs or 27 per cent of employment
Glendale-Argenton Renewal Precinct	\$397M	1.6 per cent	1232	2 per cent	Mining \$93M or 23.5 per cent of output	Education and training 381 jobs or 28 per cent of employment
Glendale Retail and Sporting Precinct	\$546M	2.2 per cent	1818	2.9 per cent	Manufacturing (Keolis Downer train workshops) \$216M or 40 per cent of output	Retail 933 jobs or 51 per cent of employment

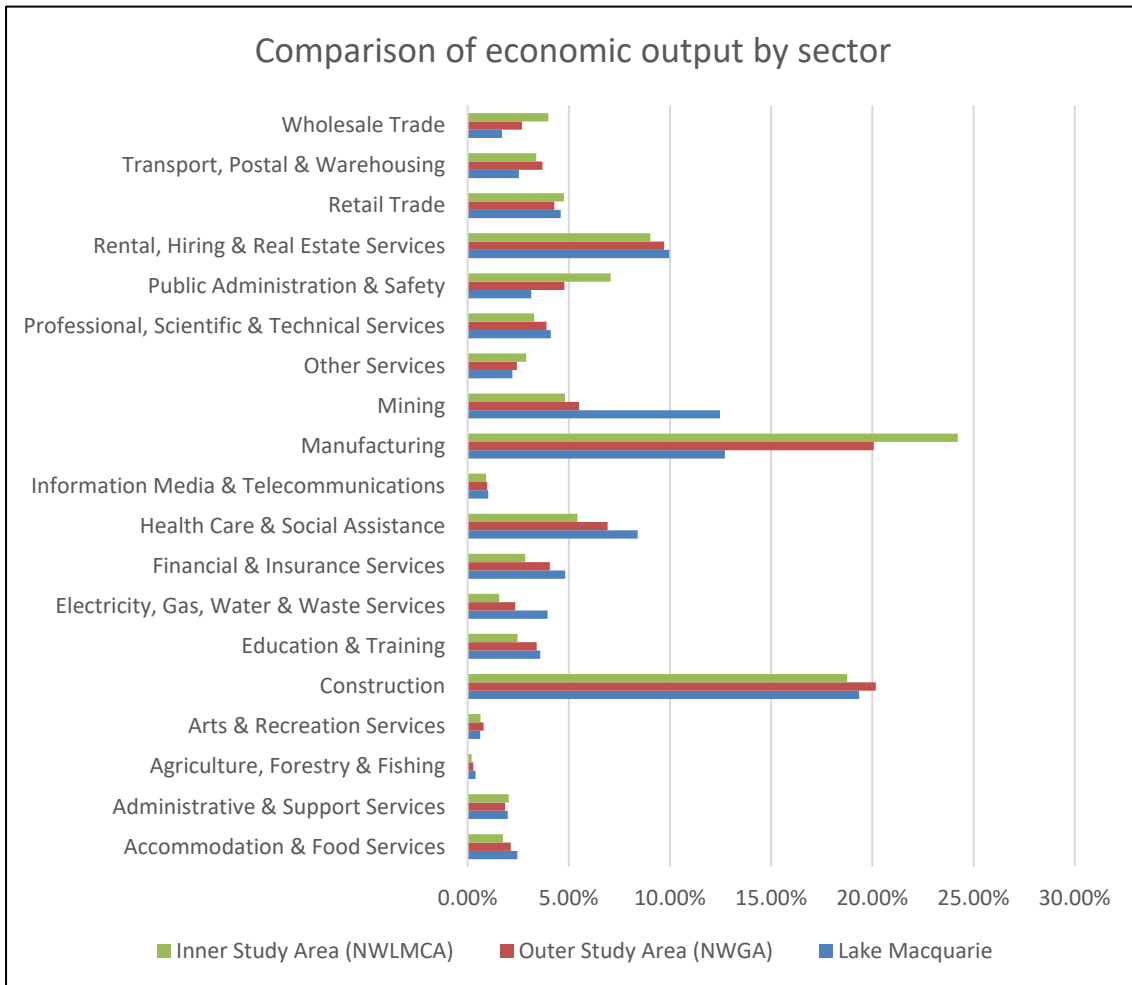


Figure 5: Comparison of Economic Output by Sector/Industry (REMPPLAN Economy, 2021)

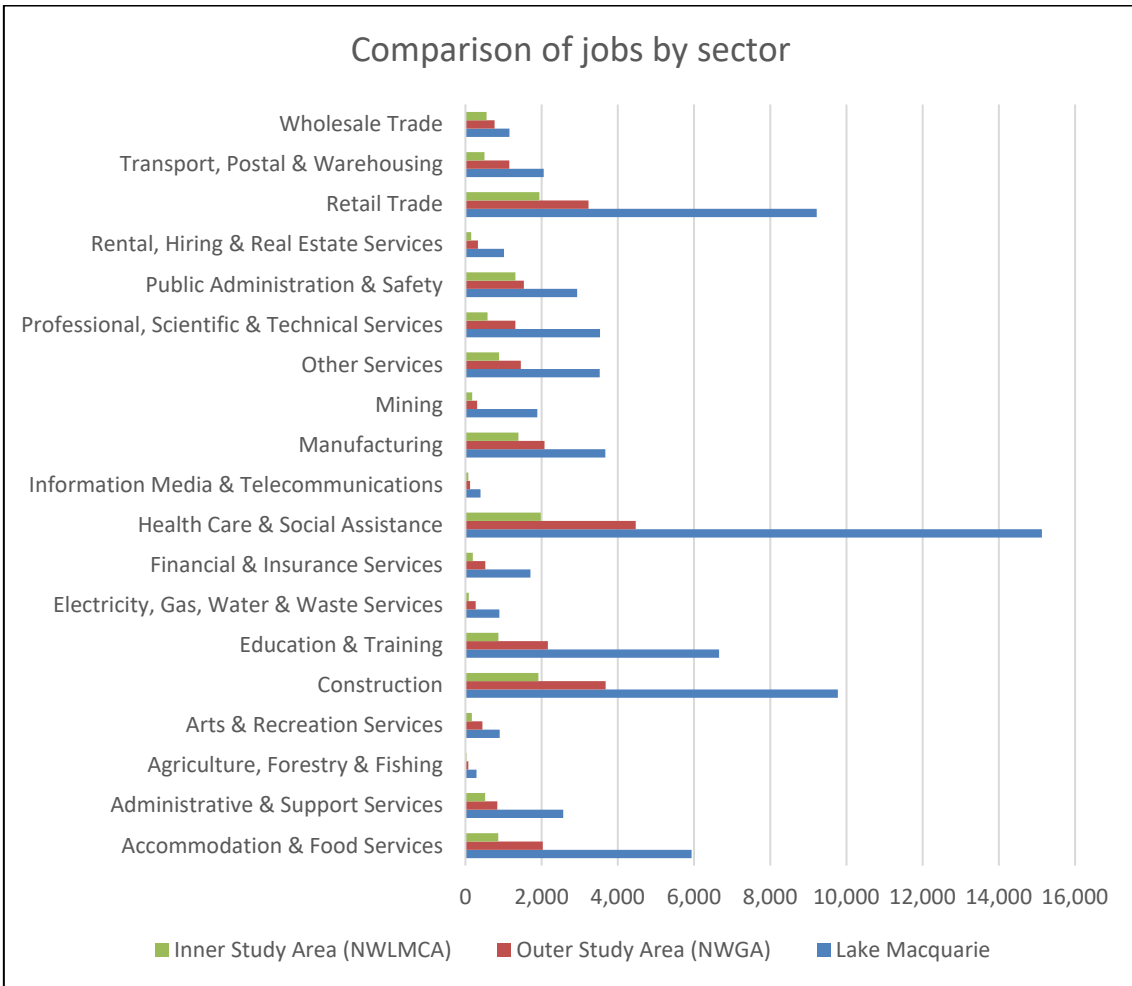


Figure 6: Comparison of Jobs by Sector/Industry (REMPPLAN Economy, 2021)

1.1.10 Commercial vacancy

The commercial vacancy rate has generally been consistent from 2018 to 2021 (refer Figure 7). The Cardiff Advanced Industry precinct, Cardiff Mixed Use and Boolaroo-Speers Point precinct had the three highest areas of vacancy in 2021 (refer to Figure 8). These three precincts also saw the highest increase in vacancy rates from 2018 to 2022 with the COVID-19 pandemic being a contributing factor. Many of the vacancies in the Cardiff Advanced Industry precinct were attributed to vacant industrial units or storage units which offer sole traders a space to undertake trade activities.

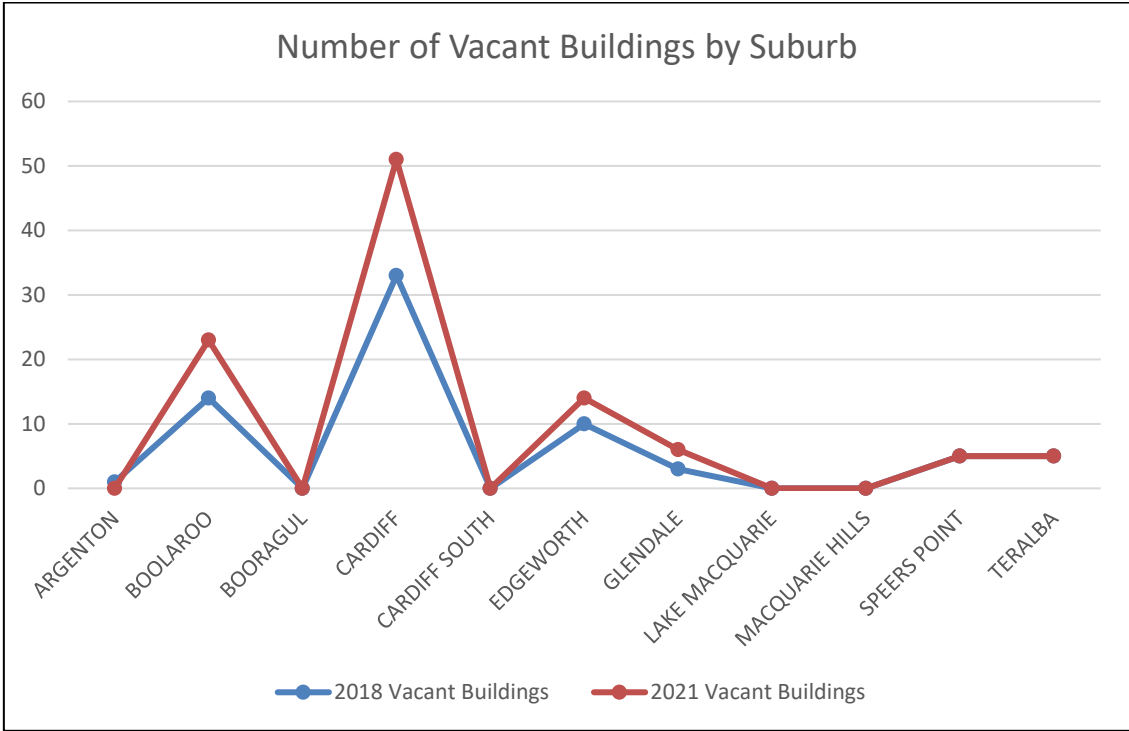


Figure 7: Number of Vacant Buildings by Suburbs

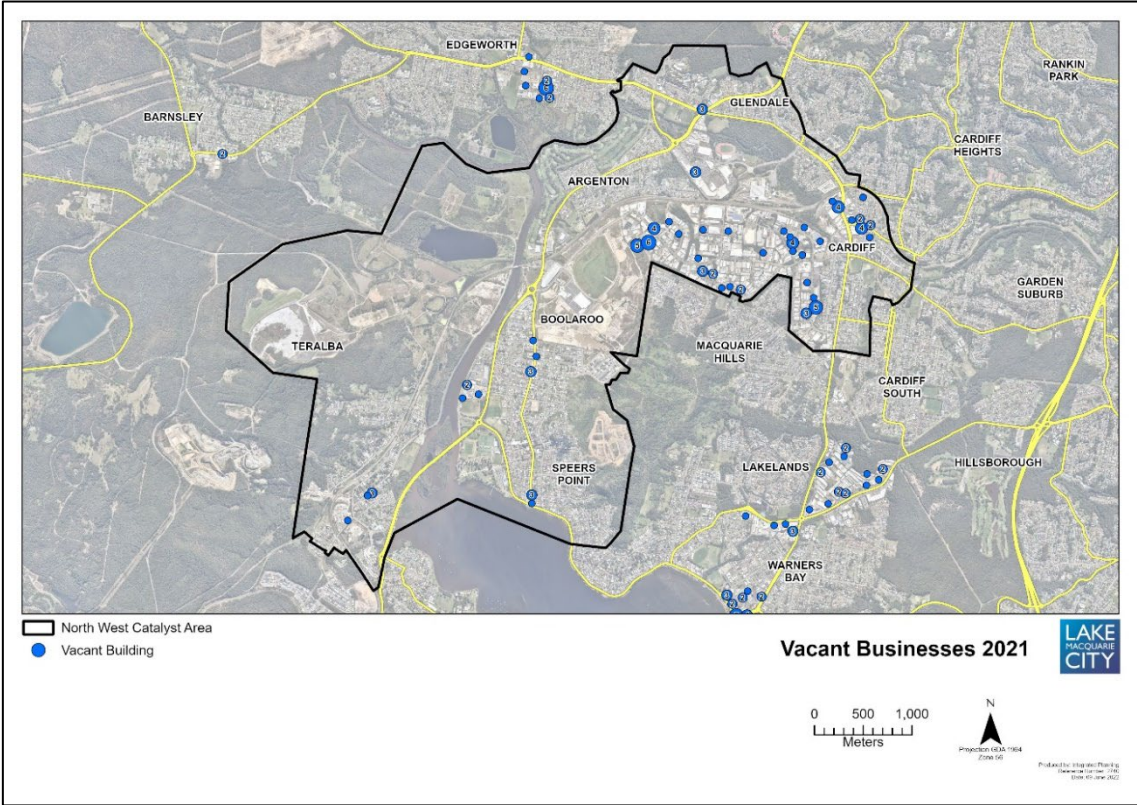


Figure 8: 2021 Commercial vacancy rate

1.2 Housing

In 2016 around 69 per cent of all people belonged to a household owned with a mortgage or outright owned (Figure 9) and by 2021 this figure was around 68 per cent. Whilst in 2016, 34 per cent of people belonged to a household being leased and by 2021 this had declined to 27 per cent (Figure 10).

In both 2016 and 2021 most of the population lived in detached dwellings with three and four bedrooms (Figure 11). Refer to Section 5.1 for housing typology, housing supply and housing affordability.

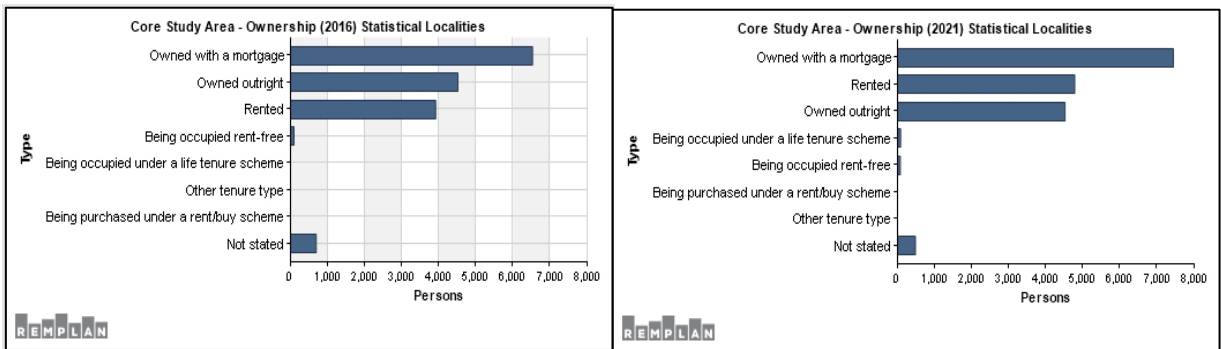


Figure 9: 2016 - Home ownership 2016 – 2021

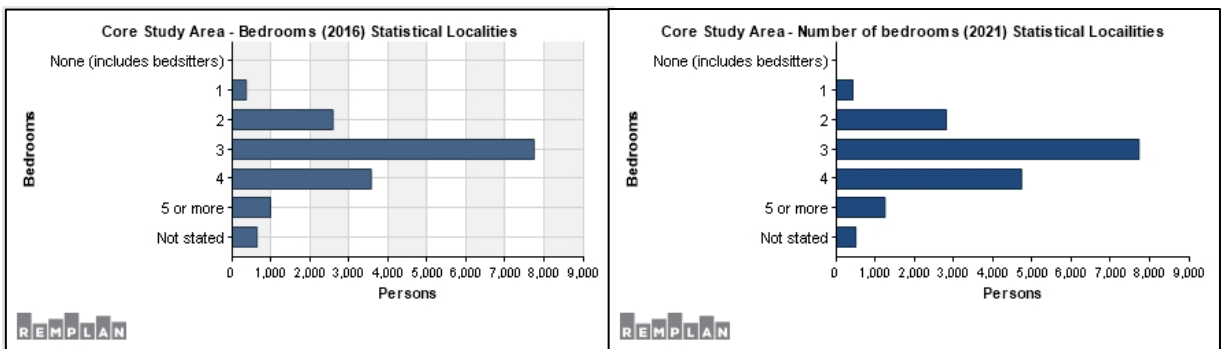


Figure 2

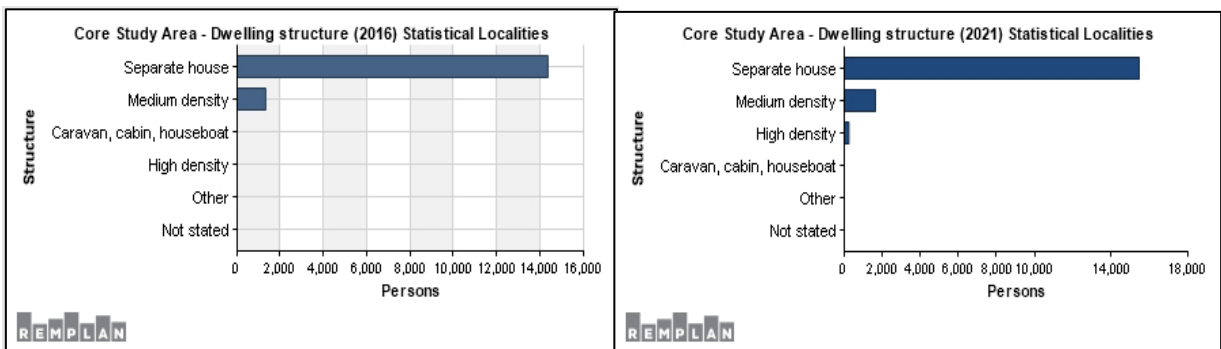


Figure 3

1.3 Social disadvantage

The catalyst area is identified as **modestly disadvantaged** using SEIFA Index rankings.

The Argenton 2016² statistical locality area is identified as the lowest scored SEIFA index rankings, with higher than average levels of disadvantage (Figure 12 and Figure 13).

When considering the larger outer study area which utilises SA2 boundaries, the Bolton Point – Teralba area is the lowest scored SEIFA Index ranking.

A low score indicates relatively greater disadvantage in general. For example, an area could have a low score if there are many households with low income, many people with no qualifications or many people in low skill occupations.

A high score indicates a relative lack of disadvantage in general. For example, an area may have a high score if there are few households with low incomes, few people with no qualifications and few people in low skilled occupations.

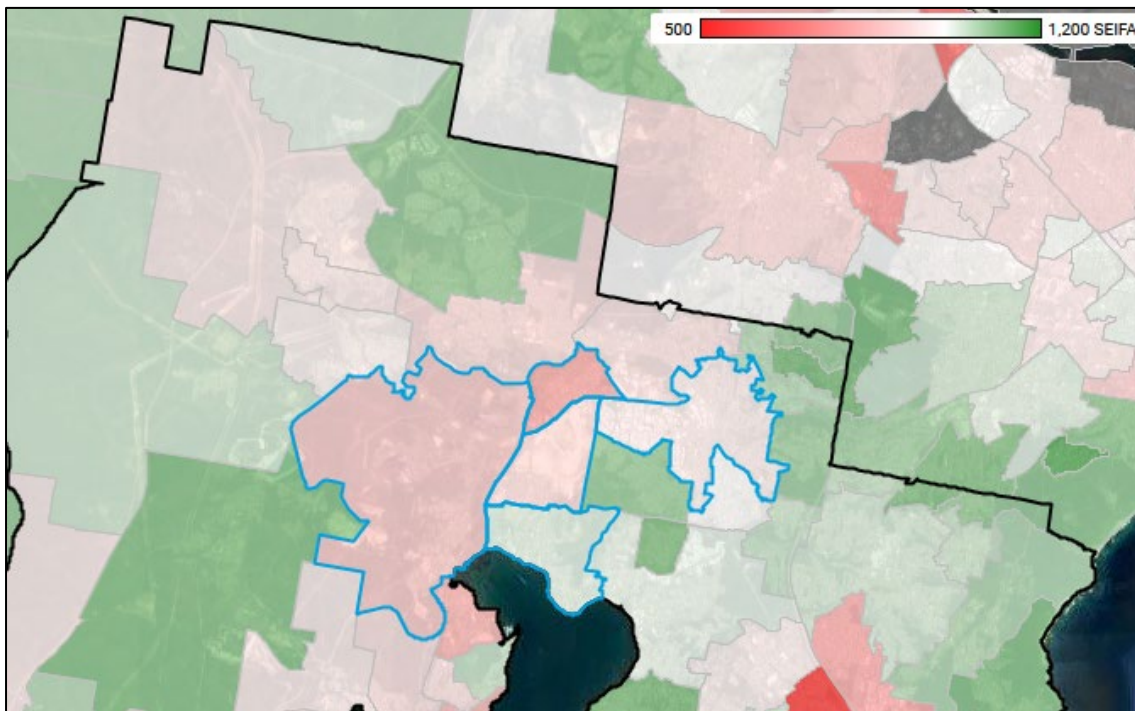


Figure 12: SEIFA ratings for the catalyst area

² SEIFA 2016 is the latest version of data. Source: Australian Bureau of Statistics.
<https://www.abs.gov.au/websitedbs/censushome.nsf/home/seifa>

The SEIFA scores range from 188 (min) to 1,186 (max), with 188 having the highest level of disadvantage and 1,186 being least disadvantaged.

The local government area index of Lake Macquarie (C):

- Ranks 355 out of 544 local government areas with SEIFA scores in Australia,
- There are 189 local government areas which are less disadvantaged, and
- There are 354 local government area that are more disadvantaged



Selected Geography

The SEIFA index of disadvantage scores (lower scores and ranks are more disadvantaged) for the 6 selected areas are:

2016 Localities	SEIFA Disadvantage	
	Score	National Rank
Speers Point ssc 13605	1,016	7,405 / 13,691
Lake Macquarie (C)	996	355 / 544
Cardiff (NSW) ssc 10809	974	4,183 / 13,691
Boolaroo ssc 10482	945	2,655 / 13,691
Teralba ssc 13793	916	1,642 / 13,691
Argenton ssc 10078	855	687 / 13,691

2016 SA2s	Score	National Rank
Warners Bay - Boolaroo SA2 111011214	1,017	1,170 / 2,184
Edgeworth - Cameron Park SA2 111021217	1,015	1,153 / 2,184
Glendale - Cardiff - Hillsborough SA2 111011209	1,007	1,068 / 2,184
Lake Macquarie (C)	996	355 / 544
West Wallsend - Barnsley - Killingworth SA2 111021221	983	818 / 2,184
Bolton Point - Teralba SA2 111021215	926	326 / 2,184

Figure 134: SEIFA Index

1.4 Crime

Crime statistics are collected by the NSW Bureau of Crime Statistics and Research. These statistics were analysed using the NSW Crime Tool Map³. Table 2 shows the crime breakdown within the and NSW for 2021 and the five-year average.

Cardiff was identified as having higher rates of crime under each category except for stealing from retail and malicious damage to property. Over a five-year period theft decreased by 10 per cent and 11 per cent in Cardiff and Glendale respectively. There was an 8 per cent decrease in stealing from a motor vehicle in Speers Point. Glendale also witnessed decreases by 20 per cent in stealing from retail and a 4 per cent decrease in malicious damage to property. There was only one five-year trend increase for the category of more offences within Cardiff of 10 per cent, which is defined as intimidation, stalking and harassment. Nevertheless, crime rates were generally stable or decreasing across the and NSW over a five-year period.

The crime statistics are more prevalent within areas of disadvantage. This can create safety risks for visitors, workers and residents, which adversely impacts upon interaction and overall comfort and safety of place. Areas for crime opportunities are within centres or car parks where property and cars are left unattended for large portions of time and may lack passive surveillance. These places also provide opportunities for close interaction which can result in disorderly conduct or harassment.

Council's *Crime Prevention Strategy* and *Crime Prevention Action Plan*⁴ seeks to implement programs to reduce the varying types of crime, which apply within the and broader City of Lake Macquarie. These projects include reducing crime within the categories of motor vehicle theft, fraud and malicious damage. The implementation of *Crime Prevention Through Environmental Design* also aims to design environments and places that reduce incentives or the opportunity to commit crime.

³ NSW Crime Tool Map (2022). NSW Bureau of Crime Statistics and Research. Source: <http://crimetool.bocsar.nsw.gov.au/bocsar/>

⁴ Crime Prevention Strategy 2021-2024 (2021). Lake Macquarie City Council. <https://shape.lakemac.com.au/crime-prevention>

Table 2: Crime and incident rates within the catalyst area. Source: NSW Bureau of Crime Statistics and Research

2021 Incident and Rate																														
Area	Assault		Assault (non domestic)		Assault (domestic)		Robbery		Sexual offence		Theft		Steal from motor vehicle		Motor vehicle theft		Break and enter dwelling		Break and enter non-dwelling		Steal from dwelling		Steal from retail		Malicious damage to property		Disorderly conduct		More offences*	
	Rate	Incident																												
Argenton	18	n.c	8	n.c	7	n.c	0	n.c	8	n.c	27	n.c	7	n.c	3	n.c	5	n.c	2	n.c	4	n.c	0	n.c	16	n.c	7	n.c	23	n.c
Boolaroo	24	n.c	10	n.c	13	n.c	0	n.c	2	n.c	99	n.c	8	n.c	15	n.c	7	n.c	13	n.c	4	n.c	16	n.c	5	n.c	4	n.c	12	n.c
Cardiff	53	889	24	402	29	486	5	83	22	268	201	3371	37	620	18	301	13	218	18	301	12	201	9	151	68	1140	25	436	51	788
Glendale	42	1303	21	651	20	620	3	31	13	372	217	6455	13	503	9	279	11	341	6	186	10	310	63	1955	73	2265	13	217	40	869
Speers Point	20	571	7	200	12	342	0	0	5	171	87	1885	21	600	9	257	7	200	3	85	4	114	0	0	17	485	4	85	15	458
Teralba	24	n.c	10	n.c	13	n.c	0	n.c	7	n.c	60	n.c	15	n.c	4	n.c	8	n.c	11	n.c	10	n.c	0	n.c	17	n.c	4	n.c	12	n.c
NWLMCA 5-yr trend	Stable		Stable		n.c		n.c		n.c		Cardiff <10 per cent Glendale <11 per cent		Speers Point <8 per cent		n.c		n.c		n.c		n.c		Glendale < 20 per cent		Glendale < 4 per cent		n.c		Cardiff > 10 per cent	
2021 NSW average rate	62864	769	28144	344	32133	393	1760	21.5	14650	179	169206	2071	27712	339	10473	128	17835	218	7132	87	16451	201	17923	219	49136	601	17321	212	40910	500
NSW 5-yr trend	Stable		<4 per cent		>2 per cent		<8.5 per cent		Stable		<7 per cent		<9 per cent		<6.5 per cent		<11 per cent		<10 per cent		<5 per cent		<8 per cent		<6 per cent		<5 per cent		<6.4 per cent	

*More offences include: intimidation, stalking and harassment.

*n.c is defined as 'not counted'.

2 Environmental context

The catalyst area is made up of eight precincts that each have different roles in terms of urban, economic and lifestyle functions. The catalyst area is anchored by the existing strategic economic centres of Glendale and Cardiff and the emerging centres of Boolaroo and Cockle Creek. The catalyst area forms the Gateway to the Lower Hunter, with access to Greater Newcastle, Hunter Valley and Central Coast-Lake Macquarie, with direct links to the Northern Rail Line connecting Greater Sydney.

The area has a diverse cultural heritage, with both Aboriginal and Non-Indigenous features. The catalyst area is located between three major natural landmarks of Lake Macquarie, Munibung Hill and Mount Sugarloaf. These landmarks have great Aboriginal cultural significance and are important for scenic amenity, tourism and active and passive recreation. The catalyst area also has a network of local and regional public open space and active transport connections that form part of the green and blue grid.

2.1 Aboriginal cultural heritage

The is on Awabakal Country, where the Pambalong, Five Islands and Kurungbong clans lived. Munibung Hill, Lake Macquarie-Cockle Creek and Mount Sugarloaf (Figure 14) are culturally significant sites.

Munibung Hill circular rock formation was said to have been placed by the Koun, which was an eagle hawk of great ceremonial importance. Munibung Hill was also known as a site where rocks for tools were found, to make yellow ochre.

Cockle Creek and the lake shoreline of Lake Macquarie were places with abundant natural resources and were also 'passing through' places as people moved from the lake to the mountains. Some parts of the creek corridor would also have been the waiting place for members of the community not eligible to participate in ceremonies higher in the mountains. These places can potentially contain scattered artefacts and middens.

Mount Sugarloaf is in the North West Regionally Significant Growth Area and is a place that is culturally important due to Puttikan, the Monster of Mount Sugarloaf. It was also an important meeting place with neighbouring clans and ritual ceremonies.

Sensitive Aboriginal Landscapes are mapped in *Lake Macquarie Local Environmental Plan 2014* (LMLEP) as occurring along the ridgelines of Munibung Hill, banks of Lake Macquarie-Cockle Creek and ridgelines amongst the Cockle Creek West Precinct (Figure 14). These areas are identified to potentially contain Aboriginal relics and artefacts and are assessed and protected during any development application.

Heritage NSW is primarily responsible for regulating the management of Aboriginal cultural heritage in New South Wales under the *National Parks and Wildlife Act 1974* (NPW Act). The NPW Act is accompanied by the *National Parks and Wildlife Regulation 2019* and a range of codes and guidelines. It is noted that cultural significance can only be determined by Aboriginal people and is identified through Aboriginal community consultation.

Today the Awabakal and Biraban Local Aboriginal Land Councils seek to preserve and promote local Aboriginal history and culture, care for Country and provide economic and wellbeing services to the local Aboriginal community across the catalyst area.

In Speers Point the earliest known non-Indigenous settlement was in the 1820s, but more intense settlement came in the latter half of the 19th century. Lake Macquarie Council chambers moved here from Cardiff in 1915. Speers Point remains the seat of Lake Macquarie government to this day, moving between various buildings until establishing in the present building in 1979.

2.2.2 Teralba Precinct

Non-Indigenous settlement of Teralba occurred in the 1880s. The area became home to many industries, including Great Northern Coal co. Teralba was the location of the first meeting of the Shire of Lake Macquarie. Broadly this area developed with the demands of surrounding industry, such as mining ventures and railway works. As with Boolaroo, T.C. Frith opened a store, which was owned by Thomas Gordon before being occupied by Frith.

2.2.3 Glendale-Argenton

Non-Indigenous settlement in Glendale started after WW2, where the Greater Newcastle Cooperative Housing Society created 20 homes. In the 1990s, a large strip-mall format shopping centre opened. Prior to the 1950s, Glendale was known as Crossroads, owing its name to the intersection of Lake Road and Main Road. A lot of Glendale's European heritage relates to the railways and tramways. The former railways workshop opened in 1926 and closed in 1992, playing an important role in the manufacturing and maintenance of locomotives and rolling stock, becoming one of the largest workshops in NSW. The site is owned by Transport Assets Holding Entity and is leased out to Downer EDI for the manufacture and maintenance of passenger trains for the Sydney suburban railways system.

Argenton was home to the Sulphide Corporation, which treated many metals including gold and silver-lead, as well as general lead smelting. This is a key reason for the contamination issues found across the area. The Speers Point to Wallsend steam tram line used to cross through Argenton. Argenton is home to the oldest golf course in Newcastle and is also the base of the Mines Rescue Station.

2.2.4 Cardiff Mixed-Use and Advanced Industry Precincts

Non-Indigenous settlement of Cardiff occurred in 1883, when a navvies camp was established near Winding Creek due to the decision to extend the railway. Over time Cardiff became a mining industry hub and was home to the Cardiff, Cardiff Borehole, Lymington and Myall collieries. During this period Cardiff was also known for its fruit growing, particularly peaches and plums. Cardiff later developed as a residential area for those working in the nearby heavy industries.

2.3 Topography

The has varied unconstrained and constrained topography. The lowest, flattest and most unconstrained topography (at Reduced Level (RL) 0-10m AHD) are along the Cockle and Winding Creek catchments. These areas are located within the Boolaroo-Speers Point, Cockle Creek, Cockle Creek West, Glendale-Argenton renewal and Glendale retail and sports precincts. These flat areas positively impact on development feasibility enabling opportunities for densification. However, these low lying areas are also subject to flooding constraints.

Topography is highest around the foothills to the summit of Munibung Hill (ranging from Reduced Level (RL) 10m-150m AHD). The varying topography around Munibung Hill offers some constraints in parts the Cardiff advanced industrial, Cardiff mixed use and Cockle

Creek precincts. The numerous ridgelines within Teralba and Cardiff Heights (range from RL 20-90m AHD) creates slope constraints within part of the Cardiff mixed use, Cockle Creek West and Teralba precincts. Development feasibility in these areas may be constrained due to the additional costs associated with structural designs that adhere to site stability requirements.

Figure 15 shows the 'slope stability geotechnical zones (Geo Zones) that are derived by a geological model along with ground slopes. Geo Zones range from 1, being the most severe, to 6, being the least severe. Stability assessment for development under three-storeys is generally required for Geo1 (T1) – Geo 3C (T3A). Buildings over three-storeys and/or greater than or equal to 1000m² in gross floor area also generally require stability assessment.

The Munibung Hill Area is also subject to historic and active landslide risks (Figure 16). These risks are primarily located in the Speers Point-Boolaroo and Cockle Creek Precincts.

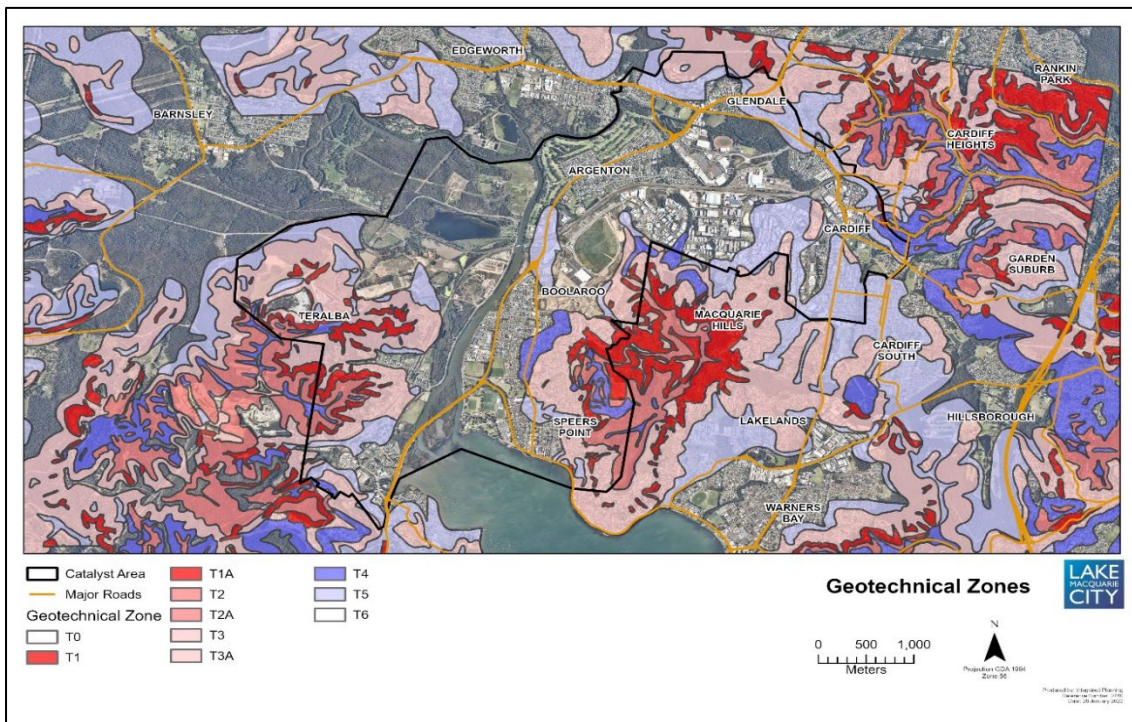


Figure 15: Geotechnical Zones

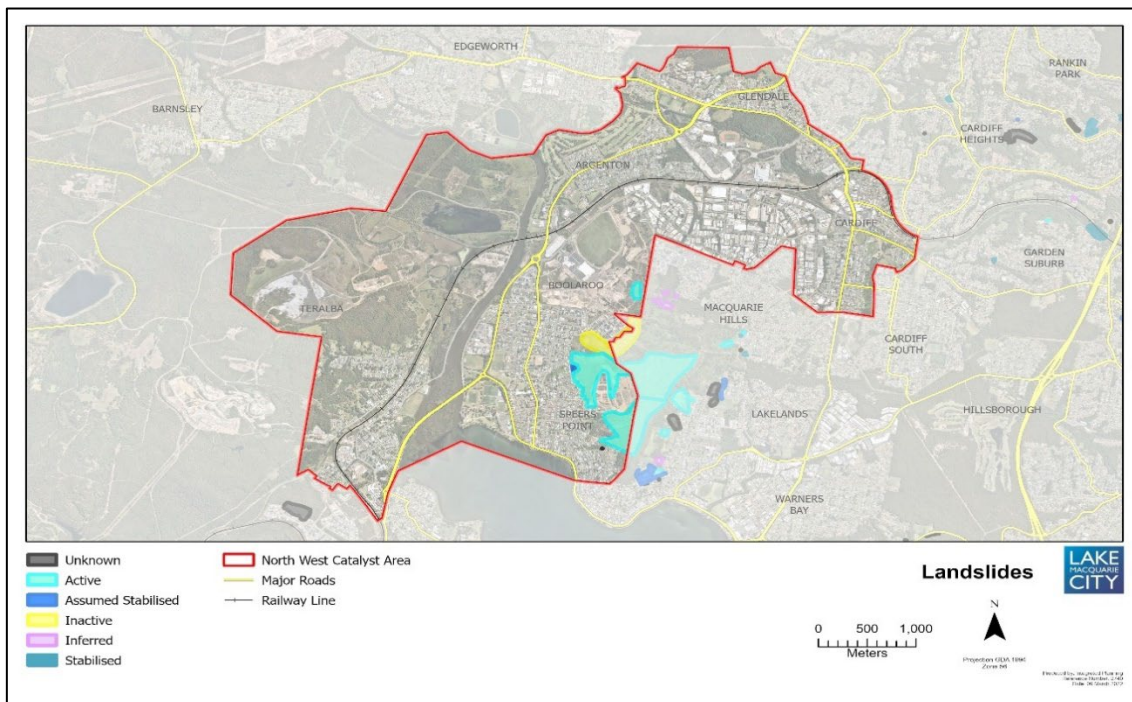


Figure 16: Recorded landslides within the

2.4 Visual, scenic and landscape values

Visual, scenic and landscape values include both the inherent value of the physical landscape and the value given to the landscape by the people who view it. This can include the landform, built form, vegetation and other features, which combine to distinguish one place from another. A views analysis was undertaken to identify the landscape, significant views and vistas across the catalyst area.

LMDCP⁵, identifies the several Scenic Management Zones Visually sensitive landscape controls apply to some areas and visual assessment of new development is required to consider and mitigate any scenic amenity impacts. Figure 17 shows the significant visually sensitive landscapes, views and vistas that require ongoing protection that are relevant to the catalyst area.

2.4.1 Landscape settings

The landscape setting of the catalyst area is defined by four visually significant landscapes. These are the:

- vegetated ridgelines and landmark escarpment of Munibung Hill
- vegetated ridgelines of Teralba
- Sugarloaf ranges
- water landscape of Cockle Creek-Lake Macquarie.

Munibung Hill is the most prominent natural landmark and it can be viewed from all precincts. Development of the Munibung Hill Estate has impacted the natural visual amenity of Munibung Hill when viewed from the north of Booragoo and east of Teralba.

⁵ Lake Macquarie Scenic Management Guidelines (2013).

The western extent of the is dominated by the vegetated ridgelines of Teralba and the Sugarloaf Ranges and contributes to the unique landscape identity of the broader north west of Lake Macquarie. Cockle Creek-Lake Macquarie provides the low-lying reflective lake edge and foreshore landscape which visually and physically connects the Boolaroo-Speers Point and Teralba Precincts. The feature's scale is somewhat enclosed when placed in the context of the Teralba and Munibung ridgelines which forms the unique visual backdrop.

Development over time has eroded the remnant vegetation between each precinct resulting in an amalgamated form that connects each precinct, apart from the Winding Creek vegetated area and northern rail line which disconnects the Cardiff and Glendale areas.

The grassed hill of the artificial containment cell within the Cockle Creek Precinct is also visually prominent from some higher placed observational points such as the Boolaroo-Speers Point, Cardiff advanced industrial, Cockle Creek, Cockle Creek West and Teralba precincts (Figure 4).

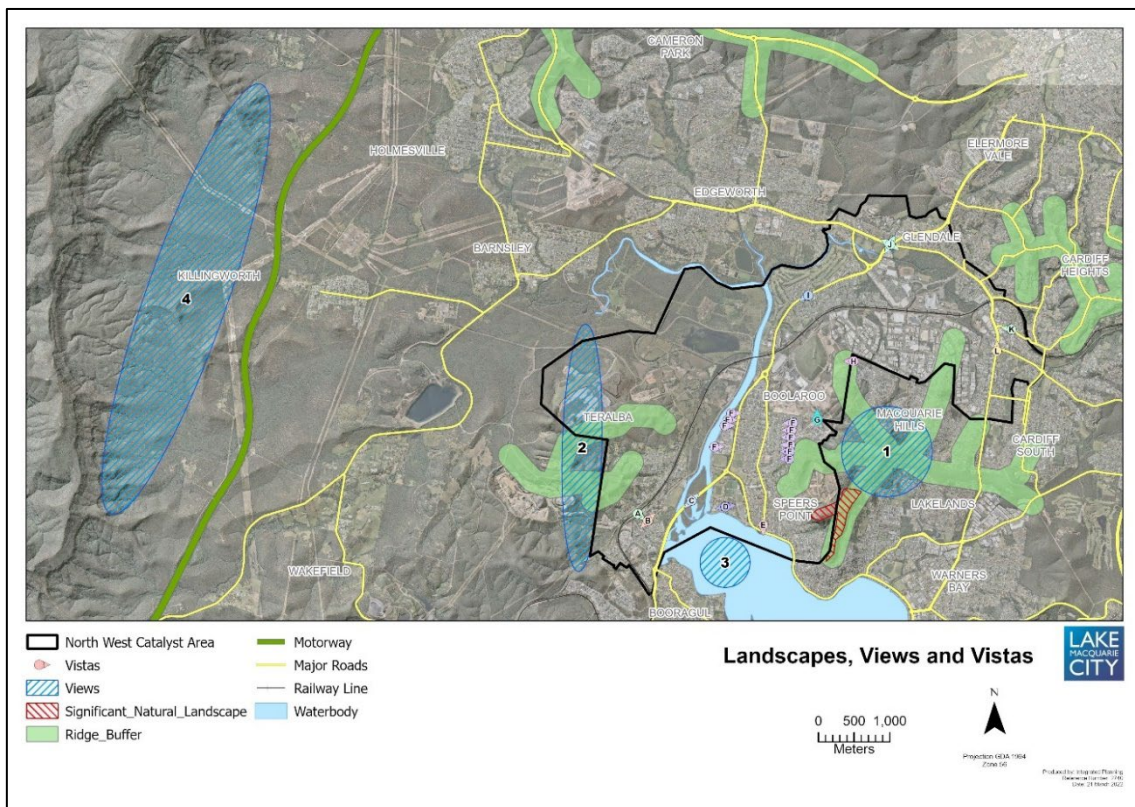


Figure 17: Landscape Views and Vistas across the North West Regionally Significant Growth Area

2.4.2 Views

A view is defined as an extensive or long-range outlook towards a particular urban aspect or topographical feature or landmark of interest. Key views include the:

- natural vegetated landscape feature of Munibung Hill viewed from either the north, east, south or west
- natural vegetated landscape feature of the Teralba ridgelines when viewed west and north of Cockle Creek Bay and west from Boolaroo-Speers Point, Cockle Creek and Glendale Argenton renewal precincts
- natural water landscape of Cockle Creek Bay-Lake Macquarie when viewed east from the Teralba ridgelines, south from Boolaroo-Speers Point, Munibung Hill, north from Booragul and west from Warners Bay
- natural vegetated landscape of the Sugarloaf ranges viewed to the west from Main Road and Lake Road within the Glendale-Argenton Renewal Precinct and Main Road within the Cardiff mixed use precinct.

2.4.3 Vistas

A vista is defined as a narrow view along a street terminated by a notable building, structure or natural feature. Key vistas include:

- streetscape of Anzac Parade Teralba looking east to Cockle Creek Bay
- streetscape of York Street Teralba looking north to south
- streetscape of Five-Islands Road north to south towards Cockle Creek
- the promenade of Speers Point Park looking east to west
- streetscape of Main Road Speers Point looking south towards the lake
- streetscape of Second, Third, Fourth and Seventh Street Boolaroo east towards Munibung Hill
- streetscapes of Second and Seventh Street Boolaroo looking west to Teralba ridgelines
- streetscape of Milburn Circuit, Boolaroo looking towards north to Cockle Creek precinct
- streetscape of Blantyre Road Macquarie Hills looking west to the Cockle Creek precinct
- streetscape of Lake Road Argenton looking south-west
- streetscape of Main Road/Lake Road intersection Glendale all directions
- streetscape of Main Road Cardiff looking west
- streetscape Macquarie Road looking north towards the Cardiff strategic centre.

Vistas within the Boolaroo area and Blantyre Road would benefit from aesthetic improvement and currently have poor urban form, lack street trees or have excessive signage.

2.5 Green spaces and waterways

The natural networks of green spaces and waterways that connect centres, public transport networks and major residential areas is also referred to as the blue and green grid⁶. High-quality green spaces and waterways improve the quality of our urban environments and can help to mitigate the effects of climate change. Well-designed and maintained green infrastructure can help to absorb flood water, cool the urban environment, clean the air, provide space for local food production, and ensure the survival of NSW’s native fauna and flora as well as promoting active living, health and wellbeing.

Cockle Creek and Winding Creek provide the key blue green corridor connections throughout the (Figure 18). This corridor is supported by foreshore vegetation and the regional shared cycleway connecting to Speers Point Park. The ridgelines of Munibung Hill and Teralba provide the key vegetation corridors that connect throughout the . Quality and connectivity of the blue green grid has noticeably reduced over time due to urban development and industry activity. East west vegetation corridors have been fragmented and street trees are noticeable deficient, particularly in the Cockle Creek and Glendale-Argenton Renewal and Glendale Retail and Sports Precincts. Industry and residential stormwater runoff have also degraded water quality has.

Note: Open spaces and recreation facilities are defined both as a category within the green and blue grid, and social infrastructure. Details of as parks and recreation facilities are addressed Section 6.2 Social Infrastructure.

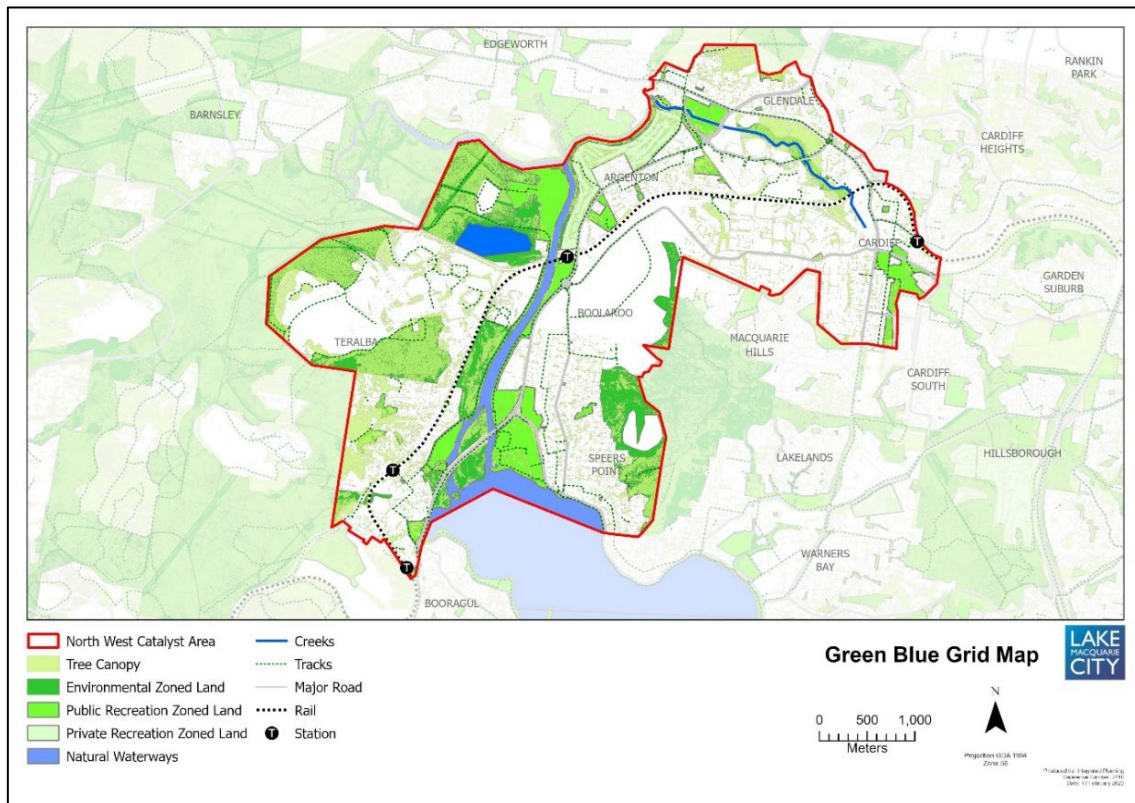


Figure 18: Green spaces and waterways network

⁶ Greener Places, 2020. Government Architect NSW. Source: <https://www.governmentarchitect.nsw.gov.au/resources/ga/media/files/ga/design-guides/framework-document-greener-places-2020-06-02.pdf>

2.5.1 Hydrology, waterways and foreshore

The lower reaches of the 109 Km² Cockle Creek catchment are within the Cockle Creek has five main tributaries:

- Winding Creek,
- Brush Creek,
- Cocked Hat Creek,
- Flaggy Creek and
- Burkes Creek.

These tributaries converge into Cockle Creek at Argenton near the Waratah Golf Course, then drain into Lake Macquarie.

Winding Creek is the tributary that has the most urban development with the Cardiff strategic centre straddling its banks.

The foreshores and floodplains of these creeks contain aquatic and terrestrial ecosystems. The mangroves, wetland and riparian vegetation are of significant ecological value and perform a range of functions essential for the ongoing health of the waterways and the Lake. There are several ecotones and transitions between fresh, saline and estuarine ecosystems throughout the catchment. Winding Creek is fresh water at Cardiff and saline below the weir, near its confluence with Cockle Creek. Stockton Borehole and Cockle Creek floodplain wetlands begin as freshwater systems and transition to saline/estuarine towards the Lake. Cockle Creek is one of the most significant environmental attributes of the . It runs along the Boolaroo-Speers Point, Cockle Creek, Cockle Creek West, and Glendale-Argenton Renewal Precincts.

One of the most significant aquatic habitats is Stockton Borehole, which in conjunction with Five Islands wetlands, is frequented by several migratory bird species including Curlew Sandpiper, Sharp-tailed Sandpiper, Red-capped Plover. These species are protected under International Agreements and National legislation.

2.5.2 Water Quality

The water quality in Cockle, Winding and Brush Creeks has deteriorated because of development higher in the catchment over the past decade. Clearing and reshaping of land for urban development has impacted the lower reaches of these creeks and north Lake Macquarie. Development of Speers Point Quarry also noticeably influenced water quality where the waterway draining this area enters the Lake.

Water quality grades for Cockle Creek estuary have improved from very poor (grade F) in 2011–12 to good (grade B) and fair (grade C) in subsequent years of monitoring. The Overall Grade for water quality in Cockle Creek estuary remained fair in 2019-2020 due to turbidity and chlorophyll-a concentrations exceeding the 80th percentile trigger value on all occasions except one. Trend analysis has shown significant declines since 2013 in total phosphorous (TP) and total dissolved phosphorous (TDP) concentrations in Cockle Creek of $-1.8 \mu\text{g-P/L}$ per year and $-1.1 \mu\text{g-P/L}$ per year, respectively. Chlorophyll-a concentrations show an upward trend (not statistically significant) of $+0.16 \mu\text{g/L}$ per year. There have been no statistically significant changes in turbidity or Total Suspended Solids concentrations in Cockle Creek since 2013.

Despite implementation of erosion controls, the clearing of vegetated land, reshaping of landforms and increased urban development continues to have an adverse impact on water

quality and aquatic ecosystems of the waterways and Lake. Over time, the high loads of sediment and nutrients generated from the catchment has significantly impacted the extent and health of seagrass in Cockle Bay. Assessments undertaken by DPE the “Cockle Creek estuary to be one of the most sensitive areas to catchment inputs partly due to the high loads of Total Suspended Solids received in runoff events and slow exchange with Cockle Bay and the lake basin” (State of the Estuary report 2021).

An assessment of sustainable catchment loads of diffuse pollutants from the catchments around Lake Macquarie⁷ indicates that in general, load reductions of up to 70 per cent are required to maintain optimal seagrass conditions in the most impacted bay ends (e.g. Cockle Bay and Bonnells Bay).

Infill development on more gently sloping land is likely to have less impact on the waterways of the , provided upgrading existing systems and controls are upgraded to reduce these impacts to more acceptable levels.

2.5.3 Wetlands and coastal management

Aquatic habitat and State significant wetlands occur in the lower lying areas of the as shown in Figure 19. Mapped State significant wetlands are subject a more rigorous development assessment process under the requirements of *State Environmental Planning Policy (Resilience and Hazards)*. Special requirements apply in the mapped Coastal Wetland areas and ‘proximity’ areas within 100m of the wetland. These requirements aim to maintain the biophysical, hydrological (surface and groundwater) and ecological environment, coastal environmental values and natural coastal processes, the water quality marine and native vegetation, Aboriginal cultural heritage, existing open space and foreshore access.

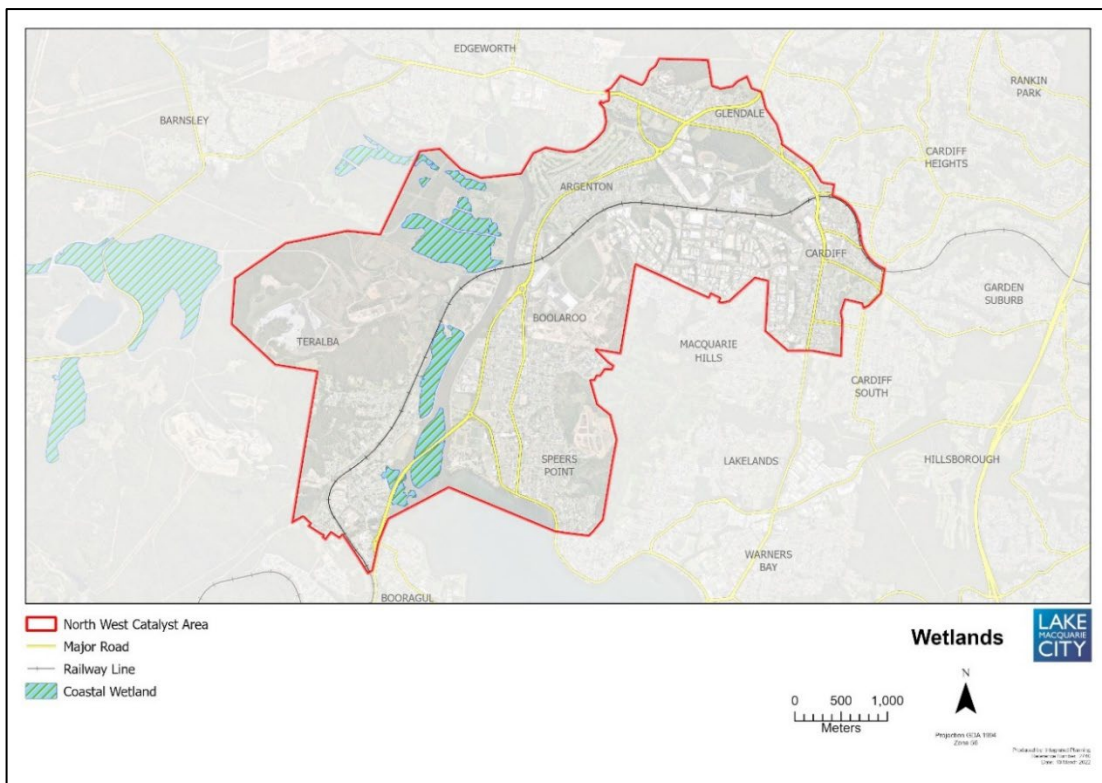


Figure 19: Significant coastal wetlands

⁷ Department of Planning, Industry and Environment, 2020. *State of the Estuary Lake Macquarie 2020*. NSW Government.

2.5.4 Native vegetation, corridors, flora and fauna

Remnant native vegetation within the is highly fragmented from clearing and development except for some well-connected patches near the perimeter as shown in Figure 20. Many of the native vegetation corridors are along the riparian corridors, watercourses and wetlands and most require some form of rehabilitation to improve the range of species that can use them. Retention and enhancement of patches of native vegetation and the links that connect these areas is extremely important for the survival and movement of native fauna populations and ongoing ecological processes including plant pollination. Larger patches of native vegetation include Cockle Creek wetlands, ridges to the north and west of Teralba and the floodplain north of Racecourse Road within the Cockle Creek West Precinct.

There are several threatened flora species in the . These include *Angophora inopina*, *Grevilea parviflora*, *Melaleuca biconvexa*, *Rhodamnia rubescens*, *Syzgium paniculatum*, and *Tetratheca juncea* (Figure 21). Most of these are found in the clusters of native remnant vegetation in the Cockle Creek, Cockle Creek West and Glendale Retail and Sports Precinct.

There are several threatened fauna species in the catalyst area. These include the Squirrel Glider, Black Bittern, Little Eagle, White-bellied Sea Eagle and the Powerful Owl (Figure 22). These are also found in the clusters of native remnant vegetation in the Cockle Creek, Cockle Creek West and Glendale Retail and Sports Precinct.

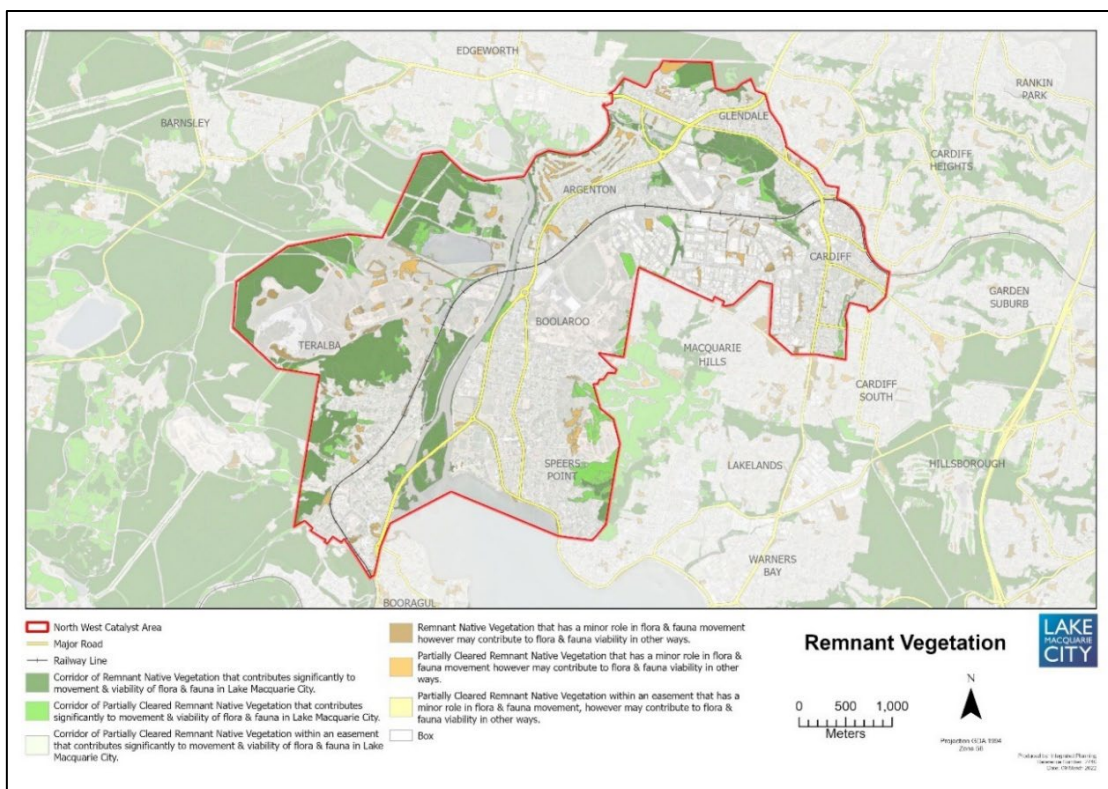


Figure 20: Remnant vegetation

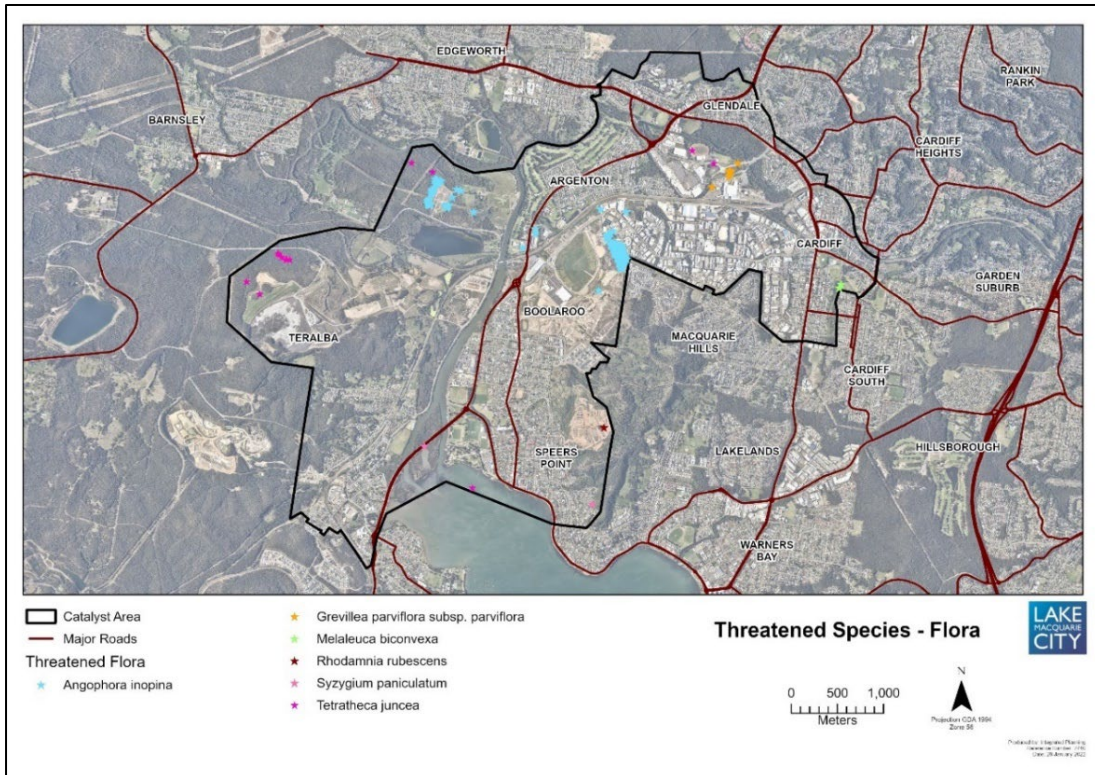


Figure 21: Threatened flora species

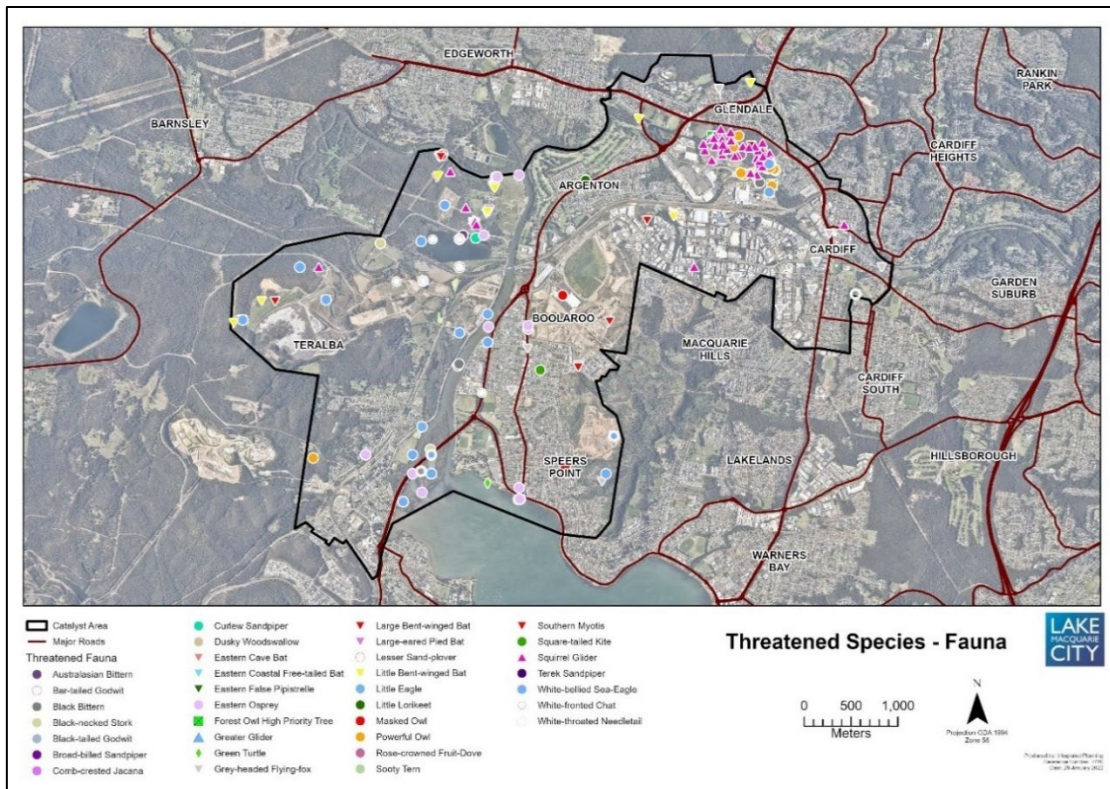


Figure 22: Threatened fauna species Resilience and risk

Resilience is the capacity of individuals, communities, businesses and systems within a city to survive, adapt and thrive no matter what kinds of environmental risks, stresses and shocks they face. The land use planning system plays an important role in creating resilient places⁸, by way of directing development away from areas of risk or establishing building controls to adapt to and withstand environmental risk.

2.6.1 Climate change

Climate change is influenced by carbon dioxide emissions created by a few human driven industries and activities. The rise in carbon dioxide emissions has resulted in an average temperature rise of 0.82 degrees Celsius from 2010 to 2020⁹. This rise in temperature creates a compounding process where the severity of natural hazards such as temperature, bushfire, rainfall, flooding and lake level rise increase. As the risk and growing footprint of these events become more prevalent, it may result in some existing or future development and infrastructure being untenable due to the risk to life, property and the cost of developing resilience measures. Key environmental hazards that are likely to increase in severity within the catalyst area include:

- Rising temperatures creating heat islands within urban areas, where low street tree coverage and hardstand concrete environments are present, such as within the Cardiff Mixed Use, Cockle Creek, Glendale-Argenton Renewal and Glendale Retail Sports precincts.
- Increasing and more severe bushfires that will create further risk of damage to communities, buildings and infrastructure such as within the Munibung Hill area, Cockle Creek West and Glendale Retail and Sports precincts.
- Fluctuations in average rainfall creating drier and wetter seasons increasing the risk of expanded flood prone areas within the Boolaroo-Speers Point, Cardiff Mixed Use, Cockle Creek West, Glendale-Argenton Renewal and Teralba Precincts.
- Projected sea and lake level of 0.4 metres by the year 2050, and by 0.9 metres by the year 2100¹⁰, which may impact low lying residential, industrial or commercial areas and infrastructure within the Boolaroo-Speers Point, Cockle Creek West and Teralba Precincts.

2.6.2 Mine subsidence

The is located within the Lake Macquarie and Killingworth-West Wallsend Mine Districts (Figure 23). Mine Subsidence districts area applied NSW Subsidence Advisory Surface Development Guidelines (Guidelines) in accordance with the *Coal Mine Subsidence Compensation Act 2017*¹¹. These guidelines inform stakeholders of mitigating any damage to surface structures from mine subsidence within proclaimed mine subsidence districts. The Guidelines contain eight categories:

- Guideline 1 Non-active mine workings at risk of pothole subsidence
- Guideline 2 Non-active mine workings possible subsidence risk
- Guideline 3 Non-active mine workings remote subsidence risk
- Guideline 4 Active mining areas – high predicted subsidence impact

⁸ Resilience and Natural Hazard Risk, 2022. NSW Department of Planning and Environment. Source: <https://www.planning.nsw.gov.au/Policy-and-Legislation/Resilience-and-natural-hazard-risk>

⁹ Global Climate Report, 2020. National Oceanic and Atmospheric Information. Source: <https://www.ncei.noaa.gov/access/monitoring/monthly-report/global/202013>

¹⁰ Climate Change Risk Assessment Adaptation Report, 2010. Lake Macquarie City Council.

¹¹ Surface Development guidelines, 2018. Subsidence Advisory NSW. Source: <https://www.nsw.gov.au/subsidence-advisory/development>

- Guideline 5 Active mining areas – moderate predicted subsidence impact
- Guideline 6 Active mining areas – minimal predicted subsidence impact
- Guideline 7 On Application
- Guideline 8 No Restrictions

The Glendale-Argenton Renewal precinct and the Glendale Sports and Retail Precinct largely fit in the guidelines 8, 3, and 2. The Cockle Creek precinct is guideline 7. The Cockle Creek West precinct is guidelines 2 and 7. The Teralba precinct is guidelines 1, 2, 3, 7 and 8. The Cardiff Advanced Industry Precinct is guidelines 1, 2, 7 and 8. The Cardiff Mixed Use Precinct is guidelines 1, 2, 3, 7 and 8. Boolaroo and Speers Point are not in any Mine Subsidence District.

Note: Information regarding guidelines and district boundaries are subject to change over time.

Future development is assessed in accordance with the Subsidence Advisory NSW Merit Assessment Policy¹². The process considers the risk to a specific development based on the mine subsidence risk at the site. The mine subsidence risk can vary from lot to lot and damage risk varies depending on the proposed construction materials and scale of the proposed building. All these factors can affect the feasibility of a development. The Glendale Retail and Sports precinct, the northern extent of the Glendale-Argenton Renewal precinct and the Cardiff Mixed Use precinct are the most constrained by mine subsidence.

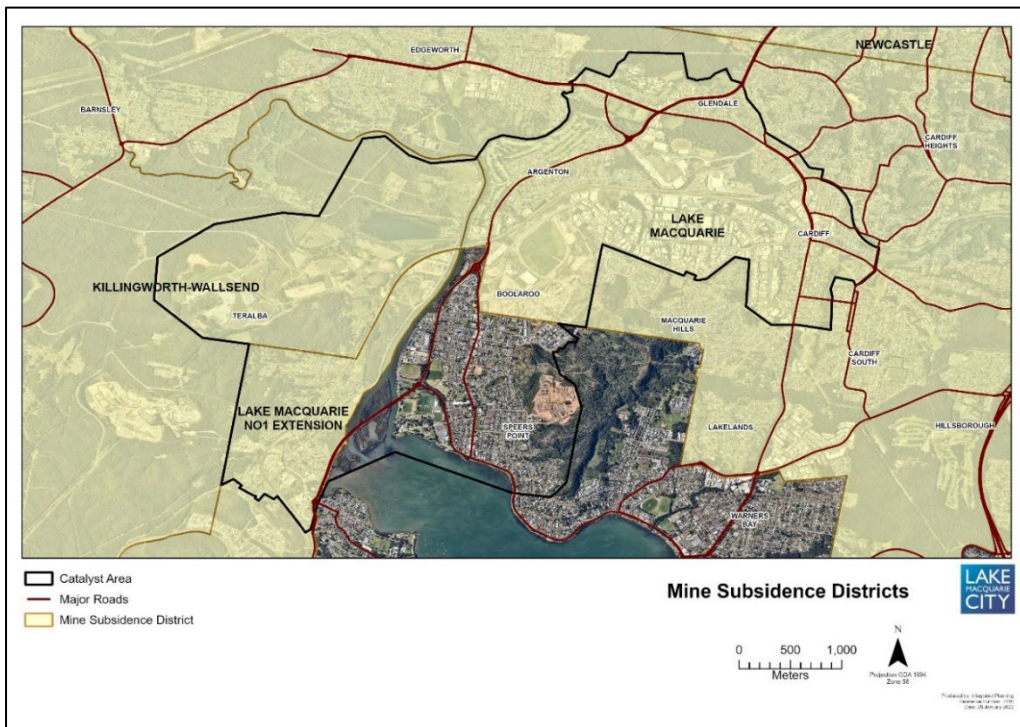


Figure 23: Mine subsidence districts

2.6.3 Contamination

¹² Merit Assessment Policy, 2018. Subsidence Advisory NSW. Source <https://www.nsw.gov.au/sites/default/files/2022-01/merit-assessment-policy-development-application.pdf>

The contains large areas of contaminated and potentially contaminated land. This contamination is from historic development and industry activities from the Pasminco Invetic Smelter in Boolaroo, mining operations in Argenton, Cardiff, Glendale and Teralba, rail operations in Cardiff, Cockle Creek, Glendale and Teralba, and industrial activity within the Cardiff Advanced Industrial Precinct. Residential and commercial development that has occurred over time has also used contaminated materials during construction such as black slag for fill and asbestos for building structures.

Councils Contaminated Land Policy¹³ monitors and establishes guidance on developing on potentially contaminated and contaminated land. Contamination notation numbers are applied to potentially contaminated or contaminated properties and are described as.

- 1 Where contamination has been confirmed on site, in the form of a contamination report, and remediation and/or abatement has not occurred.
- 2 Where land has a previous site history which could have involved contaminants, or where the land is in the vicinity of a current or historic contamination source, for instance the former Pasminco Cockle Creek Smelter, and no chemical sampling of soil has occurred.
- 3 Where contaminated land that has undergone some form of remediation or abatement, such as a site audit statement, site audit report, Stage 4 validation report or Lead Abatement Strategy (LAS) and contaminants on site are above the contaminated land investigation threshold levels.
- 4 Where land that was previously contaminated has undergone some form of remediation or abatement in anticipation of a particular use, or range of uses, and contaminant levels on site are below the contaminated land investigation threshold levels.
- 5 Where land has a previous site history which could have involved contaminants, or is in the vicinity of a contamination source, and the land has undergone some form of testing (for example, participation in the Pasminco Lead Abatement Strategy, LAS) and found to be below the contaminated land investigation threshold level.
- 6 Where Council records do not contain a clear site history for the land or there is inadequate knowledge of uses that have occurred on the land.

Figure 24 shows the potentially contaminated or contaminated land across the catalyst area. Large parts of the catalyst area are identified as contamination notation 2, reflecting the industrial history of the area. A preliminary contamination assessment will be required for most development within the , and any subsequent remediation requirements may impact the feasibility of development.

Most land within the Cockle Creek Precinct has been remediated below contamination threshold levels with contaminated material moved to the containment cell with a contamination notation 1.

The Boolaroo-Speers Point Precinct and Glendale-Argenton Renewal Precincts were also significantly impacted by the historic smelter activities. A Pasminco Cockle Creek Smelter Lead Abatement Strategy¹⁴ was applied to these lands and property owners were offered the option to have their land tested and remediated. This process resulted in some properties being remediated to acceptable contamination threshold levels. However, numerous properties remain at contamination notation 1, and will require remediation before redevelopment can occur.

¹³ Contaminated Land Policy, 2022. Lake Macquarie City Council. Source: <https://www.lakemac.com.au/files/assets/public/hprtm/land-use-and-planning-policy-management-of-land-either-contaminated-or-potentially-contaminated-and-section-10.7-planning-certificates/managing-contaminated-or-potentially-contaminated-land-within-the-city-of-lake-macquarie-policy-external-version-8.pdf>

¹⁴ Pasminco Cockle Creek Smelter Lead Abatement Strategy, 2007. P.McCluskey and D.Zines. Source: <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/lead/lead-abatement-strategy-implementation.pdf?la=en&hash=D135888494E025FA5B4EB5722F5B9C8484543B38>

There are also 20 identified Environmental Protection Authority contaminated sites and these are in the Boolaroo-Speers Point, Cockle Creek, Glendale-Argentton Renewal, Glendale Retail and Sports and Teralba Precincts.

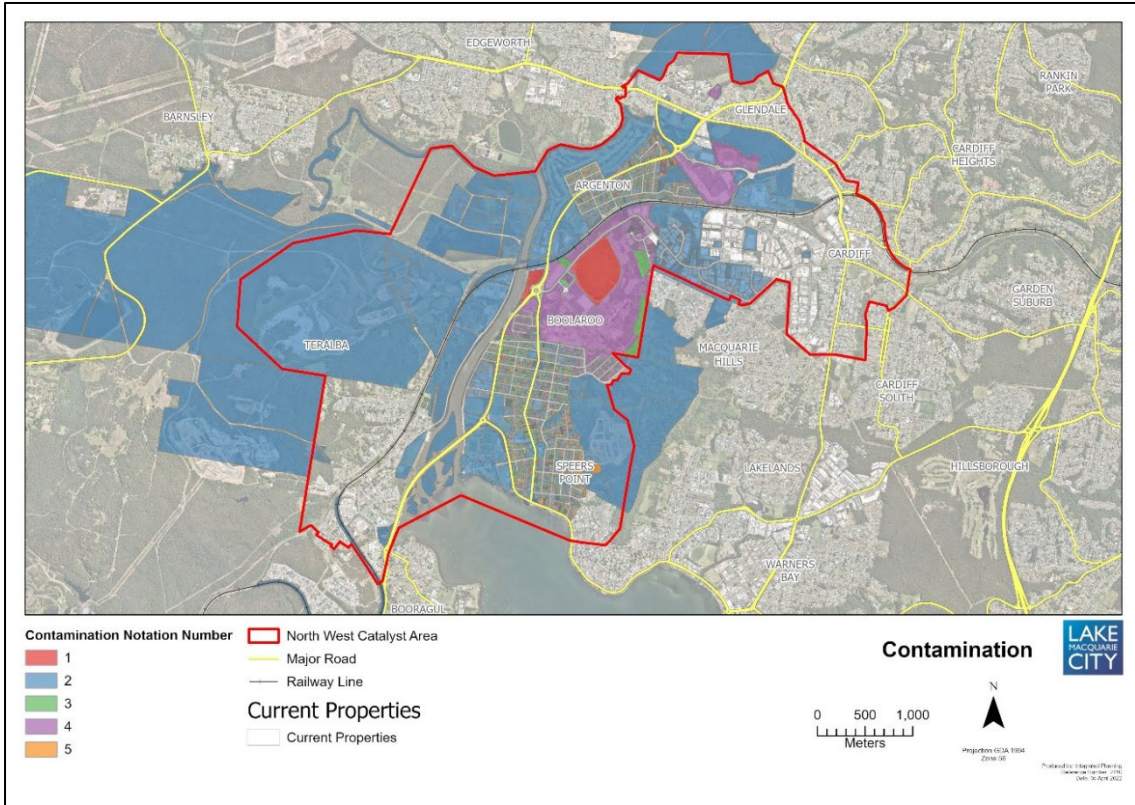


Figure 24: Potentially contaminated and contaminated sites

2.6.4 Acid sulfate soils

Acid sulfate soils are soils that have higher than usual levels of sulphides, via iron pyrite. If exposed to oxygen, these soils have the potential to become highly acidic. Common ways soils can be exposed to oxygen is through dredging, stockpiling and de-watering, earthworks and the lowering of ground water. If these soils become wet after being exposed to oxygen, they will leach acids, along with the metals present in the soil, into the ground water or adjoining water bodies, waterways or wetlands. The effects of this include the death of fish and the corrosion of metal and concrete infrastructure.

Acid sulfate soils within the are located along the Cockle Creek catchment which impacts the Boolaroo-Speers Point, Cockle Creek, Cockle Creek West, Glendale-Argentton Renewal, Glendale Retail and Sports and Teralba Precincts (Figure 25).

Works that disturb more than one tonne of soil or that are likely to lower the water table require development consent. A sulfate soils management plan may be required as part of the development application.

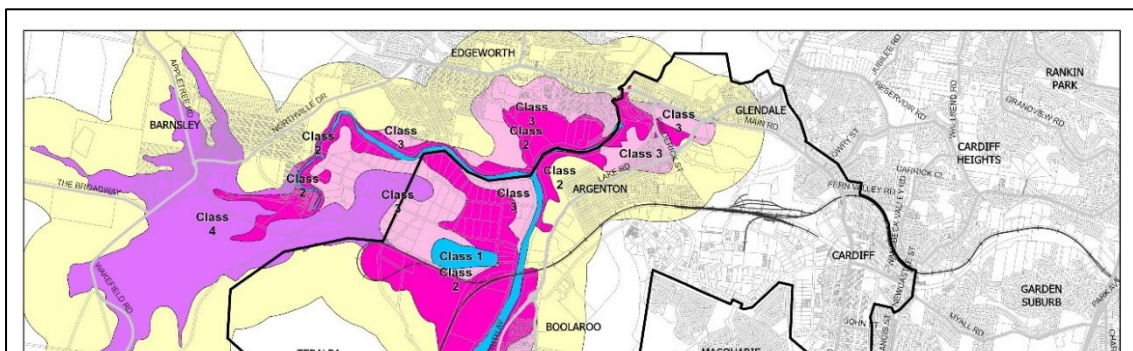


Figure 25: Acid Sulfate Soils

Class	Works
1	Any works.
2	Works below the natural ground surface. Works by which the water table is likely to be lowered.
3	Works beyond 1 metre below the natural ground surface. Works by which the water table is likely to be lowered beyond 1 metre below natural ground surface.
4	Works beyond 2 metres below the natural ground surface. Works by which the water table is likely to be lowered beyond 2 metres below natural ground surface.
5	Works within 500 metres of adjacent Class 1, 2, 3 or 4 lands that are likely to lower the water table below 1 metre AHD on adjacent Class 1, 2, 3 or 4 lands.

2.6.5 Flooding

The Cockle Creek and Winding Creek catchments are impacted by high hazard (1 per cent annual exceedance probability (AEP)) flooding. Flooding in Cockle Creek and Winding Creek occurs due to intense rainfall over the catchments. Downstream of Lake Road on Winding Creek, flood levels are influenced by water levels in Cockle Creek. The lower reaches of Cockle Creek are influenced by water levels in Lake Macquarie, but this is not a significant factor as the peak lake level occurs several hours after the peak flow in Cockle Creek. The rise in lake level is relatively small being only approximately 1m in both the February 1990 and June 2007 events.

The most significant historic flooding events have occurred within Winding Creek due to its location within the Cardiff Strategic Centre and has caused the most impact to infrastructure, property and the community. Approximately 4 kilometres of open concrete channel, culverts and pipes, 475 metres of natural creek behind Pendlebury Road and detention basins 3 and 5 are owned by Hunter Water. Flood management responsibilities for Hunter Water are asset management, monitoring water levels in basin 5 and notifying the SES. A 2012 Memorandum of Understanding between Hunter Water and Lake Macquarie City Council outlines the ownership, roles and responsibilities to facilitate effective flood risk management.

A Winding Creek and Lower Cockle Creek Flood Study and Floodplain Risk Management Study and Plan¹⁵ identifies that 85 building floors, of which 37 are residential, were inundated above floor level in the 1 per cent AEP flood event. This number is even higher when applied with the probable maximum flood (PMF) event. Most of these buildings are in the Boolaroo-Speers Point precinct, Cardiff Strategic Centre and Edgeworth.

Flood impacts are likely to increase due to climate change impacts of increased rainfall and rising sea and lake levels. Sea and lake level rise is anticipated to increase by 0.9m which will have a negligible impact of 0.1m within Winding Creek and minor impact of 0.3m at Cockle Creek. Increased rainfall will have a greater impact within the catchment with estimated increased to flood levels between 0.2m to 0.7m.

¹⁵ Winding Creek and Lower Cockle Creek Flood Study and Floodplain Risk Management Study and Plan, 2016. Lake Macquarie City Council. Source: https://shape.lakemac.com.au/flood-planning-winding-creek-lower-cockle-creek?tool=survey_tool

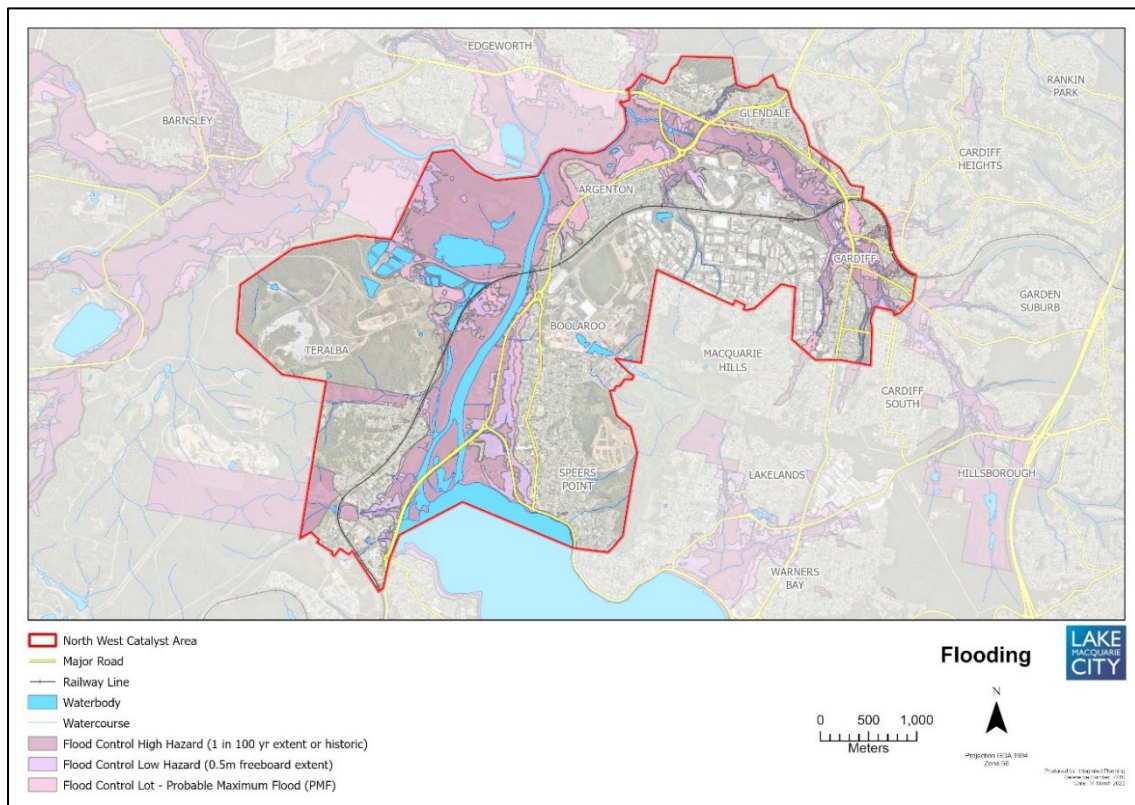


Figure 26: Flood prone land

2.6.6 Bushfire

Parts of the catalyst area are identified as bushfire prone land. These are generally associated with areas of remnant vegetation. Bushfire risk relates to vegetation and slope. Vegetation Category 1 has the highest risk (refer to Figure 27). Precincts with the highest bushfire risk are the Teralba Precinct, Cockle Creek West, and areas around the bushland owned by the Transport Assets Holding Entity (TAHE) in the Glendale Sports and Retail Precinct.

Mitigation of Bushfire risk is addressed within the Central Coast Bush Fire Management Plan¹⁶. Bushfire prone land is assigned a risk rating and based on that rating mitigation treatments are assigned. Areas rated as extreme or very high are provided the highest priority and are assigned ongoing mitigation measures, such as hazard reduction burns fire trails, community education and ignition management. Mitigation measures are implemented by Council, NSW Fire and Rescue and the NSW Rural Fire Service. Areas of Extreme, Very High or High risk within the include:

¹⁶ Central Coast Bush Fire Management Plan, 2020. Central Coast Bush Fire Management Committee. Source: <https://ccbfmc.org/>

Table 3: Risk rating of asset

Asset	Precinct	Risk Rating
Electricity Transmission Line 550 kV	Cockle Creek West	Extreme
Australian Gas Pipeline	Cockle Creek West	Very High
TAFE NSW Glendale and Schools complex	Glendale-Argenton Renewal	Very High
Macquarie College Glendale	Glendale-Argenton Renewal	Very High
Cardiff South/Lakelands	Cardiff Mixed Use	Very High
Teralba - western interface	Teralba	Very High
Electricity Transmission Lines 132/330 kV	Cockle Creek West	Very High
Northern Rail corridor	Multiple	Very High
Racecourse Rd Teralba – isolated residential	Teralba	High
Glendale urban area	Glendale Retail and Sports	High

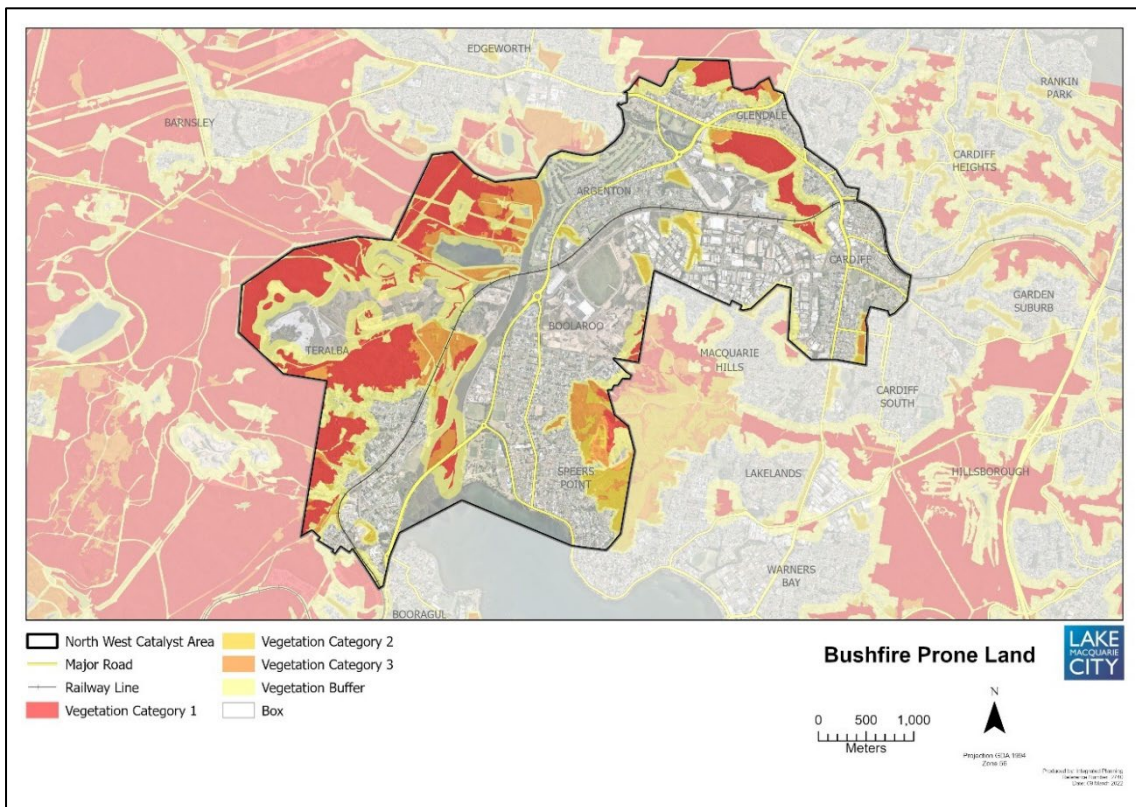


Figure 27: Bushfire Prone Land

2.6.7 Urban Heat and greening

Tree cover in the is fragmented. Areas with significant tree cover are generally where limited development has occurred, or land zoned for environmental or recreation purposes (refer to Figure 28). These areas are in the Cockle Creek West Precinct, west of the Teralba Precinct, the Munibung Hill area, bushland within the Glendale Retail and Sports Precinct and Speers Point Park with the Boolaroo-Speers Point Park Precinct.

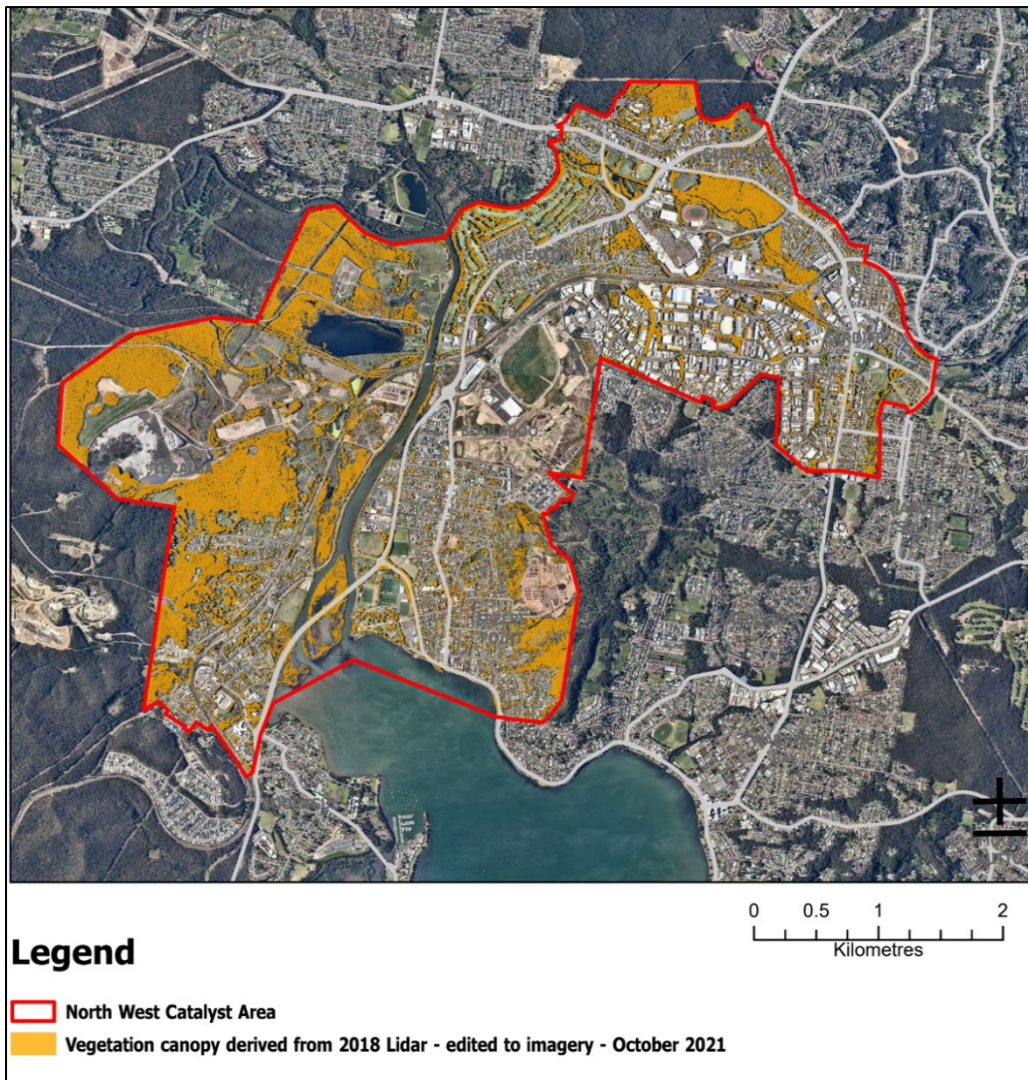


Figure 28: Vegetation Canopy (2021)

Council’s Urban Heat Strategy¹⁷ outlines that urban heat is increasing with more than 12 days per year experiencing over 30°C. Areas that lack trees and contain large areas covered by buildings and hard surfaces increase the urban heat island affect. These areas experience higher temperatures when compared to environmental or rural areas because the built form retains heat and limits the ability of the environment to cool at night. Examples of

¹⁷ Urban Heat Strategy, 2022. Lake Macquarie City Council.

this in the catalyst area are the caryard dealerships in Cardiff and the Stockland Glendale shopping centre car park which can experience 10°C above baseline temperatures.

Extreme and excessive heat events can impact people’s health and wellbeing, and disrupt transport, utilities and other infrastructure services.

Council’s Urban Heat Strategy establishes a low to high risk matrix of areas vulnerable to heat events and urban heat island affect. Overall, the has an average moderately-high risk due to its existing urban environment. The areas of highest risk include the Boolaroo local centre, Glendale Stockland shopping centre and Cardiff strategic centre (refer to Figure 29).

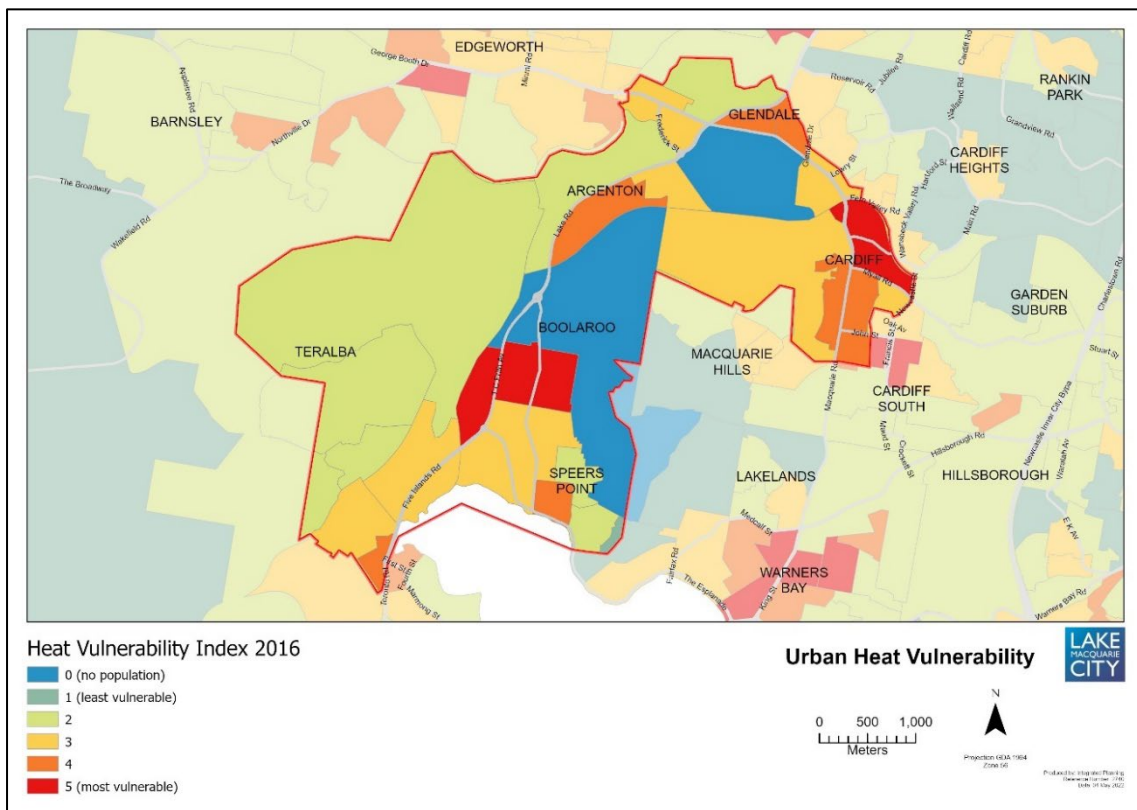


Figure 29: Heat vulnerability index (2016). Source: NSW Government

3 Movement and place

The NSW Government *Movement and Place Framework*¹⁸ advocates for the integration of transport and land use planning within and around centres. It is a cross-disciplinary, “place-based” approach to the planning, design, delivery, and operation of transport networks that recognises the important network of public space formed by roads and streets and civic spaces and parks

3.1 Movement (transport systems)

Movement includes all transportation systems, how consumers interact and use these networks and how these networks interact with land use and place.

Street environments can also be classified to identify street and place interaction and identifying priority areas. This classification is broken down into four street and public space environments to help provide a broad understanding of where movement and place interact. Roads and streets are divided into segments and then each segment categorised as one of four different types of street environment.



Figure 305: Movement and place continuum

Civic spaces (as shown in Figure 30) are existing and proposed community hubs important for social connection, pedestrian activity, outdoor trade and sense of place. Civic Spaces include Speers Point Park, Anzac Park Teralba, Stockland shopping centre Glendale, and Cardiff centre.

Local streets are the quieter local neighbourhood streets with opportunities for tree planting and improved walking and cycling paths. These include majority of the local roads within the , such as First – Seventh Streets Bolaroo, Veronica, Taylor, Thomas or Mary Streets Cardiff, and Montgomery, Williams Street Argenton etc.

¹⁸ Movement and Place Framework (2022). NSW Government. Source: <https://www.movementandplace.nsw.gov.au/>

Main Streets are within the core commercial area with potential for improved place qualities as well as movement functions. These include Main Road Boolaroo-Speers Point, Cardiff and Glendale, Lake Road Argenton, Stockland Drive Glendale, and York Street Teralba.

Main Roads are routes central to the efficient movement of people and freight. There is the opportunity to provide landscape buffers between these movement corridors and new development. These include, T.C. Frith Avenue, The Esplanade, Speers Point-Boolaroo, Five Islands Road, Teralba, Main, Munibung, Macquarie and Myall Roads Road Cardiff and Lake Road Argenton-Glendale. Many of these roads are in ownership of Transport for NSW. Refer to Figure 31.

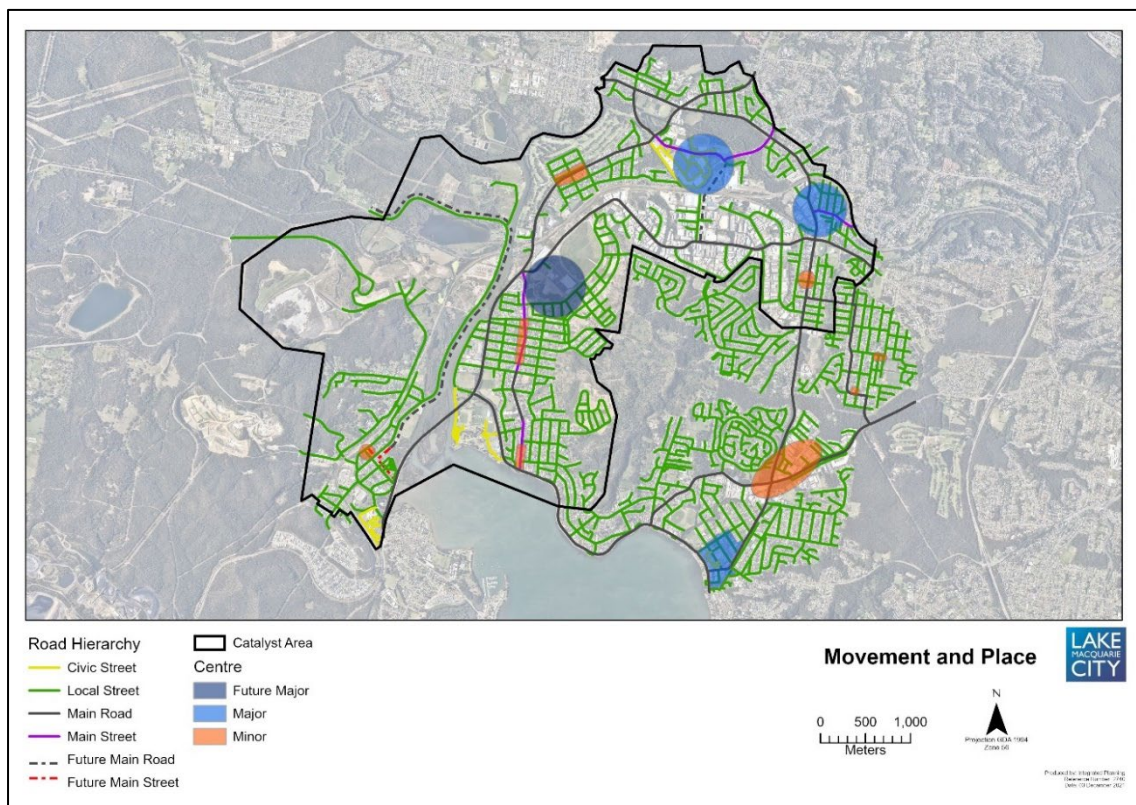


Figure 31: Current and future movement networks and places

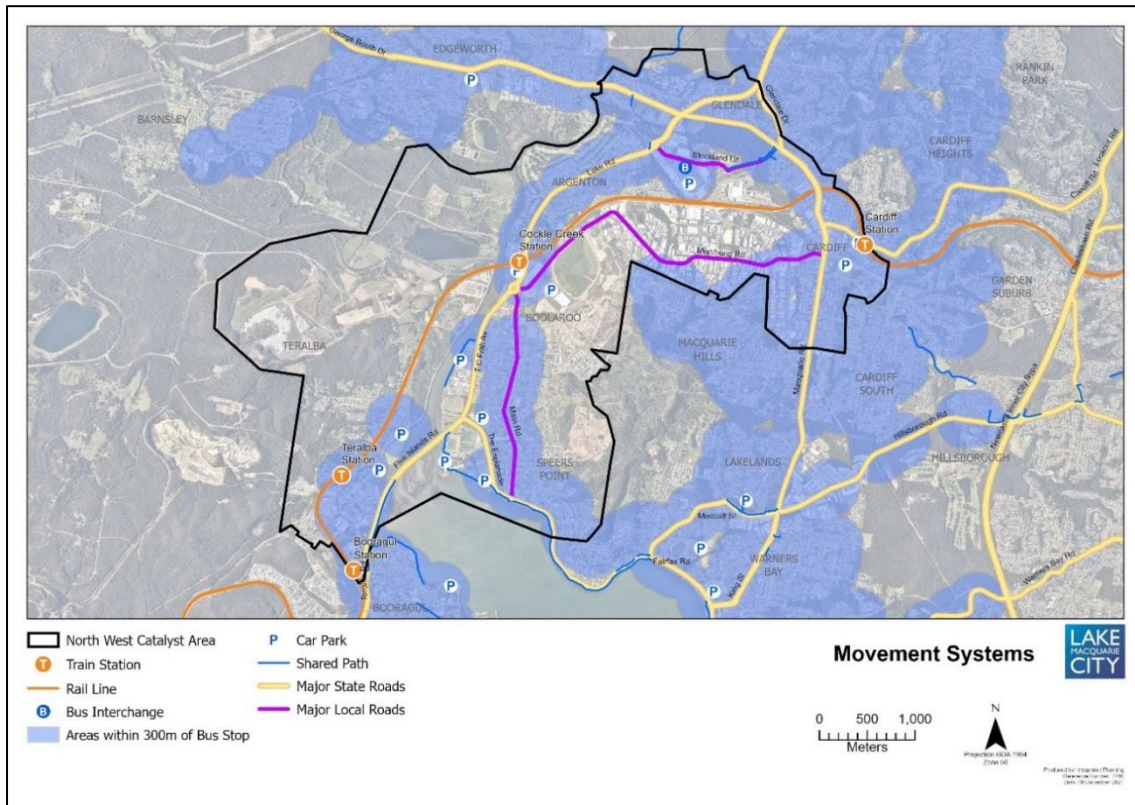


Figure 32: Movement systems

3.1.1 Road network

The contains several major State arterial roads that enable traffic flow from the south of Toronto north to Wallsend, and east from Warners Bay and Charlestown to the west of Cameron Park and the M1 Motorway.

Key State roads in ownership and management of Transport for NSW include Lake Road, Glendale Drive, Frederick Street, TC Frith, Main Road Glendale, Macquarie Road, The Esplanade, 5-Islands Road, Hillsborough Road and King Street.

Major local roads in ownership and management of Council include Main Road Boolaroo, Munibung Road, Myall Road, Main Road, Cardiff, Racecourse Road/The Weir Road and Minmi Road.

3.1.2 Car parking

There are several private, public and commuter off-road car parks within the . Each parking area serves a particular use including:

- Public open space and recreation, generally in ownership of Council: Speers Point Park, Speers Point foreshore, Cockle Creek foreshore, Hunter Sport Stadium Glendale, Tulkaba Park Teralba.
- Private retail, shopping and commercial: Stockland Glendale, Cardiff Shopping Centre, Wests Cardiff, Club Macquarie Argenton, Costco and Bunnings Boolaroo.

- Commuter car parks, generally in ownership of Transport for NSW: Cardiff Train Station, Cockle Creek Train Station, Teralba Station, Booragul Train Station.

The remainder of car parking across the is on-street parking within employment and residential areas and are in public ownership.

3.1.3 Rail network

The is serviced by the Central Coast and Newcastle Rail Line (Figure 33). Cardiff is a major node on this route and is serviced by both local and express trains. Cardiff Train Station is positioned centrally amongst surrounding suburbs and provides access to additional public transport services, taxi and park and ride facilities.



Figure 33: Central Coast and Newcastle Rail Line Service. Source: TfNSW, 2021.

3.1.4 Freight network

Freight networks include both road and rail modes. The road network is primarily confined to the State Road network (Figure 34) and includes freight vehicle types ranging from 19 – 26m B-doubles and special purpose vehicles such as truck cranes and cement pumps. 19-26m B-doubles Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) freight network map includes access on all State roads and within Council owned local roads within majority of the Cardiff Advanced Industrial Estate.

The NSW Special Purpose Vehicle freight network map (Figure 34) displays the legally enforceable network for eligible vehicles operating under the National Class 1 Special Purpose Vehicle Notice. This network includes all State roads but does not include any Council owned roads within the Cardiff Advanced Industrial Estate. Additionally, vehicles exceeding SPV Level 4 and above are restricted across the State Road network due to bridge capacity loads on Five Islands Road, TC Frith Avenue, Lake Road Glendale, Macquarie Road Cardiff and The Esplanade Warners Bay.

The rail freight network is conjoined with the Northern Railway which connects to the Port of Newcastle. There are regular conflicts between freight and passenger services on this rail line. The Lower Hunter Freight Bypass Corridor seeks to reduce this impact on the line beyond the 20-year timeframe of this plan.

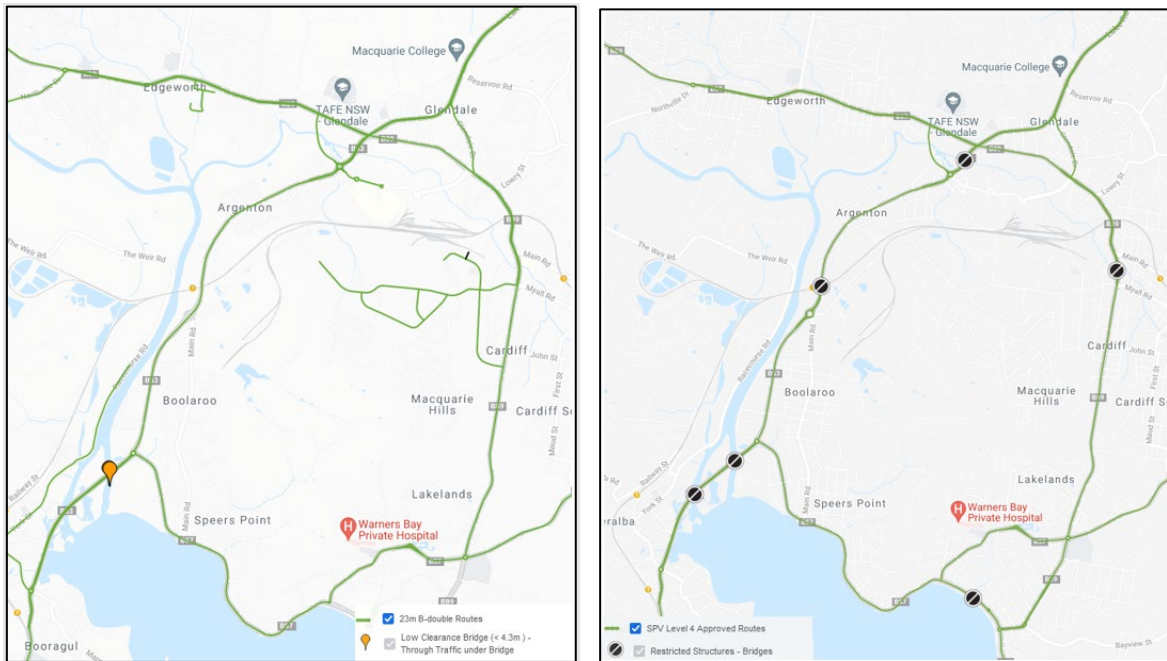


Figure 34: Left: 19-26m B-doubles Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) freight network Right: NSW Special Purpose Vehicle freight network

3.1.5 Bus network

The is serviced by two bus companies - Keolis Downer and Hunter Valley Buses.

The main bus interchange for the is the Glendale Stockland bus interchange within the Glendale Shopping and Retail Precinct. It provides connections from West Wallsend, Cameron Park and Killingworth to the west, Toronto to the south, Wallsend to the north and Charlestown and Warners Bay to the East. Bus routes within the are mostly confined to the State Road network except for Keolis Downers route 44, which traverses local roads within the Boolaroo-Speers Point Precinct and Cardiff Mixed Use Precinct particularly in Cardiff South and Macquarie Hills.

There are currently no bus services that run through the Cardiff Advanced Industry Precinct.

Bus routes and journey destinations for Keolis Downer and Hunter Valley Buses include:

Keolis Downer

Route

- 13 Glendale – John Hunter Newcastle
- 29 Glendale – Warners Bay – Belmont – Swansea
- 44 Warners Bay – Glendale – Cardiff – Macquarie Hills – Kotara
- 46 Glendale – Wallsend

Hunter Valley Buses

Route

Journey destinations

- 262 Cameron Park North – Glendale – Cardiff – Charlestown
- 263 Cameron Park South - Glendale – Cardiff – Charlestown
- 266 West Wallsend – Edgeworth Glendale – Wallsend – Newcastle University
- 267 West Wallsend – Edgeworth Glendale – Jesmond – Newcastle University
- 268 Killingworth – Edgeworth – Glendale
- 269 Toronto – Speers Point – Warners Bay – Charlestown
- 270 Toronto – Boolaroo – Glendale – Wallsend – Newcastle University
- 271 Toronto – Bolton Point – Teralba – Boolaroo – Glendale

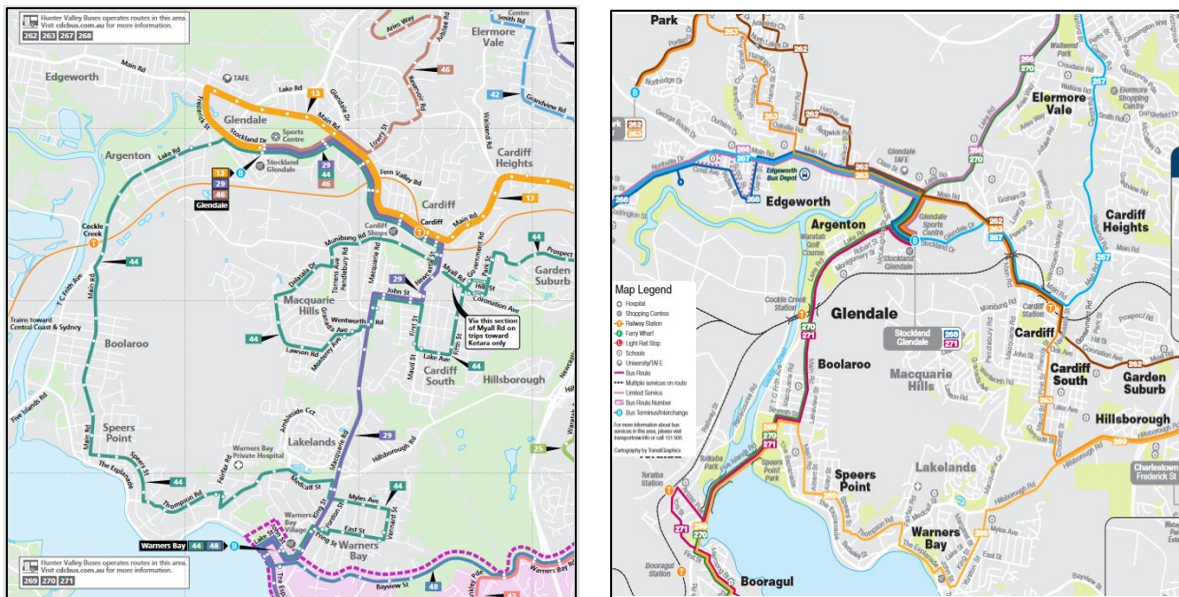


Figure 35: Keolis Downer and Hunter Valley Buses - Bus routes

3.1.6 Active transport network

Figure 36 shows the regional shared cycleway network from Warners Bay around Lake Macquarie to Bolton Point towards Teralba on Five Islands Road. The Shared Path also travels north through Speers Point, Boolaroo, Argenton, Glendale and continues to Wallsend and the University of Newcastle.

Due to a limited number of rail crossings, industrial land conflicts, topography and limited road verge area cycleway connections within and between the Glendale Retail and Sporting and Cardiff Mixed Use precincts are fragmented. This is particularly the case with active transport links along Main Road, Cardiff/Glendale, Macquarie Road and Munibung Road.

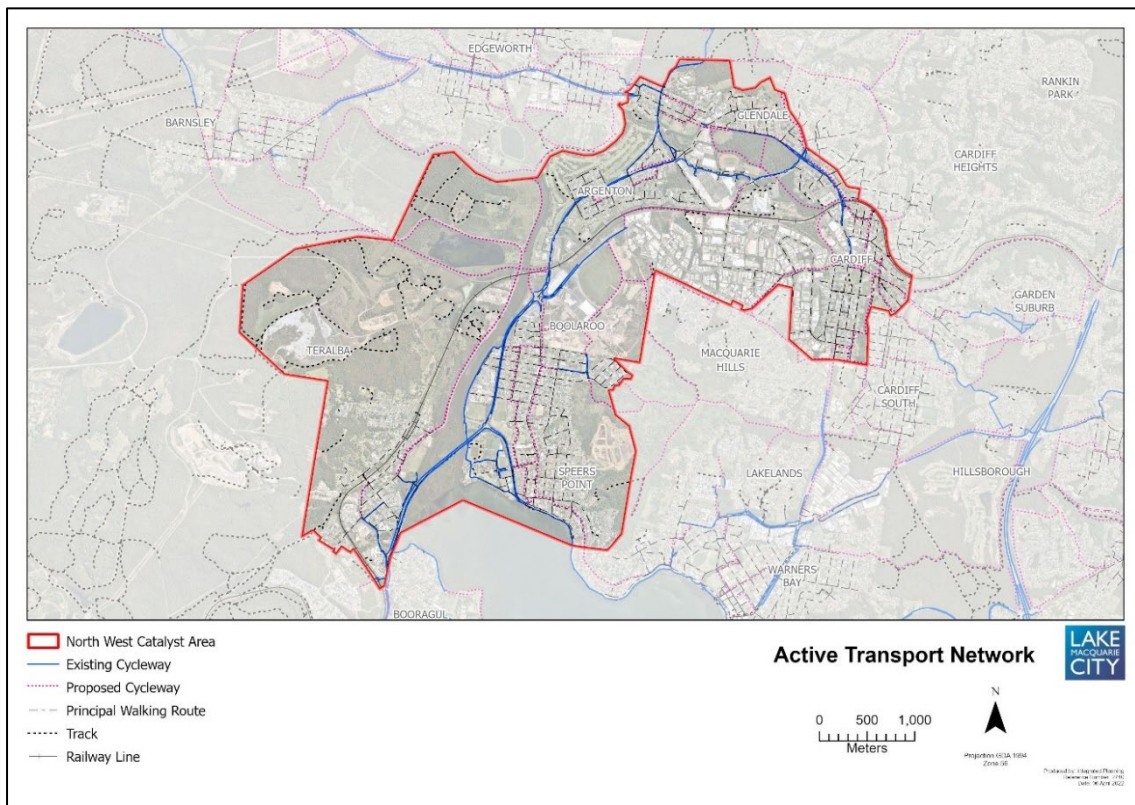


Figure 36: Active transport network

3.2 Consumer transport and travel behaviour

The catalyst area are largely car-dependent communities, regardless of their benefit from regular bus services throughout the area and intercity train services to Newcastle and Sydney.

Over one third of work journeys are to/from places of work within the Lake Macquarie West statistical area. The most common method of travelling to work was by private vehicle (Figure 37). Despite the presence of Cardiff, Cockle Creek, Teralba and Booragul train stations, in 2016 only 0.54 per cent of persons from the catalyst area used the 'train only' and 3.63 per cent of persons used a combination of public or active transport. In 2021, the number for train travel had significantly declined to only 0.11 per cent (-62.50 per cent

change). Train travel has generally been impacted worldwide from the Covid-19 pandemic¹⁹. 1.47 per cent of persons used a combination of public or active transport means in 2021. This again, resulted in significant decrease between 2016 and 2021 (Figure 37).

In 2016, most persons belonged to households with 2 motor vehicles being 41 per cent (Figure 38). In 2021, the most noticeable increase from 2016 to 2021 was household ownership of 2 – 4 in total increased by cars vehicles which increased by 53 per cent (Figure 38).

The top reasons for travelling were social/recreation (25.6 per cent), shopping (20 per cent), to serve a passenger (19 per cent), and commute (13 per cent). Around 59 per cent of trips in Lake Macquarie East and 55 per cent Lake Macquarie West SA3 are by vehicle, travelling an average 10 – 13km for each trip.²⁰

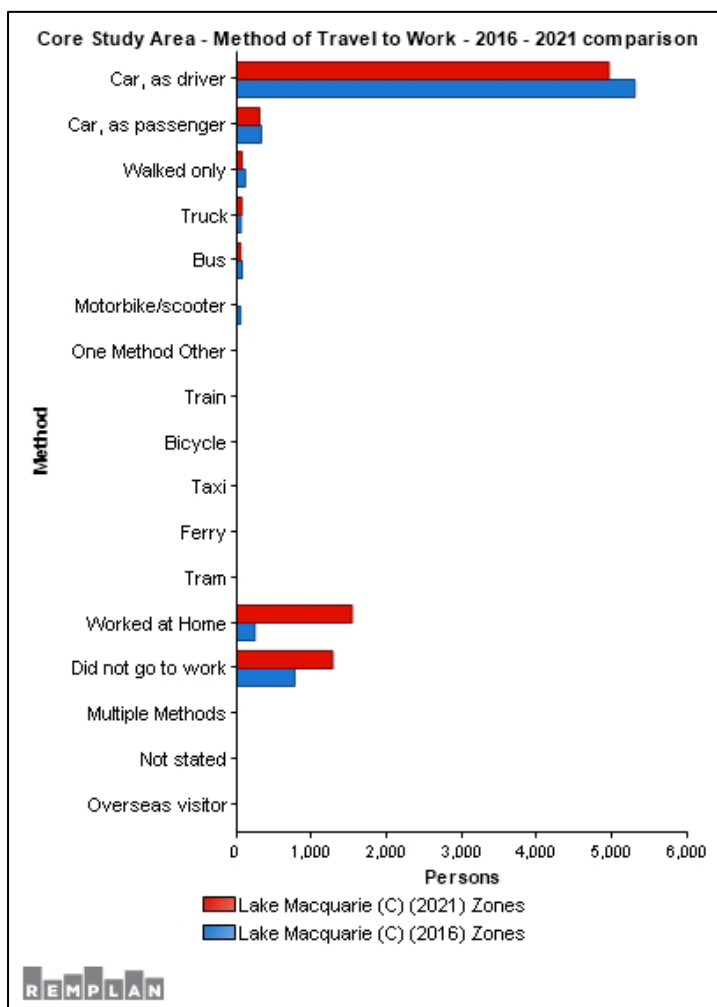


Figure 37: Method of travel to work 2016 - 2021

¹⁹ WSP, 2021. *Rail and the Effects of the COVID-19 Pandemic*. Montreal Quebec.

²⁰ NSW Household Travel Survey 2019-20, Lake Macquarie East and West SA3

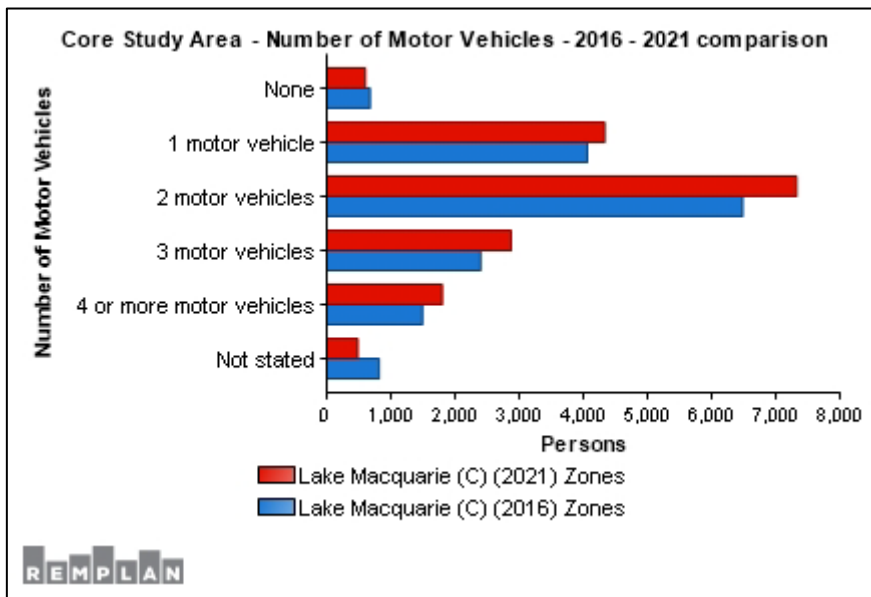


Figure 38: Number of motor vehicles 2016 – 2021

Table 4: Journey to work from usual place of residence and journey to work from place of work. Source: NSW Household Travel Survey 2019-20

SA2 Area	Top 3 work journeys start to finish from SA2 (per cent of trips)	Top 3 centres of journey to work from SA2	Top 3 areas of journey to work to SA2 (place of work)	Total persons commuting to/from SA2 inclusive of residents	From	To
Bolton Point - Teralba	Bolton Point – Teralba (12.25 per cent), Toronto – Awaba (9.22 per cent), Glendale - Cardiff – Hillsborough (7.98 per cent)	Toronto, Glendale/Cardiff, Speers Point	Toronto – Awaba (9 per cent), Glendale - Cardiff – Hillsborough (5.8 per cent), Rathmines to Bolton Point (4.24 per cent)	3,315	1,789	
Edgeworth - Cameron Park	Glendale - Cardiff – Hillsborough (11.90 per cent), Edgeworth - Cameron Park (10.23 per cent), Newcastle - Cooks Hill (5.45 per cent)	Glendale/Cardiff, Newcastle, Charlestown/Gateshead	Glendale - Cardiff – Hillsborough (6.8 per cent), West Wallsend - Barnsley – Killingworth (6 per cent), Maryland - Fletcher – Minmi (4.46 per cent)	6,708	2,645	
Glendale Cardiff	Glendale - Cardiff – Hillsborough	Newcastle, Charlestown/G	Edgeworth - Cameron Park	10,899	10,225	

SA2 Area	Top 3 work journeys start to finish from SA2 (per cent of trips)	Top 3 centres of journey to work from SA2	Top 3 areas of journey to work to SA2 (place of work)	Total persons commuting to/from inclusive of residents	SA2 of
Hillsborough	(17.35 per cent), Newcastle - Cooks Hill (9.17 per cent), Charlestown - Dudley (6.67 per cent)	ateshead, Hamilton	(7.8 per cent), Wallsend - Elernore Vale (5 per cent), Warners Bay - Boolaroo (4.9 per cent)		
Warners Bay - Boolaroo	Warners Bay - Boolaroo (19.13 per cent), Glendale - Cardiff - Hillsborough (8.22 per cent), Charlestown - Dudley (7.30 per cent)	Glendale/Cardiff, Charlestown/Gateshead, Newcastle	Glendale - Cardiff - Hillsborough (8.3 per cent), Valentine - Eleebana (7.5 per cent), Charlestown - Dudley (5.9 per cent)	6,103	6,210

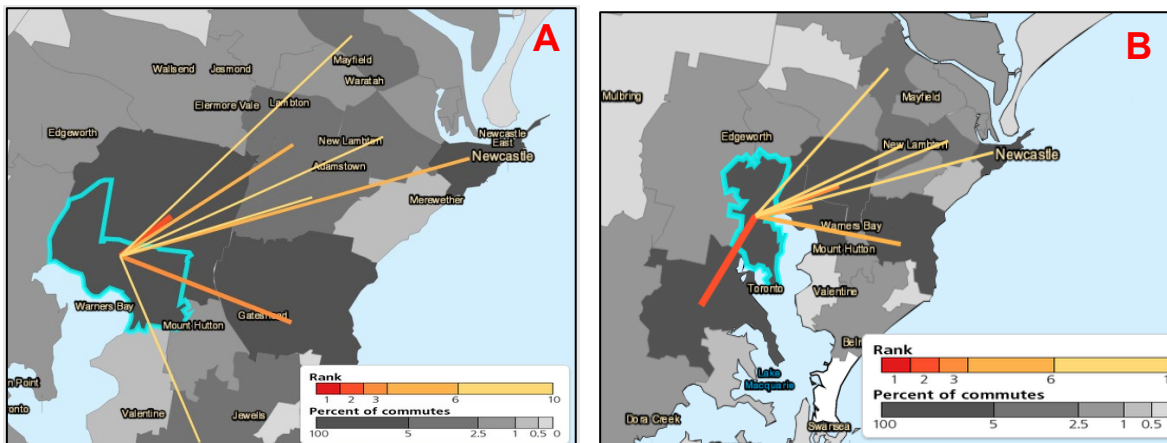


Figure 39: Journey to work from usual place of residence A. Bolton Point - Teralba SA2, B. Glendale - Cardiff - Hillsborough SA2 (ABS, 2019/2020)

3.3 Place

Places comprise numerous elements, such as the topography of the surrounding area, the underlying natural environment, the built environment, the physical experience of these environments. However, place also includes the less tangible features such as activities generated within the place, their significance, and whether those activities occur in public or private spaces. Different histories and stories also all have a bearing on how we understand places. Places all have distinct qualities, identities and character.

The Practitioner’s Guide to Movement and Place²¹ provides an evaluation criterion to assess the current environment of a place (Figure 40).

The contains several geographical scales that provide differing elements and interactions of place, which contribute to the whole (Figure 41). This provides the essential pillars for the economic, environmental and social performance of the .

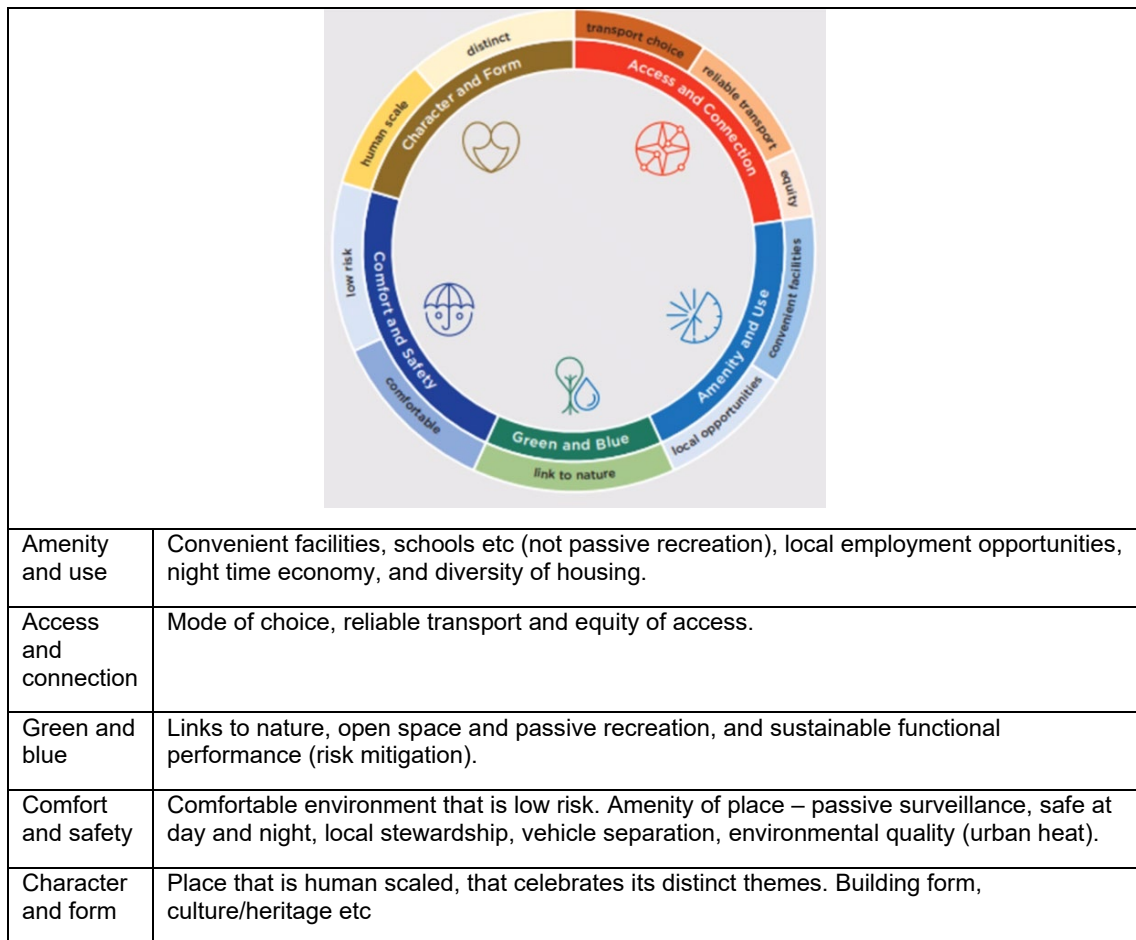


Figure 40: Elements of Place Evaluation Criteria. Source: Practitioner’s Guide to Movement and Place.

²¹ Practitioner guide to movement and place (2021). NSW Government. Source: <https://www.movementandplace.nsw.gov.au/sites/default/files/guides/pdf/practitioners-guide-to-movement-and-place.pdf>

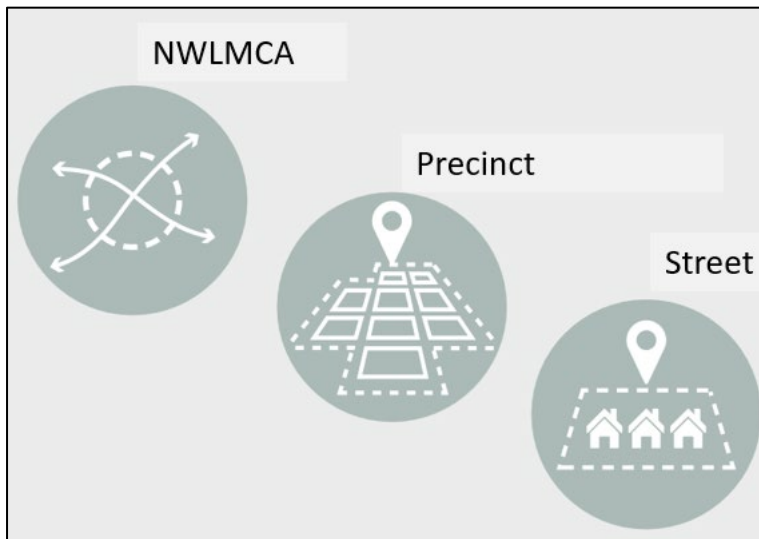





Figure 41: scales





3.3.1 Precinct Scale

The precinct scale are the pieces that accumulatively create the . This scale can be viewed at a suburban or neighbourhood scale and consist of several places, such as residential neighbourhoods, economic centres, natural or recreational spaces and transport networks that connect within and beyond the catalyst area.

In 2021, a workshop was undertaken by the catalyst area working group with to evaluate the existing conditions of place for each precinct using the evaluation criteria shown in Table 5. This provides a baseline of place performance and allows Council and other government agencies to focus on areas needing improvement.

Overall, the Boolaroo-Speers Point, Teralba and Cardiff Mixed Use precincts score the highest. While Cockle Creek, Argenton-Glendale Renewal and Cardiff Mixed Use precincts score lower.

Evaluation of existing conditions and score	Opportunities and challenges												
<p>Boolaroo-Speers Point</p>  <table border="1"> <caption>Boolaroo-Speers Point Scores</caption> <thead> <tr> <th>Category</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>Convenient facilities</td> <td>3</td> </tr> <tr> <td>Good access and connections</td> <td>2.6</td> </tr> <tr> <td>Links to nature</td> <td>4</td> </tr> <tr> <td>Comfort and safety</td> <td>3.2</td> </tr> <tr> <td>Character and form</td> <td>3.2</td> </tr> </tbody> </table>	Category	Score	Convenient facilities	3	Good access and connections	2.6	Links to nature	4	Comfort and safety	3.2	Character and form	3.2	<p>Score: 16/25 (64 per cent)</p> <p>Builds on strong links to nature in the precinct, such as open space and the Lake.</p> <p>Requires better access and connections throughout the precinct, particularly to the Lake and Speers Point Park.</p> <p>Character of older buildings provides a unique element to Boolaroo retail corridor. Though, requires some amenity improvements.</p>
Category	Score												
Convenient facilities	3												
Good access and connections	2.6												
Links to nature	4												
Comfort and safety	3.2												
Character and form	3.2												
<p>Cardiff Advanced Industry</p>  <table border="1"> <caption>Cardiff Advanced Industry Scores</caption> <thead> <tr> <th>Category</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>Convenient facilities</td> <td>2.7</td> </tr> <tr> <td>Good access and connections</td> <td>2.9</td> </tr> <tr> <td>Links to nature</td> <td>1.8</td> </tr> <tr> <td>Comfort and safety</td> <td>2.5</td> </tr> <tr> <td>Character and form</td> <td>2.3</td> </tr> </tbody> </table>	Category	Score	Convenient facilities	2.7	Good access and connections	2.9	Links to nature	1.8	Comfort and safety	2.5	Character and form	2.3	<p>Score: 12/25 (48 per cent)</p> <p>The current strength of the precinct is its relatively good access for workers, visitors and logistics and connections to the wider . Although it does not contain any public or active transport.</p> <p>Existing low links to nature will need to be enhanced to counterbalance the interface of built form and mitigate potential contamination from industrial activities.</p>
Category	Score												
Convenient facilities	2.7												
Good access and connections	2.9												
Links to nature	1.8												
Comfort and safety	2.5												
Character and form	2.3												
<p>Cardiff Mixed Use</p>  <table border="1"> <caption>Cardiff Mixed Use Scores</caption> <thead> <tr> <th>Category</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>Convenient facilities</td> <td>3.7</td> </tr> <tr> <td>Good access and connections</td> <td>3.3</td> </tr> <tr> <td>Links to nature</td> <td>1.9</td> </tr> <tr> <td>Comfort and safety</td> <td>2.8</td> </tr> <tr> <td>Character and form</td> <td>2.7</td> </tr> </tbody> </table>	Category	Score	Convenient facilities	3.7	Good access and connections	3.3	Links to nature	1.9	Comfort and safety	2.8	Character and form	2.7	<p>Score: 14.5/25 (58 per cent)</p> <p>The precinct scores high for access, connections and convenient facilities and local employment opportunities in the area.</p> <p>Links to the surrounding natural landscapes will need to be strengthened to support the attractiveness of housing and activities in the area.</p>
Category	Score												
Convenient facilities	3.7												
Good access and connections	3.3												
Links to nature	1.9												
Comfort and safety	2.8												
Character and form	2.7												

Evaluation of existing conditions and score	Opportunities and challenges												
<p>Cockle Creek</p>  <table border="1"> <thead> <tr> <th>Criteria</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>Convenient facilities</td> <td>1.9</td> </tr> <tr> <td>Good access and connections</td> <td>2.3</td> </tr> <tr> <td>Links to nature</td> <td>2.5</td> </tr> <tr> <td>Comfort and safety</td> <td>2</td> </tr> <tr> <td>Character and form</td> <td>1.8</td> </tr> </tbody> </table>	Criteria	Score	Convenient facilities	1.9	Good access and connections	2.3	Links to nature	2.5	Comfort and safety	2	Character and form	1.8	<p>Score: 10.5/25 (42 per cent)</p> <p>Relatively low scoring across all evaluation criteria, except links to nature towards Munibung Hill, or Cockle Creek.</p> <p>Development of new housing and employment opportunities will require investment in access, connections and facilities.</p> <p>Good access and connection will need to be improved towards Cockle Creek.</p>
Criteria	Score												
Convenient facilities	1.9												
Good access and connections	2.3												
Links to nature	2.5												
Comfort and safety	2												
Character and form	1.8												
<p>Glendale-Argentton Renewal</p>  <table border="1"> <thead> <tr> <th>Criteria</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>Convenient facilities</td> <td>2.3</td> </tr> <tr> <td>Good access and connections</td> <td>2.7</td> </tr> <tr> <td>Links to nature</td> <td>1.9</td> </tr> <tr> <td>Comfort and safety</td> <td>2.2</td> </tr> <tr> <td>Character and form</td> <td>1.9</td> </tr> </tbody> </table>	Criteria	Score	Convenient facilities	2.3	Good access and connections	2.7	Links to nature	1.9	Comfort and safety	2.2	Character and form	1.9	<p>Score: 11/25 (44 per cent)</p> <p>Average to low scoring evaluation of existing links to nature and character and form of the precinct due to ageing housing stock. Lake Road has created a physical and visual barrier.</p> <p>Investment in connections to Glendale Retail and Sports Precinct required to benefit from the neighbouring convenient facilities. Precinct does lack convenient facilities other than school cluster.</p>
Criteria	Score												
Convenient facilities	2.3												
Good access and connections	2.7												
Links to nature	1.9												
Comfort and safety	2.2												
Character and form	1.9												
<p>Glendale Sports and Retail</p>  <table border="1"> <thead> <tr> <th>Criteria</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>Convenient facilities</td> <td>3.3</td> </tr> <tr> <td>Good access and connections</td> <td>2.8</td> </tr> <tr> <td>Links to nature</td> <td>1.7</td> </tr> <tr> <td>Comfort and safety</td> <td>2.4</td> </tr> <tr> <td>Character and form</td> <td>2.2</td> </tr> </tbody> </table>	Criteria	Score	Convenient facilities	3.3	Good access and connections	2.8	Links to nature	1.7	Comfort and safety	2.4	Character and form	2.2	<p>Score: 12.5/25 (50 per cent)</p> <p>Investment in character and form required to support the expansion and diversification of facilities.</p> <p>Facilities are currently relatively convenient with average access and connections for the area.</p> <p>Requires further investment in critical infrastructure to achieve optimal outcome.</p>
Criteria	Score												
Convenient facilities	3.3												
Good access and connections	2.8												
Links to nature	1.7												
Comfort and safety	2.4												
Character and form	2.2												
<p>Teralba</p>  <table border="1"> <thead> <tr> <th>Criteria</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>Convenient facilities</td> <td>2.7</td> </tr> <tr> <td>Good access and connections</td> <td>3.2</td> </tr> <tr> <td>Links to nature</td> <td>3.1</td> </tr> <tr> <td>Comfort and safety</td> <td>2.6</td> </tr> <tr> <td>Character and form</td> <td>3.4</td> </tr> </tbody> </table>	Criteria	Score	Convenient facilities	2.7	Good access and connections	3.2	Links to nature	3.1	Comfort and safety	2.6	Character and form	3.4	<p>Score: 15/25 (60 per cent)</p> <p>Highest score for existing character and form due to its heritage and village atmosphere close to the Lake.</p> <p>Precinct also deemed to have relatively good access and connection, links to nature and convenient facilities.</p>
Criteria	Score												
Convenient facilities	2.7												
Good access and connections	3.2												
Links to nature	3.1												
Comfort and safety	2.6												
Character and form	3.4												

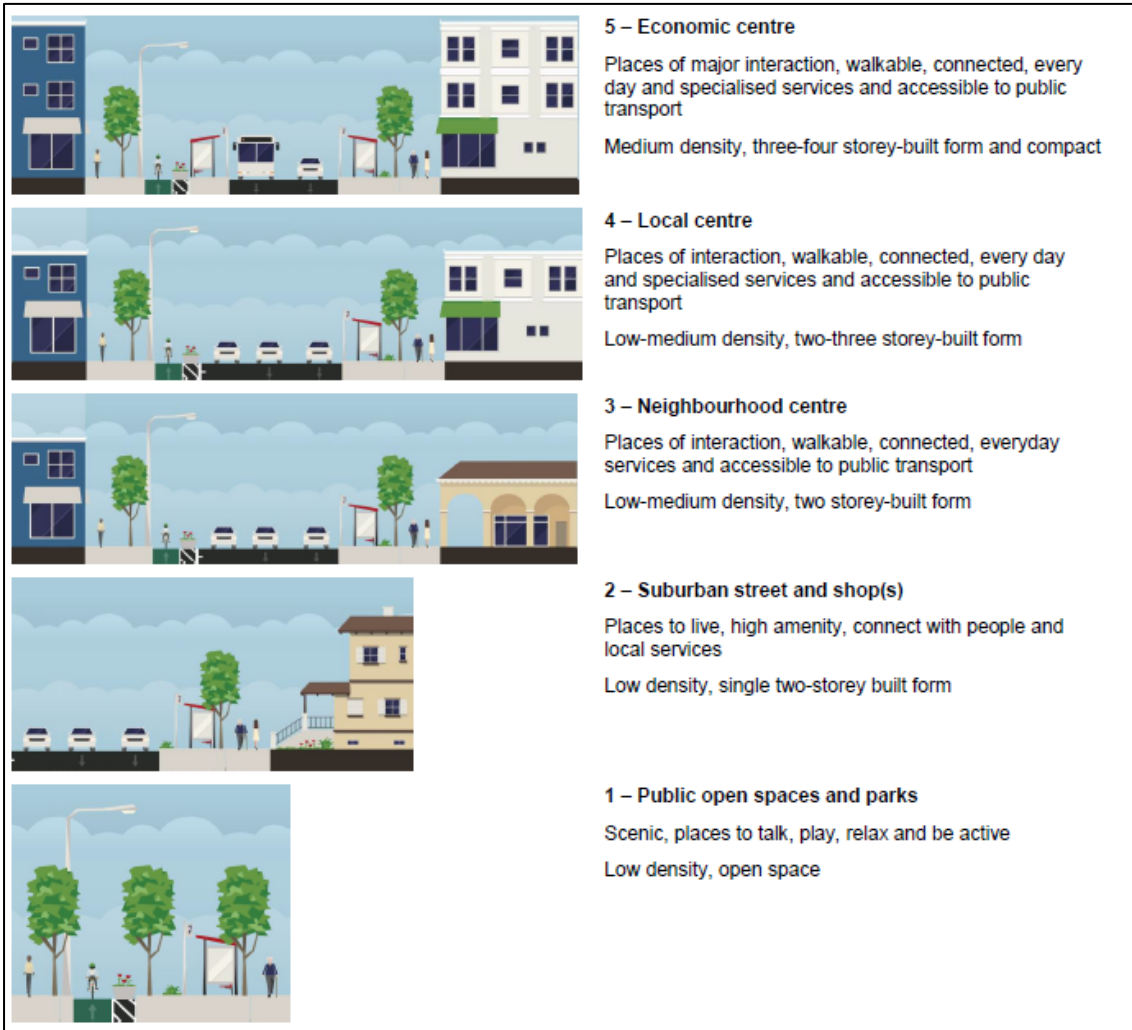


Figure 41: Economic centres built form hierarchy

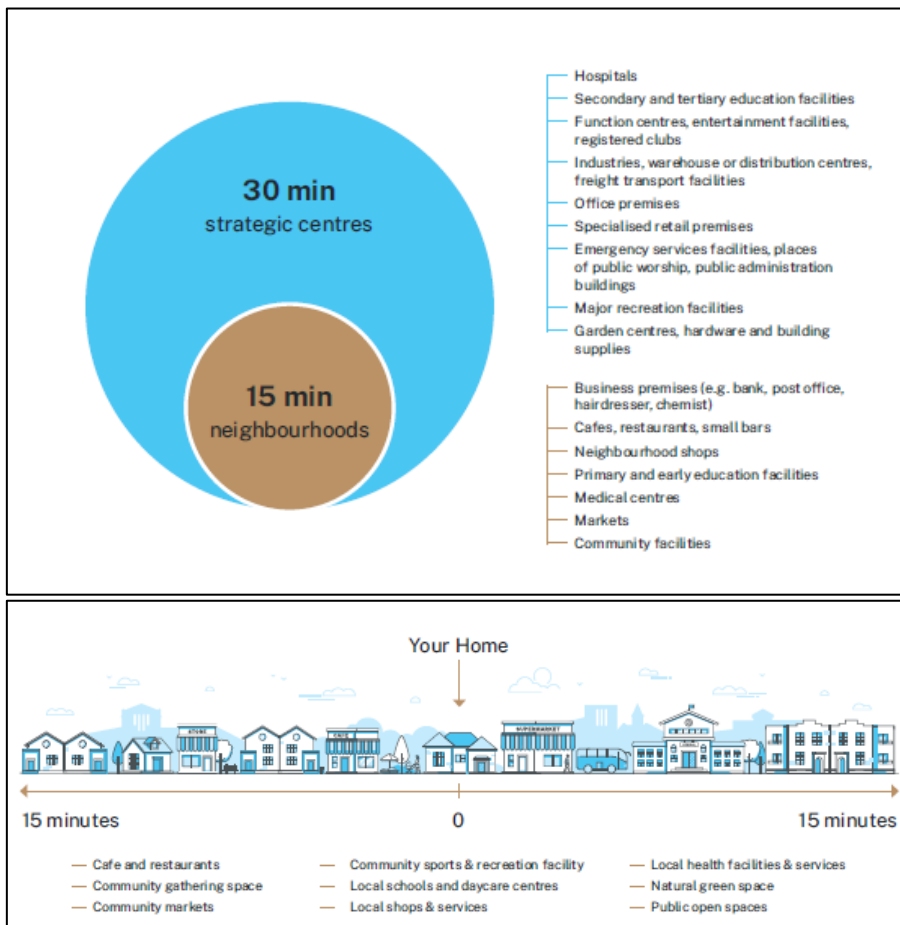


Figure 6: 15- and 30-minute catchment. Source: Hunter Regional Plan 2041

3.3.2 Street Scale

The street scale provides the interface between the street with built form, natural landscape, and social-economic activities of people.

These elements create the ‘glue’ that make a place dynamic, attractive and comfortable. The economic centres of the provide the highest concentration for these activities and are the higher priority for improving the built environment. Figure 41 outlines the varying hierarchical scales of the built environment of economic centres. This is known as the ‘centre-built form hierarchy’.

An observation assessment was undertaken at the street scale by Council staff in 2022.

The assessment used the *Practitioner’s Guide to Movement and Place* evaluation criteria of place. The assessment also considered the ‘centre built-form hierarchy’ of each area to establish a baseline (Table 6). Using these measures, a ranking out of 25 was provided equating to 5 points for each place element.

The assessment also considered walkable catchments. Walkable catchments allow residents to walk or cycle to their local/neighbourhood centre within 15 minutes²². Walkable catchment are places that are directly accessible by footpath or shared cycleway and are not extensive in slope. This includes everyday services (Figure 42) that reduce the need to travel by car to strategic centres. Residents should also be able to access strategic centres with additional services within 30 minutes by walking or cycling, such as Cardiff and Glendale.

Precincts that provide everyday services within a 15 minute walk or cycle include Boolaroo-Speers Point, Cardiff Mixed Use, parts of Glendale-Argenton Renewal near Glendale and the Glendale Retail and Sports precinct. This reduces transport choice as residents need to use vehicles to access everyday services.

²² Hunter Regional Plan 2041, 2022. NSW Government. Source: <https://www.planning.nsw.gov.au/hunter-region>

Table 6: Street scale evaluation

Main Road Boolaroo				
Score: 15/25 (60 per cent)			Hierarchy Category: 3	
<p>Amenity and use Numerous local services, including doctors, newsagency, cafés-restaurants, retail-shopping, personal services i.e. hairdressers, supermarket-local food shops, professional services, pubs and car services i.e. car repair and petrol station etc. Night time economy limited to pubs. Economically vibrant, no noticeable vacancies. Limited social interactions or place to gather.</p>	<p>Access and connection Adequate access and good connections for pedestrians via footpaths, limited connections across Main Road. Intersection on Main Road dangerous for vehicles. Public transport adequate. Limited active transport networks.</p>	<p>Links to nature Limited connections to nature due to lack of street trees and connections to Munibung Hill and Cockle Creek. Only one small park/reserve near theatre.</p>	<p>Comfort and safety Somewhat uncomfortable environment for pedestrians due to lack of street trees. Good provision of building awnings. Limited public seating and places to meet. Limited night time economy apart from pub could increase safety risk at night. Within 15 minute catchment.</p>	<p>Character and form Moderate built amenity. Some commercial buildings require revitalisation. Single storey residential dwellings interrupt the built form. Heritage elements confined to individual building, and not representative at the wider street scale.</p>
Main Road Speers Point				
Score:15/25(60 per cent)			Hierarchy Category: 3	
<p>Amenity and use Adequate local services. Excludes supermarket-local food shops, or specialised retail-shopping. car services. Night time economy limited to pubs. Economically vibrant no noticeable vacancies. Several social interactions around café.</p>	<p>Access and connection Adequate access and good connection for pedestrians via footpaths, limited connections across Main Road. Difficulty for pedestrians crossing to the Lake. Intersections on Main Road dangerous for vehicles in particular access to The Esplanade. Adequate public transport. Limit active transport network. Within 15 minute catchment.</p>	<p>Links to nature good connections to nature as Lake near Main Street. Adequate number of street trees.</p>	<p>Comfort and safety Comfortable environment for pedestrians due to number of mature street trees, connected footpaths. Fragmented building awnings. Risk for pedestrians crossing Main Road and The Esplanade. Limited night time economy apart from pub could increase safety risk at night.</p>	<p>Character and form Moderate built amenity. Good medium mixed density development at south of Main Road and interface with street. Commercial buildings in moderate condition. Single storey residential dwellings interrupt the built form.</p>
Lake Road Argenton				
Score: 10/25 (40 per cent)			Hierarchy Category: 2-3	
<p>Amenity and use Limited local services, such as car services, pub, medical centre, take-away and professional service. Night time economy limited to pub. Economically vibrant no noticeable vacancies. No</p>	<p>Access and connection Limited access for pedestrians across Lake Road apart from signals. Adequate footpath along Lake Road. Intersections on Lake Road dangerous for vehicles. Adequate public transport due to regional cycleway along Lake Road.</p>	<p>Links to nature Limited connections to nature, apart from several local parks within Argenton. Golf course is fenced and disconnected. Limited number of street trees.</p>	<p>Comfort and safety Uncomfortable environment for pedestrians. Limited number of street trees and building awnings. Connected footpaths. Risk for pedestrians crossing Lake Road. Interface risk of cars leaving car-services with pedestrians.</p>	<p>Character and form Poor built amenity. Low density commercial building or commercial refitted from dwellings. Poor interface with the street. Ageing single storey residential</p>

social interactions or place to gather.	Parts within 15 minute catchment.		Limited night time economy apart from pub could increase safety risk at night.	dwelling interrupt the built form.
Stockland Drive Glendale Score: 17.5/25 (70 per cent) Hierarchy Category: 4				
Amenity and use Extensive local and regional services. Includes specialised retail, wholesale, entertainment and recreational services/facilities. Moderate night time economy includes entertainment and restaurants-takeaway. Economically vibrant no noticeable vacancies. Social interactions and places to gather on private property.	Access and connection Adequate access and good connection for pedestrians via footpaths though the sprawled area increases walkable distances. Limited pedestrian connection across Stockland Drive and Lake Road. Intersections on Lake, Frederick St dangerous for vehicles in peak times. Good public transport due to bus interchange. Limit connection to active transport network. Within 30 minute catchment.	Links to nature Limited connections to nature, winding creek disconnected from area. Limited number of mature street trees.	Comfort and safety Uncomfortable environment for pedestrians due to sprawled design, large at-grade car park, limited street trees and limited direct footpaths across the area. Interface risk with cars and pedestrians in car park. Sprawled design may create increase safety risk at night.	Character and form Low-moderate built amenity. Commercial development is low-density with a sprawled design that is dominated by car park.
Lake / Main Road ('Crossroads') Glendale Score: 9/25(36 per cent) Hierarchy Category: 2-3				
Amenity and use Low-moderate local services. Includes takeaway, car services, personal services, professional services and medical services. Nil night time economy. Adequate economic vibrancy - one vacancy. Social interaction limited and no place to gather.	Access and connection Access for pedestrians via footpaths. Limited connection across Main and Lake Roads apart from signals. Intersections on Main and Lake dangerous for vehicles at peak time. Adequate public transport. Adequate active transport network due to regional cycleway along Lake Road.	Links to nature Limited connections to nature. Main and Lake Road disconnect sport fields. Limited number of street trees. Within 15 minute catchment.	Comfort and safety Somewhat uncomfortable environment for pedestrians. Limited number of street trees and disjointed building awnings. Connected footpaths. Risk for pedestrians crossing Main/Lake Road. Interface risk of cars leaving car-services with pedestrians. Limited night time economy and safety risk at night.	Character and form Low-moderate built amenity. Commercial development is low-density. Interface with the street moderate but inconsistent. Car dependent.
Main Road Cardiff Score: 20/25: (80 per cent) Hierarchy Category: 4				
Amenity and use Extensive local services. Low-moderate night time economy includes pubs & restaurants-takeaway. Economically vibrant no noticeable vacancies. Social interactions occurring, with limited places to gather, most public seating is situated in areas away from pedestrian activity.	Access and connection Sufficient access and good connection for pedestrians via footpaths, due to raised pedestrian crossing and signals on Main Road. Intersections on Main and Macquarie Roads dangerous for vehicles and pedestrians. Good public transport rail and bus. Limit active transport network. Within 30 minute catchment.	Links to nature Limited connections to nature as Munibung Road disconnects access to park and sport fields. Limited number of street trees.	Comfort and safety Somewhat comfortable environment for pedestrians due to awning network and connected footpaths. Though there is a risk for pedestrians with interface of cars leaving car parks. Some safety risk at night due to pubs and low-moderate night time economy.	Character and form Good built amenity. Mixture of 1-2 storey commercial development mixed with some residential. Some ageing buildings. Good interface with buildings to street. Streetscape revitalised.

Various neighbourhood shops, Cardiff South		Score: 7.5/25 (30 per cent)		Hierarchy Category:2	
<p>Amenity and use Very limited local services. Services only include Macquarie Road – Takeaway, Lake Ave – Hairdresser, Gertude: local shops i.e. supermarket, takeaway, personal services. Nil night time economy. Economically vibrant but constrained to expand no noticeable vacancies. Social interaction limited and no place to gather, other than Macquarie Road</p>	<p>Access and connection Poor access and connection. Macquarie Road is the only area that provides footpaths. All other locations in suburban setting with no footpaths and are geographically sprawled. All car dependents. Limited public transport. Limit active transport network. Not within 15 minute catchment.</p>	<p>Links to nature Limited connections to nature as within suburban. Limited street trees.</p>	<p>Comfort and safety Uncomfortable environment for pedestrians due to limited street trees, footpaths and awnings. Macquarie and Gertude Road are a risk for pedestrians crossing. Suburban environment reduces safety risk at night</p>	<p>Character and form Poor built form. Single storey commercial or in refitted dwellings. Limited interface with street. Designed for car dependency.</p>	
York Street and Anzac Parade, Teralba		Score: 12.5/25 (50 per cent)		Hierarchy Category: 3	
<p>Amenity and use Limited local services. Only includes petrol station, professional services, café, pub, school and local butcher-drink premise. Night time economy limited to pubs. Not economically vibrant as several noticeable vacancies.</p>	<p>Access and connection Adequate access and good connection for pedestrians via footpaths with connections across York Street. Anzac Parade and York Street busy with freight traffic. Good public transport. Limit active transport network. Not within 15 minute catchment, as has insufficient services.</p>	<p>Links to nature good connections to nature as Lake in proximity from Anzac Parade. Adequate number of street trees. Connection to Anzac Park.</p>	<p>Comfort and safety Comfortable environment for pedestrians due to number of mature street trees, connected footpaths. Though there is a risk for pedestrians crossing intersection of York and Anzac Parade due to traffic. Limited night time economy apart from pub could increase safety risk at night.</p>	<p>Character and form Moderate built amenity. Mixture of commercial and residential development. Single-storey residential dwellings also interrupt the built form. Heritage aesthetic defining theatre of area.</p>	

4 Subdivision and land holdings

4.1 Existing land holdings

Land in the catalyst area is highly fragmented with lots of individual land parcels in individual ownership. Highly fragmented land can negatively affect redevelopment opportunities because it can make it difficult to assemble parcels of land large enough for economically feasible development. However, there are some noticeable clusters of adjoining land parcels in single ownership. There are also several large land parcels with redevelopment potential. Figure 43 - 46 shows the location of the large land parcels and Table 7 identifies notable sites.

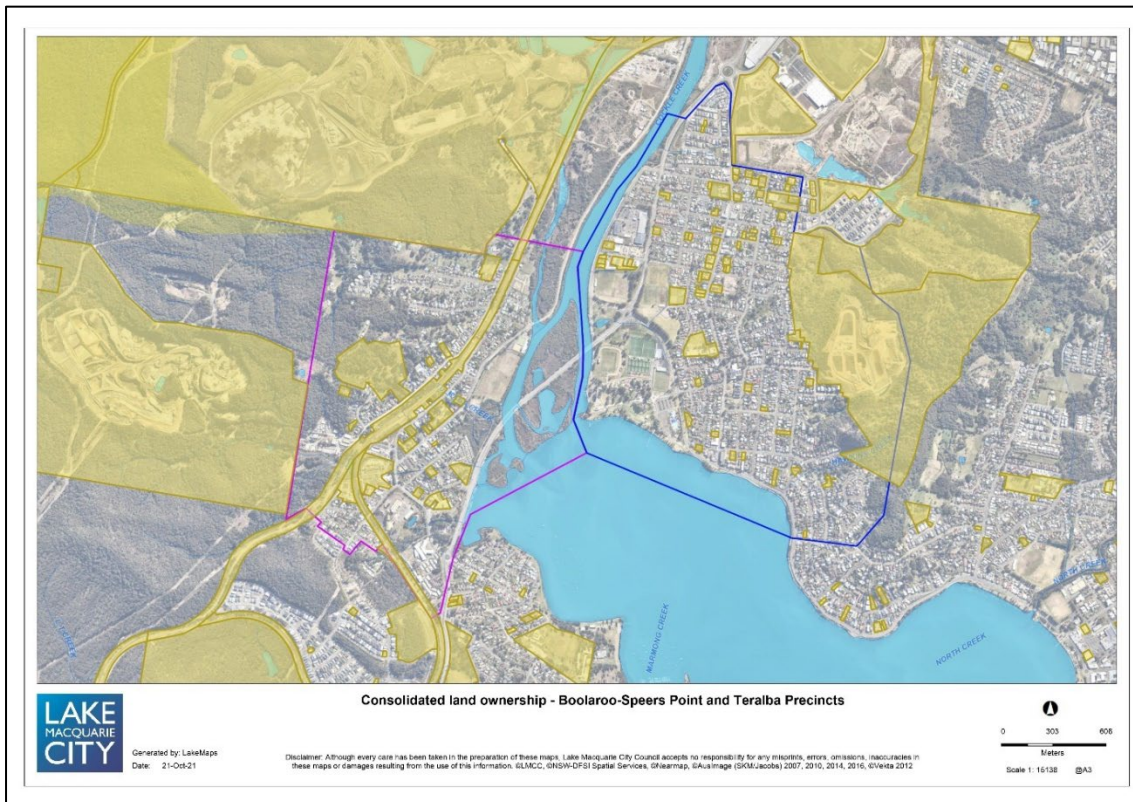


Figure 43: Boolaroo-Speers Point and Teralba consolidated ownership highlighted in yellow

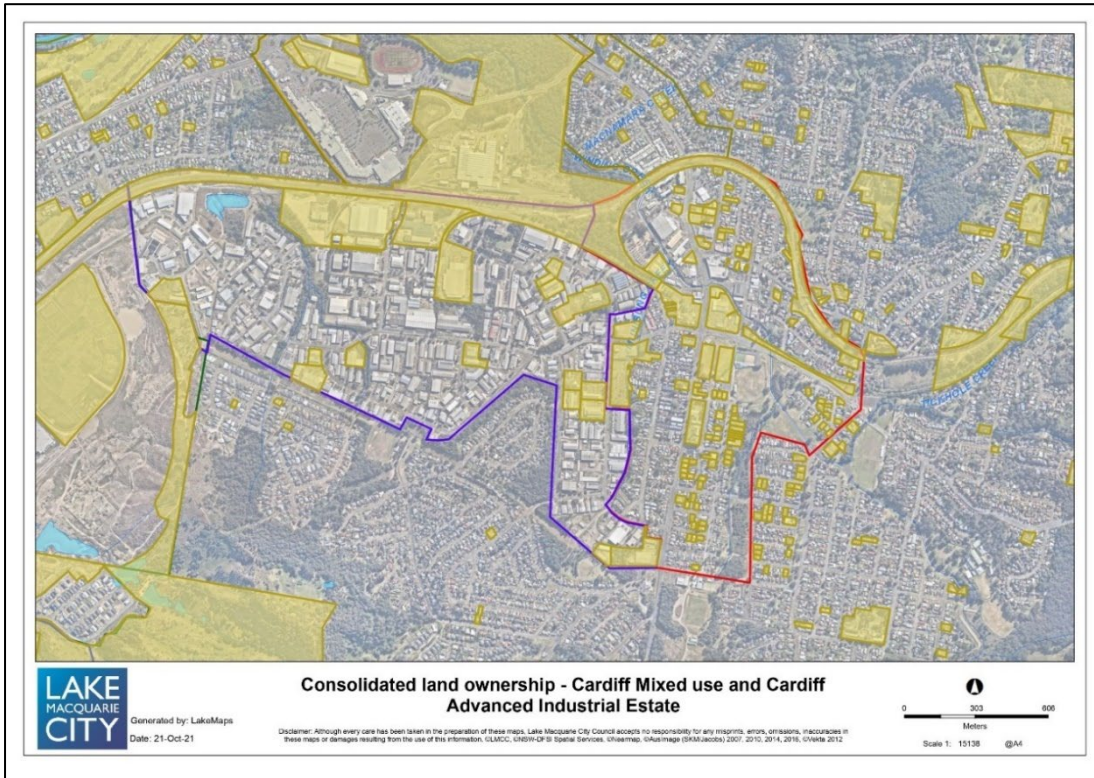


Figure 44: Cardiff Mixed use and Cardiff Advanced Industry consolidated ownership highlighted in yellow

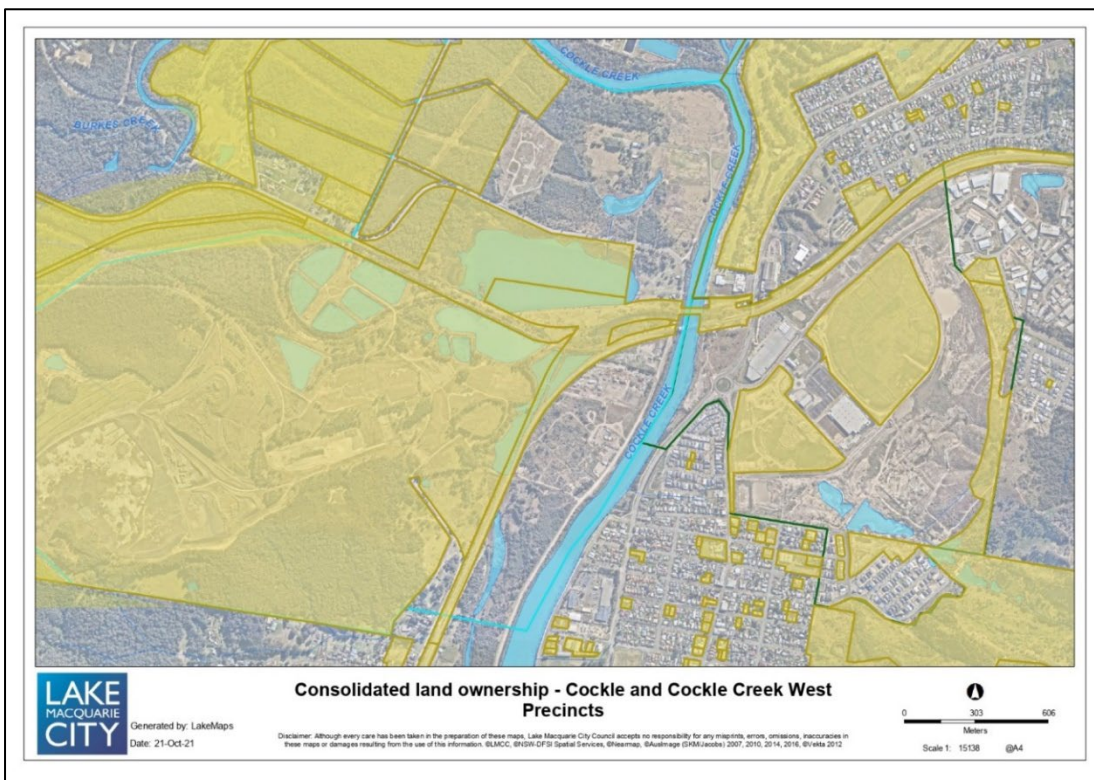


Figure 45: Cockle and Cockle Creek West Precincts consolidated ownership highlighted in yellow

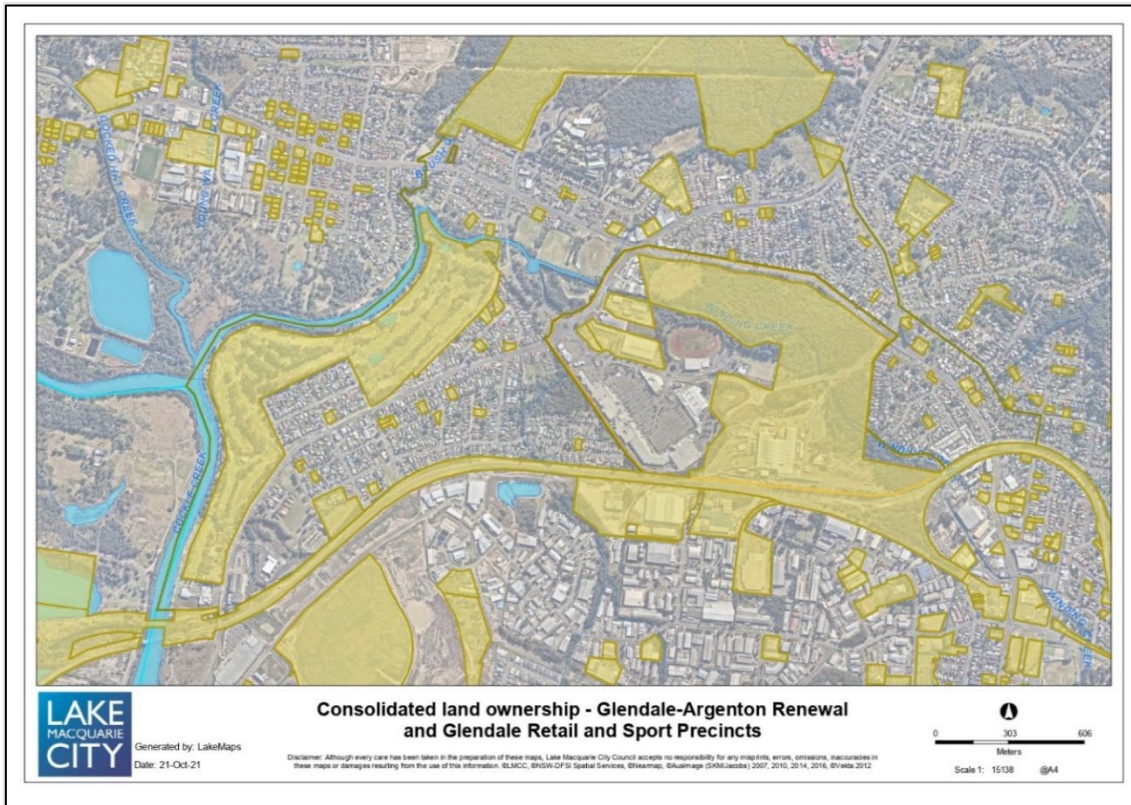


Figure 46: Glendale-Argenton Renewal and Glendale Retail and Sports Precincts consolidated ownership highlighted in yellow

Table 7: Notable adjoining properties in single ownership

Site	Current use	Zone	Owner
Boolaroo-Speers Point Precinct			
126-156 Main Road	Council headquarters	E1 Local Centre R3 Medium Density Residential	Lake Macquarie City Council
10 Lakeview Street, Boolaroo	Industrial Residential	R2 Low Residential	Private owner
Munibung Hill Site	Conservation Residential	C2 Environmental Conservation C4 Environmental Living	Munibung Hill Pty Ltd
Cardiff Advanced Industrial Estate Precinct			
7B-9 Pennant Street 24 Nelson Road, Cardiff	Industrial	E3 Productivity Support E4 General Industrial	Bendlink Pty Ltd
32 – 38 Pendlebury Road, Cardiff	Industrial	E4 General Industrial	Mainmark Property Pty Ltd
18 Munibung Road, Cardiff	Commercial	MU1 Mixed Use	Western Suburbs Leagues Club Ltd

Cardiff Mixed use Precinct			
Northern Corner Myall and Macquarie Road	Commercial Car Saleyard	MU1 Mixed Use	Molonia Pty Ltd
45-45A Macquarie Road, Cardiff	Commercial RSL Club	MU1 Mixed Use	Cardiff RSL Club Limited
Southern Corner Myall and Macquarie Road	Recreation Sporting Field	RE1 Public Recreation	State of NSW (Minister for Lands) and Lake Macquarie City Council
Cockle Creek Precinct			
160 Munibung Road, Boolaroo	Vacant	E3 Productivity Support MU1 Mixed Use	Hunter and Central Coast Development Corporation
121- 141 Munibung Road, Boolaroo	Vacant	E4 General Industrial	Hunter and Central Coast Development Corporation
128 Munibung Road, Boolaroo	Vacant	R2 Low Density Residential R3 Medium Density Residential	Green Capital
Cockle Creek West Precinct			
1 Railway Street Teralba and Surrounds	Mining activities	SP1 Special Activities C2 Environmental Conservation	Oceanic Coal / Glencore
Glendale-Argenton Renewal Precinct			
End Frederick Street, Glendale	Bushland, Future urban development	RU6 Transition C2 Environmental Conservation	Eden Estates Pty Ltd
456 Lake Road, Argenton	Golf course	RE2 Private Recreation	Waratah Golf Club
148 Montgomery Street	Public School	R2 Low Density Residential	Minister for Education and Training
Glendale Retail and Sports Precinct			
65 Glendale Drive, Glendale	Bushland	E2 Commercial Centre MU1 Mixed Use C2 Environmental Conservation	TAHE (Transport Assets Holding Entity of NSW),
94 Glendale Drive, Glendale and northern rail line	Railyards Northern Railway	E2 Commercial Centre SP2 Infrastructure	TAHE (Transport Assets Holding Entity of NSW), Rail Corporation NSW
25 and 15 Stockland Drive	Large format retail activities	E2 Commercial Centre	Spruce Property Ltd
10 Stockland Drive, Glendale	Shopping centre	E2 Commercial Centre	The Trust Company Ltd
Teralba Precinct			
57 York Street, Teralba	Public School	R3 Medium Density Residential	NSW Department of Education and Communities
127 Railway Street, Teralba	Dwelling Bushland	R2 Low Density Residential	Private ownership

4.2 Council owned landholdings

Council owns numerous landholdings within the . Council owned land is categorised as either community or operational land under the *Local Government Act 1993* and recorded in *Lake Macquarie Local Environmental Plan 2014*. 282 of these lots are categorised as community land and 135 lots are categorised as operational land (Figure 47).

Community land generally comprises public parks, playgrounds and foreshore areas. Operational land generally comprises land needed to carry out Council functions such as a works depot and stormwater drainage. It can also be for land held as a temporary asset or investment, such as affordable housing or a commercial premises.

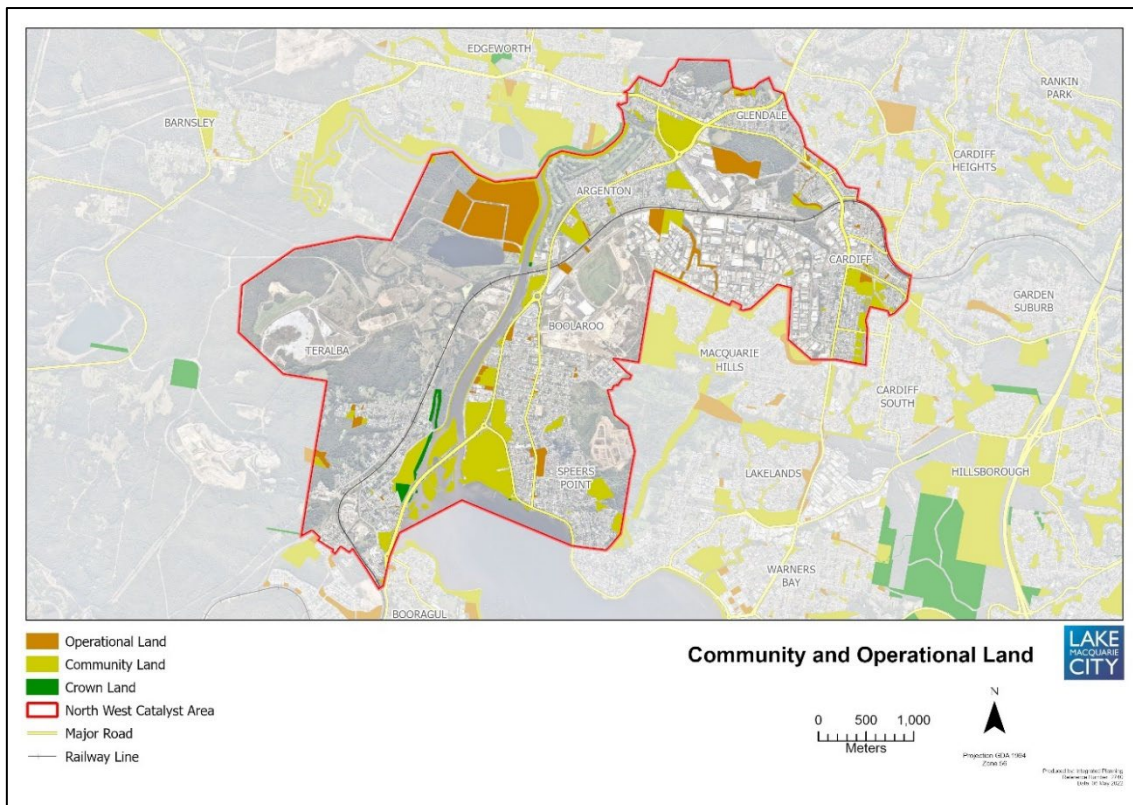


Figure 47: Council and Crown owned landholdings

4.3 Aboriginal land claims

As of 2022, Council is aware of several Aboriginal Land Claims within the . Aboriginal Land Claims are subject to the statutory provisions of *Aboriginal Land Rights Act 1983*. Land Claims can be lodged by Local Aboriginal Land Councils for vacant Crown Land and are assessed by the Department of Crown Lands. Land Claims do not require a traditional connection to the land and can be sought as compensation for dispossession and the resulting ongoing disadvantage suffered by Aboriginal peoples²³. Council will continue to assist the Local Aboriginal Land Council's and the Department of Crown Lands to ensure Aboriginal agency, self-determination and economic sustainability is achieved for Aboriginal communities.

²³ NSW Department of Crown Lands. *Aboriginal Land Claims*. Source: <https://www.industry.nsw.gov.au/lands/what-we-do/our-work/aboriginal-land-claims>

5 Existing development

5.1 Residential development

5.1.1 Existing local character

Residential development in the catalyst area is primarily a mix of detached dwellings dating from the early to mid-twentieth century through to contemporary detached dwellings.

Clusters of low-medium density housing, including dual occupancies, multi-dwelling housing, shop top housing and residential flat buildings are found within the Boolaroo-Speers Point, Cardiff Mixed Use and Teralba precincts. Table 8 summarises development activity across the catalyst area for low and mid rise medium density development.

Table 8: Development Application Activity from 2016 - 2021

Precincts	New detached dwellings* (requires a DA)	Low-medium density (dual occupancies, secondary dwellings, 1-2 storey multi-dwellings, small lot housing)	Medium-density (shop top housing, residential flat building, mixed development, seniors living)
Boolaroo-Speers Point	8	Dual occupancy - 0 Multi-dwellings – 9	Residential flat building - 2 Mixed use – 2 Seniors - 1
Cardiff Mixed Use	1	Dual occupancy - 3 Multi-dwelling - 15	Residential flat building - 3 Mixed use – 4 Seniors - 2
Cockle Creek	0	Dual occupancy - 0 Multi-dwelling – 1	Residential flat building - 0 Mixed use – 0 Seniors - 0
Glendale-Argenton Renewal	0	Dual occupancy - 0 Multi-dwelling - 2	Residential flat building - 2 Mixed use – 0 Seniors - 0
Teralba	0	Dual occupancy - 1 Multi-dwelling - 4	Residential flat building - 0 Mixed use – 0 Seniors - 0

*This data captures dwelling developments subject to a Development Application. Dwellings approved under the provisions of *SEPP (Exempt and Complying Development Codes) 2008* are not captured in this data.

5.1.1.1 Boolaroo-Speers Point and Cockle Creek

The Boolaroo-Speers Point and Cockle Creek precincts are undergoing the highest short to medium term residential development, including:

- Weemala Estate with 600+ low density residential housing lots and a proposed local neighbourhood centre with shop top housing units
- Munibung Hill Estate with 111 lots low density residential lots
- Four Winds Estate with 27 low density residential lots

These sites are defined as ‘brownfield infill residential development’ and have dwelling density range of 12 – 25 dwellings per hectare or a ‘people density range’ of 28 – 37 persons

per net hectare. This is significantly below the revised infill residential density targets identified in the Hunter Regional Plan 2041 of 50-75 persons per net hectare.

Medium density developments within this precinct include multi dwellings and 2 – 4 storey residential flat buildings along the Esplanade and Speers Street. and comprise of and are above a 35 dwelling per hectare range. While small lot housing developments, seniors housing and detached terrace housing is contained to the south of Cockle Creek precinct along Main Road and Mackenzie Parade (Refer to Figure 48)



Figure 48: Examples of housing in Boolaroo-Speers Point: A -older detached dwelling, Lakeview St Boolaroo, B - New multi-dwelling development, Seventh St Boolaroo, C -New multi-dwelling development, Lakeview St, Speers Point, D - residential flat building, The Esplanade, Speers Point

5.1.1.2 Cardiff-Mixed Use

Medium density housing has been increasing in this precinct. Cardiff centre has more 3 – 6 storey shop top housing and residential flat buildings. This precinct also has several social, affordable and seniors housing developments. However, there has been limited development activity within the MU1 Mixed Use zone between Main Road and Taylor Road.

The Cardiff South area has also seen increases in 1-2 storey multi dwelling developments clustered along Macquarie Road with a dwelling density range of 25 -35 dwellings per hectare.



Figure 49: Examples of housing in Cardiff Mixed Use Precinct, A - : Example of an older detached dwelling, Kelton Street, B - Aerial view of multi-dwelling development, Lachlan Road, C - Approved plans of a boarding house with commercial ground floor, Margaret St, D - Shop top housing on Main Road

5.1.1.3 Glendale and Argenton Renewal

There has been limited additional low or medium density housing development within this precinct. Some 2 storey multi dwelling developments have occurred in isolated areas along Lake Road and Main Road. This precinct has good opportunities for more medium density housing by capitalising on the ageing housing stock. Refer Figure 50.





Figure 50: Examples of housing in Glendale-Argenton Renewal Precinct, A - an older detached dwelling, Robert St, Argenton, B - new multi-dwelling housing, Lake Road Argenton, C – older multi-dwelling housing, Lillian St, Glendale

5.1.1.4 Teralba

Development of 1 – 2 storey attached and detached multi dwelling housing has been consistently along Railway Street and Cumberland Street. Refer Figure 51.

Table 13 shows the development application activity and housing type between 2016 – 2021. Multi-dwelling housing development was the highest recorded type of development over this period. Residential flat buildings and mixed use development (i.e. shop top housing etc.) were the second and third highest recorded rate of development application.



Figure 51: Examples of housing in Teralba Precinct, A - an older detached dwelling, 67 York St, B - Aerial of clustered older multi-dwelling housing York St, C - multi dwelling housing, Cumberland St

Figure 52 shows the housing structure comparison over 2011 and 2016²⁴. The predominant housing type has remained the detached house, increasing by 0.6 per cent from 14,267 in 2011 to 14,353 in 2016. However, the largest increase over the same time was medium density housing (i.e. dual occupancies, multi-dwellings) at 10 per cent from 1,182 in 2011 to 1,315 in 2016. This increase reflects the ongoing development pipeline from 2016-2021 (Table 13), which has been predominately multi-dwelling housing.

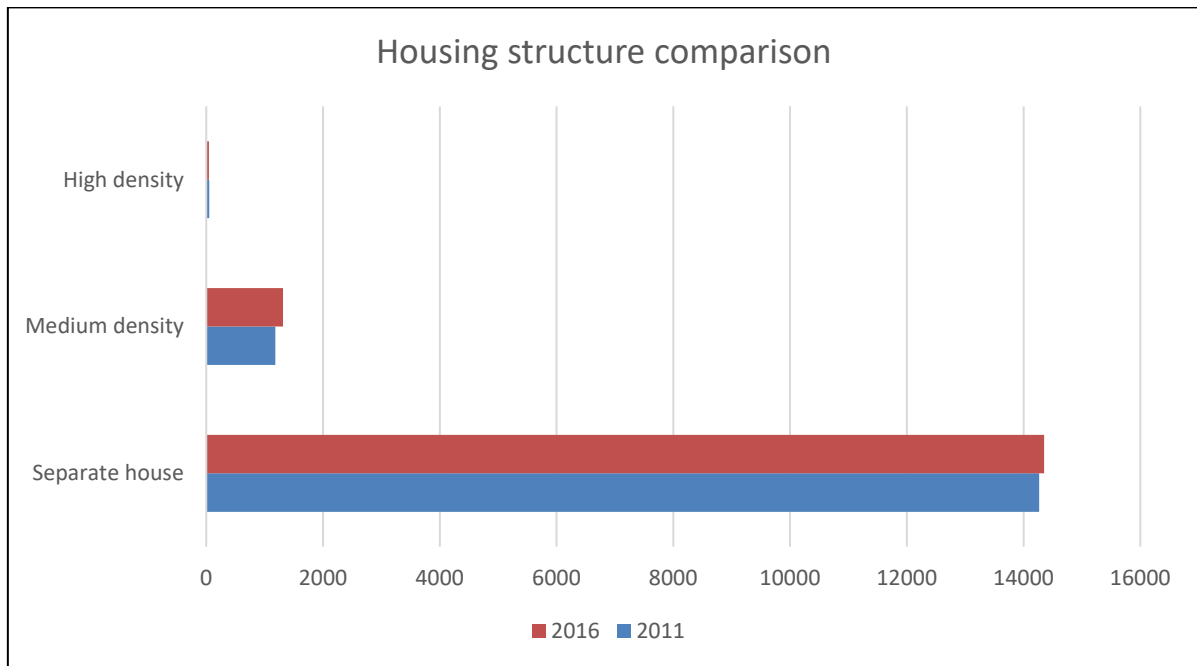


Figure 52 Housing Structure Comparison. Source: Remplan

5.1.2 Median House Price

Over the past 5 years median house prices throughout the catalyst area have risen between 55.6 per cent to 80 per cent (Table 9). Significant increases occurred from 2019 to 2021 due to impacts of the Covid-19 pandemic, supportive government fiscal policy and demand for property within the regions²⁵. In 2016, the lowest median house price was in the Glendale-Argenton Renewal Precinct at \$375,000. By 2021, the lowest median house price, again located in the Glendale-Argenton Renewal Precinct was \$588,300. Increasing costs to purchase residential property constrains housing affordability and development feasibility for multi-dwelling redevelopment. This is due to the high cost of land and construction margins, which places upward pressure on sale prices for new dwellings.

There has also been upward pressure on rental prices throughout the with the lowest median rental price at \$440 within the Glendale-Argenton Renewal Precinct and the highest rental price of \$575 within the Teralba Precinct.

²⁴ Dwelling Structure 2011 - 2016. REMPLAN,

²⁵ Insights into housing market during Covid-19, 2021. Australian Bureau of Statistics. Source: <https://www.abs.gov.au/articles/insights-housing-market-during-covid-19>

Table 9: Median housing and rental prices. Sources RealEstate.com
(<https://www.realestate.com.au/neighbourhoods/>)

Precinct	Median house price range 2016 - 2021 / per cent	Median house price range 2019 – 2021 / per cent (Covid-19)	Rental 2021 house / unit	Median unit sales range 2016 - 2021
Boolaroo/Cockle Creek Speers Point	\$440K - \$687k (56 per cent) \$557k–\$975k (75 per cent)	\$455k - \$687k (51 per cent) \$700k – \$975k (39 per cent)	\$520 \$555 / \$470	N/A \$372k-\$616k (65.5 per cent)
Cardiff Cardiff South	\$424k - \$660k (55.6 per cent) \$430k - \$672.5k (56.4 per cent)	\$450k - \$660k (46.6 per cent) \$510k - \$672.5k (31.8 per cent)	\$460 \$500	\$424k-\$553.4 (30.5 per cent) \$332.5k-\$431k (2018) (29 per cent)
Glendale Argenton	\$410k - \$640k (56 per cent) \$375k - \$588.3k (56.9 per cent)	\$482k - \$640k (32.7 per cent) \$380k - \$588.3k (54.8 per cent)	\$460 \$440	\$491.5k (2021) N/A
Teralba	\$385k – \$695k (80 per cent)	\$470k – \$695k (47.8 per cent)	\$575	N/A

5.1.3 Housing affordability

Households in need of social and affordable housing are those who, due to financial stress (and potentially other issues), are either:

- Unable to access market housing (including homeless persons)
- Have low household incomes and spend a high proportion of this income on rent i.e. are experiencing rental stress, which is typically described as lower-income households that spend more than 30 per cent of gross income on housing costs²⁶.

This definition excludes those who are homeowners, or households experiencing mortgage stress. This cohort is typically excluded, as these households have the option of liquidating their asset and entering the rental market.

Figure 53 shows the 2016 household weekly income within the in 2016 and 2021. The \$2000-\$2499 weekly (\$104k – \$129k yearly) household income range contains the largest cohort of people within for both 2016 and 2021 with a noticeable increase in 2021. Rental stress when analysed from 2021 rental rates begins from \$1250 - \$1500 weekly (<78,000 yearly) household income. Refer to Figure 53.

²⁶ Housing affordability, 2021. Australian Institute of Health and Welfare. Source: <https://www.aihw.gov.au/reports/australias-welfare/housing-affordability>

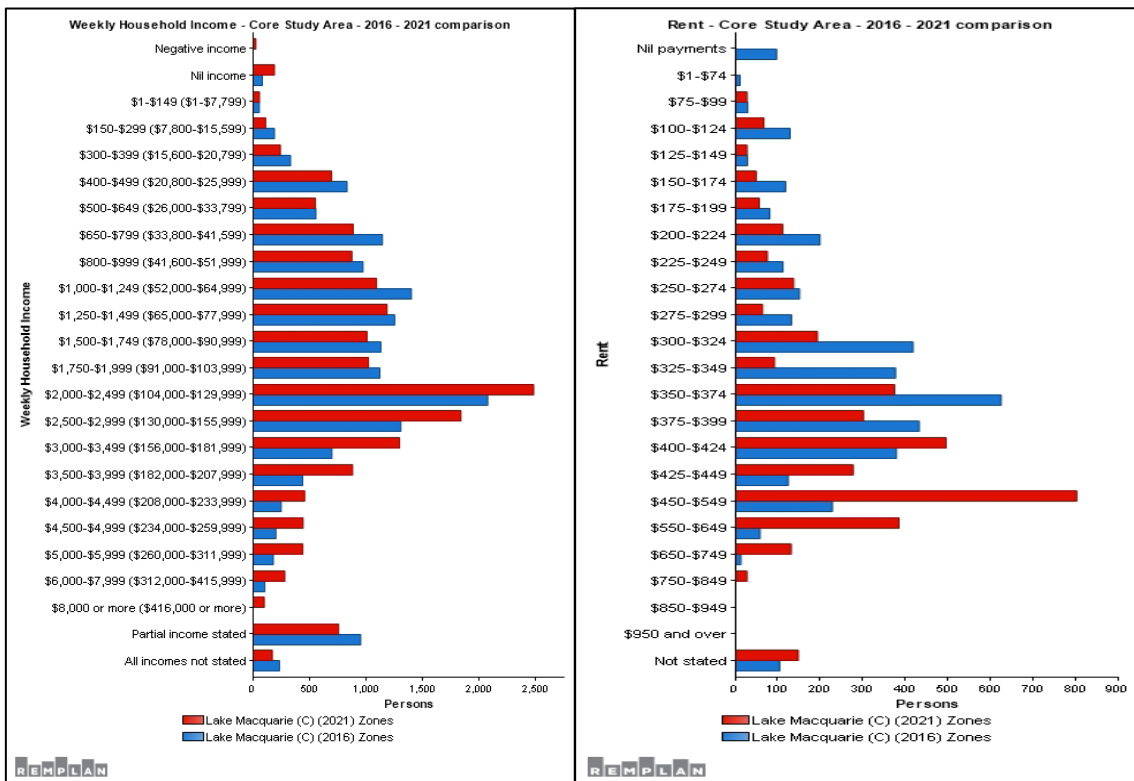


Figure 53: Weekly household income (left) and rent (right) 2016 and 2021 (Source: Remplan)

Housing affordability over the last five years has been decreasing. This is particularly the case in the rental market which has seen a surge in prices with the \$429 - \$749 price band increasing by 1,933 per cent between 2016 – 2021. The \$450 – \$549 rental price band is the median rate within the in 2021. This creates greater financial stress to the 3,845 renters within the .

Figure 54 highlights the housing continuum of housing options provided to people on moderate to very low incomes. Once a person or family are within the very low to no income range affordable or social housing is required.

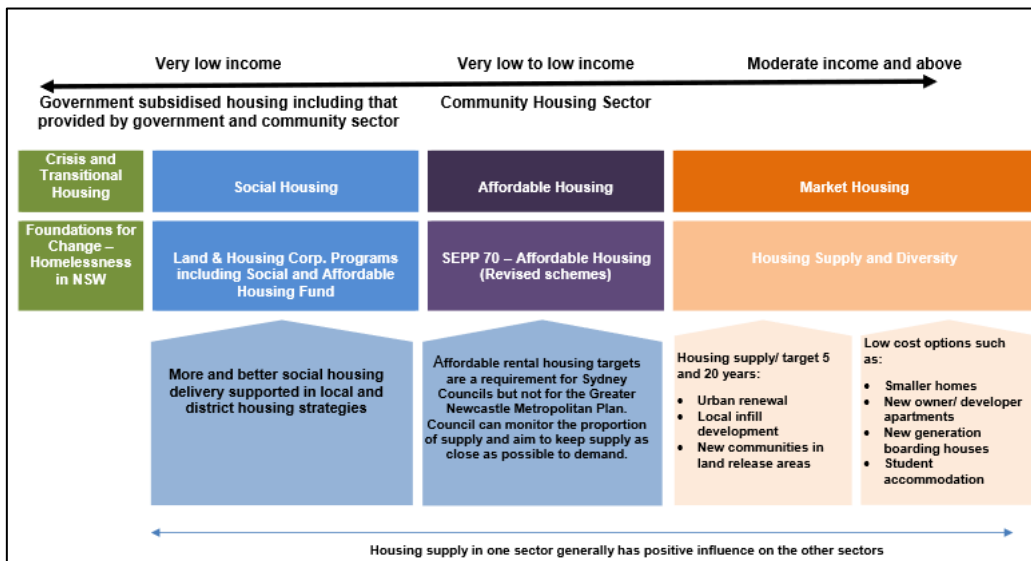


Figure 54: Housing Continuum. Source: Lake Macquarie Housing Strategy (2020)

The highest proportion of very low-income households are lone person households, followed by couples with no children. While lone person households have the most demand for social and affordable housing. Couple families with no children form the largest proportion of low income households and have the second highest demand for social and affordable housing. Couple families with children form the highest proportion of high and moderate income households²⁷.

Within the several community and affordable housing providers cater for people on low, very low incomes. Community housing providers are not-for-profit organisations that build and/or manage housing for eligible people who cannot access appropriate housing in the private market. The Registrar of Community Housing regulates the community housing sector in NSW. Limited data is provided for specific geographical locations, however there is a cluster of community housing within the Cardiff Mixed Use Precinct.

The NSW Land and Housing Corporation is the government provider of social housing. Within the catalyst area the government supplies 100 social housing units within the following precincts (Figure 55):

- Boolaroo-Speers Point: 8
- Glendale-Argenton Renewal: 86
- Cardiff Mixed Use: 3
- Teralba: 3

City scale data shows most social housing demand is for 2-bedroom housing, however, most social housing stock is 3-bedroom housing (refer to Figure 55). It is also noted that tenants are becoming older, past working age and rely on the age, disability or other government pension for income.

²⁷ Lake Macquarie – Housing Affordability Study, 2019. SGS Economic and Planning.

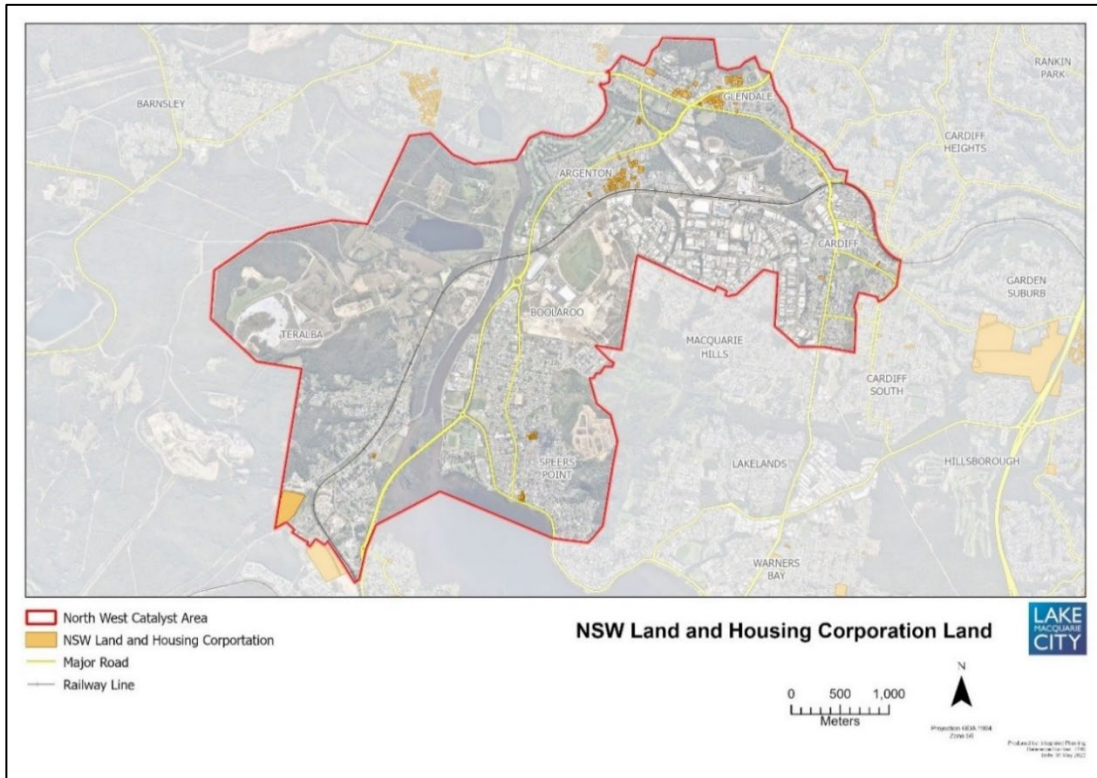


Figure 55: NSW Land and Housing Corporation landholdings

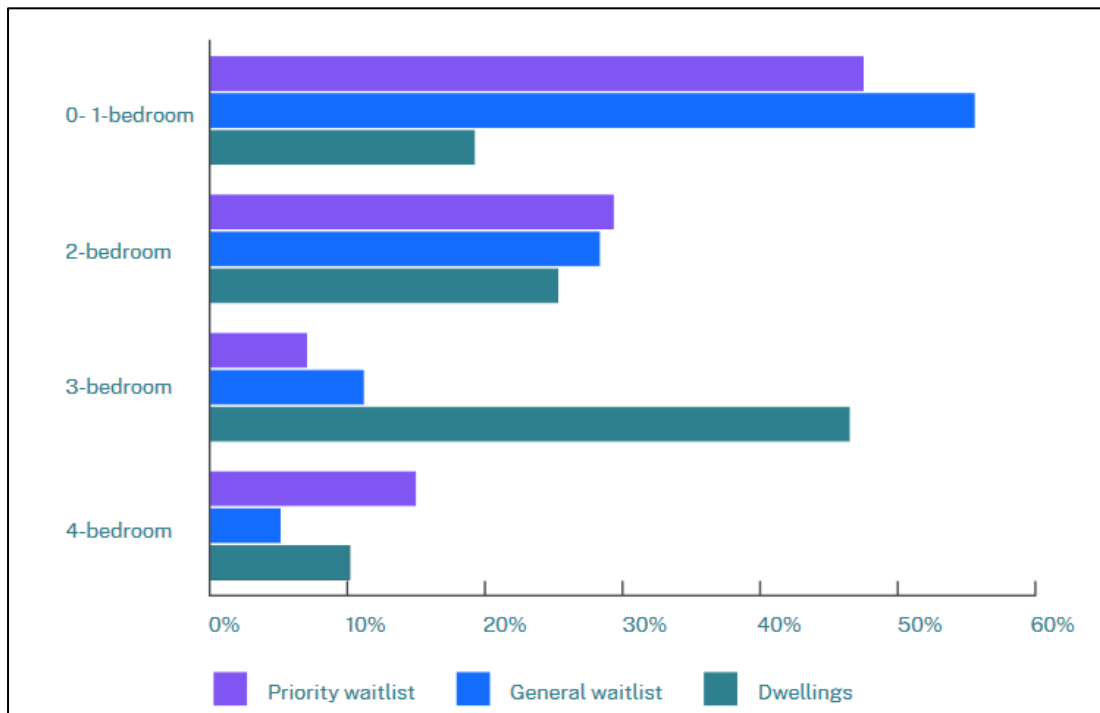


Figure 56: Types of properties available in Lake Macquarie compared with waitlist. Source NSW Land and Housing Corporation

5.2 Commercial and industrial development

The catalyst area has two strategic economic centres: Glendale and Cardiff, four local economic centres: Boolaroo, Speers Point, Argenton, Teralba and several neighbourhood shops within the Cardiff south area. Cockle Creek is an emerging economic centre. A steady pipeline of employment related development has been seen in these areas over the past 5-years, with additions to commercial buildings, new commercial premises and major employment generating development such as Costco and the Glendale Stockland Centre expansion.

Industrial and business park zoned land within the Cardiff Advanced Industry, Boolaroo-Speers Point and Teralba Precincts have progressively developed to accommodate a mix of industrial, commercial and urban services (such as gyms, child care and petrol stations, indoor recreation etc.). These areas are all nearing supply capacity, being fully developed or with remaining land being environmentally constrained²⁸.

5.2.1 Significant commercial development

5.2.1.1 Costco

Costco is a 14,000² specialised large-format retail development with fuel station positioned in the centre of the Cockle Creek Precinct. It commenced operation in 2021. The development is estimated to create 225 full time jobs while investing \$60 million into the local economy, attracting local and regional visitors to the area. The development will become the anchor site facilitating additional commercial, industrial and residential development within the Precinct.

5.2.1.2 Stockland Glendale expansion proposals

Stockland's \$45 million expansion proposal of the Glendale Shopping Centre was approved in July 2015. The proposal includes additional speciality retail, a new food court and new 'main street' restaurant strip linking the cinema precinct and the main Shopping Centre through the carpark. The proposal would increase the existing Gross Leasable Area (GLA) to 7,680m² and create 600 full time jobs during its construction and operational phases. As of 2022, there has not been any construction certificate issued to commence works of the approved development.

In August 2021, a temporary event farmers market was approved within the shopping centre. The proposal includes a 4,975² floor area comprising 150 market stalls and 24 food trucks that is estimated to contribute \$2 million to the local economy. The proposal also encloses and provides shade cover for a large portion of the southern car park. Refer Figure 57.

These developments facilitate the policy objectives for the Glendale Retail and Sporting Precinct for a better connected, comfortable and intensified shopping centre.

²⁸ Lake Macquarie Economic Study 2018 – SC Lennon and Associates

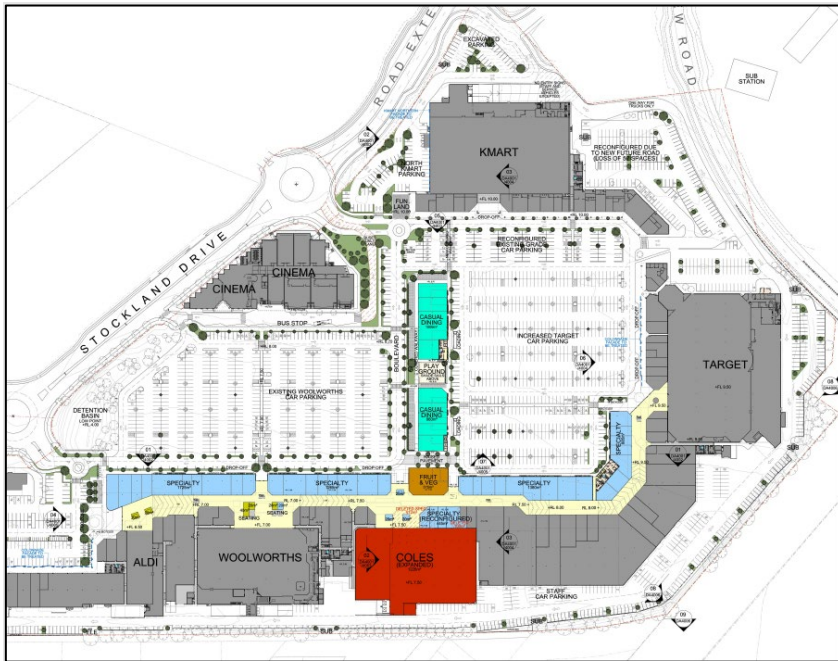


Figure 57: Top image – Major expansion of the Glendale Stockland Shopping Centre which facilitates a transition to an entertainment and dining business model. The bottom image are the temporary farmers markets in the south-eastern corner of the site.

5.2.2 Cardiff Advanced Industry precinct

The final land release of this precinct comprised the western portion of Munibung Road and Concord Street being developed from 2012. All remaining 18 lots have development consent or have been developed and are operational. New development in this area have been large floor plate uses such as industrial warehouses for manufacturing, light industrial units, food processing facilities, bus depot, petrol station and vehicle wholesalers (Figure 58). Accumulatively these developments have contributed over \$27 million to the local economy.



Figure 58: Final land release for the Cardiff Advanced Industry Precinct along extended section of Munibung Road and Concord Street.

Table 10 provides a summary of significant and major commercial and industrial development within each precinct of the , with a total estimated value of approximately \$147m

Table 10: Summary of significant commercial and industrial development

Site	Zone	Description	Employment type, status	Cost (millions)
Boolaroo- Speers Point				
65 Seventh Street BOOLAROO	E4	Service station, take away food and drink premises	Commercial Not yet constructed	\$2.8
193 Main Road SPEERS POINT	E1	Childcare centre, cafe, business premises, and retail premises	Commercial Operating	\$2.1
Cardiff Advanced Industry				
111 Munibung Road BOOLAROO	E4	Industrial warehouse	Industrial Operating	\$10.6
9 Concord Street BOOLAROO	E4	Food production and office building	Industrial Operating	\$4.2
106 Munibung Road BOOLAROO	E4	Service station, car wash, light industrial units	Industrial / commercial Under construction	\$3.7
8 Concord Street BOOLAROO	E4	Storage facility	Industrial Operating	\$2.9

109 Munibung Road BOOLAROO	E4	Warehouse	Industrial Operating	\$2.6
29 Pendlebury Road CARDIFF	E4	Light industrial units	Industrial Operating	\$2.1
113 Munibung Road BOOLAROO	E4	Vehicle sales premise	Industrial / commercial Operating	\$1.4
Cardiff Mixed Use				
52 Ada Street CARDIFF	RE2	Medical centre, shop, café, recreational facility (indoor)	Commercial Operating	\$4.9
49 Harrison Street CARDIFF	MU1	Shop expansion – Aldi	Commercial Operating	\$1.9
18 Munibung Road CARDIFF	MU1	Club alterations and additions – Wests	Commercial Operating	\$1.3
Cockle Creek				
1 Cressy Road BOOLAROO	E3 / MU1	Costco -Specialised large format retail	Commercial Operating	\$ 43.6
Glendale-Argenton Renewal				
328 Main Road CARDIFF	R3	Petrol station	Commercial Operating	\$1.7
515 Lake Road ARGENTON	MU1	Alterations and additions to pub - Argenton Hotel	Commercial Operating	\$1.5
Glendale Retail and Sporting				
10 Stockland Drive GLENDALE	E2	Expansion of Stockland shops and restaurants	Commercial Not yet constructed	\$45
10 Stockland Drive GLENDALE	E2	Commercial premises – Dan Murphy's	Commercial Operating	\$4.7
94 Glendale Drive GLENDALE	E2	Alterations additions to existing rail facility	Industrial Operating	\$1.8
Teralba				
150 Rhondda Road TERALBA	SP1	Asphalt Plant	Industrial Operating	\$8
TOTAL ESTIMATED VALUE				\$146.8

6 Infrastructure

6.1 Utilities

6.1.1 State significant utilities

Critical utility infrastructure servicing both the City of Lake Macquarie and the State crosses parts of the catalyst area (see Figure 59)

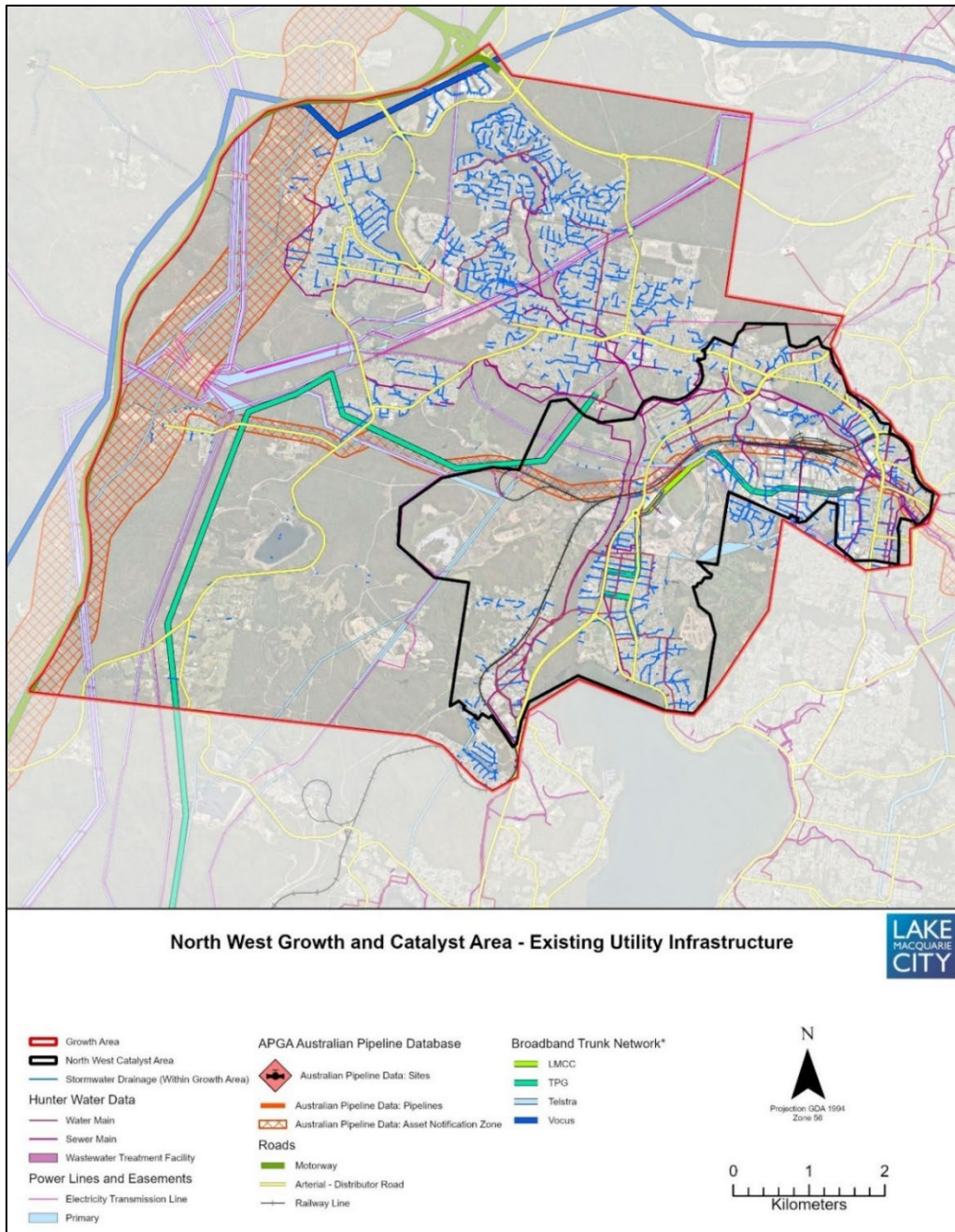


Figure 59 :Utility infrastructure within the catalyst area

To the west of the North West Growth Area traversing the M1 Motorway is a major utility easement corridor that services the north and the south of the State and nation and contains primary electricity easements that power the national electricity grid, along with the Elcom Substation, the APGA Australian Gas Pipeline and telecommunication networks.

The utility easement corridor contains a junction that splits and runs along the Cockle Creek West Precinct which continues east along the northern rail line through the Glendale-Argenton Renewal, Glendale Retail and Sport and Cardiff Mixed Use Precincts and continues towards Newcastle. This corridor contains the APGA Australian Gas Pipeline and primary electricity easements. The APGA Australian Gas Pipeline contains a 200m notification zone which requires consultation with the APGA if any land use change is proposed to these lands, such as higher residential densities.

Several primary electrical easements also traverse the Cockle Creek, Cardiff Advanced Industrial and Glendale-Argenton Renewal Precincts. To the Cockle Creek Precinct electrical easements do create easement restrictions on several land parcels intended for future development and these will require design solutions to ensure buffers and safety requirements. The Ausgrid - Argenton 132kV Zone Substation is also located within the Glendale-Argenton Renewal Precinct.

6.1.2 Water and waste water

The Hunter Water Edgeworth Wastewater Treatment Works (WWTW) is located adjacent to the Glendale-Argenton Renewal Precinct and services most of the catalyst area. It currently treats 14 megalitres per day and can handle wastewater from a population of up to 70,000 people. The Teralba Precinct wastewater is serviced by the Toronto WWTW. Four waste water pump stations are in the catalyst area: Argenton 1 WWPS, Boolaroo 1 WWPS, Booragul 1 WWPS, and Teralba 1 WWPS.

Portable water is supplied from the Elmore Vale Reservoir water supply zone, with several trunk watermains transferring bulk water. The Elmore Vale Reservoir supply zone has the following subzones within the Catalyst Area: Boolaroo Booster Zone, Speers Point 1 Booster Zone, and Argenton 1 Pressure Reducing Valve (PRV) Zone.

Hunter Water noted the following future infrastructure capacity considerations for growth of the catalyst area:

Potable Water

The catalyst area is serviced by significant existing trunk watermains to service expected growth up to 2035, while two 375mm trunk watermain upgrades through Argenton and Boolaroo have been identified to service growth beyond 2035.

Constraints in the potable water network will require ongoing monitoring and will be incrementally updated with infill development. Constraints include:

- water supply boosting for development areas above elevation of 40m within the, Boolaroo – Speers Point, Cockle Creek, Cockle Creek West and Teralba Precincts.
- water supply pressure management for development areas in low elevations close to trunk infrastructure within Cockle Creek, Cockle Creek West, Glendale – Argenton Renewal, Glendale Retail and Sports Precincts.
- localised pipe capacity constraints due to age requiring upgrade in the Boolaroo –Speers Point Precinct and Teralba Precinct.

Wastewater

Argenton 1 wastewater pump station (WWPS) services the Glendale – Argenton Renewal, Glendale Retail and Sports, Cardiff Advanced Industry and the Cardiff Mixed-Use precincts via the gravity sewer network and receives pumped flows from Boolaroo 1 WWPS. Localised Hunter Water capital upgrades will be undertaken incrementally towards 2042 within the gravity catchment to maintain levels-of-service as growth occurs.

Boolaroo 1 WWPS services the Boolaroo-Speers Point and Cockle Creek precincts and pumps to the Argenton 1 WWPS. The following service considerations were identified for the projected growth of the catalyst area:

- servicing of the Green Capital's Weemala residential estate within the Cockle Creek Precinct and the former Speers Point Quarry residential estate have been addressed as part of the wastewater strategies and designs prepared by the proponents of each development. Upgrades are anticipated to occur 2022 -2028, pending residential construction timeframes.
- a Hunter Water capital upgrade of sewer mains upstream of the pump station has been identified to maintain levels-of-service as growth occurs towards 2042 within the overall gravity catchment.

The operation of Edgeworth Wastewater Treatment Works (WWTW) brings several potential impacts such as odour and noise generation. A 400m buffer is applied to the WWTW to mitigate these impacts, generally denser residential infill within this buffer is not encouraged, if public open space or natural areas are preferred²⁹. Figure 60 shows the extent of the buffer.

The Teralba Precinct is currently serviced by the Booragul 1 WWPS and Teralba 1 WWPS. Both pump stations have existing capacity to service minor infill developments within their respective gravity catchments.

Recycled Water

Hunter Water supports integrated water and landuse planning approaches and the supply of recycled water can play an important role. Recycled water for community greening can assist in achieving liveability outcomes for our communities such as supporting health and wellbeing outcomes and contributing to urban cooling.

Hunter Water is currently investing in a new recycled water irrigation scheme at the Edgeworth WWTW that makes recycled water available to irrigate Jack McLaughlan Oval – Edgeworth Oval in Park Street and the Pasterfield Sports Complex at Cameron Park within the North West Growth Area. This scheme is in addition to recycled water that is currently supplied to the adjacent Waratah Golf Course in the Glendale-Argenton Precinct. There may be a case to supply recycled water if there are large water users (i.e. commercial or industrial) proposed in the catalyst area.

²⁹ Hunter Water, 2004. *Hunter Water Buffer Zone Policy – Wastewater Treatment Plants*. Hunter Water Corporation.

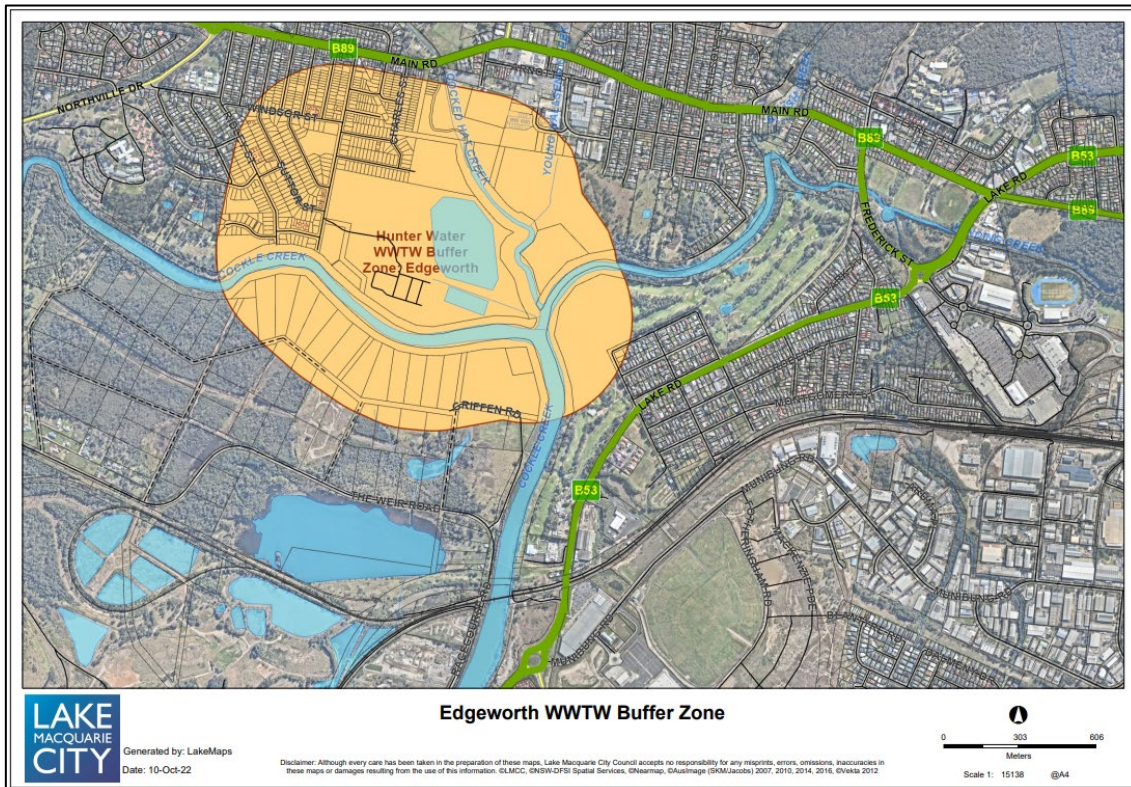


Figure 60: Edgeworth WWTW Buffer Zone

Stormwater

Hunter Water owns and maintains approximately four kilometres of open concrete channels and culverts, 500m of unlined channel between Pendlebury Road and Gorleston Terrace and two stormwater detention basins in the Winding Creek Catchment. These will be maintained into the future and any new residential infill that requires connection to these assets will be assessed on merit.

Hunter Water will undertake rehabilitation works for the natural section of Munibung Creek in Cardiff, between Pendlebury Road and Gorleston Terrace. This will improve the creeks natural state, erosion and weed control. Hunter Water will also undertake a stormwater visual improvement to the Winding Creek stormwater channel, ensuring the area is beautified back to a natural environment for the community to enjoy.

6.1.3 Electricity

Ausgrid advised the growth projections would not result in the need for any major substations or other major upgrades to the transmission network towards 2042. Some new infill development will need to upgrade and/or augment the distribution network (11kV electricity assets) to ensure localised supply.

There are two main substations within the catalyst area, and a third substation outside it but also services it (Edgeworth on Main Rd). The Argenton substation has ample spare capacity to provide supply for continued residential growth (such as the Cockle Creek Precinct) and other nearby infill development, as well as industrial/commercial growth. Ausgrid have plans

to refurbish and upgrade Cardiff substation (within the Cardiff Advanced Industry Precinct on Pendlebury Rd), and therefore will have spare capacity to supply further industrial and commercial growth at Cardiff. This project is expected to be completed by 2026. However, at current the Cardiff substation predominantly supplies the residential areas of Macquarie Hills, Lakelands and Warners Bay commercial area, which are outside the catalyst area.

Power supply will also be transformed in line with Ausgrid's implementation of its Ausgrid Revised Regulatory Proposal 2019-24, which recognises the technological landscape and management of the electrical network is rapidly changing due to the transition to sustainable energy sources both at the large scale and smaller customer scale (i.e. residential solar panels and battery storage).

Ausgrid will maintain its existing network, while undertaking innovative pilots to update grid capacity for sustainable energy generation and distribution, such as employing advanced distribution management systems, produce new innovation programs that implement new grid technologies that improve customer outcomes. Also, incorporate demand management programs and apply planning and technological data usage for greater understanding for customers and stakeholders.

6.1.4 Gas

No comment was received from Jemena. It is anticipated that Jemena will continue its implementation of its *Asset Management Plan*, which sets out in assets, such as pipelines, facilities and depots. Overall, Jemena's assets will be monitored and updated once parts of the network reach the end of the operational lifecycle. Jemena also employ a risk framework, with any development proposal with in its Asset Protection Buffer requiring notification to Jemena to mitigate any risk to life or property.

6.1.5 Telecommunications

The TTP broadband trunk network enters within the Cockle Creek West Precinct. No comment was received from Telstra or NBN Co. It is anticipated that Telstra will upgrade network assets and capacity as future development occurs. Telstra's is guided by its Corporate Strategy: Telstra 2022, which updates the existing network incrementally or at end of asset lifecycle, while extending the 5G network. NBN will continue to expand the physical NBN network, while improving its usability and function, while being incorporated into development incrementally. The catalyst area is now a fixed line serviceable area with the NBN.

6.2 Social infrastructure

Social infrastructure includes physical facilities and spaces where the community can access social services. These include health-related services, education and training, social housing programs, police, courts and other justice and public safety provisions, as well as arts, culture and recreation facilities.

A variety of social infrastructure facilities are found within the catalyst area (Figure 61). These services are concentrated within the Boolaroo-Speers Point, Glendale-Argenton Renewal and Glendale Retail and Sports precincts. Most social infrastructure is delivered and maintained under Councils Resourcing Strategy, while future services and infrastructure

are listed and levied under the Glendale Contributions Plan³⁰. This plan sets a 2030 timeframe for planning and delivery of local social infrastructure.

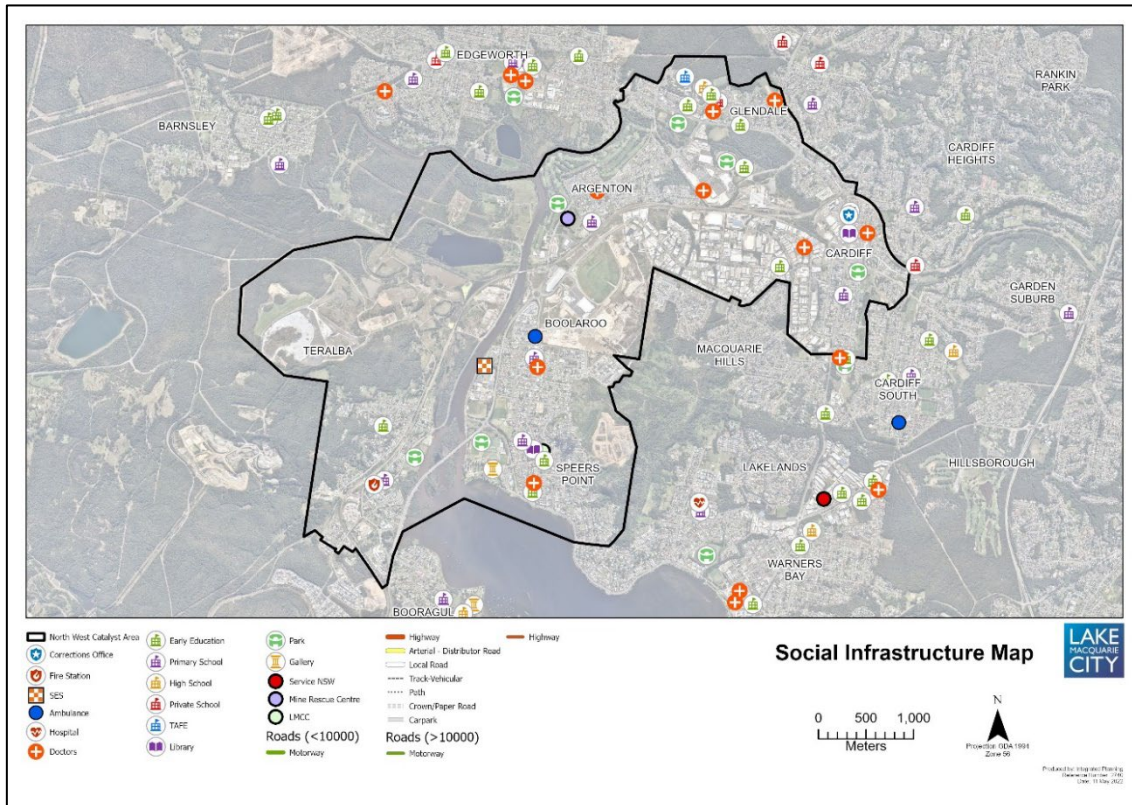


Figure 61: Social infrastructure in the catalyst area

6.2.1 Education services

The Glendale-Argenton Renewal Precinct contains the full range of education services from early learning through to tertiary education. It also serves as a High School catchment for the suburbs of Argenton, Cameron Park, Edgeworth and Glendale. All other precincts are zoned for high schools located outside of the . Overall, enrolments at government schools of school age children within the are 1,314 children.

Precinct	Education facilities
Boolaroo-Speers Point	Family Day Care Speers Point Great Beginnings Speers Point Speers Point Public School Boolaroo Public School
Cardiff Advanced Industry Cardiff Mixed Use	Cardiff ELC Tilly's Play and Development – Cardiff Cardiff Child Care Cardiff Public School St Kevin's Primary School
Glendale-Argenton Renewal	Goodstart Early Learning Glendale Awabakal Preschool – Glendale

³⁰ Glendale Contributions Catchment - Development Contribution Plan 2015. Lake Macquarie City Council.

Precinct	Education facilities
Glendale Retail and Sports Teralba	Argenton Public School
	Glendale Technology High School
	TAFE Glendale
	Glendale Early Education Centre
	Milestones with Mary – Teralba
	Teralba Public School

School Infrastructure NSW also seeks effective transport planning to promote safety, access and pedestrian prioritisation. A key metric to determine the accessibility of schools is the NSW Governments Movement and Place Framework and its Built Environment Performance Indicators, which spatially identifies walkable school catchments. Walkable access to primary schools is measured from 0-400m to greater than 2.3km. A <400m to 800m walkable distance is considered the most desirable distance (see Figure 62).

Overall, there is generally adequate walkable access to primary schools within the . Areas with poor access i.e. 1200m to 2.3km includes the Munibung Hill, and Billy’s Lookout areas. These areas are serviced by dedicated school buses.

Schools Infrastructure NSW (SINSW) have advised it has a well-established asset portfolio across the catalyst area and it would continue to monitor projected population, land use change, development and enrolment growth towards 2042. NSW Education will continue to optimise existing assets by:

- Realigning school intake areas to appropriately manage growth in existing facilities where possible
- Monitoring enrolments to provide priority to students living in the local school intake area
- Renewing existing assets to provide contemporary teaching spaces and learning environments for students
- Increasing the size, amenity and functionality of existing schools to manage growth whilst providing greater curriculum choices where possible
- Using temporary classrooms to manage short term fluctuations in enrolment levels.

If additional school infrastructure is required to support enrolment demand, SINSW will commence optioneering to identify sites in and around the subject area which meet the SINSW Site Selection Criteria and may be suitable for future school development.

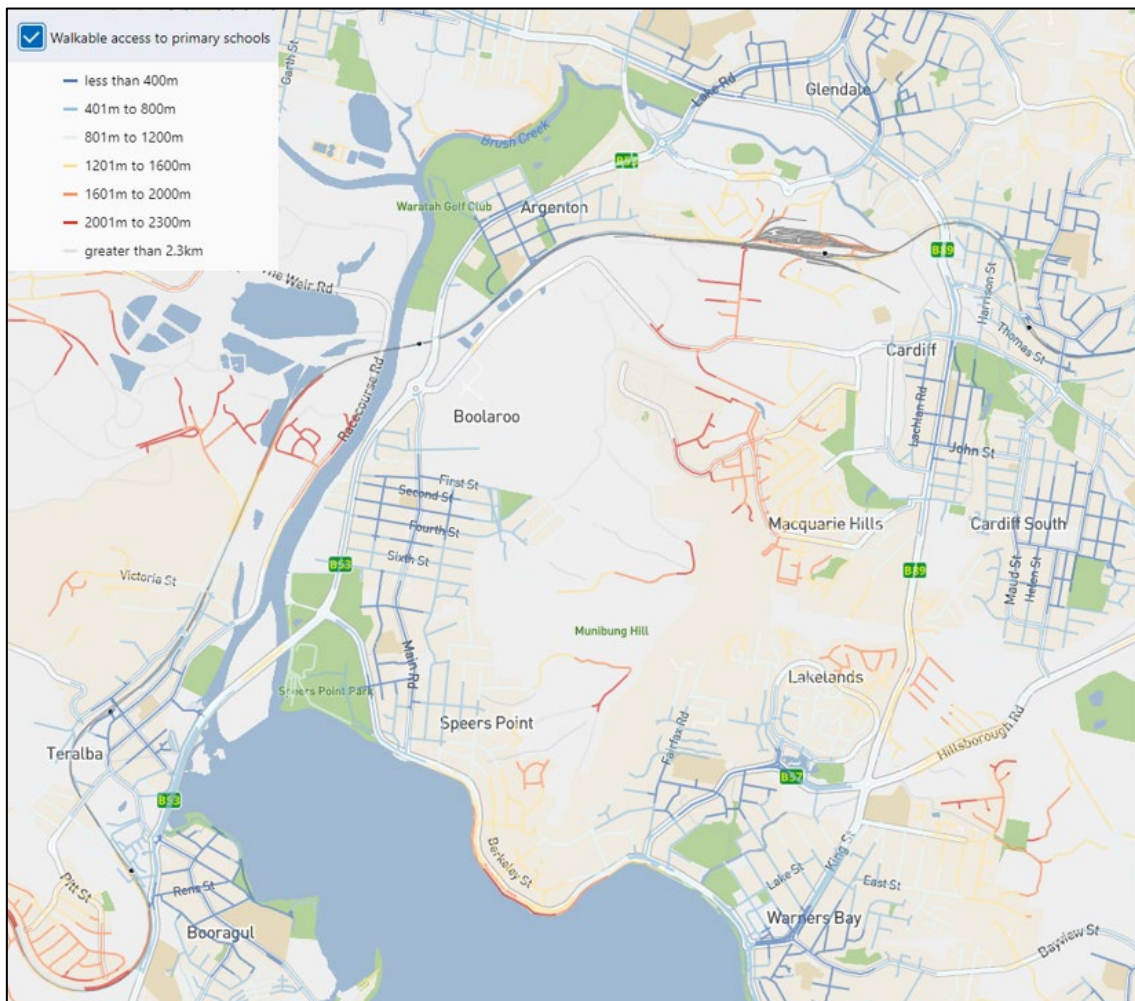


Figure 62: Walkable access to primary schools. Source: NSW Government

It is anticipated that TAFE will continue to implement and review its Strategic Plan 2016-22. The Strategic Plan seeks to manage TAFE’s property portfolio to reduce costs, introduce latest fit-for-purpose technology and support efficient allocation of teaching and training resources. TAFE will seek out innovative ways to extend reach and course delivery without compromising on quality. TAFE’s approach also delivers on its commitment to support the NSW Government in building infrastructure to meet the needs of communities across the State in an efficient way. TAFE will also rationalise and re-purpose property through a Strategic Asset Management Plan, and reinvest in fit-for-purpose and state-of-the-art facilities. Council will continue to engage with TAFE Glendale to ensure land use opportunities are maximised to support the vision for the catalyst area.

6.2.2 Emergency services

Emergency services are sparsely located throughout the . The closest police stations are in Toronto, Morisset and Belmont. NSW rescue service such as the SES and NSW Fire and Rescue are relatively well represented located in the Boolaroo-Speers Point, Cardiff Mixed Use and Teralba Precincts.

Fire and Rescue NSW have indicated that resources at Cardiff and Teralba are sufficient to service the catalyst area growth. Incremental works to improve or redevelop existing stations are likely to occur throughout the Place Strategy timeframe. However, no major additional resource enhancements are required.

NSW Police noted that there is a currently a capacity gap within the catalyst area, with the nearest police stations being in Toronto and Belmont. The projected population will likely result in ongoing resourcing impacts. Council will work with NSW Police will to identify appropriate sites for a police facility within the catalyst area to cater for growth projections.

NSW Ambulance advised that there are known infrastructure and staffing needs for the catalyst area. This is due to the projected growth rate within the Cameron Park and Glendale areas as well as some precincts being relatively far from existing stations (i.e. Boolaroo and Cardiff South).

The NSW Government has committed \$232 million to the Rural Ambulance Infrastructure Reconfigurations (RAIR) program. This program benefits regional communities through upgrading, rebuilding and establishing new ambulance stations across regional NSW. These stations are strategically selected and identified through assessment of current and projected demand and the functionality and state of repair of existing stations. The catalyst area will be investigated in future programs to mitigate impacts from projected growth.

NSW SES advised that any future rezoning should not enable development that will result in an increase in risk to life, health or property of people living on the floodplain. Risk assessment should consider the full range of flooding, including events up to the Probable Maximum Flood (PMF) and not focus only on the 1 per cent AEP flood. Risk assessment should have regard to flood warning and evacuation demand on existing and future access/egress routes. Development must not conflict with the NSW SES's flood response and evacuation strategy for the existing community. Development strategies relying on deliberate isolation or sheltering in buildings surrounded by flood water are not equivalent, in risk management terms, to evacuation. Development strategies relying on an assumption that mass rescue may be possible where evacuation either fails or is not implemented are not acceptable to the NSW SES.

Large parts of the catalyst area are identified as flood prone land, including the current Lake Macquarie City SES Unit in Boolaroo. Future consideration should be made to the viability of relocating the Unit to above the PMF level and not isolated by flooding to ensure the Unit is not at risk of flooding and impacting the ability for SES members to service the community.

6.2.3 Health services

A range of medical clinics are found throughout the catalyst area with NSW Ambulance stations located at Boolaroo and Cardiff. The nearest private hospital is at Warners Bay and John Hunter Hospital is the nearest public hospital.

Precinct	Medical clinics
Boolaroo-Speers Point	Boolaroo Medical Practice Amity Family Practice, Boolaroo NSW Dr Babla's Surgery, Speers Point
Cardiff Advanced Industrial	Awabakal Medical – Cardiff, Fr Oldfield and Associates, Pendlebury Clinic
Cardiff Mixed Use	Cardiff Medical Centre and Skin Cancer Clinic Atune Health Centres – Cardiff

Precinct	Medical clinics
Glendale-Argenton Renewal	The Doctors Argenton Glendale Medical Centre Macquarie Family Medical Practice - Glendale
Glendale Retail and Sports	Stockland Medical Centre

NSW Health advised that the projected growth rate was factored into their Clinical Service Plan for the John Hunter Hospital redevelopment. Additionally, as the John Hunter Hospital and Belmont Hospitals' were within 9km of the catalyst area and Warners Bay Private was within 1km, it is anticipated that the projected population will utilise these services. All facilities will be able to cater for the projected population.

6.2.4 NSW Government services

NSW Government services are sparsely located within the , with the primary servicing being the Lake Macquarie City Council Administration Building. Apart from the Lake Macquarie Community Corrections Office in the Cardiff Mixed Use Precinct, there is no other NSW Government Service, such as Centrelink or Medicare, with the nearest service being Service NSW in the Hillsborough Road Warners Bay area.

6.2.5 Local government services and facilities

There are several local government services within the , and these are concentrated within the Boolaroo-Speers Point and Cardiff Mixed Use Precincts. These include Speers Point and Cardiff libraries, Cardiff Senior Citizens Centre, Ulinga Pak Community Hall and the Lake Macquarie multi-arts pavilion at Speers Point.

6.3 Open space and recreation

The open and recreation space network contributes to the green and blue grid offering natural and passive recreation spaces that also contribute to reducing urban heat, flood storage resilience, climate sustainability and a sense of place and connection for local communities.

Open space and recreation infrastructure in the provides a concentrated network within Boolaroo-Speers Point, Cardiff Mixed Use, Glendale-Argenton and Teralba Precincts as shown in Table 11. There are disconnections and deficiencies of this network within the Cardiff Advanced Industrial, Cockle Creek, Cockle Creek West and Glendale Retail and Sports Precincts.

Table 11: Open space and recreation facilities in the catalyst area

Precinct	Parks and playgrounds	Sporting fields and recreation facilities	Water-based recreation facilities	Private recreation facilities
Boolaroo-Speers Point	Albert Park Reserve Speers Point Park and Lake Macquarie Variety Park Walters Park Munibung Hill	Lake Macquarie Regional Football Facility Boolaroo Sports Club Macquarie Field Tredinnick Oval	Speers Point Swim Centre Speers Point Public Jetty Speers Point Boat Ramp	
Cardiff Advanced Industry				Parrey Skatepark and Newcastle Scooter Skate BMX
Cardiff Mixed Use	Gertrude Street Reserve Playground Ulinga Park Playground Wilkinson Park Playground Fern Valley Road Reserve Playground	Cardiff Oval 1, 2, 3 Cardiff Park Tennis Courts Cardiff Skate Park Nancy Dwyer Netball Courts		Lake Macquarie Tennis Centre
Glendale-Argenton Renewal	Argenton Hall Reserve Playground Cedar Street Park Playground Clarence Street Reserve Playground Bill Bower Oval Playground Jack Edwards Oval	Lake Macquarie BMX Club Bill Bower Oval		Waratah Golf Club
Glendale Retail and Sports		Hunter Sports Centre		
Teralba	Anzac Park Tulkaba Park Playground			

6.3.1 Open space and recreation supply analysis

The sites within the wider Glendale Catchment identified under the Lake Macquarie Parks and Play Strategy and the Development Contributions Plan for the Glendale Contributions Catchment.

The Parks and Play Strategy seeks to ensure 80 per cent of residents in urban areas have access within a 400m walk, and 100 per cent within 800m walk of a park or play space. Several gaps in open space provision are identified within the Glendale Catchment. Figure 63 shows the current open space and recreation networks gaps using the 400m and 800m standard. Areas with the most significant gaps include Cockle Creek Precinct, Cardiff and Glendale.

The Parks and Play Strategy also identifies the following open space and recreational gaps within the :

- The catchment provides the second lowest amount of local parkland / 1000 population when considered against other catchments within Lake Macquarie.

- The catchment provides the second lowest amount of local + District parkland / 1000 population when considered against other catchments within Lake Macquarie.
- Only 53 per cent of the catchment's residents have access to a park within 400m. This results in almost half the catchment population being in an unacceptable walkable proximity to open spaces.
- Average size of local parks within the catchment is 0.69Ha. It is important that parks are 0.5ha to ensure financial and ongoing maintenance sustainability
- 64 per cent of local parks are below 0.5Ha.
- 60 per cent of play spaces are over 15 years old, which will require renewal or removal within a short-term (5+ year) period

Overall, the key issue for the is the lack of accessibility to local parks and the insufficient supply, which will worsen as growth continues.

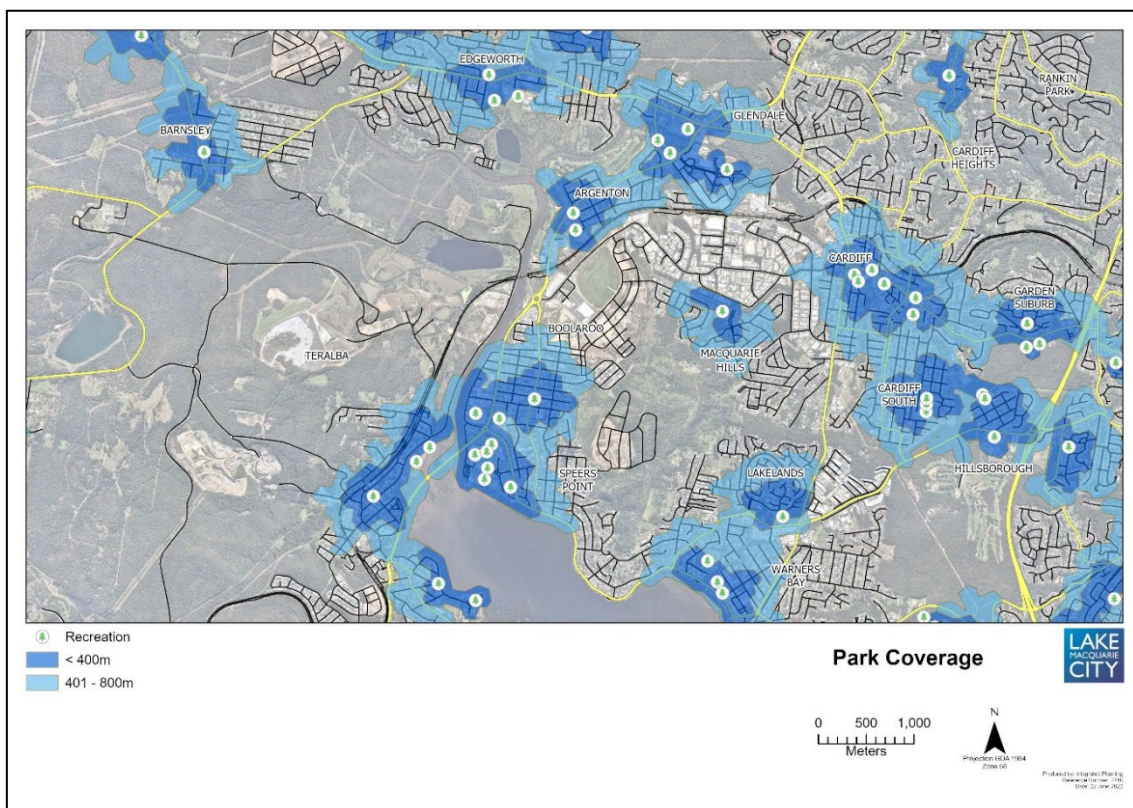


Figure 63: Open space and recreational network gap analysis

6.3.2 Munibung Hill open space

Although Munibung Hill is outside of the boundary, it is a significant place of passive recreation and connection to nature for the community within the catalyst area as well as a major node of the green and blue grid and a place of Aboriginal importance.

The potential of Munibung Hill as a premier recreation space is affected by the fragmented land ownership, environmental-scenic sensitive landscapes, unstable landscapes and

historic contamination risk³¹. To mitigate these impacts, the Munibung Hill Management Plan has established the following vision with management objectives (Table 16) to facilitate an enhanced Munibung Hill:

Munibung Hill is a visual, environmental, and recreational landmark framing the north of Lake Macquarie. Safe and accessible bushland open space invites people to connect with nature and culture.

Table 12: Management Objectives for Munibung Hill

No.	Management objective
1	The condition and connectivity of ecological communities on Munibung Hill is improved.
2	On and off-site impacts of erosion on Munibung Hill are reduced.
3	Contamination risks for more diverse recreational use of Munibung Hill are clarified, and safe recreational opportunities are confirmed.
4	Threatened and endangered species and ecological communities are protected from inappropriate fire regimes, supporting the recovery of biodiversity values.
5	Mitigate the contribution of Munibung Hill to fire risks in surrounding urban areas and mitigate risks from fire for people participating in recreation on Munibung Hill.
6	Identified walking tracks are safe and stable.
7	The number of recreational users using designated tracks increases
8	Aboriginal cultural values are protected.
9	Vehicle access on Munibung Hill is restricted to essential service, maintenance and emergency vehicles.
10	Capital and maintenance costs for recreational access on Munibung Hill are sustainable.
11	Management activities on Munibung Hill, funded by LMCC, provide public benefits, not private benefit.
12	All relevant landholders and stakeholders, including the Aboriginal community are consulted about detailed design and implementation of access improvement projects (see also engagement strategy)
13	Tenure arrangements and planning requirements for potential access points are clarified
14	Responsibility for achieving the targets is assigned to a relevant Council team.
15	Opportunities for Landcare to undertake works are investigated and promoted.

³¹ Munibung Hill Management Plan, 2022. Umwelt.

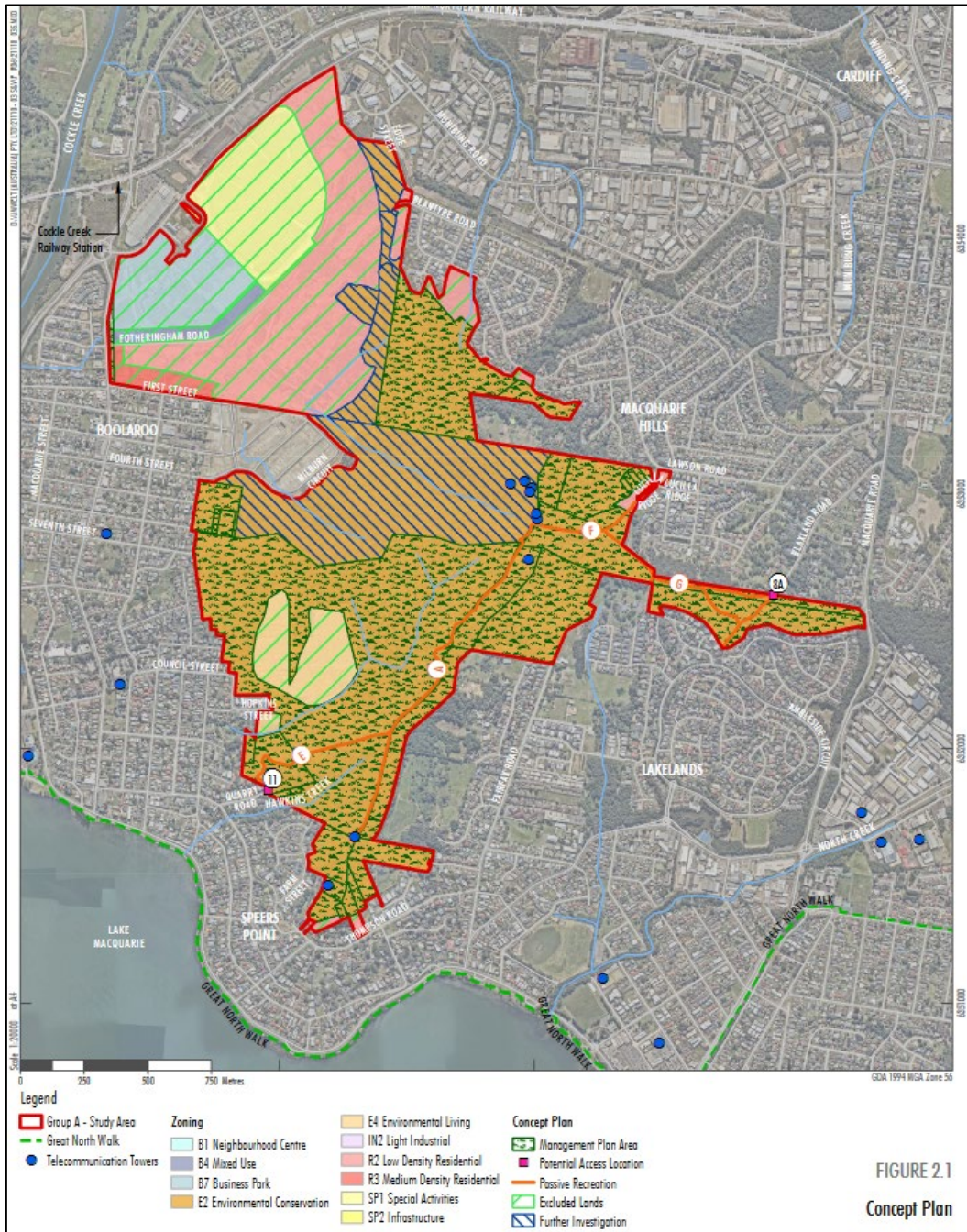


FIGURE 2.1
Concept Plan

Figure 74: Extract of Concept Plan within the Munibung Hill Management Plan