

To: Andrew Gillies
Willoughby City Council
Project/File: 300304622

From: Elizabeth Muscat / Chris Coath
Stantec Australia
Date: 5 May 2023

1 Introduction

Cardno (now Stantec) completed the *Review of Parking Rates* report for Council in February 2021. The report proposed new car parking, motorcycle and bicycle parking rates for the Willoughby local government area (LGA). For car parking rates, the rates recommended were divided into three geographic areas:

- Chatswood and St Leonards CBDs (maximum rates)
- Artarmon Railway Precinct (maximum rates)
- Rest of LGA (target rates – i.e. neither minimum nor maximum rates)

With regards to the Chatswood and St Leonards CBDs and Artarmon railway precinct, maximum rates were proposed to align with Council's stated travel demand management (TDM) approach as defined in Council's existing Willoughby DCP, Willoughby Integrated Transport Strategy 2036 and the Chatswood CBD Planning and Urban Design Strategy 2036.

The intention of removing minimum car parking requirements was to align with the TDM approach; discourage private vehicle ownership and car use in these dense, highly accessible areas and promote a mode shift to more efficient and sustainable active, public and shared transport modes.

A secondary Technical Memorandum was prepared in October 2022 recommending car parking rates for regional shopping centres. This recommended a maximum and minimum rate for 'regional shopping centres' (defined as 30,000sqm or greater).

Following public exhibition of Council's draft comprehensive LEP and DCP, a report was put to Council at its 12 December 2022 meeting. This included the parking rates as proposed in the Review of Parking Rates report and the regional shopping centres parking rate range.

Council passed resolutions related to parking rates as follows:

AMENDMENT

That Council:

...

3. Noting that the effect of the following will result in a delay in considering the Development Control Plan, that Council staff investigate the addition of a minimum parking rate for land uses in the Chatswood, St Leonards, and Artarmon railway precincts;

review the EV charging requirements to ensure the financial impact on homeowners is not unreasonable;

Reference: 300304622

further consider public feedback related to target parking rates in the local centres and in what circumstances (if any) these may be applied above the targets; and provide a further report on this matter for Council's consideration in a timely manner which allows for the implementation of the Development Control Plan at the same time as the Local Environmental Plan is brought into effect.

That the investigation of the sufficiency of parking in Castlecrag include consideration of the number of aged residents and whether it is appropriate to increase the number of disabled parking spots at the Castlecrag shops.

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1.1 Purpose of this report

The following Technical Note has been prepared in response to Council's resolution and includes.

Section 2 of this report provides a recommendation for minimum parking rates to accompany the previously proposed maximum parking rates for all land uses within Chatswood and St Leonards CBDs and Artarmon railway precinct.

Section 3 of this report discusses factors that may be taken into account when varying from target parking rates within centres.

Section 4 of this report addresses the item specifically relating to target parking rates in local centres and the sufficiency of parking in Castlecrag. This also outlines the demographic and travel behaviour factors that may influence the intended supply of parking in Castlecrag.

Reference: 300304622

2 Minimum and Maximum Car Parking Rates

2.1 Maximum Car Parking Rates

Maximum car parking rates were proposed for the Chatswood and St Leonards CBDs and Artarmon railway precinct to align with Council's stated travel demand management approach which includes discouraging private vehicle ownership and car use in these dense, highly accessible areas and promote a mode shift to more efficient and sustainable active, public and shared transport modes.

The adoption of maximum rates places a cap on the amount of parking that can be provided and removes the requirement for developers to provide parking by way of a zero parking rate being available for adoption.

This however does not mean that developers will provide zero parking as market factors will often result in at least some parking being provided in particular for key destination land uses.

Public exhibition of the draft maximum rates identified that there is some concern that maximum parking rates for these areas provides little security for parking overspill to streets, particularly for residential land uses.

The following sections provide consideration of the setting of minimum parking rates to supplement the adopted maximum parking rates.

2.2 Supplementing with a Minimum Parking Rate

While noting the above, many developments will still naturally seek to provide a level of parking even when the option exists to provide zero parking. However, maximum-only rates may result in undue pressures and overspill into surrounding residential areas rather than achieving a mode shift in a transitional period before fulfilment of the TDM approach.

Therefore consideration of a minimum rate to supplement the maximum rates gives greater support to cater for the needs of residents and users in an interim-period prior to greater fulfilment of the TDM approach, as development will be unable to provide zero off-street parking. The banded rates would apply to all new development and all types within the CBD and railway precinct environments.

The setting of minimum parking rates (when supporting a maximum rate approach) are not easily derived in the context of the objectives developed in setting maximum car parking rates. However consideration can be given to particular users groups that may require a provision of parking to support the economic viability of a development or the impact of not providing parking for a particular user group on the surrounding areas.

These elements are considered in the following discussions.

2.3 Surrounding Parking Characteristics

By understanding the existing parking characteristics surrounding the Chatswood and St Leonards CBDs and the Artarmon railway precinct, as well as future residential density, the risks of under providing parking may be understood.

Reference: 300304622

Artarmon Railway Precinct

The Artarmon Railway Precinct is expected to increase in gross floor area for residential land use by over 700 per cent and non-residential land use by 40 per cent as identified in the Willoughby Local Centres Strategy.

There are currently around 85 on-street parking spaces and 200 off-street parking spaces in the centre, with a peak non-residential parking demand of 200 spaces. On-street spaces are generally time restricted in the core of the centre, and short-stay visitor parking demand is largely accommodated within the on-street supply along Hampden Road and Hampden Lane. There is minor overspill in visitor parking to adjacent residential streets. Employee longer term parking is often in competition of commuter rail all day parking which exceeds the capacity of the 30 space commuter car park.

The Local Centres Strategy recommends considering the introduction of localised paid parking for long-stay bays in the Precinct, and that a combination of duration / timing restrictions will also likely be necessary to support centre function.

This demonstrates that there is little on-street parking supply to accommodate residential parking overspill.

Chatswood CBD

The Chatswood CBD is set to grow by an additional 6,000 dwellings and 6,000 to 8,000 jobs by 2036, as stated in the Willoughby Housing Strategy and Chatswood CBD Strategy. Outside of the core centre on low-density residential streets, a residential parking scheme is available for spaces that otherwise have a 2P restriction between 8:30am and 6pm Monday to Fridays. Some outer core streets also have sections of unrestricted on-street parking, and this supply tends to be fully utilised across the day.

This assessment shows that the on-street environment of the Chatswood CBD and immediate surrounds is generally constrained with little supply to cater for parking overspill in the on-street network.

St Leonards CBD

NSW government is currently operating a car parking levy scheme to discourage car use around St Leonards Station. It generally applies to all residential and non-residential off-street car parking spaces.

The St Leonards and Crows Nest Strategic Transport Study describes that each bordering Council has a different approach to on-street parking management in the St Leonards sub-precinct. North Sydney Council and Lane Cove Council have paid parking on the streets that fall within their LGA but Willoughby City Council does not, leading to higher parking demand in the Willoughby LGA.

Parking demands within close proximity to high traffic-generating land uses are generally managed through restrictions and fees. Where no on-street restrictions exist, parking demands occur a considerable distance from activity centres on weekdays. This demand is most likely from employees of the St Leonards sub-precincts. Residential streets in Naremburn (north of Chandos Street) close to St Leonards have high levels of commuter parking associated with the employment centre. Local businesses in Crows Nest are concerned about a lack of parking for customers.

Similarly to Chatswood, the St Leonards CBD is a major public transport hub and activity centre and has little capacity to cater for overspill from off-street parking in the network.

Reference: 300304622

2.4 Case Studies

In a NSW context there are no known examples or case studies to draw upon where minimum and maximum approaches have been adopted together, with the exception of Waverly Council which sets zero minimums for areas within 800 metres of Bondi Junction railway station where multi-residential development is permissible. The rate does however specify that a minimum of one car share space is to be provided for every 90 residential units, a minimum of one car share space be provided for every 50 commercial car parking spaces and that a car share space can be provided in lieu of four car parking spaces.

A minimum of zero off-street car parking spaces shows that Waverly Council is prepared to accept zero parking in medium to higher density residential units and other businesses, and in effect operates similarly to having only a maximum rate.

The Footscray Metropolitan Activity Centre in Melbourne provides one inner metropolitan example where a minimum and maximum approach has been adopted. In a similar manner to the Willoughby Council resolution, minimum rates were derived to temporarily prevent the adoption of a zero rate. These rates were prescribed on a basis that the target would remain in future years to remove the minimum rates and therefore retain only the maximum rates. The rates adopted for this centre are identified in **Table 2-1**.

Table 2-1 Footscray Metropolitan Activity Centre parking rates

Use	Minimum rate	Maximum rate	Measure
Medical centre	1.0	2.3	To each practitioner (equivalent full-time)
Office	1.5	2.0	To each 100 sq m of gross floor area
Restaurant	0.05	0.1	To each patron catered for
Restricted retail premises	0.5	1.0	To each 100 sq m of gross floor area
Retail premises (shop)	0.5	1.5	To each 100 sq m of gross floor area
Supermarket	2	2.5	To each 100 sq m of gross floor area
Dwelling	0.5	1.0	To each studio or one bedroom dwelling
	0.8	1.0	To each two bedroom dwelling
	1.0	1.5	To each 3 or more bedroom dwelling
	0.1	-	For visitors to every dwellings of developments of 10 or more dwellings
Residential hotel	0.1	0.3	To each lodging room
Residential college	0.05	0.25	To each bedroom

The South Australian parking requirements have adopted both minimum and maximum rates for areas identified as 'designated areas', which range from the Adelaide CBD through to local suburban neighbourhood shopping centres depending on a number of criteria relating to proximity to public transport and the Adelaide CBD. Within the designated areas, there are no separate considerations of land use beyond residential and non-residential (except for tourist accommodation premises). All non-residential land uses have a requirement to provide a minimum of 3 spaces per 100 square metres and a maximum of 5 or 6 spaces per 100 square metres, with the higher rate applicable in the smaller centres.

Reference: 300304622

It should be noted that densities for Adelaide are not entirely comparable to the Chatswood and St Leonards CBDs and Artarmon railway precinct however may give an understanding on how a banded rate is applied in other jurisdictions.

2.5 Recommending minimum parking rates

With respect of further considering an approach to setting minimum car parking rates a number of factors relating to residential and commercial development need to be explored as follows.

2.5.1 RESIDENTIAL

ABS Census data is presented in **Table 2-2** to understand, at least based on existing characteristics, the market for different residential car parking outcomes for different dwelling sizes. It is noted that this data includes only attached dwellings.

Table 2-2 Assessment of number of bedrooms versus vehicle ownership (ABS Census 2021)

	No bedrooms (includes studio apartments or bedsitters)				
	No motor vehicles	One motor vehicle	Two motor vehicles	Three motor vehicles	Four or more motor vehicles
Artarmon	0%	0%	0%	0%	0%
Chatswood	94%	6%	0%	0%	0%
St Leonards / Crows Nest	86%	14%	0%	0%	0%
	One bedroom				
	No motor vehicles	One motor vehicle	Two motor vehicles	Three motor vehicles	Four or more motor vehicles
Artarmon	23%	77%	0%	0%	0%
Chatswood	48%	48%	3%	0%	0%
St Leonards / Crows Nest	48%	49%	3%	0%	0%
	Two bedrooms				
	No motor vehicles	One motor vehicle	Two motor vehicles	Three motor vehicles	Four or more motor vehicles
Artarmon	19%	66%	14%	1%	0%
Chatswood	28%	64%	8%	0%	0%
St Leonards / Crows Nest	16%	70%	13%	0%	0%
	Three bedrooms				
	No motor vehicles	One motor vehicle	Two motor vehicles	Three motor vehicles	Four or more motor vehicles
Artarmon	9%	58%	33%	0%	0%
Chatswood	12%	62%	25%	1%	0%
St Leonards / Crows Nest	7%	69%	24%	0%	0%
	Four bedrooms				
	No motor vehicles	One motor vehicle	Two motor vehicles	Three motor vehicles	Four or more motor vehicles
Artarmon	0%	0%	0%	0%	0%
Chatswood	18%	41%	41%	0%	0%

Reference: 300304622

St Leonards / Crows Nest	0%	0%	100%	0%	0%
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It is clear from the above data that markets do exist across all size dwellings for developments that provide zero residential car parking. The extent of such markets are however recognised to diminish as dwelling sizes increase.

The setting of maximum rates below one space per dwelling for residential developments in Chatswood, St Leonards and Artarmon means that at least some dwellings will not be provided with parking. These outcomes should be supplemented with suitable on-street parking controls that prevent resident parking from spilling onto the street and fulfilling the objective for mode shift to occur where parking is not provided on-site.

Equally it is clear that markets exist for dwellings with a carparking space and as such would be likely that an automatic zero provision would not be adopted as the norm.

As such the setting of a minimum residential parking rate may be best dictated by providing parking to support changes in travel modes (such providing spaces for car share vehicles) and for those that have a greater need for car parking to be provided on-site such as persons with a disability.

A minimum provision of residential parking therefore beginning at a rate 0.1 spaces per dwellings could be reasonable acknowledging that research shows that 1 car share vehicle replaces in the order of 9-10 private vehicles.

2.5.2 COMMERCIAL

With respect of commercial parking the desired level of parking provision will vary across land uses types with some land uses such as supermarkets and bulky goods retailers representing key destination land uses which seek to provide a higher level of customer amenity while smaller retailers represent more of an ancillary offering to the centre which is supported by walk up trade and multi-purpose trips by those who are already within the precinct.

Different types of commercial facilities will also have differing impacts on the surroundings areas. Office parking if not provided will represent a long stay impact to the surrounds which consumes parking for long periods of time and is difficult to be shared by other users. This may therefore influence this type of parking being desired to be accommodated on-site. Equally this must be balanced with greater ability / acceptance for these users to change mode of travel and therefore an overprovision of this type of parking would not be desirable if it were to compromise achieving travel demand management objectives.

As a general rules the following approach could be adopted for commercial uses:

- For key destination type uses that will typically seek to provide parking to support proposed development, a minimum car parking rate could be set at two thirds of the maximum car parking rate.
- For supporting and ancillary type land uses a minimum car parking rate could be set at one third of the maximum car parking rate.

2.5.3 RECOMMENDED MINIMUM PARKING RATES

Considering the above discussion, recommended minimum parking rates for all new land uses within the Chatswood and St Leonards CBD and Artarmon Railway Precinct are shown in **Table 2-3**.

Table 2-3 Recommended minimum parking rates

Proposed land use category	Maximum rate		Recommended minimum rate		Rational for minimum rate
	CBD (St Leonards and Chatswood)	Railway Precinct (Artarmon)	CBD (St Leonards and Chatswood)	Railway Precinct (Artarmon)	
Attached dwellings (dual and multi-dwelling housing)	<ul style="list-style-type: none"> 0.5 spaces per studio / 1 bedroom flat 0.5 spaces per 2 bedroom flat 0.5 spaces per 3+ bedroom flat 	<ul style="list-style-type: none"> 0.5 spaces per studio / 1 bedroom flat 0.5 spaces per 2 bedroom flat 1 space per 3+ bedroom flat 	<ul style="list-style-type: none"> 0.1 spaces per studio/ 1 bedroom flat 0.2 spaces per 2 bedroom flat 0.25 spaces per 3 bedroom flat 	<ul style="list-style-type: none"> 0.1 spaces per studio/ 1 bedroom flat 0.25 spaces per 2 bedroom flat 0.5 spaces per 3 bedroom flat 	Assessment of number of bedrooms versus vehicle ownership data
Hotels, motels and serviced apartments	0.25 space per room	0.75 space per room	0.1 spaces per room	0.25 spaces per room	First principles assessment
Office and business premises	1 space per 400 m ²	1 space per 75 m ²	1 space per 670 m ²	1 space per 100 m ²	Minimum rate adopted as approximately 2/3 of maximum rate
Sex services premises	2 spaces per room	2 spaces per room	1 space per room	1 space per room	First principles assessment
Retail premises	1 space per 70 m ²	1 space per 50 m ²	1 space per 200 m ²	1 space per 145 m ²	Minimum rate adopted as a approximately 1/3 of maximum rate
Bulky goods premises	1 space per 150 m ²	1 space per 125 m ²	1 space per 200 m ²	1 space per 200 m ²	Minimum rate adopted as approximately 2/3 of maximum rate
Retail premises (supermarkets)	1 space per 70 m ²	1 space per 50 m ²	1 space per 100 m ²	1 space per 70 m ²	Minimum rate adopted as approximately 2/3 of maximum rate
Long day care centres	1 space per 20 m ²	1 space per 20 m ²	1 space per 60 m ²	1 space per 60 m ²	Minimum rate adopted as a approximately 1/3 of maximum rate
Work based child care centres	1 space per 20 m ²	1 space per 20 m ²	1 space per 60 m ²	1 space per 60 m ²	

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Proposed land use category	Maximum rate		Recommended minimum rate		Rational for minimum rate
	CBD (St Leonards and Chatswood)	Railway Precinct (Artarmon)	CBD (St Leonards and Chatswood)	Railway Precinct (Artarmon)	
Preschool, Occasional Care Centres or Out of School Hours Care (within 500m of railway station)	1 space per 26 m ²	1 space per 26 m ²	1 space per 80 m ²	1 space per 80 m ²	
Restaurants or cafes, food and drink premises, pubs	1 space per 50 m ²	1 space per 50 m ²	1 space per 145 m ²	1 space per 145 m ²	Minimum rate adopted as a approximately 1/3 of maximum rate
Hospitals	3 spaces per bed	3 spaces per bed	2 spaces per bed	2 spaces per bed	Minimum rate adopted as approximately 2/3 of maximum rate
All medical centres (including consulting rooms, medical centres and veterinary hospitals / clinics)	2 spaces per consulting room	2 spaces per consulting room	1 space per consulting room	1 space per consulting room	Minimum rate adopted as approximately 0.5 of maximum rate

2.5.4 INTERMEDIATE STEP

The addition of a minimum rate for all new land uses within the Chatswood and St Leonards CBDs and Artarmon railway precinct should be considered an intermediate step towards the TDM approach and more sustainable future. A low minimum rate may give support to the parking supply in that there won't be zero parking provided and the TDM approach is still being somewhat achieved in the interim, whereas a high minimum rate may exclude the market for zero car parking units within the CBD and railway precincts. The setting of car parking rates in this manor should not form a static document, rather be updated to respond to changing land use outcomes, mode shift trends and policy positions. As such it would be recommended that the adoption of minimum parking rates to supplement the maximum rates be regularly reviewed to consider their effectiveness in achieving good planning outcomes that support the desired TDM approach.

2.5.5 DECISION GUIDELINES

Maximum rates accompanied by a minimum rate will provide Council with comfort that parking demand, particularly from new residential units, will not place a high burden on the on-street parking network and will suit the needs of most development types.

For example, a banded rate provided by a minimum and maximum excludes developments that do justify a zero parking supply. This should however still be considered where appropriate against the factors to allow developments who meet appropriate criteria to provide less or more parking (above the maximum or below the minimum).

Therefore it is recommended to retain flexibility in applying alternative rates for developments on a case by case situation that meet a number of criteria such as those outlined in **Section 3** of this memorandum.

2.5.6 APPLYING THE PARKING RATES

It should be made clear that the proposed car parking rates identified in the above discussions are not intended to be retrospectively applied to developments, rather apply to new or increased land use floor space (or other changes to land uses scale such as restaurant seating or number of practitioners).

Reference: 300304622

3 Variations to Local Centre Target Parking Rates

In considering the circumstances where variations to the Local Centre target car parking rates could be considered, the context of the target parking rates must also be clearly understood.

The identified 'target' parking rates while neither identifying a minimum nor maximum rates in effect prescribe both a minimum and maximum requirement. This recognises that in local centres a provision of car parking is likely to be required, however the allowance of increased car parking provisions (which could be allowed with the use of minimum parking rates) would conflict with sustainability aspirations and therefore must be controlled.

Notwithstanding, it is relevant that a set of decision guidelines be provided which allow the granting of a permit to vary the target car parking requirements specified by the DCP. This recognises that identifying a set of car parking rates is not going to fit all circumstances and it is not necessarily efficient or construes a level of precision if such rates are prescribed to apply to every possible circumstance that could arise. The original Cardno Review of Parking Rates report also acknowledges that individual circumstances will occur which warrant variations to be considered.

In particular, having regard to the strategic setting of parking rates to support sustainable transport modes, a focus should be provided on ensuring that an over provision of car parking does not occur.

In most circumstances, the identification of decision guidelines relates to the identifying of guidelines to allow a lesser provision of parking where minimum rates are prescribed or the opposite where maximum rates are prescribed. In this circumstance where a target rate is prescribed it is more difficult to provide a clear set of decision guidelines that can be applied.

It is noted that in the instance of a 'target' rate, Council has in effect set a deemed to comply solution and cannot specifically ask for a variation to the target if parking is provided at this rate. Should Council desire to have a greater control over seeking higher rates than those proposed by developers in specific areas, it would be recommended to adapt the draft DCP before final adoption.

A suggested set of decision guidelines could include and draw a distinction between the following:

- The assessment of likely demand for parking spaces, and
- Whether it is appropriate to allow a variation in the supply of spaces.

These are two separate considerations, discussed below:

1. Car Parking Demand Assessment

An application to vary the number of car parking spaces required by the target car parking rates must be accompanied by a Car Parking Demand Assessment. The Car Parking Demand Assessment must address the following matters, to the satisfaction of the responsible authority:

- The likelihood of multi-purpose trips within the locality which are likely to be combined with a trip to the land in connection with the proposed use
- The variation of car parking demand likely to be generated by the proposed use over time
- The short-stay and long-stay car parking demand likely to be generated by the proposed use
- The availability of public transport in the locality of the land
- The convenience of pedestrian and cyclist access to the land
- The provision of bicycle parking and end of trip facilities for cyclists in the locality of the land
- The anticipated car ownership rates of likely or proposed visitors to or occupants (residents or employees) of the land

Reference: 300304622

- Any empirical assessment or case study.

2. Appropriateness of Varying the Parking Supply

Before granting a permit to vary the number of parking spaces, Council must consider the following, as appropriate:

- The Car Parking Demand Assessment
- Any relevant local planning policy or incorporated plan
- The availability of alternative car parking in the locality of the land, including:
 - Public car parks intended to serve the land
 - On street parking in non-residential zones
 - Streets in residential zones specifically managed for non-residential parking.
- On street parking in residential zones in the locality of the land that is intended to be for residential use
- The practicality of providing car parking on the site, particularly for small lots
- Whether a Green Travel Plan has been provided
- Existing and likely future traffic volumes on the surrounding road network and the nature of this network
- Any adverse economic impact a shortfall of parking may have on the economic viability of any nearby activity centre
- Any credit that should be allowed for car parking spaces provided on common land or by a cash-in-lieu payment or similar
- Local traffic management in the locality of the land
- The impact of the variation of car parking spaces on local amenity, including pedestrian amenity and the amenity of nearby residential areas
- The environmental implications of providing parking with particular regard to vegetation and landscape impacts
- The character of the surrounding area and whether varying the car parking provision would result in a positive urban design outcome
- Any other relevant consideration.

Reference: 300304622

4 Castlecrag Case Study

4.1 Demographic and travel behaviour assessment

The following analysis of demographic and travel behaviour data provides an assessment of Castlecrag in comparison to other centres within Willoughby and attempts to differentiate any factors that Council may deem appropriate to varying local centre target parking rates.

4.1.1 AGE PROFILE

The age profile for the centres within Willoughby as outlined by the ABS Census 2021 are shown in **Figure 4-1**. Castlecrag's age profile shows a high proportion of people aged between 10 and 19 (19 per cent), which may correspond to the figures for people aged 40 to 59 (32 per cent) who may be parents of the 10 to 19 year olds. Castlecrag has the highest proportion of people aged 50 to 59 (18 per cent) and 60 to 69 (13 per cent), however exhibits a similar trend to other centres for people aged over 70 years old. Northbridge was found to be the area with the highest proportion of people aged over 70.

The Castlecrag age profile shows a range slightly higher compared to other centres, however this does not necessarily correspond to a significant age difference for the area, and also does not necessarily dictate a distinct need for additional parking and/ or accessible parking spaces.

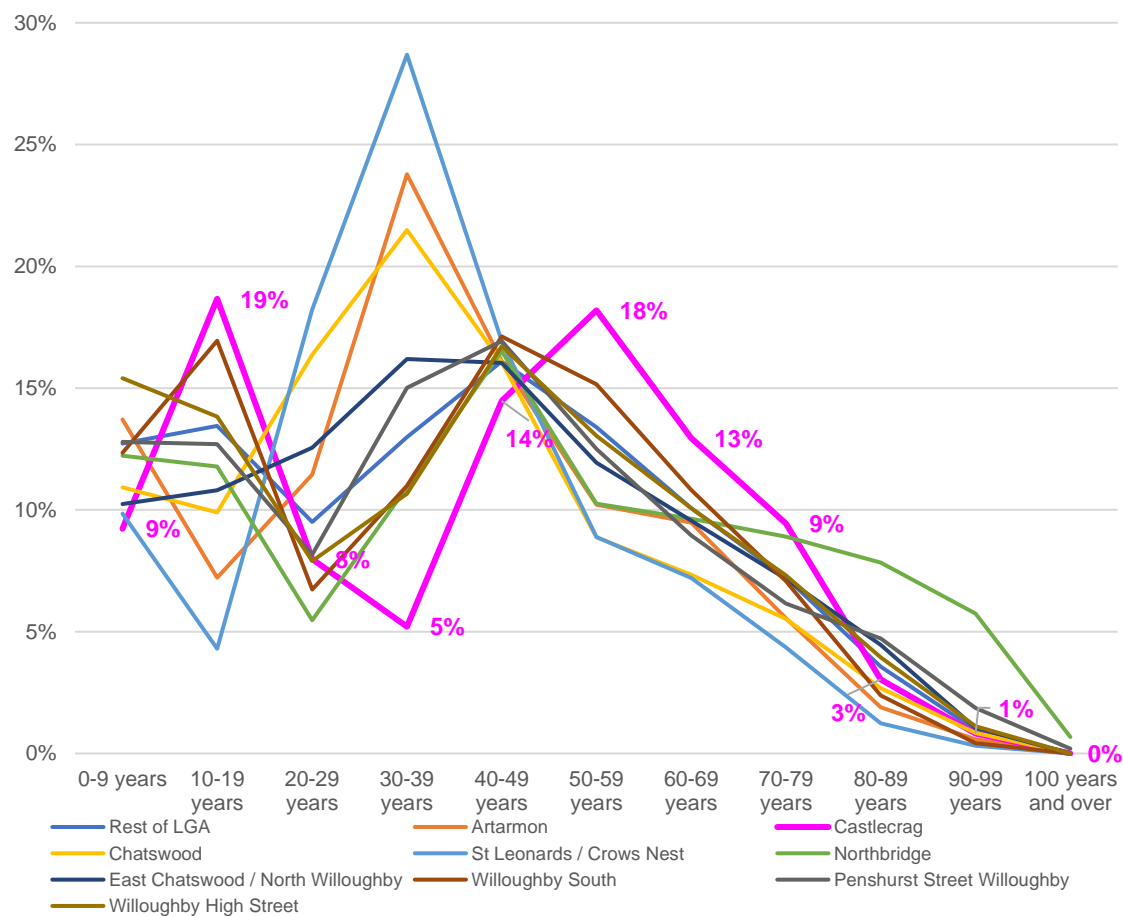


Figure 4-1 Age profile (ABS Census 2021)

4.1.2 HOUSEHOLD INCOME

Household income for each centre as outlined by the ABS Census 2021 is shown in **Table 4-1**. In comparison to other centres, Castlecrag is a distinct outlier for higher income households with a combined income of over \$4,000 a week. 34 per cent of households in Castlecrag have a weekly total income of more than \$6,000. This may mean that Castlecrag households have the most disposable income to be used on items such as private vehicles. In addition, homes generally have adequate off-street car parking capacity, with garages often having multi-vehicle capacity.

Table 4-1 Household weekly income (ABS Census, 2021)

	Negative income	Nil income	\$1-\$149	\$150-\$299	\$300-\$399	\$400-\$499	\$500-\$649	\$650-\$799	\$800-\$999	\$1,000-\$1,249	\$1,250-\$1,499	\$1,500-\$1,749	\$1,750-\$1,999	\$2,000-\$2,499	\$2,500-\$2,999	\$3,000-\$3,499	\$3,500-\$3,999	\$4,000-\$4,999	\$4,500-\$4,999	\$5,000-\$5,999	\$6,000-\$7,999	\$8,000 or more
Rest of LGA	0%	1%	0%	1%	2%	3%	2%	3%	3%	5%	5%	4%	4%	10%	6%	7%	5%	3%	10%	8%	10%	6%
Artarmon	0%	1%	1%	1%	0%	3%	2%	6%	4%	2%	8%	5%	6%	14%	8%	9%	7%	2%	11%	4%	7%	0%
Castlecrag	0%	1%	1%	0%	1%	1%	0%	1%	1%	2%	2%	3%	3%	8%	5%	5%	4%	2%	14%	10%	20%	14%
Chatswood	0%	5%	1%	2%	2%	3%	3%	4%	4%	6%	6%	6%	6%	14%	5%	7%	4%	2%	8%	4%	4%	1%
East Chatswood / North Willoughby	0%	2%	1%	3%	2%	3%	3%	5%	6%	6%	6%	6%	6%	12%	7%	8%	3%	2%	7%	4%	5%	2%
Northbridge	0%	2%	1%	1%	1%	5%	3%	4%	4%	4%	4%	6%	5%	10%	5%	6%	4%	3%	10%	7%	8%	8%
Penshurst Street Willoughby	0%	2%	1%	1%	1%	2%	3%	4%	6%	7%	5%	4%	5%	8%	7%	6%	5%	3%	10%	8%	9%	4%
St Leonards / Crows Nest	0%	2%	0%	1%	1%	3%	2%	2%	4%	6%	5%	6%	5%	17%	5%	9%	5%	3%	12%	5%	5%	2%
Willoughby High Street	0%	0%	2%	1%	2%	3%	2%	3%	3%	6%	4%	2%	6%	8%	7%	5%	2%	2%	13%	11%	9%	9%
Willoughby South	0%	2%	0%	2%	0%	3%	2%	3%	3%	3%	4%	4%	5%	7%	5%	6%	4%	2%	8%	12%	15%	8%

The 2021 Census also revealed that Castlecrag had the lowest level of disadvantage on the Socio-Economic Indexes for Areas (SEIFA) scale.

4.1.3 NEED FOR ASSISTANCE

The need for assistance is measured in the ABS Census 2021 as counting persons with a severe or profound disability. Results for centres in Willoughby are shown in **Table 4-2**. Within the Willoughby LGA, Northbridge was found to house the highest proportion of people living with the need for assistance with 11 per cent of all persons. This is distinctly higher than all other centres, including Castlecrag, which have a relatively similar rate of two to four per cent.

These statistics show that Castlecrag's requirement for accessible parking is not significantly different to all other centres except for Northbridge.

Table 4-2 Need for assistance in daily life (ABS Census, 2021)

Row Labels	Has need for assistance with core activities	Does not have need for assistance with core activities
Rest of LGA	4%	96%
Artarmon	3%	97%
Castlecrag	3%	97%
Chatswood	4%	96%
St Leonards / Crows Nest	2%	98%
Northbridge	11%	89%
East Chatswood / North Willoughby	4%	96%
Willoughby South	4%	96%
Penshurst Street Willoughby	3%	97%
Willoughby High Street	4%	96%

4.1.4 NUMBER OF MOTOR VEHICLES

The number of motor vehicles per household is determined from the ABS Census 2021. The data for all centres within Willoughby is summarised in **Figure 4-2**. Castlecrag was found to have the highest proportion of two or more vehicles per household across all centres, as well as the lowest proportion of households with zero vehicles (two per cent).

This may be reflective of the fact that Castlecrag also reported the highest weekly income of all centres as well as the lowest level of disadvantage for residents ([Socio-Economic Indexes for Areas \(SEIFA\)](#)). This may mean that residents are more able to afford multiple vehicles, and not necessarily that a vehicle is needed for every trip outside of the home.

High vehicle ownership may be reflective of the fact that within an unconstrained environment (oversupply of car parking), people choose to drive despite other modes being available for comfort or other reasons.

It may also be reflective in part that public transport accessibility is limited throughout Castlecrag as discussed in later sections.

Reference: 300304622

However, from a sustainability perspective and a vision-based approach, vehicle ownership should not necessarily dictate vehicle parking supply.

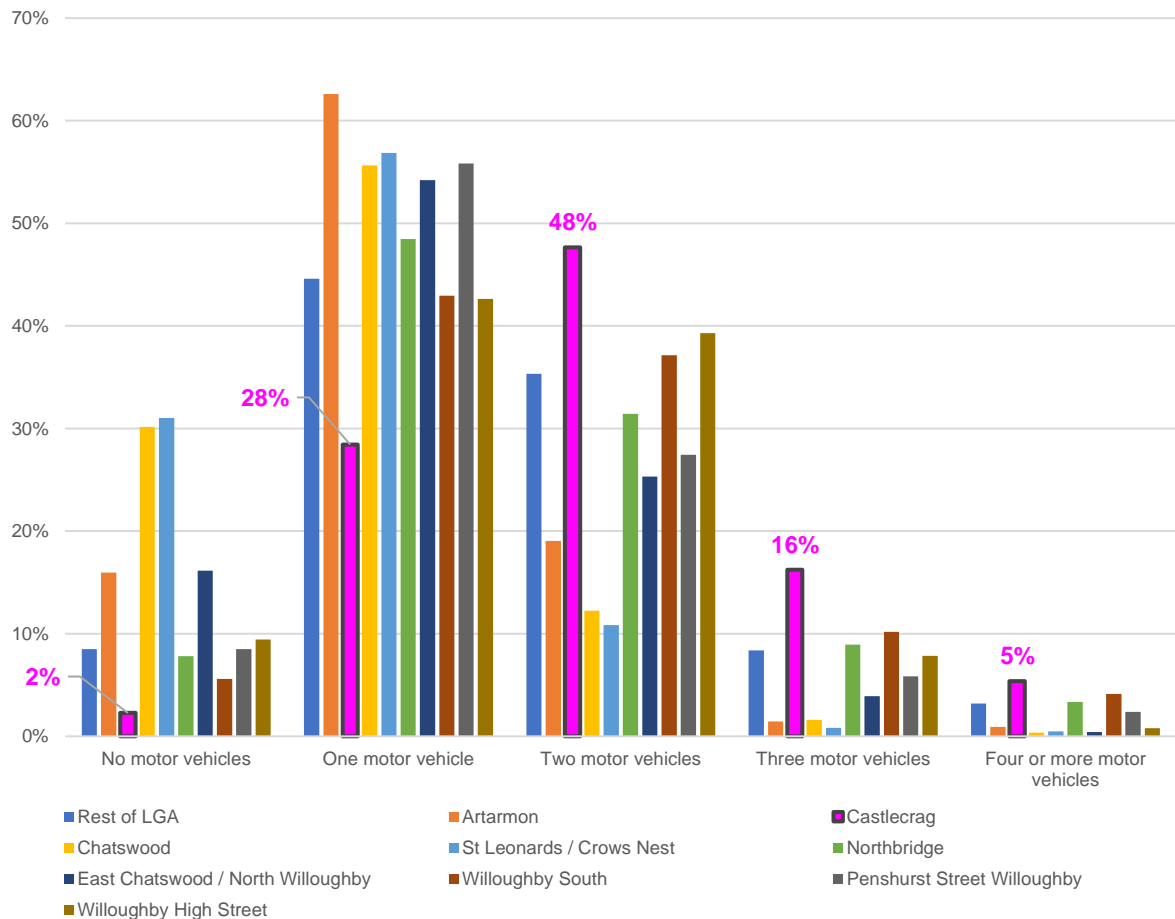


Figure 4-2 Number of vehicles per household (ABS Census 2021)

4.1.5 METHOD OF TRAVEL TO WORK

The method of travel to work was analysed for the 2016 ABS Census because this timeframe better reflects normal travel behaviour (in comparison to 2021 COVID-19 travel conditions). The method of travel to work for all centres within Willoughby is shown in **Figure 4-3**.

Castlecrag was found to have one of the highest vehicle as driver mode shares, along with Castle Cove, at 53 per cent. Walking mode share was measured as the lowest of the centres with 1.4 per cent, and public transport was measured in the mid-range of other centres, with 17 per cent for bus travel.

Reference: 300304622

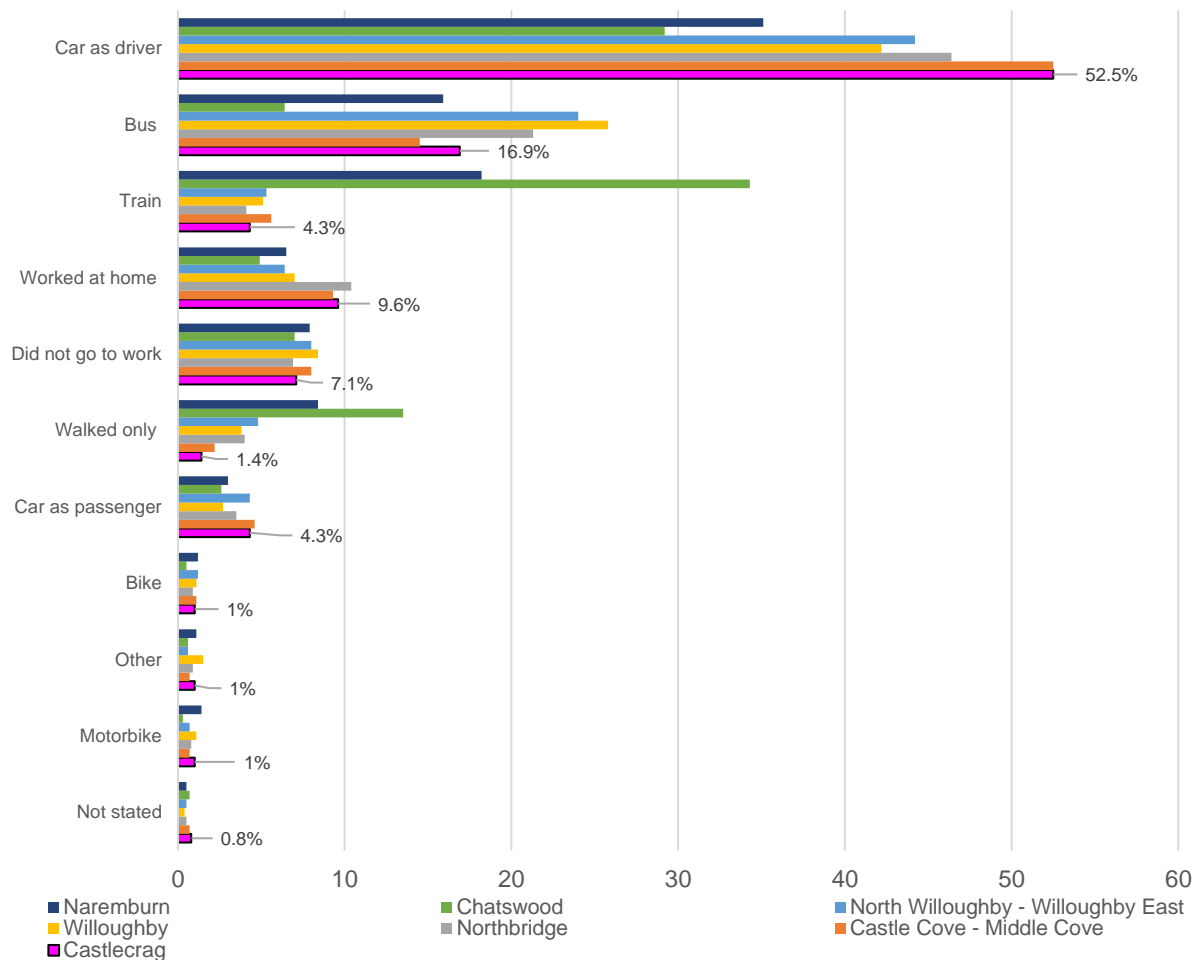


Figure 4-3 Method of travel to work (ABS Census, 2016)

4.1.6 PUBLIC TRANSPORT WALKING CATCHMENT

The public transit stop walking catchment for buses (400 metres) and trains (800 metres) is shown in **Figure 4-4**. This map shows that the Castlecrag peninsula has some of the lowest coverage of public transit stops across the council area, especially the coastal low-density areas in the east.

Other areas of low accessibility include southern Northbridge near Hallstrom Point, eastern Naremburn, north-western Chatswood and Castle Cove. This indicates that Castlecrag is not a singular extreme case of low accessibility, however may explain in part higher than average vehicle ownership and car as driver mode share for method of travel to work.

Reference: 300304622

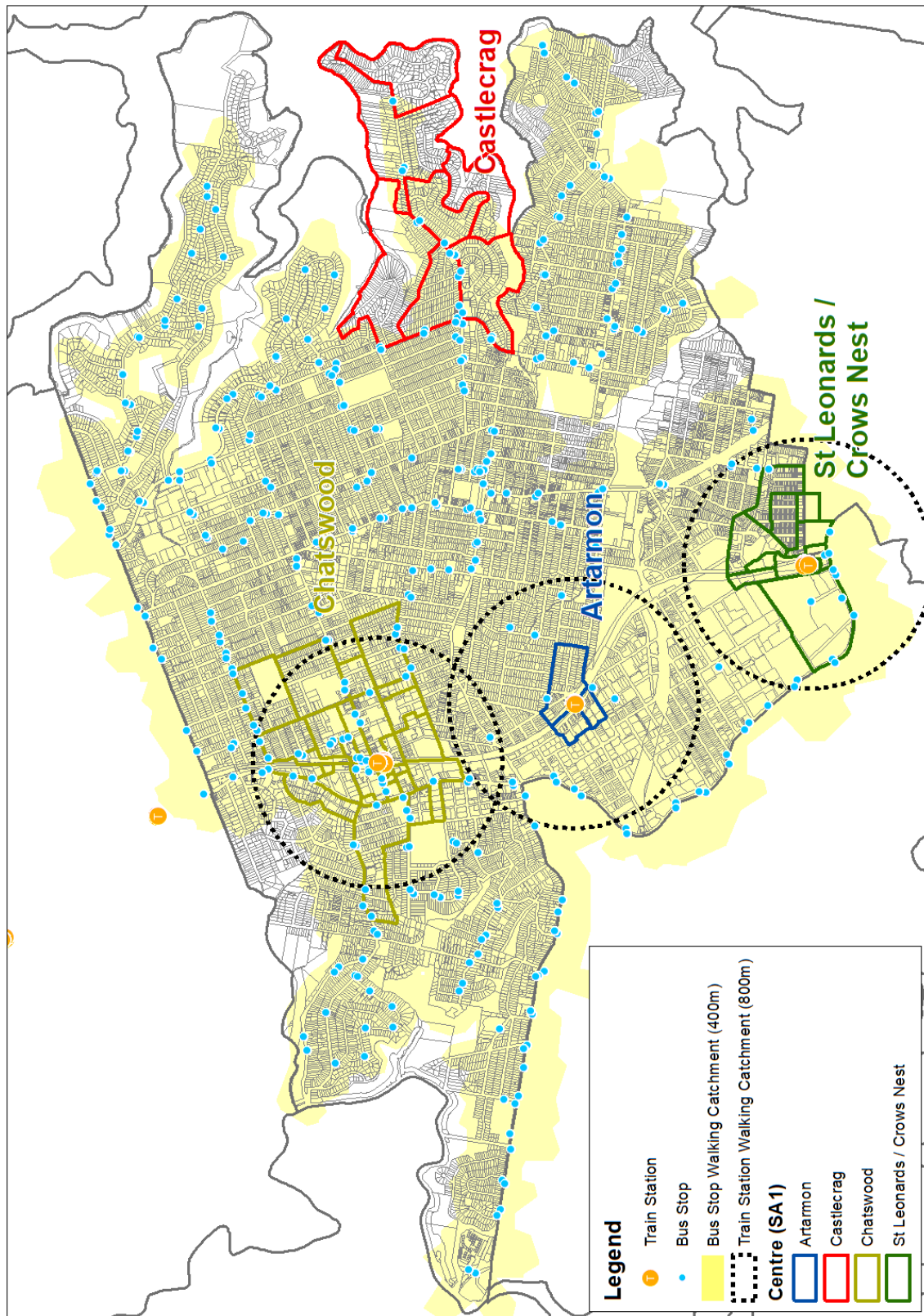


Figure 4-4 Public transit stop walking catchment

Design with community in mind

Reference: 300304622

4.1.7 PUBLIC TRANSPORT ACCESSIBILITY

275	Chatswood	10:18 AM
275	Chatswood	12:15 PM
275	Chatswood	2:15 PM
203	North Sydney	2:58 PM
203	North Sydney	3:28 PM
203	North Sydney	4:25 PM
203	North Sydney	4:55 PM
203	North Sydney	5:25 PM
203	North Sydney	5:45 PM
203	North Sydney	6:09 AM
203	North Sydney	6:39 AM
203	North Sydney	7:08 AM
203	North Sydney	7:52 AM
203	North Sydney	8:28 AM
203	North Sydney	8:58 AM
275	Chatswood	9:15 AM

The bus stop timetable information for the Edinburgh Road at Linden Way bus stop is shown in **Figure 4-5**. This stop is located at the far east of the Castlecrag peninsular, with services connecting to North Sydney and Chatswood.

Service frequency is shown for a typical weekday period, with frequencies ranging up to two hours in the middle of the day and half an hour in the AM and PM peak travel periods.

The public transport accessibility level as defined by the NSW Government is shown in **Figure 4-6**. This measure is based on the distance from a point of interest to the nearest public transport stop and service frequencies at that stop. Castlecrag, Willoughby North, West and East, Northbridge, Middle Cove, Castle Cove and areas of Naremburn are indicated as having low levels of public transport accessibility. This shows that Castlecrag is not a standalone area of lower accessibility within Willoughby, however is nonetheless poor in public transport access, which corresponds to the low frequency of bus services along Edinburgh Road.

Figure 4-5 Edinburgh Road at Linden Way bus stop timetable information

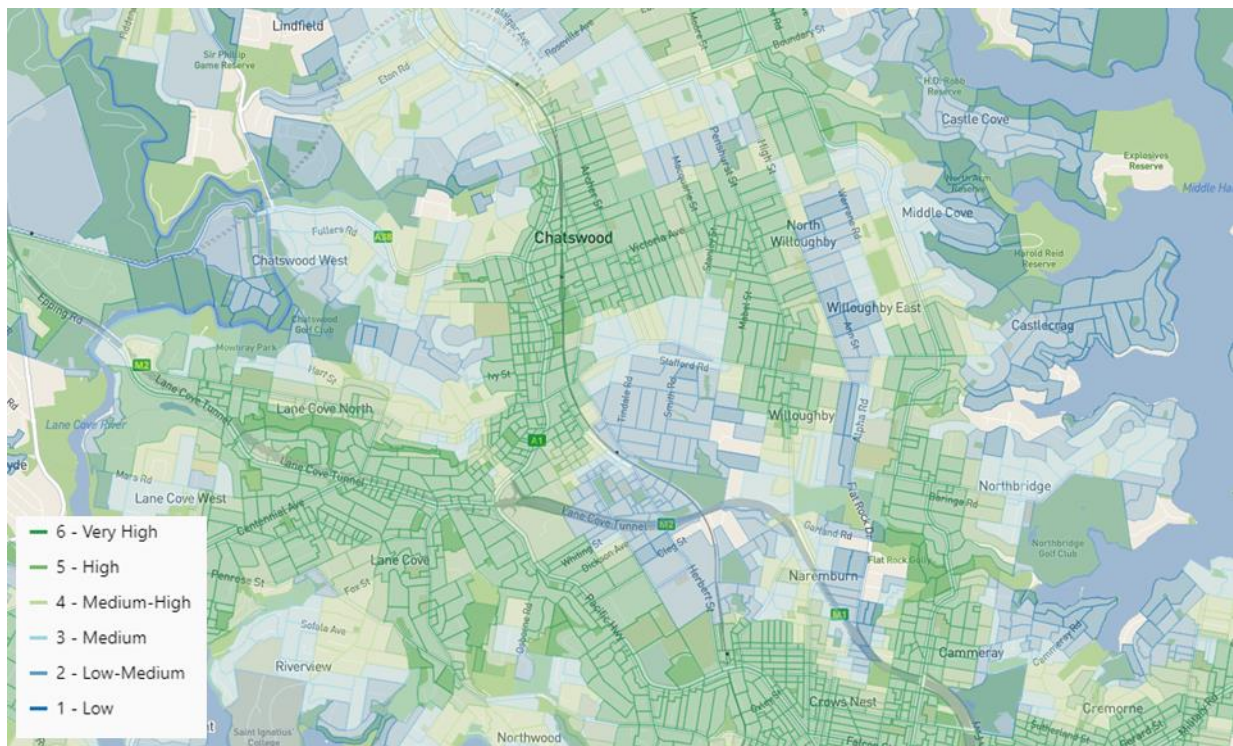


Figure 4-6 Public transport accessibility level (NSW Movement and Place, built environment indicators)

Reference: 300304622

4.1.8 TRANSIT AND WALK SCORES

Walk Score measures walkability on a scale from 0 – 100 based on walking routes to destinations such as grocery stores, schools, parks, restaurants, and retail.

Transit Score is a measure of how well a location is served by public transit on a scale from 0 to 100. The Transit Score algorithm calculates a score for a specific point by summing the relative "usefulness" of nearby routes. Usefulness is defined as the distance to the nearest stop on the route, the frequency of the route, and type of route.

The transit and walk scores for centres within Willoughby and the addresses used as a point of reference are shown in **Table 4-3**.

Table 4-3 Transit and Walk scores

Centre	Address	Walk score	Transit score
Artarmon	11 Elizabeth Street, Artarmon	89	72
Castlecrag	100 Edinburgh Road, Castlecrag	6	47
North Willoughby/ East Chatswood	315 Penshurst Street, North Willoughby	15	61
High Street	183 High Street, North Willoughby	7	53
Naremburn	272/ 274 Willoughby Road, Naremburn	13	71
Northbridge	119 Sailors Bay Road, Northbridge	3	42
Penshurst Street	83 Penshurst Street, Willoughby	76	53
Willoughby South	580 Willoughby Road, Willoughby	3	55

Walk score description:

Transit Score®	Description
90-100	Rider's Paradise World-class public transportation.
70-89	Excellent Transit Transit is convenient for most trips.
50-69	Good Transit Many nearby public transportation options.
25-49	Some Transit A few nearby public transportation options.
0-24	Minimal Transit It is possible to get on a bus.

Transit score description:

Walk Score®	Description
90-100	Walker's Paradise Daily errands do not require a car.
70-89	Very Walkable Most errands can be accomplished on foot.
50-69	Somewhat Walkable Some errands can be accomplished on foot.
25-49	Car-Dependent Most errands require a car.
0-24	Car-Dependent Almost all errands require a car.

For Walk Score, in comparison to Artarmon and Penshurst Street, Castlecrag is significantly lower rated with minimal transit, however is not significantly different in rating to High Street Willoughby, Naremburn, Northbridge and Willoughby South.

For Transit Score, Castlecrag is classified as car-dependent, however is not rated too dissimilarly to High Street Willoughby, Northbridge, Penshurst Street and Willoughby South.

This data indicates that Castlecrag is not a stand-out underperformer in terms of walkability and public transport access within Willoughby, and that multiple areas share these classifications.

Reference: 300304622

4.1.9 SUMMARY

The above assessment suggests that Castlecrag is skewed towards a more aged and less accessible community with higher dependence on private vehicles, however not to an extreme extent that significantly segregates Castlecrag from other local centres such as Northbridge, Willoughby South, Willoughby High Street or Penshurst Street.

4.2 Accessible parking

The previous and current draft DCP requirements for accessible parking spaces is as per the Building Code of Australia [classification of buildings](#). This means that the rate at which accessible spaces are required is the same, but under the draft DCP rates, will result in a lower amount of accessible spaces due to the reduce requirement for parking spaces.

To consider the deficit in accessible spaces, the Castlecrag Quadrangle development (PP-2021-5395) is used as a case study. The following two tables show the accessible parking required for the Quadrangle development under the existing DCP rates (1.54 spaces, meaning that two spaces are required), and under the current Draft DCP rates (0.9 spaces, meaning that one space is required). It is noted that for the retail land uses (Building classification 6) within the Quadrangle development, a factor of two per cent is required for accessible parking.

Table 4-4 Quadrangle develop accessible parking requirement (with existing DCP rates applied)

Previous DCP parking rates applied						Building Code Australia		
Land use	Net lettable area (m2)	Selling area (85%)	Unit	Number of parking spaces required	% of total	Building classification	% of accessible parking	Number of accessible spaces required
Supermarket	1057	898.45	m ²	53.907	61%	6	2%	1.08
Specialty shops	549	466.65	m ²	18.666	32%	6	2%	0.37
Restaurant	134	113.9	m ²	4.556	8%	6	2%	0.09
TOTAL	1740	1479	m²	77.129				1.54

Table 4-5 Quadrangle develop accessible parking requirement (with current Draft DCP rates applied)

Current Draft DCP rates applied						Building Code Australia		
Land use	Net lettable area	Selling area (85%)	Unit	Number of parking spaces required	% of total	Building classification	% of accessible parking	Number of accessible spaces required
Supermarket	1057	898.45	m ²	27.226	61%	6	2%	0.54
Specialty shops	549	466.65	m ²	14.141	32%	6	2%	0.28
Restaurant	134	113.9	m ²	3.452	8%	6	2%	0.07
TOTAL	1740	1479	m²	44.818				0.90

A sensitivity assessment was performed to determine the percentage of accessible parking (compared to the total supply of parking) that would be required to roughly match the requirement under the existing DCP rate. This was found to be between three and four per cent, as shown in the table below.

Reference: 300304622

This results in a requirement of 1.62 accessible spaces (meaning that two spaces are required). Note that this is an increase of only one space.

Table 4-6 Quadrangle develop accessible parking requirement (with current draft DCP rates and adjusted percentage of all parking applied)

Current Draft DCP rates applied						Building Code Australia		
Land use	Net lettable area (m2)	Selling area (85%)	Unit	Number of parking spaces required	% of total	Building classification	% of accessible parking	Number of accessible spaces required
Supermarket	1057	898.45	m ²	27.226	61%	6	4%	1.09
Specialty shops	549	466.65	m ²	14.141	32%	6	3%	0.42
Restaurant	134	113.9	m ²	3.452	8%	6	3%	0.10
TOTAL	1740	1479	m ²	44.818				1.62

Under the Quadrangle development example, it was found that by slightly adjusting the percentage of total parking (one to two per cent), the requirement for accessible parking does not largely change and will only result in increases of provision in developments with larger scale car parking provision.

Given that the recommended Draft DCP rates result in a reduced provision of car parking, it may be reasonable to adopt a percentage of the total supply of parking of between three and four per cent for accessible spaces. However, this may have marginal change in the quantum of spaces in smaller sized developments as was seen in the Castlecrag Quadrangle development case study.

Further, it was found in the demographic and travel behaviour summary that Castlecrag is not significantly dissimilar to other centres within Willoughby, particularly for age profile and need for assistance information. Therefore, Council may wish to apply the above recommendation to all centres (outside of railway and CBD precincts), not solely for Castlecrag, under the DCP.

Council may consider adopting this requirement in the updated DCP, however may not be significant enough given the marginal increase in accessible spaces that can be expected.

Reference: 300304622

5 Recommendations

The use of minimum car parking rates can be adopted to supplement maximum car parking rates however should not detract from the TDM objectives sought to be achieved by the maximum rates. The recommended minimum rates contained within this memorandum should also serve as an interim set of rates with the ultimate aim in years to come to adopt a singular set of maximum car parking rates.

As explored in **Section 3** of this memorandum a set of decision guidelines to enable the consideration of variations to the prescribed target rates for local centres is appropriate and enables for the nuances of accessibility and demographic characteristics to be considered.

As a case study, Castlecrag highlights the nature of such nuances with it being shown to be skewed towards a more aged and less accessible community with higher dependence on private vehicles.

As such Council could reasonably approve an application seeking to increase the amount of car parking supply above the target rates. This would align with the Willoughby City Council Local Centres Strategy 2036 which identifies a strength of Castlecrag, being that parking, both on and off-street, supports the activity of the centre.

This skew however, is not to an extreme extent that significantly segregates Castlecrag from other local centres such as Northbridge, Willoughby South, Willoughby High Street or Penshurst Street and therefore would not be expected to give rise to a completely different set of car parking targets.

I trust the above is clear and should you have any questions please do not hesitate to contact me or Chris Coath.

Sincerely yours,

Stantec Australia Pty Ltd

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