REFERENCES

Department of Planning 2007, *Inner North Subregion draft Subregional Strategy*, NSW Government.

Department of Planning and Environment 2014, *A Plan for Growing Sydney*, NSW Government.

Fensham 2008, It's a trolley folly to blame planners for rising grocery prices

IBIS, 2014

JLL 2014, Australian Shopping Centre Investment Review and Outlook

Knight Frank 2014, *North Shore Office Market Overview.*

news.com.au, 23 August 2013

PricewaterhouseCoopers and Frost & Sullivan 2012, The rapid growth of online shopping is driving structural changes in the retail model

Productivity Commission (PC), 2011, Economic Structure and Performance of the Australian Retail Industry. Inquiry Report, December.

Productivity Commission (PC), 2011, Economic Structure and Performance of the Australian Retail Industry

Productivity Commission (PC), 2014, Relative Costs of Doing Business in Australia: Retail Trade

SGS Economics and Planning, 2012, *Review of planning proposal 17-19 Smith Street East Chatswood*, final report prepared for Willoughby City Council.

SGS Economics and Planning, 2013, *Response to economic peer review of proposed East Chatswood Supermarket*, final report prepared for Willoughby City Council

SGS Economics and Planning 2014, *St Leonards/Crows Nest Market Feasibility Study*, prepared for North Sydney Council.

The Australian, 22 Feb 2014

The Centre for International Economics 2013, Reform of the NSW Planning System: Final Report, Better Regulation Statement, October.

APPENDIX 1: LAND AUDIT METHODOLOGY

Audit Method

The floorspace audit was completed using a method developed by SGS in association with the Department of Planning and Infrastructure. Three levels of information are collected about each lot within the 23 centres:

	Data Collected	Source of Data
Level 1.	Zoning, size of lot	Cadastre with land use zoning layers provided by Willoughby City Council
Level 2	Digitised building outlines and building footprint	GIS base for on-ground verification (digitised building outlines using aerial photographs provided by council)
Level 3	Building size, 3 Digit ANZSIC categories, Broad Land Use Category and the proportion of building footprint occupied by each business	On-ground field survey, Google Street View verification and business directories

The field survey built on the Level 1 and Level 2 data was inputted via GIS. The field survey and post production procedures were measured based on latest available data (using a mixture of online and on-foot observations):

- **Level 1 data** – was used to identify the land parcels to be audited. *Business and Industrial zones* were used to identify the extent of each employment centre.

- **Level 2 data** – From geo-referenced aerial images provided by Council, building footprints within each of the 23 centres were digitised. The respective zoning information from the cadastre layer addressed in Level 1 was added to these building records.

- **Level 3 data** – involved site by site visits and building auditing. In this stage, surveyors assigned an SGS Broad Land Use Category (BLCs) to each building floor and 3 digit ANZSIC categories to each business occupying each floor. Business floorspace was assigned by estimating percentage of building footprint occupied by that business and corresponding uses.

A full description and examples of each BLC is provided in section 2.3.

In addition to the on-foot assessment carried out for the street fronting businesses and retailers, the internal floorspace of the enclosed shopping centres and high rise office buildings were audited through the use of online floor plans and building directories. The floorspace data collected through the audit is compiled and its integrity checked before being analysed. The aim of the audit is ultimately to describe the characteristics of each employment centre by a mixture of broad land use categories.

The data generated is highly detailed and can be updated in future surveys or, desirably, it could become a platform on which 'real time' data from Council development applications could be included.

BLC allocation at a building level

Where mixed use buildings have been recorded with more than one BLC category, the majority use of that building is assigned as the primary BLC to be mapped, prioritising non-res uses.

The final building floorspace by BLC reported in employment lands analysis section adopts one BLC per building model, except for the reported residential floorspace. The former aims to characterize whole buildings by its respective BLC. The latter ensures that non-employment generating floorspace (such as residential and residential related parking) are constrained against the actual floorspace estimates.

When interpreting the BLC at the building level, it should be noted that the BLC represents the predominant use from the perspective of the current business operation. As such, it may not reflect what is allowed under the planning approval.

BLC Definitions

TABLE 28. BLC DEFINITIONS

BLC Code	BLC Name	Description	Example uses	Physical indicators	Location requirements
HIM	Heavy Industrial and Manufacturing	Large scale production activity. Likely to be characterised by high noise emission; emission stacks; use of heavy machinery; and servicing by and frequency of large trucks	Chemical Manufacturing Iron and Steel Manufacturing Petroleum and Coal Manufacturing Log Sawmilling Meat Processing Oil and Fat Manufacturing	Emission Stacks; Large scale production; High noise emission; Use of heavy machinery; and Frequency of large trucks.	Industrial areas. Heavy manufacturing is in decline in Sydney, but will continue to cluster in some locations such as Wetherill Park, Campbelltown/ Ingleburn etc. There are strong arguments for collocation in terms of raw material delivery and to concentrate externalities (though impacts on surrounding uses are generally moderate).
FL	Freight and Logistics	Warehousing and distribution activities. Includes buildings with a number of docking facilities; 'hard stand' areas with trucks or goods awaiting distribution; and large storage facilities	Postal depot/mail centres Road Freight Transportation Services Container Terminals Jeans West Distribution Centre Woolworth Storage Centre	Buildings with large number of docking facilities; Large 'hard stand' areas with trucks or goods awaiting distribution; Heavy movement of trucks; Large Storage Facilities; Warehousing; and Distribution Centre.	Warehousing and distribution is a metro level issue with activities preferably locating close to air, sea and inter-modal inland ports, or with access to the motorway system
US	Urban Services	Concrete batching, waste recycling and transfer, construction and local and state government depots, electricity sub-station, specific storage space for nearby activities	Government (federal, state or local) Depot Bus Depot Electricity Supply Concrete Batching Recycling Depots		These typically have noise dust and traffic implications and need to be isolated or buffered from other land uses. Needed in each sub-region
LI	Light manufacturing	Small scale production with lower noise and emission levels than heavy manufacturing, not able to be serviced by large trucks and/or b-doubles	Small printing works Small scale production Lower noise and emission levels than heavy industrial	Toy and Sporting Good Manufacturing; Clothing Manufacturing; Electrical Equipment Manufacturing; Footwear Manufacturing; Boat Building; and Light Engineering.	Industrial areas but with a lower requirement for distance from population than heavy manufacturing/

BLC Code	BLC Name	Description	Example uses	Physical indicators	Location requirements
LSI	Local Service Industrial	Car service and repair; joinery, construction and building supplies; and domestic storage. Typically does not interfere with the amenity of the neighbourhood via pollution, not able to be serviced by large trucks and/or b-doubles	Automobile Repairs Plumbers Building supplies Panelbeaters Domestic Storage Bricklaying Services Machinery and Equipment Hiring Self-storage	Services providing urban support, generally related to local population demand. May have some ancillary office less than 20% of total.	Wide range of businesses that service other business (components, maintenance and support) and Subregional populations. Need to be accessible for population centres
IOW	Integrated office/warehouse	Integrated warehouse, storage, R&D, 'back-room' management and administration with an office component		Generally a combination of office and some back-office functions	Traditional business park environments offer large land parcels and attractive site aspects. Business park locations are heavily driven by strategic positioning with respect to arterial infrastructure. For business park land uses with higher industrial components proximity to population centres is not desirable.
PO	Pure Office	Office buildings that are independent (i.e. are not ancillary to another use on site) and likely to accommodate a significant number of administration staff	Banks; Architectural and Surveying Services;	Office buildings that are independent (i.e., are not ancillary to another use on site); Office buildings likely to accommodate a significant number of administration staff (>10 people); and Will generally be in commercial area.	Typically require commercial centre locations. Need to have good accessibility for office workers.
SR	Service Retail		Accountants Real Estate Agent Hairdressing and Beauty Services Diet and Weight Reduction Centre Operation Laundry and Dry-Cleaning Services Other Personal Services n.e.c.	Small scale, located in or near centres	

BLC Code	BLC Name	Description	Example uses	Physical indicators	Location requirements
FBR	Food & beverage retailing		Small Grocery Stores (floor space is no larger than adjacent premises)Convenience StoresFresh Meat, Fish and Poultry RetailingButchersFish ShopsPoultry Shops (Frozen and Cooked)Fruit and Vegetable RetailingLiquor RetailingSmallgoods Stores/DelicatessensHealth Foods StoresBakers and Bread Shops	Small scale, located in or near centres	
FBS	Food and beverage services		Cafes Restaurants Takeaway Food Services Hot Food Retailing Cold Food Retailing Sandwiches Retailing Catering Services Pubs, Taverns and Bars Small Bar Karaoke Bar Clubs (Hospitality)	Small scale, located in or near centres	
SM	Supermarket		Supermarket	Located in or near centres or big box retailers	
DS/DDS	(Discount) Department Store		Discount department stores (Big W, Target) and department stores (David Jones, Myer)	Located in or near centres or big box retailers	
OR	Other retailing	All types of specialty retailing, but not including bulky goods.	Post office Newsagency Chemist Clothing Retailing Accessories Other Store-Based Retailing (except bulky goods)	Small scale, located in or near centres	

BLC Code	BLC Name	Description	Example uses	Physical indicators	Location requirements
LFR	Large format retail	Typically large, one-story buildings surrounded by car-parking,	Automobile Retailing; Homemaker centres Bedding & furniture retail Harvey Norman; BBQ's Galore; Timber and bulk hardware (e.g. Bunnings).	Require large building for storage of bulky goods Large, one story buildings, usually out of centre; Usually surrounded by car-parking; and Usually high exposure (main roads).	Usually located out of centre and in high exposure (main road) locations.
AR	Automobile retailing		Dealership for motor vehicles		
DL	Local Dispersed	Social and community services, trades construction, other 'nomads'	Police/ Fire/Ambulance Services Childcare Religious Services Veterinarians, doctors, physios, chiros, dentists etc. Funeral Services Cultural and Community Services (Libraries, Museums, Parks and Gardens) Accommodation		Institutions are dispersed but need to be accessible and well served by public transport.
DR	Regional Dispersed		Performing Arts Venues Amusement Parks Sports and Physical Recreational Venues and Grounds	Generally standalone uses, in suburban areas, small scale	Typically require strategic locations and needed in each sub-region.
SS	Service Stations	Service Stations	Service Stations	Service Stations	Main roads and busy road corridors
LHE	Local health and education	Smaller scale education or health uses such as schools, training centres, community college, aged care facilities, day surgery	Nursing homes Training centres Pre, Primary schools Sports and Recreational Services Secondary Schooling Primary schools	Small scale education or health	Institutions are dispersed but need to be accessible and well served by public transport.
RHE	Regional health and education	Large-scale regional health and education facilities include general and speciality hospitals, universities and TAFEs	Hospitals Tertiary Level Education	Large scale government, community or entertainment/sporting sites, providing a wide variety of activities.	Typically require strategic locations and needed in each sub-region.

BLC Code	BLC Name	Description	Example uses	Physical indicators	Location requirements
VO	Vacant		Vacant building		
H	Hardstand	Hardstand area required for business functioning. For example, turning areas for FL uses			
C	Carpark				

Source: SGS Economics and Planning, 2014

APPENDIX 2: RETAIL MODEL

Retail Gravity Model

The SGS Retail Gravity Model distributes the available retail expenditure using a gravity distributional mechanism. The Model looks at the likelihood or propensity of a particular person to gravitate towards a retail centre within a defined retail system and estimates how much of a person's household goods retail expenditure will be spent at a particular centre based on two opposing forces:

- **An attracting force** – if all retail centres were at your doorstep people will still have a preference to visit one centre over the other. This is a result of floorspace (as shoppers tend to enjoy greater variety and choice), the quality of the retailers, the price, the supplementary businesses (for example cinemas, entertainment) and so on.

- **A detracting force** – this is generally represented as how far away the centre is. Given the associated costs of travel (all other things equal between two centres) a shopper will try and shop at the closer centre.

These two forces determine the market pull of a particular centre which is then used to determine how much of each resident's retail expenditure (that is, market share) will be spent at that particular centre. For a group of residents within the same Travel Zone (TZ), the market pull of a centre is calculated as follows:

$$\text{Market Pull} = \frac{\text{Attraction Force}}{\text{Detracting Force}}$$

$$= \frac{('Attractiveness'\ of\ the\ centre) * (Floorspace\ of\ the\ centre)}{(Travelling\ time\ from\ the\ customer\ to\ the\ centre)^2}$$

As described above, the "attractiveness" measures of a wide range of factors that make a shopper prefer one centre over another. All these factors are captured in the actual current performance of the centre.

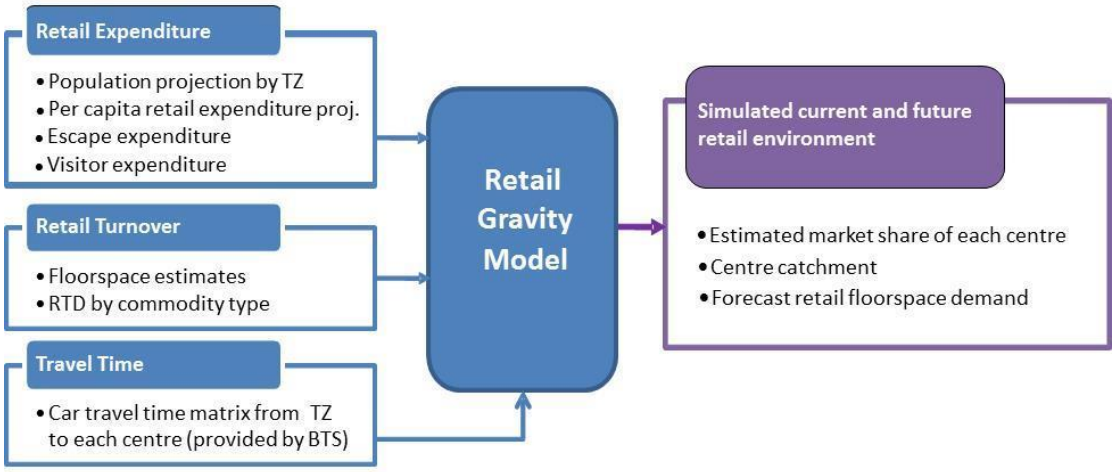
The market share, or percent of expenditure that is likely to be spent at a particular centre, is then calculated as follows:

$$\text{Market Share} = \frac{(Market\ Pull\ of\ Centre\ X)}{Sum\ of (Market\ Pull\ to\ all\ Centres\ within\ the\ Model)}$$

As opposed to making assumptions to try to directly calculate the relative "attractiveness" of each centre, the 'attractiveness' of a centre is determined within the model, using the estimated retail turnover as a basis and working backwards to find the "attractiveness" value at the present time.

The model inputs and outputs, in the context of the current study, are summarised in Figure 80.

FIGURE 80. MODEL INPUTS AND OUTPUTS



Source: SGS, 2013

The model included the following centres:

Strategic Centre:

- St Leonards
- Chatswood

Villages:

- Northbridge

Small Villages:

- Victoria Ave/ Penshurst St Chatswood
- Artarmon
- Castlecrag
- Willoughby Road, Willoughby
- Penshurst/Mowbray Rd, Willoughby

Neighbourhood Centre:

- Willoughby Road, Naremburn
- Mowbray Road Lane Cove North
- Cnr Boundary and Penshurst, Roseville
- Deepwater Road, Castle Cove
- High Street, Willoughby
- Northbridge East
- Denawen Ave, Castle Cove
- Eastern Valley way Middle Cove
- 156- 174 and 216-234 Victoria Ave
- Fullers Road
-
- Bulky goods:
- East Chatswood Industrial Area
- Artarmon Industrial Area
- Pacific Highway Chatswood

Model Inputs

Retail expenditure

SGS has forecasted the future per capita and total retail expenditure by commodity group in the Willoughby LGA. The steps in the analysis are as follows:

- Use data from MarketInfo to calculate expenditure by commodity group in the base year (2011/12), for all SA1s in the Willoughby LGA.
- Use data from the ABS Retail Trade series to forecast future percentage growth in per capita expenditure by commodity group, at a state (NSW) level.
- Apply the growth trends derived from Step 2 to the base year per capita expenditure in Step 1 to forecast future per capita expenditure by commodity in each SA1.
- Use the overlap between travel zones to convert results above to per capita expenditure for each BTS travel zone within the Willoughby LGA.
- Discount the per capita expenditure to account for the share of online retail by commodity group.
- Multiply the per capita expenditure forecasts by projected population in each travel zones to get projected aggregate expenditure by commodity group
- Aggregate expenditure to get forecasts of total retail expenditure by commodity group for the Willoughby LGA.

The table below presents the observed per capita expenditure by commodity group for 2011/12 for one sample travel zone (1815) out of the 33 in the Willoughby LGA.

TABLE 29. ANNUAL PER CAPITA SPEND IN CATCHMENT AREA, 2011/12

Commodity group	Annual per capita spend (2011/12 $)
Fresh Food Spend	2,256
Groceries (Food&Non-Food) Spend	1,698
Pharma& Toiletry.& Cosmetics Spend	735
Tobacco Spend	346
Bottle shop Spend	607
Restaurants & Cafes Spend	1,379
Take-Away Spend	903
Clothing & Shoes Spend	1,516
Furniture & Whitegoods Spend	984
Manchester & Home Decoration Spend	342
Electronic Home Entertainment Spend	1,514
Newsagent & Lotto Spend	422
Hardware & Gardening Spend	549
Personal Items & Services Spend	996
Total Retail Spending^	13,361

^Totals may not sum as 'Total Retail Spending' is its own Market Info category
Source: Market Info, 2014.

The ABS Retail Trade time series data has been used to forecast future retail per capita expenditure trends by commodity group. First, historical trends in per capita expenditure in the Retail Trade Industry sub-groups in NSW have been linearly extrapolated to estimate percentage growth into the future. Then, the Market Info retail categories have been lined up with ABS Retail Trade Industry sub-groups. For those categories that do not line up 'neatly', the forecast percentage growth in retail spending as a whole have been used. Finally, the projected percentage growth rates for Retail Trade sub-groups have been applied

to the Market Info data on expenditure by commodity group in the base year of 2011/12 in order to generate projections of future per capita expenditure on an SA1 level.

The table below shows the projected percentage growth in per capita expenditure by commodity group in five year intervals.

TABLE 30. PROJECTED GROWTH IN PER CAPITA EXPENDITURE, 5 YEAR INTERVALS

	2016	2021	2026	2031	2036	2041	2046	2051
Fresh Food Spend	9%	14%	12%	11%	10%	9%	8%	8%
Groceries (Food&Non-Food) Spend	11%	14%	12%	11%	10%	9%	8%	8%
Pharma& Toiletr.& Cosmetics Spend	9%	15%	13%	12%	10%	9%	9%	8%
Tobacco Spend	8%	13%	12%	11%	10%	9%	8%	7%
Bottle shop Spend	-3%	16%	14%	12%	11%	10%	9%	8%
Restaurants & Cafes Spend	14%	16%	13%	12%	11%	10%	9%	8%
Take-Away Spend	-6%	13%	12%	11%	10%	9%	8%	7%
Clothing & Shoes Spend	2%	13%	11%	10%	9%	8%	8%	7%
Furniture & Whitegoods Spend	8%	13%	11%	10%	9%	8%	8%	7%
Manchester & Home Decoration Spend	11%	13%	11%	10%	9%	9%	8%	7%
Sports & Active Recreation Spend	35%	13%	11%	10%	9%	8%	8%	7%
Electronic Home Entertainment Spend	23%	13%	12%	11%	10%	9%	8%	7%
Newsagent & Lotto Spend	0%	7%	6%	6%	6%	5%	5%	5%
Hardware & Gardening Spend	1%	13%	11%	10%	9%	8%	8%	7%
Total Retail Spending	8%	13%	12%	11%	10%	9%	8%	7%

Source: SGS, 2014 based on Market Info data, ABS Retail Trade series.

The per capita percentage growth forecasts have then been applied to expenditure in the 'base' year of 2011/12 in order to generate future per capita expenditure forecasts. These have then been multiplied by population projections for each travel zone to generate total expenditure forecasts, which have been summed for the whole catchment area. Results are presented in the table below.

Online discounting

Not all expenditure will be retained in the catchment area, as some retail spending will be captured online. SGS has sought to estimate the 'leaked' expenditure based on research from the PC.[15] Given uncertainty about the future, SGS has not sought to estimate future trends in online retail. Rather, it has been assumed that 'leaked' shares remain fixed at the 2011 level.

The table below shows the estimated shares by commodity group. Where possible, percentages for individual commodity groups have been sourced from the PC report. Perishable commodities are assumed to lose a negligible share of turnover to online retailing. For other non-perishable commodities, the overall online share of retail sales has been applied. It has been assumed that all online retailing expenditure is sourced from outside the catchment area.

TABLE 31. ONLINE RETAIL SHARES BY COMMODITY GROUP

	Share of online retail
Fresh Food Spend	0%
Groceries (Food&Non-Food) Spend	1%
Pharma& Toiletr.& Cosmetics Spend	4%
Tobacco Spend	4%

[15] Productivity Commission, 'Economic Structure and Performance of the Australian Retail Industry', November 2011.

Bottle shop Spend	1%
Restaurants & Cafes Spend	0%
Take-Away Spend	0%
Clothing & Shoes Spend	6%
Furniture & Whitegoods Spend	5%
Manchester & Home Decoration Spend	4%
Sports & Active Recreation Spend	0%
Electronic Home Entertainment Spend	12%
Newsagent & Lotto Spend	4%
Hardware & Gardening Spend	4%
Total Retail Spending	4%

Source: Productivity Commission, 2011.

The catchment expenditure forecasts above have been discounted by these shares in order to generate 'retained' expenditure forecasts; that is, expenditure which is captured by retail floorspace within the catchment area.

TABLE 32. TOTAL RETAINED EXPENDITURE FORECASTS BY COMMODITY GROUP

	2014 ($M)	2031 ($M)
Food/Groceries	$271	$384
Pharma	$182	$319
Tobacco/Bottleshops	$22	$13
Restaurants/Cafes/Takeaway	$697	$1,193
Clothing/Shoes	$327	$594
Personal	$101	$138
Furniture/Whitegoods/Manchester/HomeDec	$231	$389
Electronic	$204	$352
Hardware/Gardening	$91	$145
Newsagent/Lotto	$103	$59
Total	$2,227	$3,587

Source: SGS, 2014.

Turnover Estimates by Centre

To estimate the retail turnover by floorspace type within each centre, we have applied a set of benchmark retail turnover densities (RTDs) to the floorspace estimates.

The RTD is a measure for the trading performance of a retail centre and is expressed as dollars per sqm of retail floorspace. To estimate the centre-specific RTDs across a range of commodity and store types, we have used the Urbis Retail Averages in the first instance. Where data is available, the estimated turnover has been cross-checked and adjusted to line up with the published retail turnover figures from various sources.

The table below shows the estimated turnover by centre and floorspace type.

TABLE 33. ESTIMATED CENTRE TURNOVER IN 2014, 2012$ DOLLARS ($000)

	Supermarket	Department Stores	LFR Hardware	LFR Furniture	LFR Electronics	Specialty – Food	Specialty – HH Goods	Specialty - Clothing	Specialty - Other	Hospitality	Total
Chatswood	$205,400	$98,000	$4,600	$42,900	$142,800	$15,000	$0	$283,000	$217,600	$497,500	$1,506,800
East Chatswood Industrial Area	$0	$0	$61,900	$39,500	$1,700	$0	$0	$0	$5,900	$1,000	$110,000
Deepwater Road, Castle Cove	$600	$0	$0	$0	$0	$700	$0	$0	$0	$4,000	$5,400
Denawen Ave, Castle Cove	$1,200	$0	$0	$600	$0	$0	$0	$0	$0	$0	$1,900
Cnr Boundary and Penshurst, Roseville	$0	$0	$0	$3,300	$0	$0	$0	$800	$2,500	$0	$6,700
Victoria Ave/ Penshurst St Chatswood	$5,000	$0	$1,300	$3,200	$0	$15,600	$0	$6,400	$7,100	$38,300	$76,900
High Street	$2,600	$0	$0	$700	$0	$17,800	$0	$300	$0	$7,600	$29,000
St Leonards	$600	$0	$0	$3,300	$500	$0	$0	$0	$0	$8,400	$12,800
Artarmon Industrial	$0	$0	$21,000	$75,000	$39,100	$5,100	$0	$4,500	$7,700	$18,000	$170,400
Willoughby Road, Naremburn	$700	$0	$0	$2,000	$0	$5,800	$0	$0	$0	$7,500	$16,000
Artarmon	$4,500	$0	$0	$300	$900	$3,200	$0	$700	$2,300	$16,300	$28,100
Pacific Hwy Chatswood	$0	$0	$0	$6,900	$0	$0	$0	$7,400	$2,300	$6,300	$22,900
156- 174 and 216-234 Victoria Ave	$500	$0	$900	$2,200	$0	$600	$0	$0	$1,000	$6,500	$11,800
Mowbray Lane Cove North	$0	$0	$0	$300	$0	$1,200	$0	$0	$0	$0	$1,400
Northbridge East	$0	$0	$500	$0	$0	$200	$0	$0	$0	$2,400	$3,200
Northbridge	$39,500	$0	$0	$10,600	$1,900	$2,300	$0	$27,400	$2,800	$37,200	$121,600
Castlecrag	$6,700	$0	$0	$0	$0	$2,400	$0	$4,200	$1,400	$10,000	$24,700
Willoughby Road	$900	$0	$600	$10,500	$0	$2,200	$0	$0	$4,000	$28,500	$46,700
Penshurst/Mowbray Rd, Willoughby	$7,100	$0	$0	$8,500	$2,400	$0	$0	$400	$1,700	$4,900	$25,000
Eastern Valley Way Middle Cove	$0	$0	$0	$1,100	$0	$0	$0	$1,500	$1,300	$2,000	$5,900
TOTAL	$275,300	$98,000	$90,800	$210,900	$189,300	$72,100	$0	$336,600	$257,600	$696,400	$2,227,200

Source: SGS Economics and Planning calculations

Travel time matrices

The travel time matrix is sourced from the Bureau of Transport Statistics and has been used in the Gravity Model to determine the travel time from the travel zone where the local resident lives to the retail centres.

Future floorspace requirements

Based on the catchment of each retail centre estimated in the model using the inputs described above, we were able to forecast the growth in the retail expenditure 'pool' available to each centre.

As a number of centres in Willoughby (e.g. Chatswood, St Leonards and Northbridge) draws retail trade from areas beyond the LGA boundary, we have also estimated the 'out of area' expenditure by comparing the total retail turnover with spending by Willoughby residents at each centre estimated in the model. The 'out of area' expenditure was projected by first determining the origins of the expenditure injected into the retail centres in Willoughby using the shopping trip patterns from Household Travel Survey; and then growing the expenditure by a combined rate of population growth in these origins and real retail expenditure growth as outlined Table 30.

The projected retail expenditure by commodity type has been used in conjunction with the indexed RTDs[16] and current actual floorspace to arrive at estimates of retail floorspace demand by commodity type for the selected centres in the Willoughby LGA.

The table below shows the projected growth in demand for retail floorspace by commodity type from 2014 to 2031. It can be seen that the highest projected growth in demand is for Clothing and Shoes, followed by restaurants and cafes.

TABLE 34. GROWTH IN FLOORSPACE DEMAND IN WILLOUGHBY BY COMMODITY TYPE (2014-2031)

	Additional floorspace (sqm)	Updated
Food/Groceries	6,551	5,519
Pharma	6,165	10,694
Tobacco/Bottleshops	81	-1,613
Restaurants/Cafes/Takeaway	16,510	32,959
Clothing/Shoes	21,594	34,729
Personal	1,956	2,748
Furniture/Whitegoods/Manchester/HomeDec	14,156	27,127
Electronic	15,676	24,601
Hardware/Gardening	6,322	9,811
Newsagent/Lotto	-7,433	-6,468
Total	81,577	140,107

Source: SGS Economics and Planning, 2014

The projected retail demand for specific centres is discussed in the retail and strategic centre sections of the main report.

[16] It is assumed that the RTD in various centres would grow in 2012 dollars at a rate of 0.84% per annum.

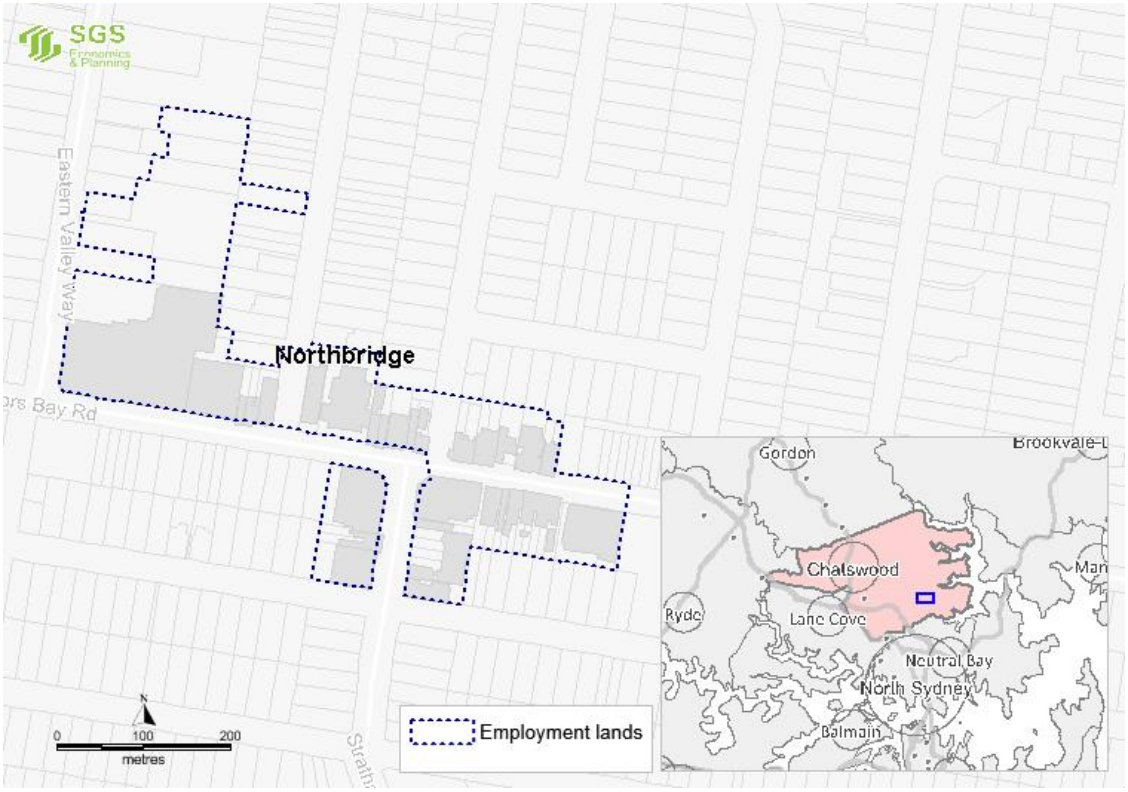
APPENDIX 3: VILLAGE AND SMALL VILLAGE CENTRES

Northbridge

Location and zoning

Northbridge centre is located in the south east of Willoughby LGA (refer to Figure 81).

FIGURE 81. LOCATION OF NORTHBRIDGE



Source: SGS Economics and Planning, 2015

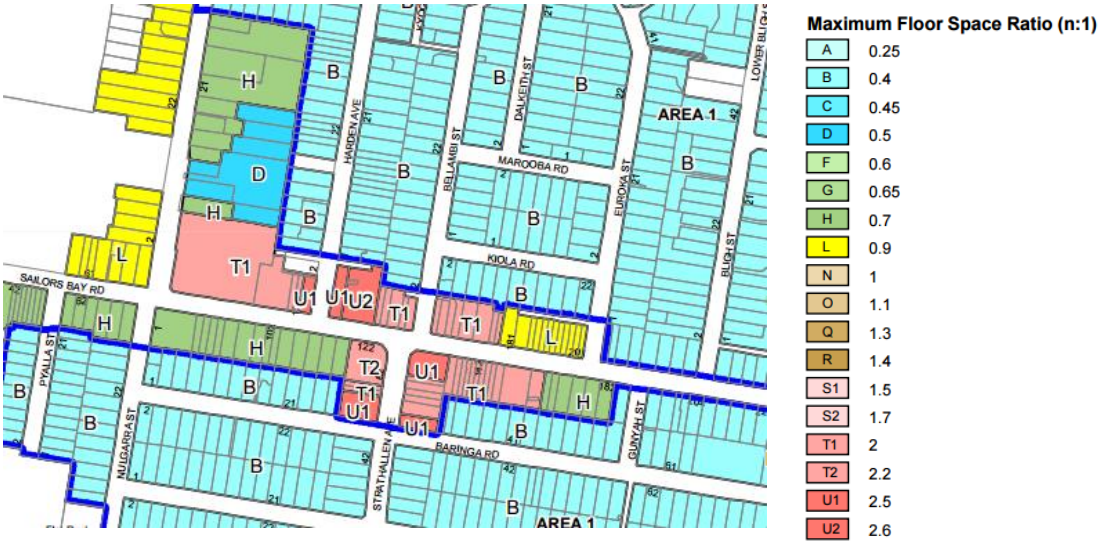
Northbridge is a village centre located along Sailors Bay Road, Strathallen Ave and Eastern Valley Way in Northbridge. The centre is zoned B2 Local Centre and surrounded by low and medium density residential zones (refer to Figure 82). The B2 zoning provides for retail, business, entertainment and community uses for the local resident and working population.

FIGURE 82. NORTHBRIDGE ZONING MAP

Source: Willoughby City Council, 2012

The FSRs for Northbridge range from 0.5:1 to 2.6:1 (refer to Figure 83).

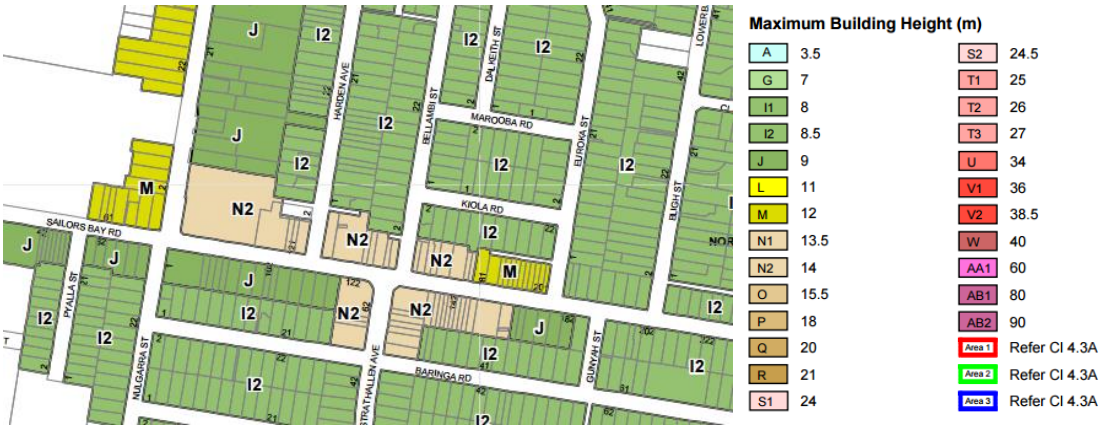
FIGURE 83. NORTHBRIDGE FSR CONTROL MAP



Source: Willoughby City Council, 2012

There is a blanket height control for Northbridge of 14 metres, aside from a small proportion of sites located along Eastern Valley Way which have a height control of 9 metres (refer to Figure 84).

FIGURE 84. NORTHBRIDGE HEIGHT OF BUILDING CONTROL MAP



Source: Willoughby City Council, 2012

Current floorspace profile

Northbridge retail centre is around 4.2 hectares and contains 58,000 sqm of floorspace (refer to Figure 85).

TABLE 35. NORTHBRIDGE OVERVIEW OF CENTRE

	sqm
Total land	42,093
Current floorspace	58,420
Current employment floorspace	40,805
Retail	30,930
Non-retail	9,875
Current retail FSR	0.73
Current total employment FSR	1.39
Capacity for retail floorspace^	30,930
Capacity for employment floorspace^	40,805
Vacant floorspace+	1,481
Control FSR	0.5:1 – 2.6:1

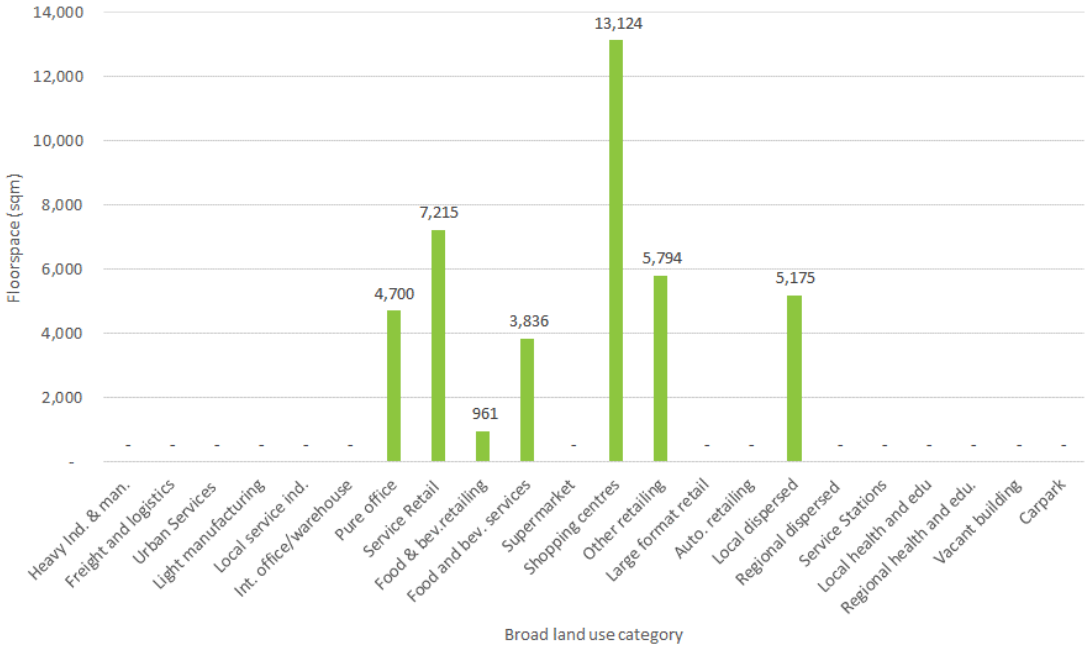
Source: SGS Economics and Planning, 2015

^Capacity is calculated by applying the average retail FSR of 0.71 and employment FSR of 0.93 to the land area. Where these figures are exceeded by the current floorspace, the capacity is equal to the current floorspace (i.e. assuming no further capacity for growth)

+ Vacancy is included in other floorspace measures above.

The retail role of the centre is reflected in the land audit results. The floorspace within the centre includes shopping centre uses, service retail, other retail, dispersed uses, pure office and food and beverage services (refer to Figure 85). The centre contains a Woolworths which represents around 20 percent of the Northbridge Plaza Shopping Centre which is characterised as the shopping centre BLC. These uses are all very much characteristic of a typical village centre.

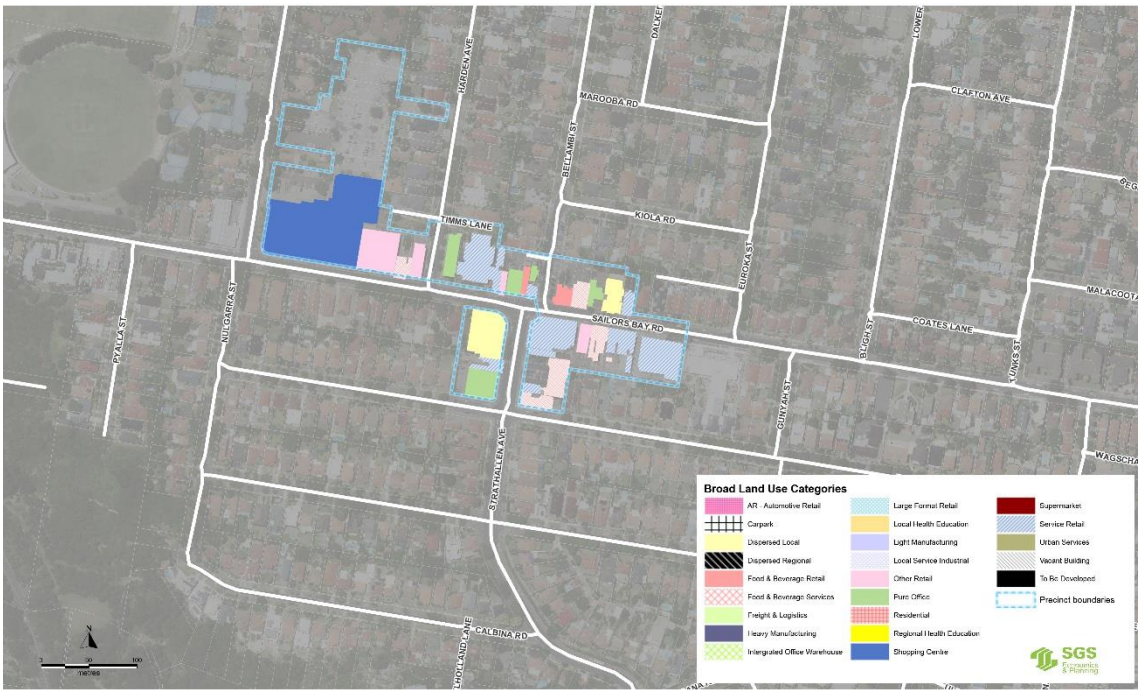
FIGURE 85. NORTHBRIDGE CURRENT FLOORSPACE BY BLC



Source: SGS Economics and Planning, 2015

The shopping centre uses are concentrated on one lot within Northbridge and the other uses identified above are mixed throughout the centre (refer to Figure 86).

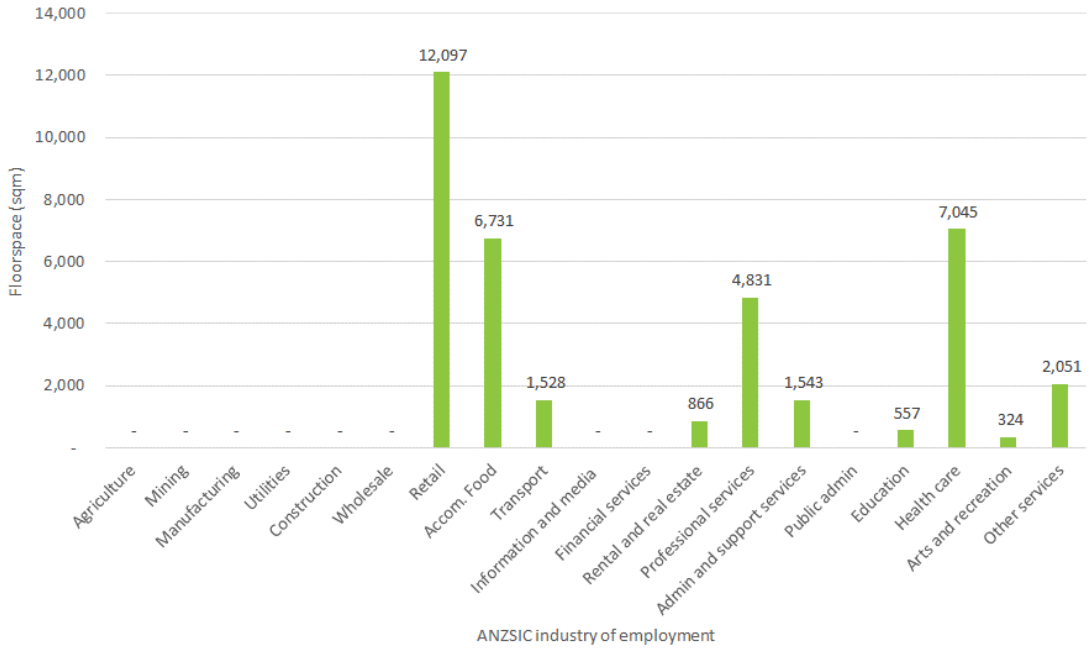
FIGURE 86. NORTHBRIDGE LAND AUDIT MAP



Source: SGS Economics and Planning, 2015

In terms of floorspace by industry of employment, unsurprisingly, the majority of floorspace in Northbridge is for retail uses. Other uses include health care and accommodation and food (refer to Figure 87).

FIGURE 87. NORTHBRIDGE CURRENT FLOORSPACE BY ANZSIC INDUSTRY OF EMPLOYMENT



Source: SGS Economics and Planning, 2015

Floorspace projections

Northbridge is projected to require an additional 11,152 sqm of floorspace to 2041, while the retail modelling has identified demand for an additional 5,000 sqm of retail floorspace within Northbridge to 2031.

Capacity and demand gap analysis

The following table shows the gap analysis that compares the projected retail and employment floorspace demand with the benchmark capacity.

TABLE 36. NORTHBRIDGE GAP ANALYSIS

		sqm
Current employment floorspace	*A*	40,805
Retail floorspace	*B*	30,930
Capacity for retail floorspace	*C*	30,930
Capacity for employment floorspace	*D*	40,805
Vacant floorspace+	*E*	1,481
Net retail demand	*F*	4,999
Net total employment demand	*G*	11,152
Retail gap/surplus	*(C-B+E)-F*	-3,518
Total employment gap/surplus	*(D-A+E)-G*	-9,671

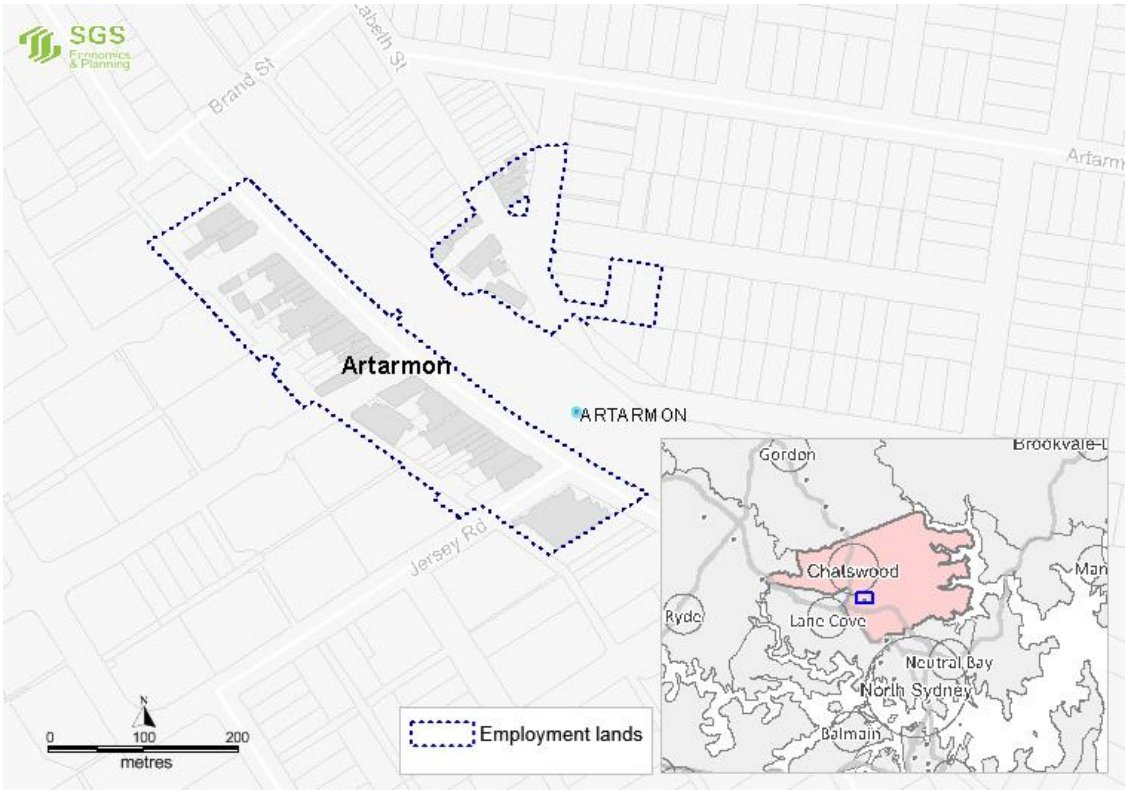
Source: SGS Economics and Planning, 2015
+ Vacancy is included in other floorspace measures above.

Artarmon

Location and zoning

Artarmon centre is located in the central west of Willoughby LGA, along the north shore railway line surrounding Artarmon railway station (refer to Figure 88).

FIGURE 88. LOCATION OF ARTARMON



Source: SGS Economics and Planning, 2015

Artarmon is a small village centre which surrounds Artarmon station. The railway line transects the centre with the western side zoned B2 Local Centre and the eastern side zoned B1 Neighbourhood Centre (refer to Figure 89). The B1 zone provides for more small scale retail, business and community uses compared to the B2 zone. The centre is surrounded by low, medium and high residential zones.

FIGURE 89. ARTARMON ZONING MAP

Source: Willoughby City Council, 2012

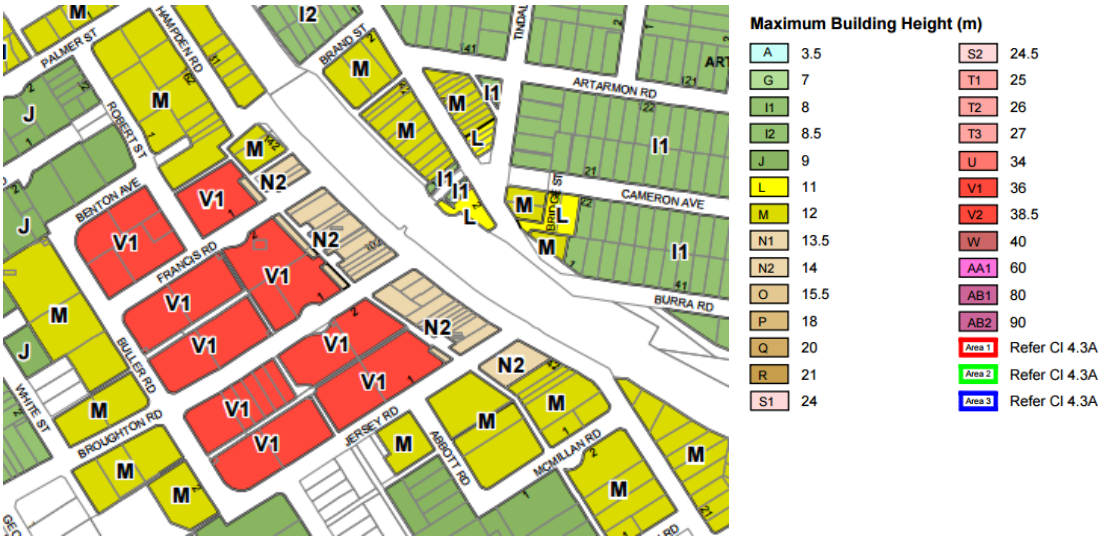
The sites zoned B2 Local Centre in Artarmon have an FSR control of 2:1, and the sites zone B1 Neighbourhood centre have an FSR control of 1:1 or 1.3:1 (refer to Figure 90).

FIGURE 90. ARTARMON FSR CONTROL MAP

Source: Willoughby City Council, 2012

The sites zoned B2 Local Centre in Artarmon have a height control of 14 metres, and the sites zone B1 Neighbourhood centre have an FSR control of 8 metres or 11 metres (refer to Figure 91).

FIGURE 91. ARTARMON HEIGHT OF BUILDING CONTROL MAP



Source: Willoughby City Council, 2012

Current floorspace profile

Artarmon small village centre contains 19,000 sqm of floorspace across 1.5 hectares of land (refer to Table 37).

TABLE 37. OVERVIEW OF ARTARMON

	sqm
Total land	15,605
Current floorspace	19,479
Current employment floorspace	17,855
Retail	11,222
Non-retail	6,633
Current retail FSR	0.72
Current total employment FSR	1.14
Capacity for retail floorspace^	11,222
Capacity for employment floorspace^	17,855
Vacant floorspace+	1,952
Control FSR	0.9:1-2:1

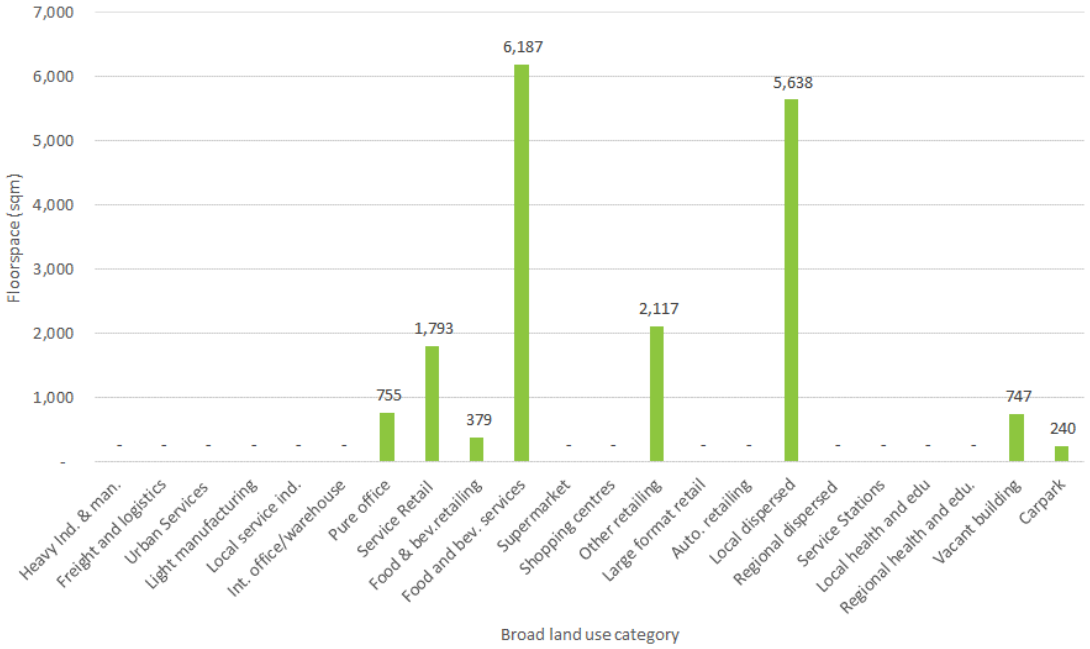
Source: SGS Economics and Planning, 2015

^Capacity is calculated by applying the average retail FSR of 0.71 and employment FSR of 0.93 to the land area. Where these figures are exceeded by the current floorspace, the capacity is equal to the current floorspace (i.e. assuming no further capacity for growth)

+ Vacancy is included in other floorspace measures above.

Artarmon contains primarily food and beverage services and local dispersed land uses (refer to Figure 92).

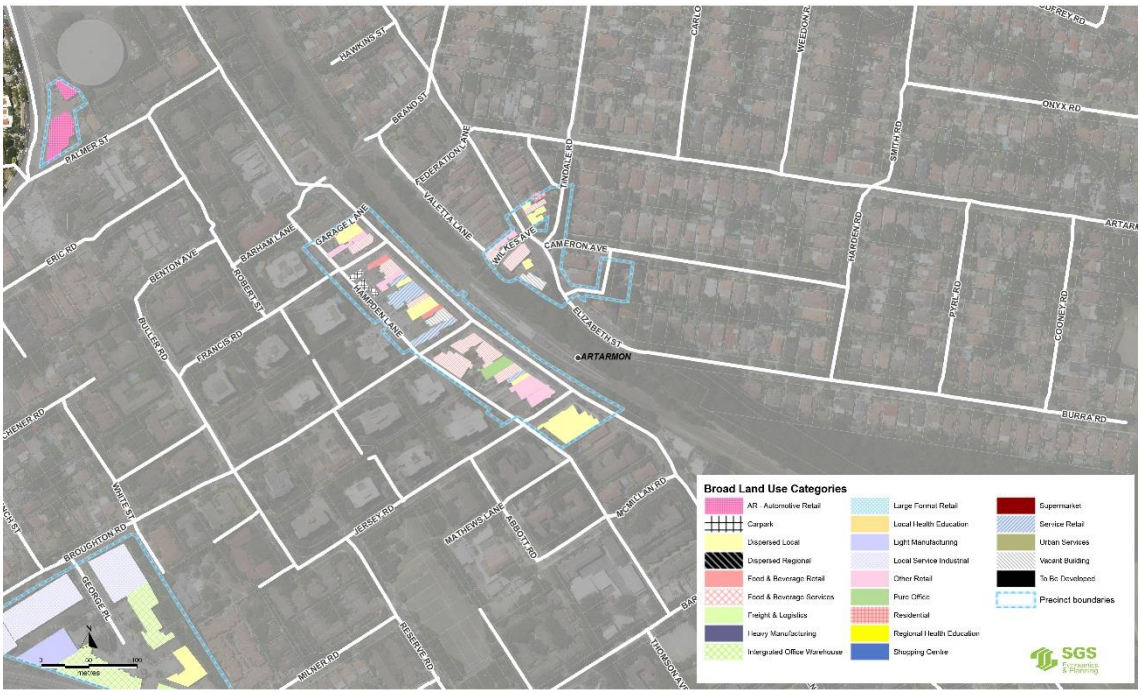
FIGURE 92. ARTARMON CURRENT FLOORSPACE BY BLC



Source: SGS Economics and Planning, 2015

The various land uses in Artarmon are spread throughout the centre and there is limited evidence of clustering of any particular activity (refer to Figure 93).

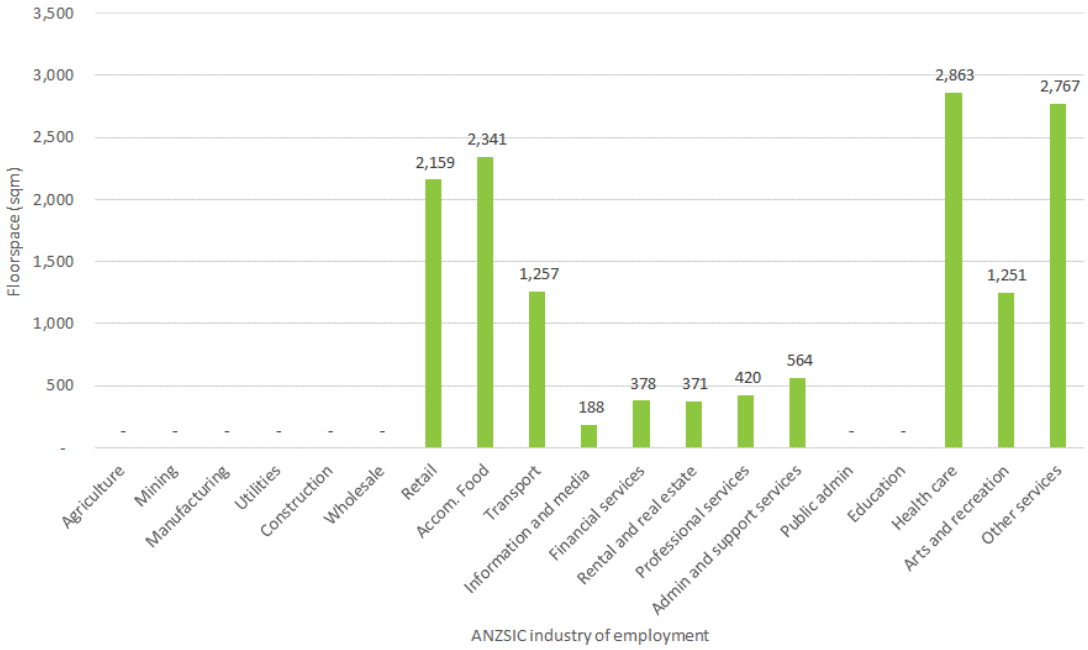
FIGURE 93. ARTARMON LAND AUDIT MAP



Source: SGS Economics and Planning, 2015

In terms of floorspace by employment, Artarmon contains a range of uses including health care, other services, accommodation and food and retail (refer to Figure 94).

FIGURE 94. ARTARMON CURRENT FLOORSPACE BY ANZSIC INDUSTRY OF EMPLOYMENT



Source: SGS Economics and Planning, 2015

Floorspace projections

Artarmon is projected to require an additional 3,958 sqm of floorspace to 2041. The retail modelling has identified demand for an additional 841 sqm of retail floorspace within Artarmon to 2031.

Capacity and demand gap analysis

The following table shows the gap analysis that compares the projected retail and employment floorspace demand with the benchmark capacity.

TABLE 38. ARTARMON GAP ANALYSIS

		sqm
Current employment floorspace	*A*	17,855
Retail floorspace	*B*	11,222
Capacity for retail floorspace	*C*	11,222
Capacity for employment floorspace	*D*	17,855
Vacant floorspace+	*E*	1,952
Net retail demand	*F*	841
Net total employment demand	*G*	3,958
Retail gap/surplus	*(C-B+E)-F*	1,111
Total employment gap/surplus	*(D-A+E)-G*	-2,006

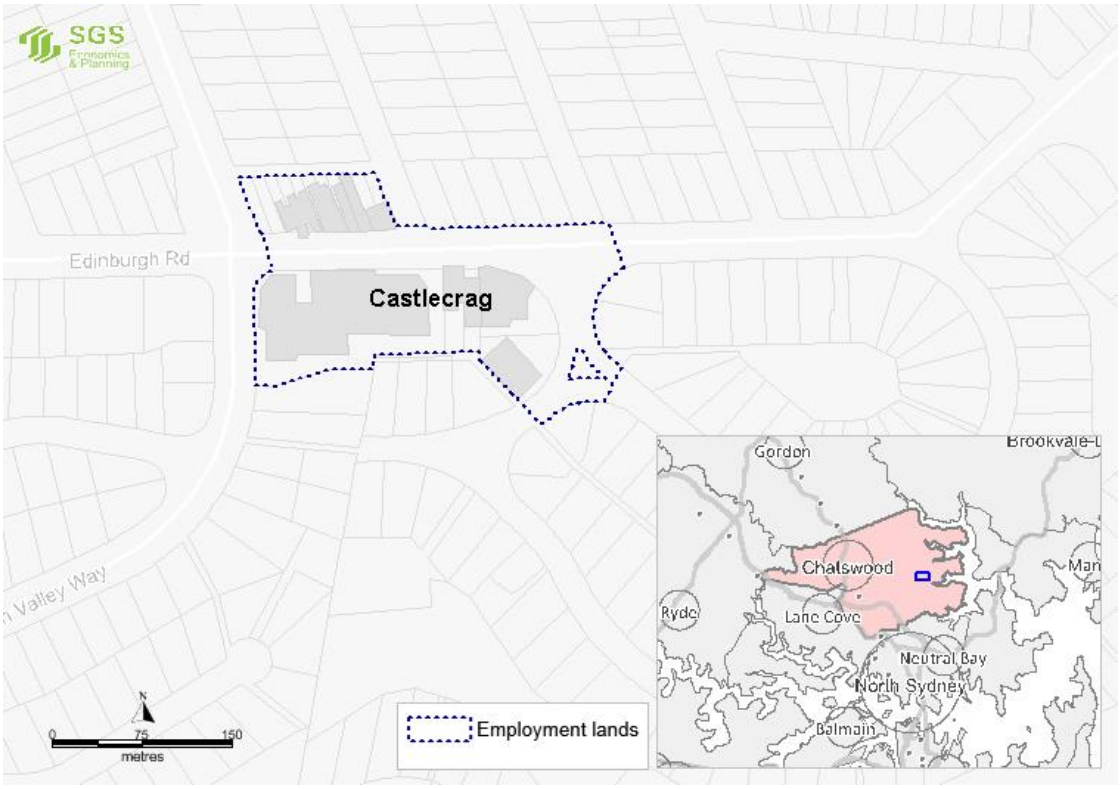
Source: SGS Economics and Planning, 2015
+ Vacancy is included in other floorspace measures above.

Castlecrag

Location and zoning

Castlecrag is located in the central east of Willoughby LGA, to the north of Northbridge centre (refer to Figure 95.

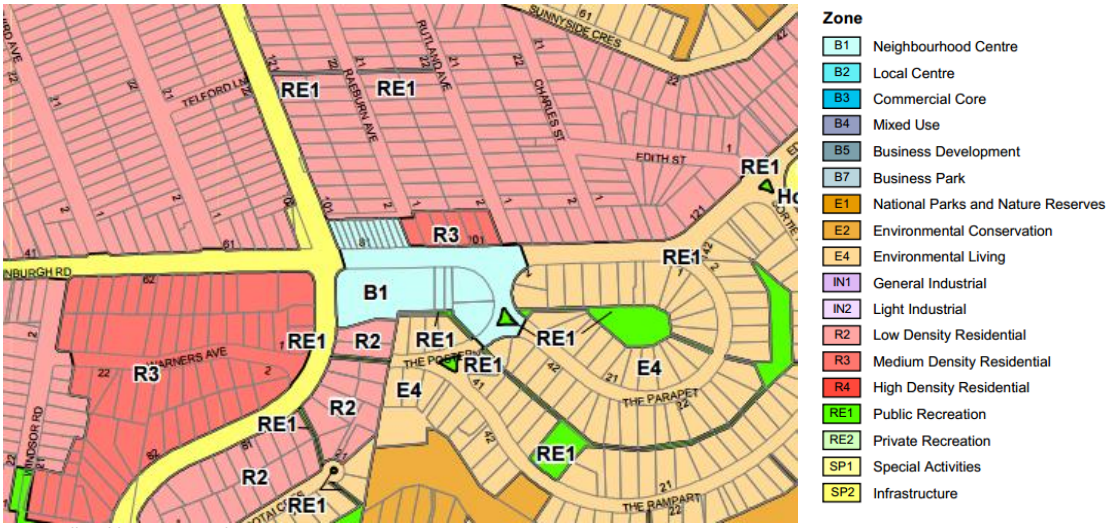
FIGURE 95. LOCATION OF CASTLECRAG (TO BE UPDATED)



Source: SGS Economics and Planning, 2015

Castlecrag is a small village centre located at the junction of Eastern Valley Way and Edinburgh Road. The centre is zoned B1 Neighbourhood Centre (refer to Figure 96). The B1 zone provides small scale retail, business and community uses. The centre is surrounded by low and medium residential uses.

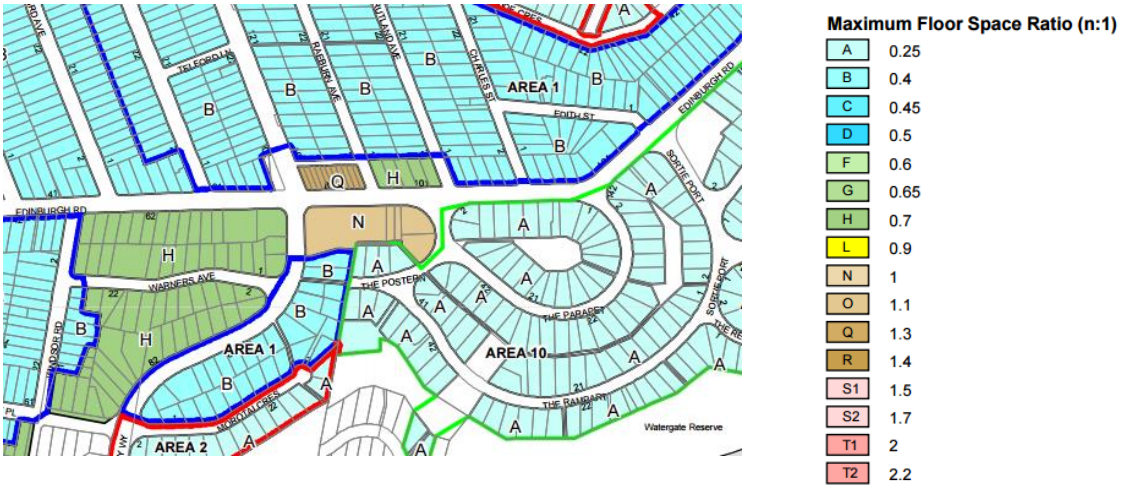
FIGURE 96. CASTLECRAG ZONING MAP



Source: Willoughby City Council, 2012

The sites located to the north of Edinburgh Road have an FSR control of 1.3:1 and the sites to the south of Edinburgh Road have an FSR of 1:1 (refer to Figure 97).

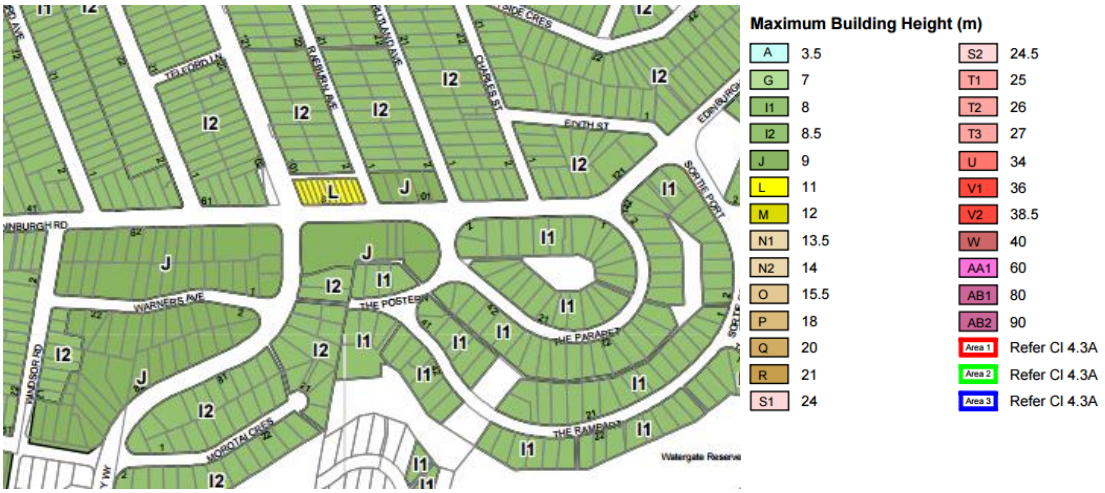
FIGURE 97. CASTLECRAG FSR CONTROL MAP



Source: Willoughby City Council, 2012

The sites located to the north of Edinburgh Road have a height control of 11 metres and the sites to the south of Edinburgh Road have a height control of 9 metres (refer to Figure 98).

FIGURE 98. CASTLECRAG HEIGHT OF BUILDING CONTROL MAP



Source: Willoughby City Council, 2012

Current floorspace profile

Castlecrag is a small centre of 1 hectare which accommodates 10,000 sqm of floorspace (refer to Table 38).

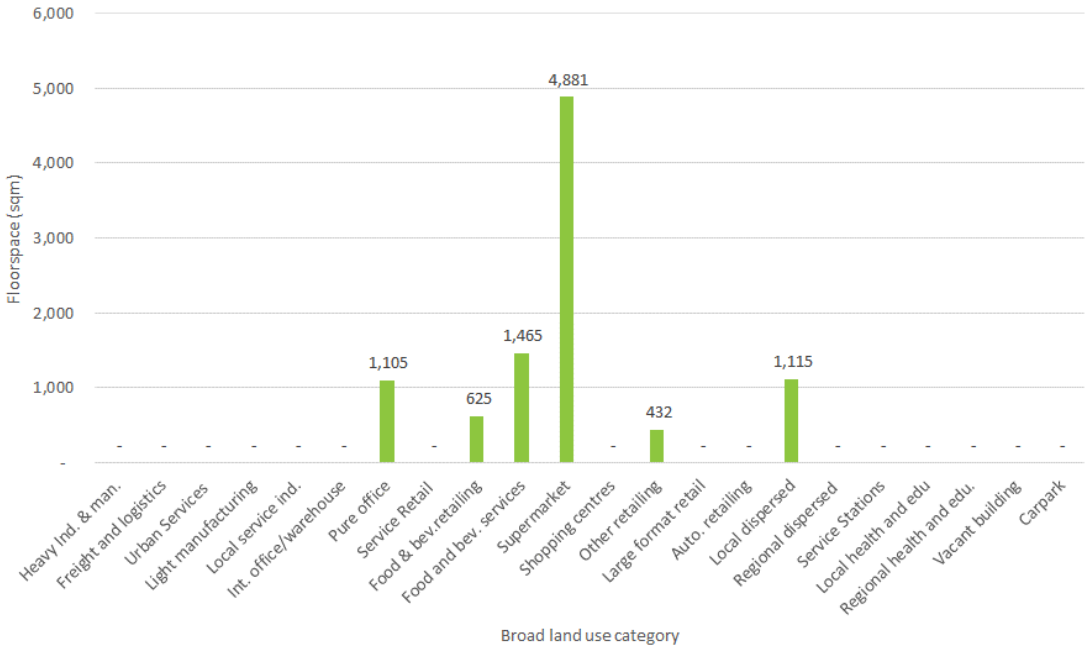
TABLE 39. OVERVIEW OF CASTLECRAG

	sqm
Total land	10,503
Current floorspace	9,975
Current employment floorspace	9,622
Retail	7,403
Non-retail	2,220
Current retail FSR	0.70
Current total employment FSR	0.92
Capacity for retail floorspace^	7,457
Capacity for employment floorspace^	9,768
Vacant floorspace+	146
Control FSR	1:1 - 1.3:1

Source: SGS Economics and Planning, 2015
^Capacity is calculated by applying the average retail FSR of 0.71 and employment FSR of 0.93 to the land area. Where these figures are exceeded by the current floorspace, the capacity is equal to the current floorspace (i.e. assuming no further capacity for growth)
+ Vacancy is included in other floorspace measures above.

The land audit revealed that the floorspace within Castlecrag is primarily supermarket land uses with some food and beverage services and local dispersed uses along with a small amount of office and other retailing (refer to Figure 99). The concentration of supermarket land uses is reflective of the presence of an IGA supermarket and a green grocer within the centre. The Quadrangle Shopping Centre has been classified as supermarket uses as this is the predominant use of the building.

FIGURE 99. CASTLECRAG CURRENT FLOORSPACE BY BLC



Source: SGS Economics and Planning, 2015

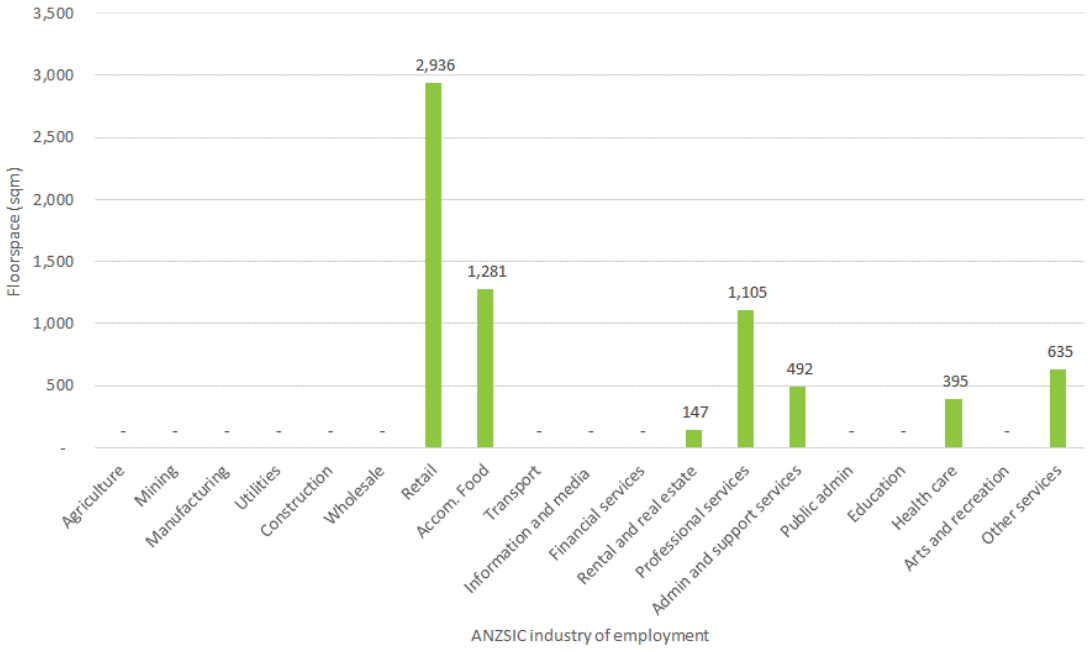
As mentioned above, the supermarket uses are concentrated around the IGA with the food and beverage and other retail located opposite (refer to Figure 100).

FIGURE 100. CASTLECRAG LAND AUDIT MAP

Source: SGS Economics and Planning, 2015

In terms of floorspace by industry of employment, the role of Castlecrag as a retail centre is reflected by the concentration of retail employment floorspace, supported by accommodation and food and professional services (refer to Figure 101).

FIGURE 101. CASTLECRAG CURRENT FLOORSPACE BY ANZSIC INDUSTRY OF EMPLOYMENT



Source: SGS Economics and Planning, 2015

Floorspace projections

Castlecrag is projected to require an additional 1,973 sqm of floorspace to 2041. The retail modelling has identified demand for an additional 1,073 sqm of retail floorspace within Castlecrag to 2031.

Capacity and demand gap analysis

The following table shows the gap analysis that compares the projected retail and employment floorspace demand with the benchmark capacity.

TABLE 40. CASTLECRAG GAP ANALYSIS

		sqm
Current employment floorspace	*A*	9,622
Retail floorspace	*B*	7,403
Capacity for retail floorspace	*C*	7,457
Capacity for employment floorspace	*D*	9,768
Vacant floorspace+	*E*	146
Net retail demand	*F*	1,073
Net total employment demand	*G*	1,973
Retail gap/surplus	*(C-B+E)-F*	-872
Total employment gap/surplus	*(D-A+E)-G*	-1,681

Source: SGS Economics and Planning, 2015
+ Vacancy is included in other floorspace measures above.

Willoughby Rd, Willoughby

Location and zoning

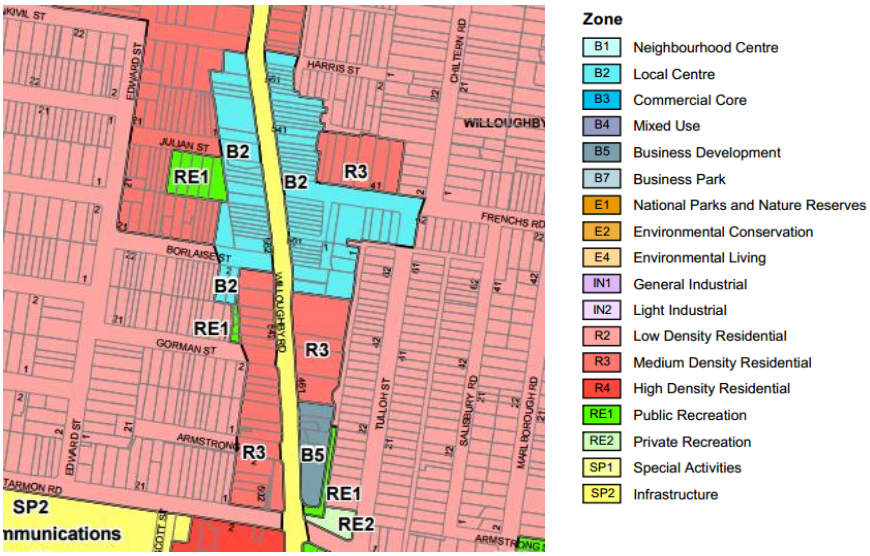
Willoughby Road centre is located in Willoughby which is in the centre of Willoughby LGA (refer to Figure 102).

FIGURE 102. LOCATION OF WILLOUGHBY ROAD, WILLOUGHBY

Source: SGS Economics and Planning, 2015

Willoughby Road is a small village centre located on Willoughby Road in Willoughby. The centre is zoned B2 Local Centre and surrounded by low and medium density residential zones, with a small B5 Business Development precinct to the south (refer to Figure 103). The B2 zoning provides for retail, business, entertainment and community uses for the local resident and working population.

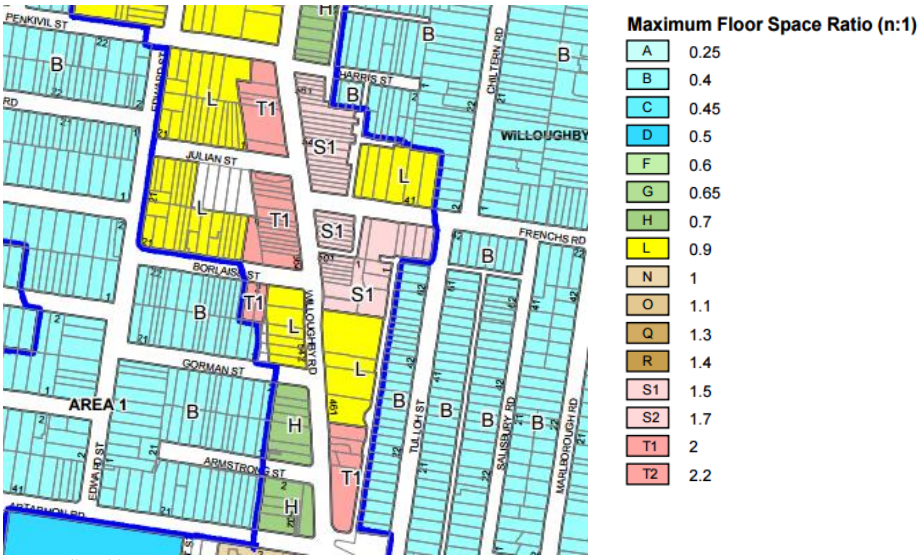
FIGURE 103. WILLOUGHBY ROAD ZONING MAP



Source: Willoughby City Council, 2012

The sites to the west of Willoughby Road have an FSR control of 2:1 and sites to the east of Willoughby Road have an FSR control of 1.5:1 (refer to Figure 104).

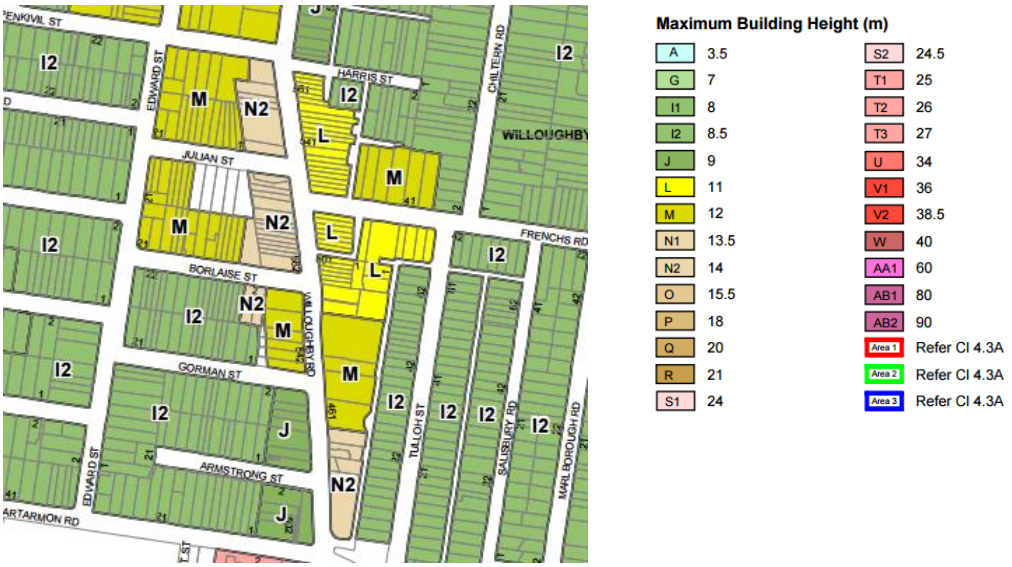
FIGURE 104. WILLOUGHBY ROAD FSR CONTROL MAP



Source: Willoughby City Council, 2012

The sites to the west of Willoughby Road have a height control of 14 metres and sites to the east of Willoughby Road have a height control of 11 metres (refer to Figure 104).

FIGURE 105. WILLOUGHBY ROAD HEIGHT OF BUILDING CONTROL MAP



Source: Willoughby City Council, 2012

Current floorspace profile

Willoughby Road contains 32,000 sqm of floorspace across 2.9 hectares (refer to Table 41).

TABLE 41. OVERVIEW OF WILLOUGHBY ROAD

	sqm
Total land	29,412
Current floorspace	32,382
Current employment floorspace	23,887
Retail	17,455
Non-retail	6,432
Current retail FSR	0.59
Current total employment FSR	0.81
Capacity for retail floorspace^	20,882
Capacity for employment floorspace^	27,353
Vacant floorspace+	2,151
Control FSR	1.5:1 - 2:1

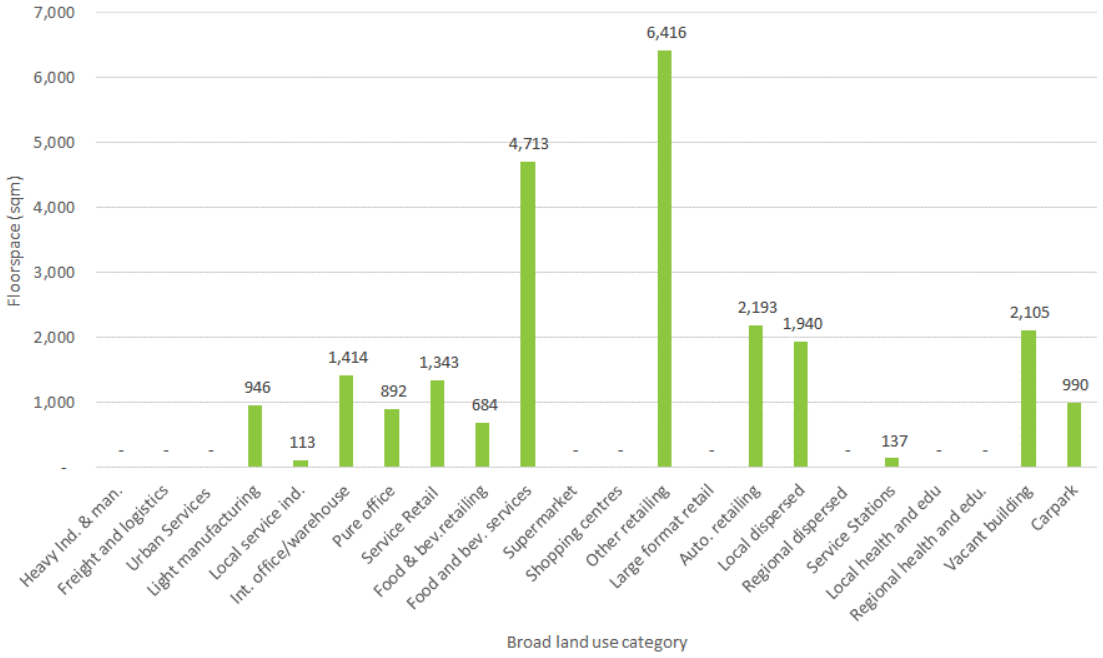
Source: SGS Economics and Planning, 2015

^Capacity is calculated by applying the average retail FSR of 0.71 and employment FSR of 0.93 to the land area. Where these figures are exceeded by the current floorspace, the capacity is equal to the current floorspace (i.e. assuming no further capacity for growth)

+ Vacancy is included in other floorspace measures above.

The land audit highlights the role of Willoughby Road as a local centre providing a range of services for the local resident population, including other retailing and food and beverage services, as well as a range of light industrial, office and retailing uses (refer to Figure 106). Other retailing here includes businesses such as the florist, discount stores, the pharmacy and newsagency.

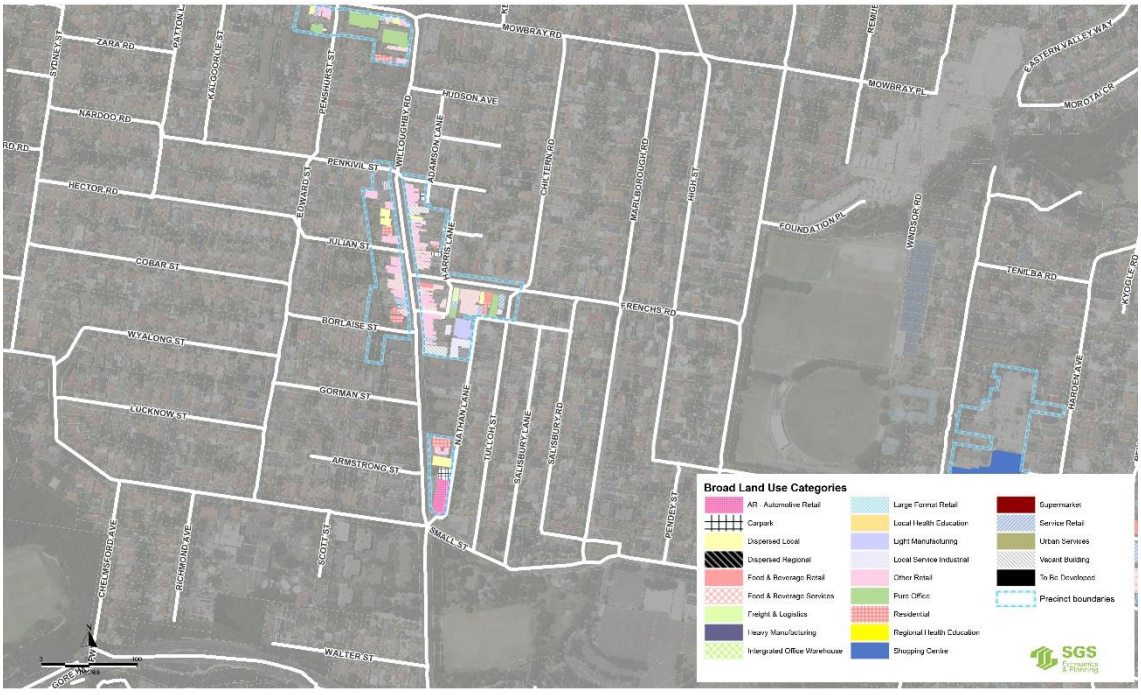
FIGURE 106. WILLOUGHBY ROAD CURRENT FLOORSPACE BY BLC



Source: SGS Economics and Planning, 2015

The retail uses in Willoughby are concentrated within the local centre zone with the population serving industrial uses located within the business development zone to the south (refer to Figure 107).

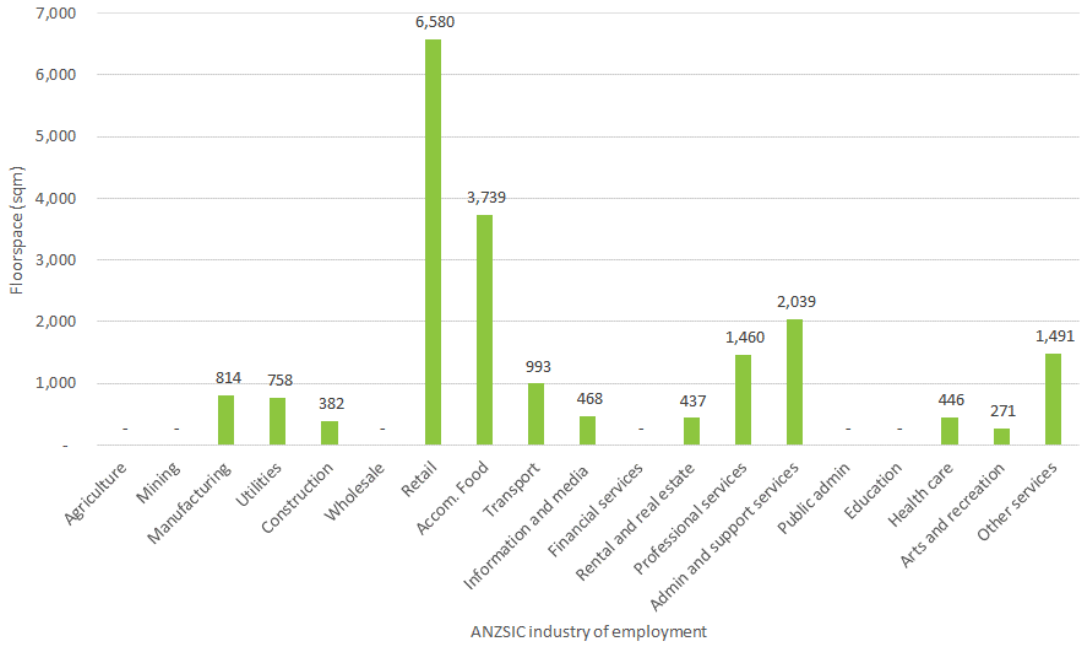
FIGURE 107. WILLOUGHBY ROAD LAND AUDIT MAP



Source: SGS Economics and Planning, 2015

The breakdown of floorspace by employment highlights that retail is the main industry of employment in terms of floorspace in Willoughby Road, followed by accommodation and food services and administrative and support services (refer to Figure 108).

FIGURE 108. WILLOUGHBY ROAD CURRENT FLOORSPACE BY ANZSIC INDUSTRY OF EMPLOYMENT



Source: SGS Economics and Planning, 2015

Floorspace projections

Willoughby Road centre in Willoughby is projected to require an additional 5,324 sqm of floorspace to 2041. The retail modelling has identified demand for an additional 2,167 sqm of retail floorspace within Willoughby Road, Willoughby to 2031.

Capacity and demand gap analysis

The following table shows the gap analysis that compares the projected retail and employment floorspace demand with the benchmark capacity.

TABLE 42. WILLOUGHBY ROAD GAP ANALYSIS

		sqm
Current employment floorspace	*A*	23,887
Retail floorspace	*B*	17,455
Capacity for retail floorspace	*C*	20,882
Capacity for employment floorspace	*D*	27,353
Vacant floorspace+	*E*	2,151
Net retail demand	*F*	2,167
Net total employment demand	*G*	5,324
Retail gap/surplus	*(C-B+E)-F*	3,411
Total employment gap/surplus	*(D-A+E)-G*	293

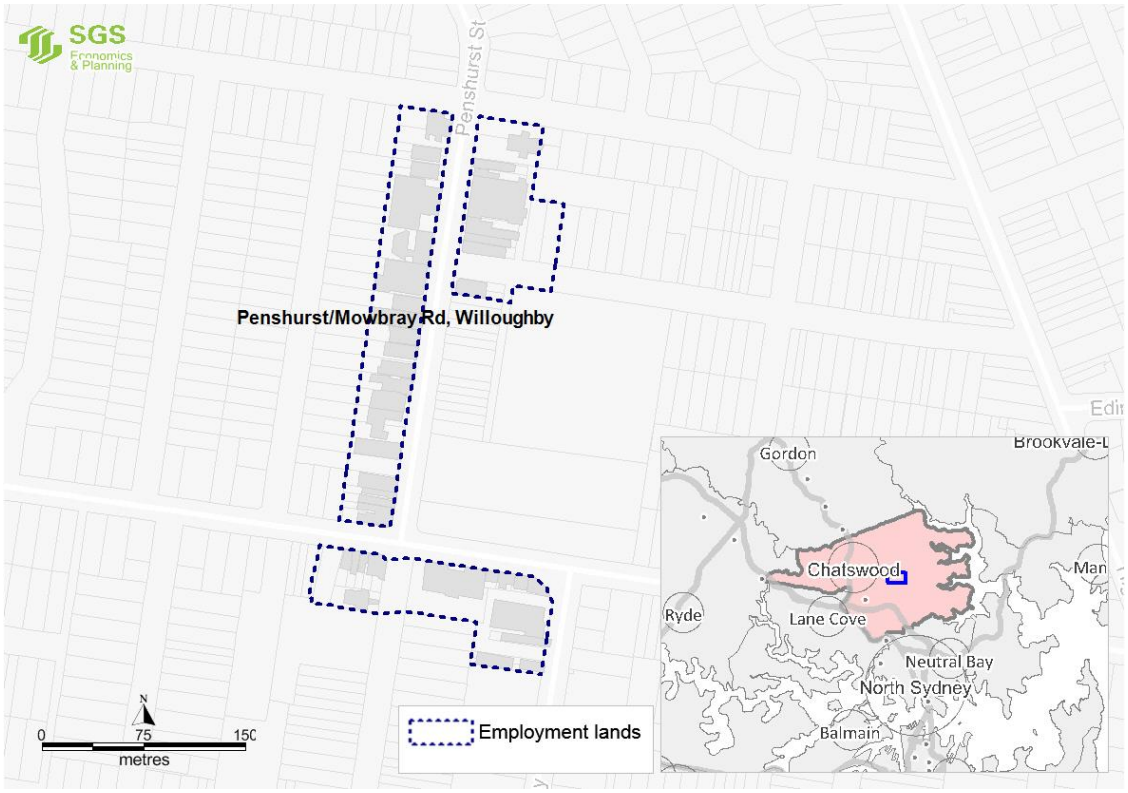
Source: SGS Economics and Planning, 2015
+ Vacancy is included in other floorspace measures above.

Penshurst St and Mowbray Rd, North Willoughby

Location and zoning

The centre located along Penshurst St and Mowbray Road in North Willoughby is located to the north of the centre of Willoughby Road (refer to Figure 109).

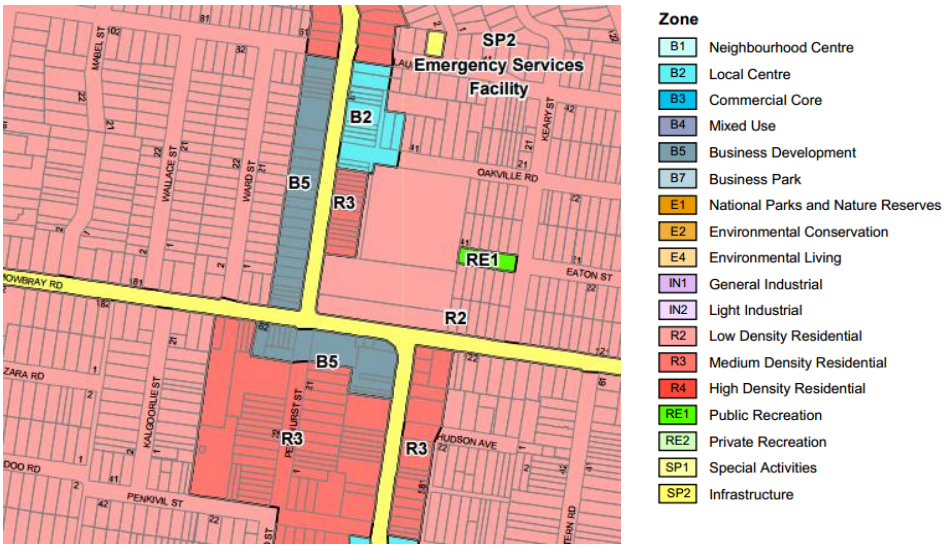
FIGURE 109. LOCATION OF PENSHURST/MOWBRAY RD, WILLOUGHBY



Source: SGS Economics and Planning, 2015

The small village centre in North Willoughby is located along Penshurst Street and Mowbray Road (near the junction of Willoughby Road). The centre is zoned B5 Business Development with a small precinct of B2 Local Centre, and is surrounded by low and medium residential zones (refer to Figure 109). Retail uses are restricted to the B2 zone. The B5 zone primarily provides for a mix of business and warehouse uses, and bulky goods premises, as well as neighbourhood shops.

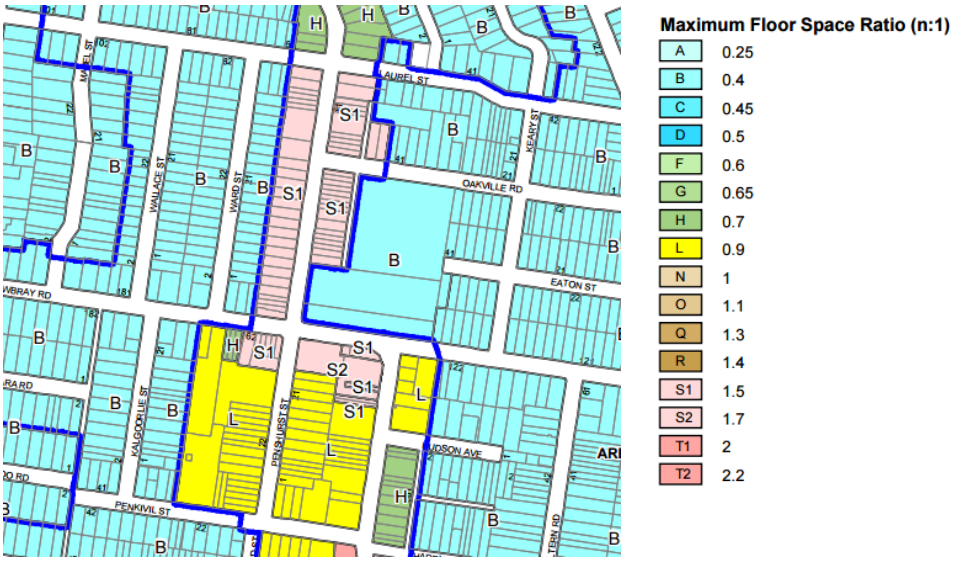
FIGURE 110. PENSHURST/MOWBRAY RD, WILLOUGHBY RD ZONING MAP



Source: Willoughby City Council, 2012

The centres has an FSR control of 1.5:1 (refer to Figure 111).

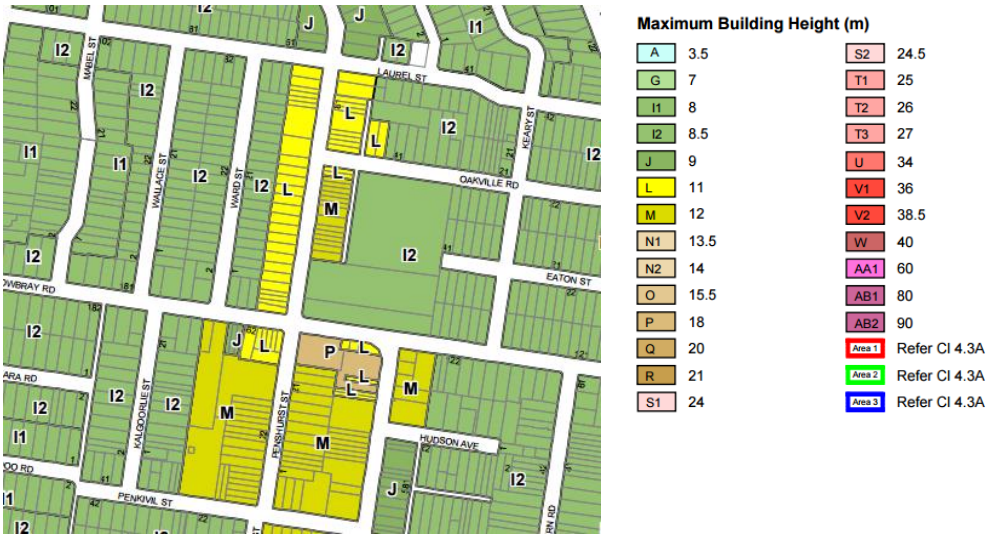
FIGURE 111. PENSHURST/MOWBRAY RD, WILLOUGHBY FSR CONTROL MAP



Source: Willoughby City Council, 2012

The centre has a height control of 11 metres (refer to Figure 112).

FIGURE 112. PENSHURST/MOWBRAY RD, WILLOUGHBY HEIGHT OF BUILDING CONTROL MAP



Source: Willoughby City Council, 2012

Current floorspace profile

The Penshurst St and Mowbray Road centre in North Willoughby contains 2.6 hectares of land which contains 27,000 sqm of floorspace which was audited (refer to Table 43).

TABLE 43. OVERVIEW OF PENSHURST/MOWBRAY RD, WILLOUGHBY

	sqm
Total land	26,266
Current floorspace	26,775
Current employment floorspace	25,535
Retail	13,747
Non-retail	11,788
Current retail FSR	0.52
Current total employment FSR	0.97
Capacity for retail floorspace^	18,649
Capacity for employment floorspace^	25,535
Vacant floorspace+	1,485
Control FSR	1.5:1 – 1.7:1

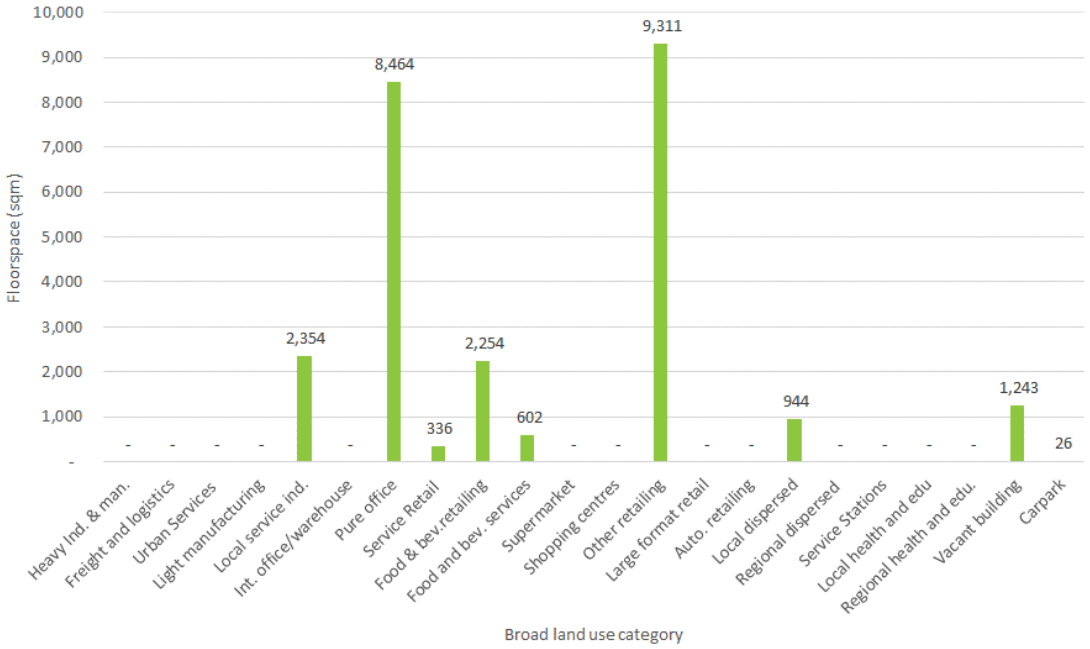
Source: SGS Economics and Planning, 2015

^Capacity is calculated by applying the average retail FSR of 0.71 and employment FSR of 0.93 to the land area. Where these figures are exceeded by the current floorspace, the capacity is equal to the current floorspace (i.e. assuming no further capacity for growth)

+ Vacancy is included in other floorspace measures above.

The centre primarily contains other retailing and pure office uses with various other local service industrial, retail and dispersed uses (refer to Figure 113). Other retailing here includes businesses such as the florist, pharmacy, newsagency and post office.

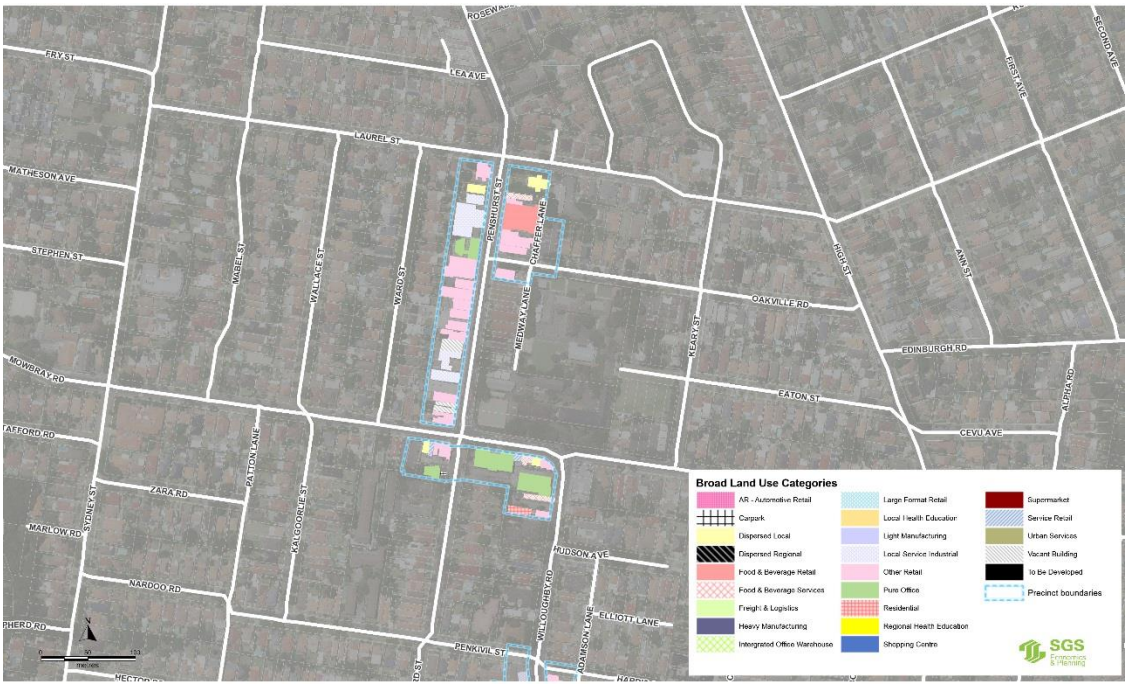
FIGURE 113. PENSHURST/MOWBRAY RD, WILLOUGHBY CURRENT FLOORSPACE BY BLC



Source: SGS Economics and Planning, 2015

Retail uses are primarily concentrated on Penshurst Street with office uses located along Mowbray Road (refer to Figure 114).

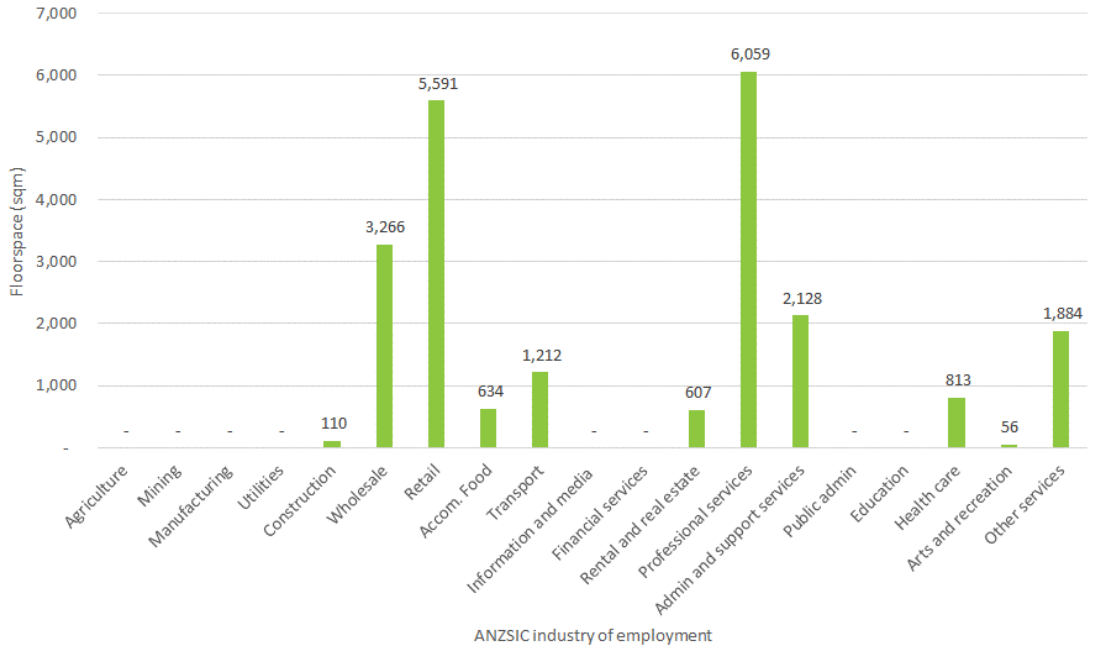
FIGURE 114. PENSHURST/MOWBRAY RD, WILLOUGHBY AUDIT MAP



Source: SGS Economics and Planning, 2015

The land uses identified above are generally reflective in the breakdown of floorspace by industry. The professional services and retail uses are the main industries of employment by total floorspace (refer to Figure 115).

FIGURE 115. PENSHURST/MOWBRAY RD, WILLOUGHBY CURRENT FLOORSPACE BY ANZSIC INDUSTRY OF EMPLOYMENT



Source: SGS Economics and Planning, 2015

Floorspace projections

Penshurst St/Mowbray Road retail centre is projected to require an additional 4,711 sqm of floorspace to 2041. The retail modelling has identified demand for an additional 1,180 sqm of retail floorspace within the Penshurst St/Mowbray Road retail centre to 2031.

Capacity and demand gap analysis

The following table shows the gap analysis that compares the projected retail and employment floorspace demand with the benchmark capacity.

TABLE 44. PENSHURST ST/MOWBRAY RD GAP ANALYSIS

		sqm
Current employment floorspace	*A*	25,535
Retail floorspace	*B*	13,747
Capacity for retail floorspace	*C*	18,649
Capacity for employment floorspace	*D*	25,535
Vacant floorspace+	*E*	1,485
Net retail demand	*F*	1,179
Net total employment demand	*G*	4,711
Retail gap/surplus	*(C-B+E)-F*	5,207
Total employment gap/surplus	*(D-A+E)-G*	-3,226

Source: SGS Economics and Planning, 2015
+ Vacancy is included in other floorspace measures above.

Further, a development application has recently been approved (24 July 2015) for mixed use development at 150 Mowbray Road and 680 Willoughby Road, Willoughby comprising retail and employment uses with 'shop top housing' located above. This will result in the loss of some existing employment floorspace. According to the land audit conducted by SGS, the site currently accommodates 6,900 sqm of pure office uses. The proposed development involves the demolition of the existing buildings and the new development will include 698 sqm of office premises and 551 sqm of bulky goods

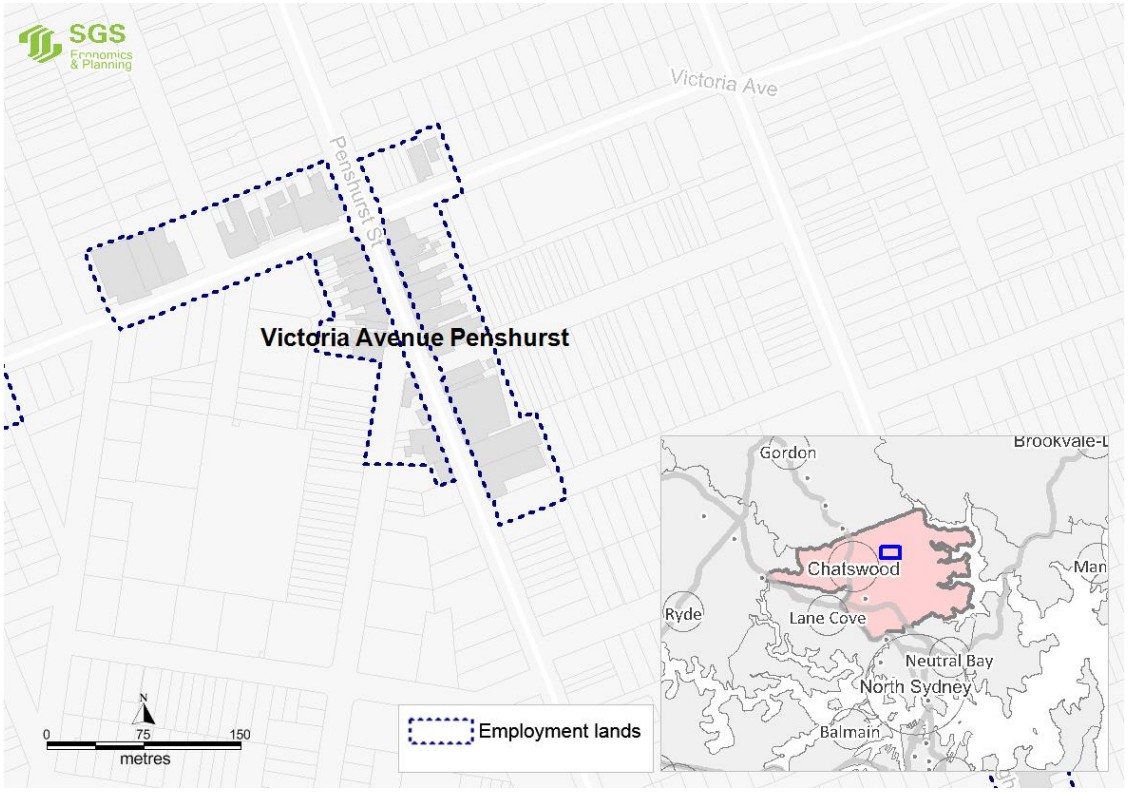
premises (total of 1,249 sqm). There is therefore expected to be a loss of about 5,500 sqm of employment floorspace capacity, resulting in a total gap of -8,700 for employment floorspace.

Victoria Ave/ Penshurst St Chatswood

Location and zoning

The centre located at the intersection of Penshurst St and Victoria Avenue in East Chatswood is located in the north of Willoughby LGA, between Chatswood and the industrial precinct in East Chatswood (refer to Figure 116).

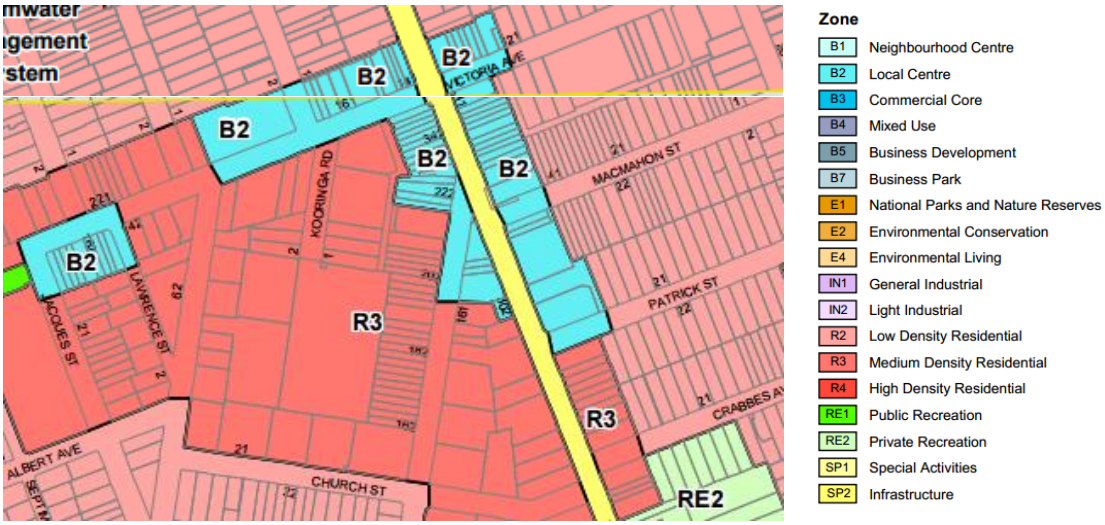
FIGURE 116. LOCATION OF VICTORIA AVE/ PENSHURST ST CHATSWOOD



Source: SGS Economics and Planning, 2015

The small village centre is around 20 minutes' walk east from Chatswood, with ground floor retail and first floor shop top housing or small offices typical of the built form. The centre is zoned B2 Local Centre and surrounded by low and medium density residential zones (refer to Figure 117). The B2 zoning provides for retail, business, entertainment and community uses for the local resident and working population. Willoughby Council has advised that there are car parking and traffic issues within this centre.

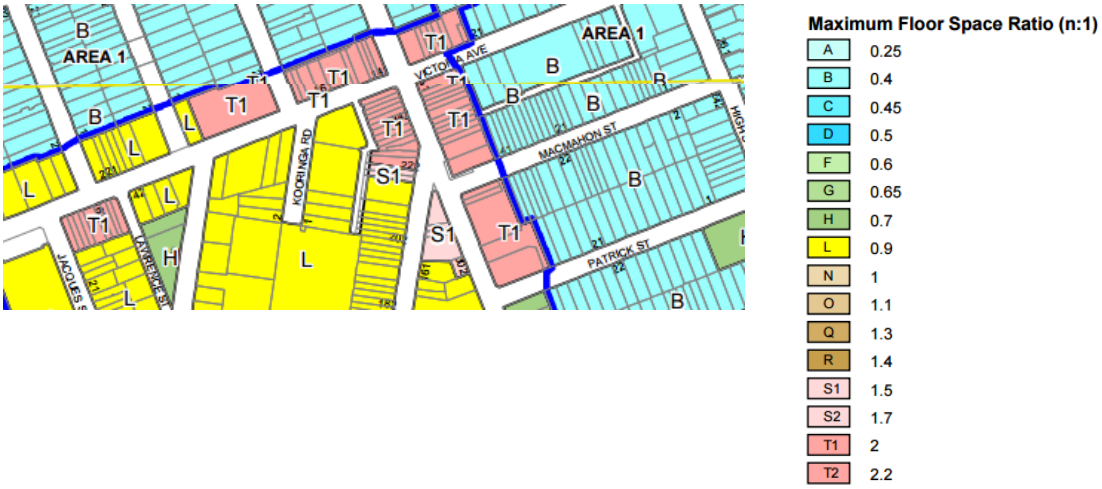
FIGURE 117. VICTORIA AVE/ PENSHURST ST CHATSWOOD ZONING MAP



Source: Willoughby City Council, 2012

The centre has an FSR control of 2:1 with some sites with an FSR of 1.5:1 (refer to Figure 118).

FIGURE 118. VICTORIA AVE/ PENSHURST ST CHATSWOOD FSR CONTROL MAP



Source: Willoughby City Council, 2012

The centre has a height control of 14 metres (refer to Figure 119).

FIGURE 119. VICTORIA AVE/ PENSHURST ST CHATSWOOD HEIGHT OF BUILDING CONTROL MAP

Source: Willoughby City Council, 2012

Current floorspace profile

The retail centre in East Chatswood contains 2.6 hectares of land which accommodates 34,000 sqm of floorspace which was audited (refer to Table 45).

TABLE 45. OVERVIEW OF VICTORIA AVE/ PENSHURST ST CHATSWOOD

	sqm
Total land	26,043
Current floorspace	34,265
Current employment floorspace	27,228
Retail	26,335
Non-retail	893
Current retail FSR	1.01
Current total employment FSR	1.05
Capacity for retail floorspace^	26,335
Capacity for employment floorspace^	27,228
Vacant floorspace+	2,071
Control FSR	1.5:1 - 2:1

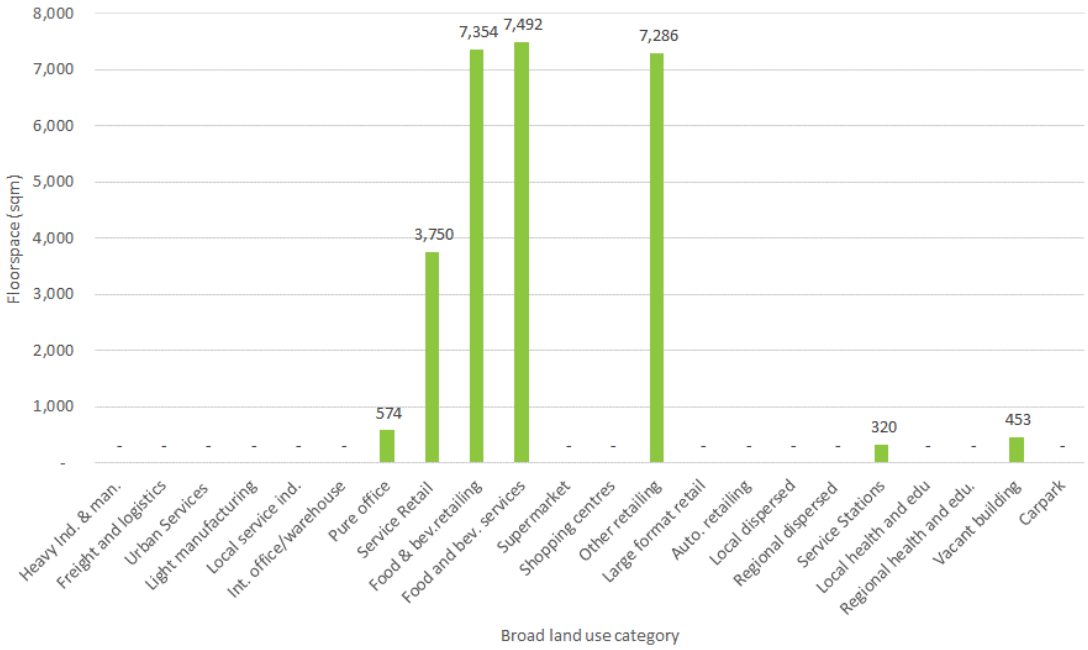
Source: SGS Economics and Planning, 2015

^Capacity is calculated by applying the average retail FSR of 0.71 and employment FSR of 0.93 to the land area. Where these figures are exceeded by the current floorspace, the capacity is equal to the current floorspace (i.e. assuming no further capacity for growth)

+ Vacancy is included in other floorspace measures above.

East Chatswood contains three main land uses: food and beverage retailing, food and beverage services and other retailing (refer to Figure 120). This highlights the role of the centre as a local retail centre.

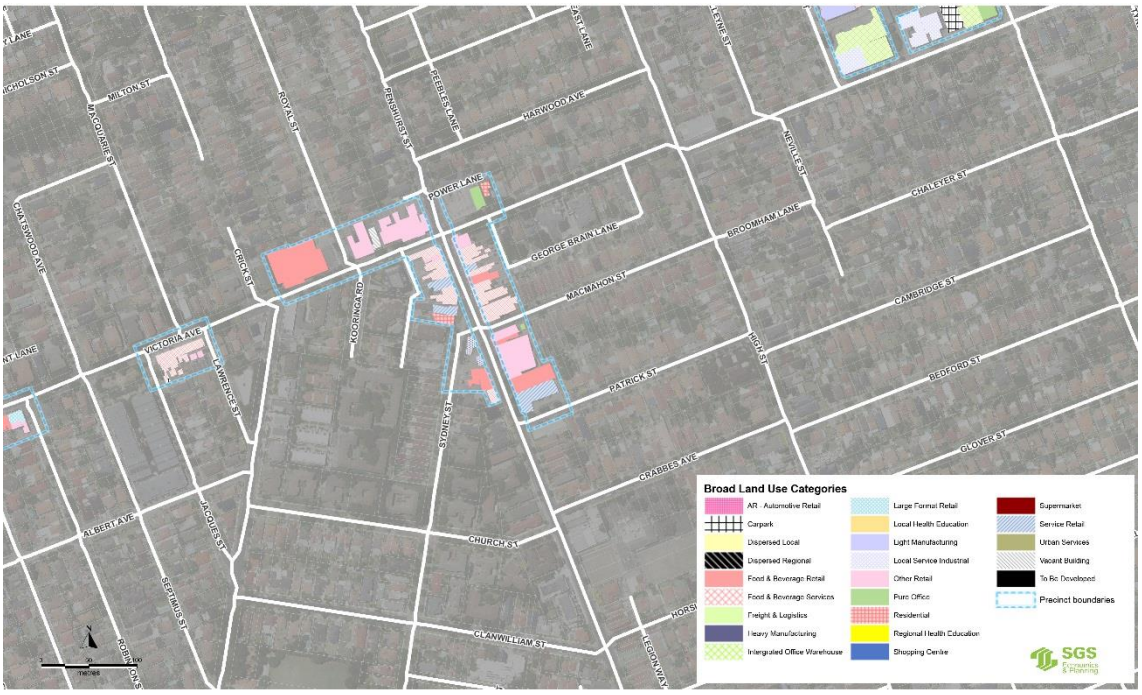
FIGURE 120. VICTORIA AVE/ PENSHURST ST CHATSWOOD CURRENT FLOORSPACE BY BLC



Source: SGS Economics and Planning, 2015

Within East Chatswood, the various retail uses are mixed throughout the centre (refer to Figure 121).

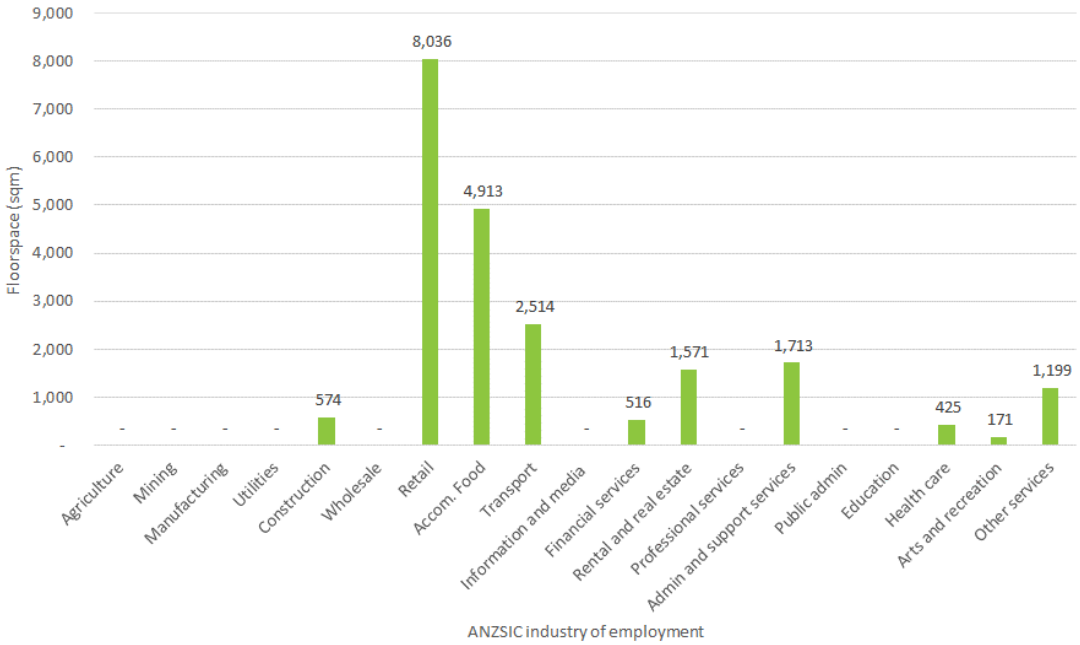
FIGURE 121. VICTORIA AVE/ PENSHURST ST CHATSWOOD LAND AUDIT MAP



Source: SGS Economics and Planning, 2015

The breakdown of floorspace by industry of employment is reflective of the BLCs identified above with the largest industries of employment by floorspace being retail and accommodation and food (refer to Figure 122).

FIGURE 122. VICTORIA AVE/ PENSHURST ST CHATSWOOD CURRENT FLOORSPACE BY ANZSIC INDUSTRY OF EMPLOYMENT



Source: SGS Economics and Planning, 2015

Floorspace projections

Penshurst St/Victoria Avenue retail centre is projected to require an additional 5,538 sqm of floorspace to 2041. The retail modelling has identified demand for an additional 1,800 sqm of retail floorspace within the Penshurst St/Victoria Avenue retail centre to 2031.

Capacity and demand gap analysis

The following table shows the gap analysis that compares the projected retail and employment floorspace demand with the benchmark capacity.

TABLE 46. VICTORIA AVE/ PENSHURST ST GAP ANALYSIS

		sqm
Current employment floorspace	*A*	27,228
Retail floorspace	*B*	26,335
Capacity for retail floorspace	*C*	26,335
Capacity for employment floorspace	*D*	27,228
Vacant floorspace+	*E*	2,071
Net retail demand	*F*	1,810
Net total employment demand	*G*	5,538
Retail gap/surplus	*(C-B+E)-F*	262
Total employment gap/surplus	*(D-A+E)-G*	-3,467

Source: SGS Economics and Planning, 2015
+ Vacancy is included in other floorspace measures above.

APPENDIX 4 SUPPLY-DEMAND GAP ANALYSIS

This section provides further detail on the method used in the demand forecasting and supply-demand gap analysis.

The supply-demand analysis involved undertaking the following steps:

- Calculate growth rates from BTS employment projections for the period 2011 to 2041
- Convert employment projections to floorspace demand
- Calculate floorspace capacity
- Compare estimated floorspace capacity to projected demand.

Employment forecasts by industry

The baseline employment forecasts (by ANZSIC industry) for each precinct are sourced from the Bureau of Transport Statistics (BTS). The forecasts provide an indication of the magnitude and distribution of future employment and account for future trends by industry. It is important to note that these projections are trend based and broadly speaking, assume that the historical patterns persist. They therefore do not account for any unforeseen structural changes and their applicability to the main study area in particular is limited as a result. For this reason, we model three demand scenarios, which are discussed in the next section.

The BTS employment forecast for Willoughby LGA is disaggregated to form five precincts: Artarmon Industrial, Chatswood, East Chatswood, and St Leonards/Crows Nest.

For each precinct (and the rest of the LGA), the baseline five-yearly employment forecast for 2011 and 2041 is shown in the table overleaf. The change in employment over the 30 year period is also. Yellow highlights in the tables shows the top three industries in each precinct, and red highlights indicate declining industries. Retail, health care, and professional services are currently the key industries in the LGA. With the majority of employment growth occurring in these three industries, this trend is expected to continue to 2041.

TABLE 47. EMPLOYMENT FORECASTS BY PRECINCT IN THE LGA

	2011					2041					Change between 2011 and 2041				
Industry	**Artarmon Industrial**	**Chatswood**	**East Chatswood**	**Rest of LGA**	**Total LGA**	**Artarmon Industrial**	**Chatswood**	**East Chatswood**	**Rest of LGA**	**Total LGA**	**Artarmon Industrial**	**Chatswood**	**East Chatswood**	**Rest of LGA**	**Total LGA**
Agriculture, Forestry and Fishing	9	9	3	31	53	17	17	6	59	99	8	8	3	27	46
Mining	14	82	0	49	144	20	121	0	72	213	7	39	0	23	69
Manufacturing	1,267	735	499	940	3,442	1,391	1,149	459	1,265	4,264	124	414	-41	325	823
Electricity, Gas, Water and Waste Services	111	17	27	297	452	155	24	38	415	632	44	7	11	118	179
Construction	702	1,625	306	1,774	4,407	968	2,241	422	2,447	6,077	266	616	116	673	1,670
Wholesale Trade	870	910	763	926	3,470	868	909	762	926	3,465	-1	-1	-1	-1	-5
Retail Trade	961	3,390	419	1,897	6,668	1,302	4,591	567	2,569	9,029	340	1,201	148	672	2,361
Accommodation and Food Services	144	1,316	42	1,062	2,563	199	1,816	58	1,466	3,539	55	501	16	405	976
Transport, Postal and Warehousing	289	165	42	860	1,356	358	205	52	1,067	1,682	69	40	10	207	326
Information Media and Telecommunications	1,410	1,541	143	1,971	5,064	2,092	2,286	212	2,924	7,514	682	745	69	954	2,450
Financial and Insurance Services	154	1,049	45	1,305	2,552	180	1,226	53	1,525	2,984	26	177	8	221	432
Rental, Hiring and Real Estate Services	240	411	52	678	1,381	306	523	66	863	1,758	66	112	14	185	377
Professional, Scientific and Technical Services	1,070	3,259	292	4,986	9,607	1,297	3,951	354	6,046	11,649	227	693	62	1,060	2,042
Administrative and Support Services	250	867	68	801	1,987	353	1,222	96	1,129	2,799	102	355	28	328	813
Public Administration and Safety	71	1,052	80	751	1,955	83	1,221	93	871	2,268	11	169	13	120	313
Education and Training	42	576	27	2,078	2,723	59	817	39	2,946	3,861	18	241	11	868	1,138
Health Care and Social Assistance	248	1,782	74	7,680	9,784	378	2,715	112	11,698	14,902	130	932	39	4,018	5,118
Arts and Recreation Services	26	248	37	390	701	30	287	43	452	812	4	39	6	62	111
Other Services	724	505	194	882	2,304	975	680	261	1,188	3,104	251	175	67	306	800
Unclassified	223	461	139	781	1,604	267	551	167	935	1,920	44	91	27	154	315
TOTAL	**8,824**	**20,000**	**3,253**	**30,140**	**62,217**	**11,297**	**26,553**	**3,859**	**40,862**	**82,572**	**2,473**	**6,553**	**606**	**10,722**	**20,354**

Source: BTS (2014), SGS calculations

Estimating floorspace demand

The floorspace audit was conducted using both ANZSIC industry categories and broad land-use categories. Floorspace demand is derived by applying each precinct's BTS employment growth rates (by ANZSIC industry) to each precinct's recorded floorspace (by ANZSIC industry)[17]. This assumes there is a proportional relationship between jobs and floorspace and that this remains unchanged over time.

Floorspace demand by ANZSIC and SGS broad land use (BLC) is reported for each precinct on the following page. They provide a better indication of land-use needs than ANZSIC industry categories because many industries are likely have similar or multiple land-uses. The SGS model assumes that the relationship between ANZSIC industries and BLCs remain unchanged over time. This is a reasonable assumption over the medium to long term, though technological change could imply changes in demand for land-uses.

Table 48 and Table 49 show current and projected floorspace demand by ANZSIC industry, in 2014 and 2041 (estimated) respectively. Within these tables, the industry codes are as follows:

A	Agriculture, Forestry and Fishing
B	Mining
C	Manufacturing
D	Electricity, Gas, Water and Waste Services
E	Construction
F	Wholesale Trade
G	Retail Trade
H	Accommodation and Food Services
I	Transport, Postal and Warehousing
J	Information Media and Telecommunications
K	Financial and Insurance Services
L	Rental, Hiring and Real Estate Services
M	Professional, Scientific and Technical Services
N	Administrative and Support Services
O	Public Administration and Safety
P	Education and Training
Q	Health Care and Social Assistance
R	Arts and Recreation Services
S	Other Services

Table 50 shows growth in floor space. Consistent with the employment projections retail, accommodation and food, and professional services are expected to grow strongly. Chatswood and Artarmon precincts are projected to experience the most growth in the LGA.

Table 51 shows growth in floor space by Broad Land-use Category (BLC). Top two BLCs in each precinct are highlighted. Given projected growth in retail, health care, food and accommodation, and professional services industries, Pure Office (PO) and Shopping Centre (SC) land-use floor space is projected to grow strongly.

Even though industry forecasts show some contraction in East Chatswood in Mining and Manufacturing industries, growth in other land-uses off-set the decline in these industries. This illustrates the importance of BLC floor space forecasts, as opposed to industry forecasts.

[17] The BTS employment growth rates were applied to building-level ANZSIC category floorspace from the audit. We then apply the current land-use (BLC) profile to the ANZSIC floorspace for that building to derive its land-use distribution. As such, the current land-use profile of each building is assumed to remain unchanged over time. Lastly, buildings within a precinct are aggregated to derive precinct floorspace demand.

TABLE 48. FLOORSPACE (SQM) AT 2014 – ANZSIC INDUSTRIES

Projected - 2041	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	TOTAL
156- 174 Victoria Ave	0	0	0	0	0	483	1,586	1,117	0	0	0	195	75	98	0	0	0	0	0	3,554
Artarmon	0	0	0	0	0	925	2,755	3,122	379	232	417	470	509	717	0	0	4,085	1,444	3,461	18,516
Artarmon Industrial	0	326	37,346	11,296	15,694	114,967	92,647	7,556	27,037	75,987	10,729	18,054	127,388	156,637	5,922	10,619	3,923	2,730	88,042	806,900
Castlecrag	0	0	0	0	0	0	3,747	1,708	0	0	0	186	1,340	626	0	0	563	0	794	8,964
Chatswood	0	0	3,873	0	279	884	204,853	120,844	4,623	64,218	35,079	10,408	117,300	147,177	32,821	16,408	91,915	26,007	31,334	908,024
Cnr Boundary and Penshurst, Roseville	0	0	0	0	0	54	1,872	0	0	0	0	258	0	464	0	0	0	0	0	2,647
Deepwater Road, Castle Cove	0	0	0	0	0	0	318	684	0	0	0	137	0	0	0	0	462	556	405	2,560
Denawen Ave, Castle Cove	0	0	0	0	0	166	520	0	0	0	0	0	0	0	0	0	225	182	198	1,292
East Chatswood Industrial Area	0	0	18,456	1,174	8,508	79,496	69,205	1,588	0	13,607	1,327	9,393	34,413	45,937	3,415	3,488	0	9,776	19,402	319,185
Eastern Valley way Castle Cove	0	0	0	0	0	155	1,257	343	0	0	0	0	0	178	0	169	171	0	296	2,569
Fullers Road Greville Street	0	0	115	0	0	0	65	0	0	0	0	0	123	0	0	46	146	0	64	558
High Street	0	0	0	0	0	359	2,145	1,212	0	0	0	695	711	406	0	0	0	0	160	5,689
Lane Cove Industrial	0	0	9,243	0	0	4,999	0	0	0	0	0	0	0	735	0	0	0	0	0	14,977
Mowbray Lane Cove North	0	0	0	0	301	0	338	126	0	0	0	0	0	0	99	0	0	0	0	865
Northbridge	0	0	0	0	0	721	15,438	8,975	926	0	0	1,097	5,858	1,961	0	759	10,051	374	2,566	48,727
Northbridge East	0	0	0	0	0	0	205	419	0	0	0	0	45	0	0	0	129	0	231	1,029
Pacific Highway Boudary Street Chatswood	0	0	0	638	0	0	5,500	0	0	0	0	0	1,029	0	0	0	0	0	170	7,337
Pacific Hwy Chatswood	631	0	0	0	0	977	9,156	2,397	0	0	0	0	0	487	0	0	0	287	1,741	15,676
Penshurst Mowbray	0	0	0	0	151	4,011	7,135	845	529	0	0	768	7,347	2,703	0	0	1,159	65	2,358	27,071
St Leonards	0	0	2,583	0	0	2,104	3,538	5,447	3,231	11,142	17,415	1,079	55,521	17,248	4,612	5,572	2,916	442	2,673	135,523
Victoria Avenue Penshurst	0	0	0	0	785	2,305	10,255	6,551	236	0	570	1,989	0	2,176	0	0	606	197	1,500	27,169
Willoughby Road	0	0	1,045	953	523	992	8,397	4,986	0	578	0	553	1,771	2,590	0	0	636	312	1,865	25,200
Willoughby Road, Naremburn	0	0	0	0	0	205	2,059	1,287	0	0	0	0	320	203	0	0	86	291	214	4,666
TOTAL	**631**	**326**	**72,661**	**14,062**	**26,240**	**213,803**	**442,991**	**169,208**	**36,963**	**165,764**	**65,538**	**45,282**	**353,750**	**380,343**	**46,869**	**37,062**	**117,073**	**42,663**	**157,473**	**2,388,701**

Source: SGS Economics and Planning (2015), using SGS land audit data.

TABLE 49. FLOORSPACE (SQM) AT 2041 – ANZSIC INDUSTRIES

Projected - 2041	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	TOTAL
156- 174 Victoria Ave	0	0	0	0	0	483	1,586	1,117	0	0	0	195	75	98	0	0	0	0	0	3,554
Artarmon	0	0	0	0	0	925	2,755	3,122	379	232	417	470	509	717	0	0	4,085	1,444	3,461	18,516
Artarmon Industrial	0	326	37,346	11,296	15,694	114,967	92,647	7,556	27,037	75,987	10,729	18,054	127,388	156,637	5,922	10,619	3,923	2,730	88,042	806,900
Castlecrag	0	0	0	0	0	0	3,747	1,708	0	0	0	186	1,340	626	0	0	563	0	794	8,964
Chatswood	0	0	3,873	0	279	884	204,853	120,844	4,623	64,218	35,079	10,408	117,300	147,177	32,821	16,408	91,915	26,007	31,334	908,024
Cnr Boundary and Penshurst, Roseville	0	0	0	0	0	54	1,872	0	0	0	0	258	0	464	0	0	0	0	0	2,647
Deepwater Road, Castle Cove	0	0	0	0	0	0	318	684	0	0	0	137	0	0	0	0	462	556	405	2,560
Denawen Ave, Castle Cove	0	0	0	0	0	166	520	0	0	0	0	0	0	0	0	0	225	182	198	1,292
East Chatswood Industrial Area	0	0	18,456	1,174	8,508	79,496	69,205	1,588	0	13,607	1,327	9,393	34,413	45,937	3,415	3,488	0	9,776	19,402	319,185
Eastern Valley way Castle Cove	0	0	0	0	0	155	1,257	343	0	0	0	0	0	178	0	169	171	0	296	2,569
Fullers Road Greville Street	0	0	115	0	0	0	65	0	0	0	0	0	123	0	0	46	146	0	64	558
High Street	0	0	0	0	0	359	2,145	1,212	0	0	0	695	711	406	0	0	0	0	160	5,689
Lane Cove Industrial	0	0	9,243	0	0	4,999	0	0	0	0	0	0	0	735	0	0	0	0	0	14,977
Mowbray Lane Cove North	0	0	0	0	301	0	338	126	0	0	0	0	0	0	99	0	0	0	0	865
Northbridge	0	0	0	0	0	721	15,438	8,975	926	0	0	1,097	5,858	1,961	0	759	10,051	374	2,566	48,727
Northbridge East	0	0	0	0	0	0	205	419	0	0	0	0	45	0	0	0	129	0	231	1,029
Pacific Highway Boudary Street Chatswood	0	0	0	638	0	0	5,500	0	0	0	0	0	1,029	0	0	0	0	0	170	7,337
Pacific Hwy Chatswood	631	0	0	0	0	977	9,156	2,397	0	0	0	0	0	487	0	0	0	287	1,741	15,676
Penshurst Mowbray	0	0	0	0	151	4,011	7,135	845	529	0	0	768	7,347	2,703	0	0	1,159	65	2,358	27,071
St Leonards	0	0	2,583	0	0	2,104	3,538	5,447	3,231	11,142	17,415	1,079	55,521	17,248	4,612	5,572	2,916	442	2,673	135,523
Victoria Avenue Penshurst	0	0	0	0	785	2,305	10,255	6,551	236	0	570	1,989	0	2,176	0	0	606	197	1,500	27,169
Willoughby Road	0	0	1,045	953	523	992	8,397	4,986	0	578	0	553	1,771	2,590	0	0	636	312	1,865	25,200
Willoughby Road, Naremburn	0	0	0	0	0	205	2,059	1,287	0	0	0	0	320	203	0	0	86	291	214	4,666
TOTAL	**631**	**326**	**72,661**	**14,062**	**26,240**	**213,803**	**442,991**	**169,208**	**36,963**	**165,764**	**65,538**	**45,282**	**353,750**	**380,343**	**46,869**	**37,062**	**117,073**	**42,663**	**157,473**	**2,388,701**

Source: SGS Economics and Planning (2015), using SGS land audit data, and BTS (2014) employment forecasts.

TABLE 50. FLOORSPACE (SQM) GROWTH (2014 TO 2041) – ANZSIC INDUSTRIES

Growth in floor space	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	TOTAL
156- 174 Victoria Ave	0	0	0	0	0	-1	343	279	0	0	0	41	13	21	0	0	0	0	0	697
Artarmon	0	0	0	0	0	-2	596	780	49	44	40	99	89	153	0	0	1,222	193	695	3,958
Artarmon Industrial	0	114	1,598	2,317	4,218	-247	20,063	1,889	3,499	14,523	1,017	3,798	22,335	33,339	657	2,832	1,173	365	17,683	131,172
Castlecrag	0	0	0	0	0	0	811	427	0	0	0	39	235	133	0	0	168	0	159	1,973
Chatswood	0	0	1,233	0	75	-2	44,361	30,214	598	12,274	3,326	2,189	20,567	31,326	3,641	4,375	27,492	3,481	6,293	191,444
Cnr Boundary and Penshurst, Roseville	0	0	0	0	0	-0	405	0	0	0	0	54	0	99	0	0	0	0	0	558
Deepwater Road, Castle Cove	0	0	0	0	0	0	69	171	0	0	0	29	0	0	0	0	138	74	81	562
Denawen Ave, Castle Cove	0	0	0	0	0	-0	113	0	0	0	0	0	0	0	0	0	67	24	40	244
East Chatswood Industrial Area	0	-1,149	-2,103	241	2,286	-171	14,986	397	0	2,601	126	1,976	6,034	9,777	379	930	0	1,309	3,897	41,516
Eastern Valley way Castle Cove	0	0	0	0	0	-0	272	86	0	0	0	0	0	38	0	45	51	0	60	551
Fullers Road Greville Street	0	0	25	0	0	0	14	0	0	0	0	0	22	0	0	12	44	0	13	130
High Street	0	0	0	0	0	-1	464	303	0	0	0	146	125	86	0	0	0	0	32	1,156
Lane Cove Industrial	0	0	2,047	0	0	-9	0	0	0	0	0	0	0	156	0	0	0	0	0	2,195
Mowbray Lane Cove North	0	0	0	0	81	0	73	31	0	0	0	0	0	0	11	0	0	0	0	197
Northbridge	0	0	0	0	0	-1	3,341	2,244	120	0	0	231	1,027	417	0	203	3,006	50	515	11,152
Northbridge East	0	0	0	0	0	0	44	105	0	0	0	0	8	0	0	0	39	0	46	242
Pacific Highway Boudary Street Chatswood	0	0	0	131	0	0	1,190	0	0	0	0	0	180	0	0	0	0	0	34	1,536
Pacific Hwy Chatswood	211	0	0	0	0	-2	1,981	599	0	0	0	0	0	104	0	0	0	38	349	3,281
Penshurst Mowbray	0	0	0	0	40	-7	1,544	211	69	0	0	162	1,288	575	0	0	347	9	473	4,711
St Leonards	0	0	955	0	0	19	787	1,292	378	1,961	2,009	222	9,455	3,409	427	1,561	872	66	493	23,906
Victoria Avenue Penshurst	0	0	0	0	211	-4	2,219	1,638	31	0	54	418	0	463	0	0	181	26	301	5,538
Willoughby Road	0	0	231	195	140	-2	1,817	1,246	0	111	0	116	310	551	0	0	190	42	374	5,324
Willoughby Road, Naremburn	0	0	0	0	0	-0	445	322	0	0	0	0	56	43	0	0	26	39	43	974
TOTAL	**211**	**-1,035**	**3,986**	**2,885**	**7,052**	**-429**	**95,940**	**42,235**	**4,743**	**31,514**	**6,571**	**9,520**	**61,743**	**80,692**	**5,115**	**9,958**	**35,017**	**5,717**	**31,581**	**433,016**

Source: SGS Economics and Planning (2015), using SGS land audit data, and BTS (2014) employment forecasts.

TABLE 51. FLOORSPACE (SQM) GROWTH (2014 TO 2041) – BROAD LAND USE

Growth in floor space	AR	DL	DR	FBR	FBS	FL	HIM	IOW	LFR	LHE	LI	LSI	OR	PO	RHE	SC	SM	SR	SS	TR	US	TOTAL
156- 174 Victoria Ave	0	0	0	83	405	0	0	0	132	0	0	0	63	0	0	0	0	13	0	0	0	697
Artarmon	0	2,284	0	68	889	0	0	0	0	0	0	0	254	225	0	0	0	239	0	0	0	3,958
Artarmon Industrial	5,603	3,749	10,658	233	964	6,767	2,200	29,362	11,826	0	3,506	29,521	1,645	19,438	0	0	0	1,055	0	0	4,647	131,172
Castlecrag	0	275	0	326	175	0	0	0	0	0	0	107	48	128	0	0	914	0	0	0	0	1,973
Chatswood	1,837	22,034	2,214	1,312	7,430	152	0	0	442	8,652	0	78	6,606	82,827	0	49,633	715	7,511	0	0	0	191,444
Cnr Boundary and Penshurst, Roseville	0	0	0	0	0	0	0	0	0	0	0	0	558	0	0	0	0	0	0	0	0	558
Deepwater Road, Castle Cove	0	141	0	0	91	0	0	0	0	0	0	0	0	0	0	0	0	331	0	0	0	562
Denawen Ave, Castle Cove	0	0	0	69	0	0	0	0	0	0	0	0	0	0	0	0	0	175	0	0	0	244
East Chatswood Industrial Area	244	919	0	0	0	268	0	21,697	8,645	0	365	4,026	354	3,682	0	0	0	927	148	0	241	41,516
Eastern Valley way Castle Cove	0	161	0	0	0	0	0	0	0	0	0	0	391	0	0	0	0	0	0	0	0	551
Fullers Road Greville Street	0	104	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0	0	0	130
High Street	0	0	0	826	0	0	0	0	0	0	0	0	0	330	0	0	0	0	0	0	0	1,156
Lane Cove Industrial	0	0	0	0	0	153	1,982	0	0	0	59	0	0	0	0	0	0	0	0	0	0	2,195
Mowbray Lane Cove North	0	0	0	84	0	0	0	0	0	0	0	112	0	0	0	0	0	0	0	0	0	197
Northbridge	0	2,293	0	224	1,017	0	0	0	0	0	0	0	1,507	780	0	3,603	0	1,727	0	0	0	11,152
Northbridge East	0	0	0	18	159	0	0	0	0	0	0	0	0	0	0	0	0	65	0	0	0	242
Pacific Highway Boudary Street Chatswood	815	34	0	0	0	0	0	0	0	0	0	0	0	88	0	0	0	92	376	0	131	1,536
Pacific Hwy Chatswood	434	197	0	0	599	0	0	0	1,443	0	0	425	75	0	0	0	0	0	108	0	0	3,281
Penshurst Mowbray	0	862	0	346	168	0	0	0	332	0	0	460	1,147	1,309	0	0	0	88	0	0	0	4,711
St Leonards	0	0	0	0	711	0	0	0	0	0	0	406	563	19,500	1,700	0	0	649	0	378	0	23,906
Victoria Avenue Penshurst	0	312	0	989	1,775	0	0	0	0	0	0	0	1,305	510	0	0	0	559	88	0	0	5,538
Willoughby Road	604	488	0	151	1,256	24	0	111	0	0	266	354	1,414	286	0	0	0	271	99	0	0	5,324
Willoughby Road, Naremburn	0	39	0	347	348	0	0	0	0	0	0	0	118	78	0	0	0	44	0	0	0	974
TOTAL	9,537	**33,892**	**12,872**	**5,076**	**15,985**	**7,365**	**4,182**	**51,169**	**22,821**	**8,652**	**4,196**	**35,516**	**16,046**	**129,182**	**1,700**	**53,236**	**1,628**	**13,747**	**818**	**378**	**5,019**	**433,016**

Source: SGS Economics and Planning (2015), using SGS land audit data, and BTS (2014) employment forecasts.
Note that 2014 and 2041 BLC forecast are not shown to reduce repetition.

Estimating floorspace capacity

Note that an alternative process was adopted for the purpose of calculating floorspace capacity and the gap analysis for local centres (see retail centre section) and therefore the method outlined below is only relevant to the following centres:

- Chatswood
- St Leonards
- Artarmon Industrial
- East Chatswood Industrial Area
- Lane Cove Industrial
- Pacific Hwy Chatswood
- Pacific Highway Boundary Street Chatswood

SGS has excluded residential lots, infrastructure lots (owned by State or council for community purposes) and any 'under development' lots as advised by council in this analysis. These method assume that all lots will be developed just for commercial purposes and excludes the impact of shop top housing when estimating net capacity.

The two separate methods have been used to derive the net floorspace capacity in the above centres:

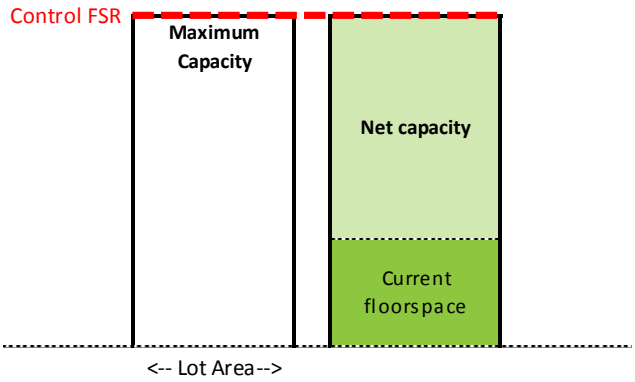
- Method 1: Net capacity estimated by assuming only sites with <60% of the maximum floorspace implied by the FSR controls will be able to realise the additional capacity in the controls
- Method 2: Net capacity estimated based on 60th percentile FSR with redevelopment potential considerations

Note that method 2 only applies to Artarmon Industrial and East Chatswood Industrial Areas, whereas method 1 applies to the remaining centres.

Method 1

The net capacity is calculated by taking the difference between the theoretical maximum capacity implied by the FSR controls and current floorspace. This calculation is illustrated in Figure 123 below.

FIGURE 123. NET CAPACITY CALCULATION



Source: SGS Economics and Planning, 2015

However, under this method, it is assumed that only the sites that have less than 60 percent of the maximum floorspace implied by the FSR control in the LEP would be able to realise the additional capacity in the controls. This is to reflect the likely yield uplift required to incentivise the redevelopment of existing stock.

Also, the lots that are currently under public ownership or contain residential floorspace have been excluded from the capacity calculation. The current vacancy is added to the additional capacity in the controls to derive the floorspace capacity in Chatswood.

Method 2

As aforementioned, this method only applies to the industrial areas, where the majority of the existing lots are not built to the maximum capacity implied by the FSR. This is not surprising as industrial businesses require more parking, manoeuvring, storage or buffer areas that are important to the business even though these areas are not covered by floorspace.

This means that the actual FSRs for industrial areas such as Artarmon Industrial and East Chatswood are likely to be less than what the development controls allow if they continue to be utilised for similar purposes.

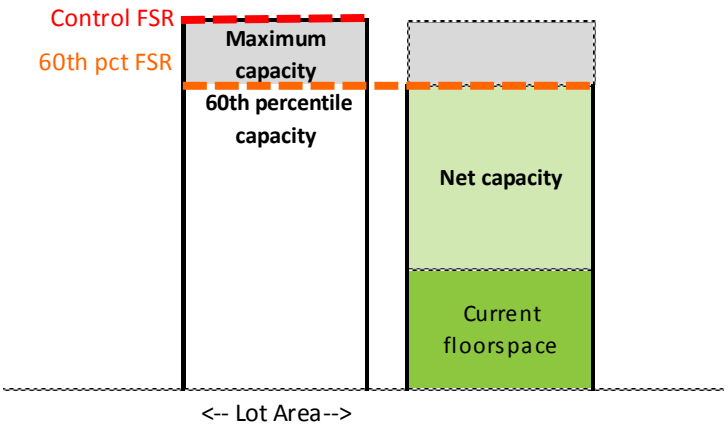
In order to establish an FSR that is more likely to represent the future use of industrial land, the current floorspace and lot sizes for each BLC (recorded through the audit) were analysed. Each lot and BLC were grouped into their respective FSR groups to better understand different levels of utilisation and efficiencies across different BLCs. Finally the 60th percentile FSR for each BLC was chosen to be the benchmark FSR. An example of the analysis is shown in FIGURE 124 below.

Figure 124. FSR distribution OF FREIGHT AND LOGISTICS BLC ACROSS THE PRECINCT

Source: SGS Economics and Planning, 2014

This method was applied for both lots under 1,000sqm and larger than 1,000sqm. This distinction in lot size is necessary as the lot utilisation and efficiency for smaller lots and larger lots are different across BLCs. For example, a freight and logistics operator may allocate more land area for parking and manoeuvring if a larger lot is available but this may not be the case on smaller lots. SGS also notes that the maximum FSR for each BLC is capped at 1 for lots smaller than 1,000 sqm and 1.5 for lots greater than 1,000 sqm. The method and summary of 60th percentile FSRs is provided in Figure 125 and Table 52 below.

FIGURE 125. NET CAPACITY BASED ON 60TH PERCENTILE FSR



Source: SGS Economics and Planning, 2015

TABLE 52. FSR BY BLC

BLC	BLC Name	Artarmon industrial		East Chatswood Industrial	
		Lot size <=1,000 sqm	Lot size >1,000 sqm	Lot size <=1,000 sqm	Lot size >1,000 sqm
AR	Automotive Retail	1.0	1.4	1.0	1.0
DL	Dispersed Local	1.0	1.3	1.0	1.3
DR	Dispersed Regional	1.0	1.5	NA	NA
FBR	Food and Beverage Retail	1.0	1.0	NA	NA
FBS	Food and Beverage Services	1.0	0.6	NA	NA
FL	Freight and Logistics	1.0	0.8	NA	0.7
HIM	Heavy Manufacturing	NA	0.2	NA	NA
IOW	Integrated Office Warehouses	1.0	1.5	1.0	1.4
LFR	Large Format Retail	1.0	1.5	1.0	1.5
LI	Light Industrial	1.0	1.3	1.0	0.9
LSI	Local Service Industrial	1.0	1.3	1.0	1.3
OR	Other Retail	1.0	1.0	0.6	0.7
PO	Pure Offices	1.0	1.5	1.0	1.0
SR	Service Retail	1.0	1.4	1.0	1.0
US	Urban Services	1.0	0.7	NA	0.8
VO	Vacant Buildings	1.0	1.4	NA	1.5
	Vacant Land	1.0	1.5	1.0	1.5

Source: SGS Economics and Planning estimates, 2014.
Note: VO - recorded as VO if a lot consists primary or completely vacant buildings during audit.

In addition, for those sites considered having significant capacity, a more detailed analysis on the redevelopment potential of those sites is conducted. As a result from this analysis, a number of sites under the following categories have been excluded from the capacity calculation, due to the reasons outlined below:

Integrated Office Warehouses (IOW) with more than 60 percent site coverage: IOWs that are greater than 60 percent in site coverage were excluded from the analysis. This is based on the observation from the land audit that IOWs generally require common areas for parking, loading and manoeuvring and generally covers up to 60 to 65 percent of lot area. Based on the façade and quality of these buildings, it is also assumed that IOW are recently developed and therefore unlikely to be redeveloped in the short to medium term (see example in Figure 126).

FIGURE 126. INTEGRATED OFFICE WAREHOUSES

Source: Google Earth 2014

Urban Services (US): Semi-permanent or permanent sites such as council depots, waste plants, concrete batching plants etc. have variable FSR but are generally unlikely to be redeveloped (Figure 127). In this scenario, the concrete batching site owned by Holcim Australia (along Marsden Street) and the broadcasting tower next to Fox Sports (bounded by Pacific Highway and Broadcast Way) were excluded from the capacity analysis.

FIGURE 127. URBAN SERVICES

Source: Google Earth, 2014

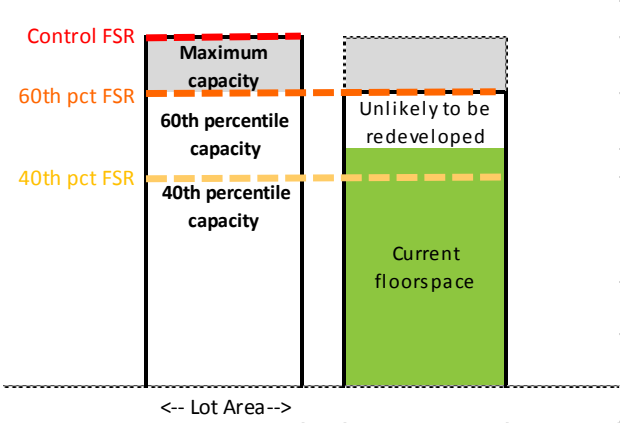
Automotive Retail: Automotive Retailers in general tend to require more outdoor areas for displaying vehicles and manoeuvring even though they are not actively used for employment. This is particularly significant for the Aldi Alto and Mitsubishi Alto Automotive Retailing site (bounded by Pacific highway and Alto Place). Majority of outdoor areas are being occupied by the business and therefore unlikely for intensification (Figure 128). Due to the above reasons, this site has been excluded from the capacity analysis.

FIGURE 128. AUTOMOTIVE RETAILING

Source: Google Earth, 2014

Insignificant floor space uplift after redevelopment: This is based on the view that property and land value are inherently related to employment floorspace as a result of productivity and land activation. For the purpose of this study, floorspace uplift is used as a proxy for land value uplift to determine whether a site is likely to be redeveloped or not. Generally speaking, if the uplift in floorspace is insignificant, it is more likely that a site will remain its current form due to profitability and land value uplift considerations. Anecdotally, the 40th percentile FSR is chosen as the cut off point to represent lots that are likely to remain its current form and unlikely to be redeveloped. Figure 129 below illustrates the capacity that has been excluded as some sites are unlikely to be redeveloped.

FIGURE 129. SITES UNLIKELY TO BE REDEVELOPED



Source: SGS Economics and Planning, 2015

The table below shows the results of the capacity analysis for the centres where this method was adopted. The total capacity within these centres ranges from 530,000 sqm to 709,000 sqm GFA across three scenarios.

TABLE 53. FLOOR SPACE CAPACITY SUMMARY (SQM)

Precinct/centre name	Method 1	Method 2	Adopted capacity
Artarmon Industrial		133,982	133,982
East Chatswood Industrial Area		50,867	50,867
Lane Cove Industrial	31,041		31,041
St Leonards	15,455		15,455
Pacific Hwy Chatswood	20,863		20,863
Chatswood	280,287		280,287
Pacific Highway Boundary Street Chatswood	13,611		13,611
Total			**546,106**

Source: SGS Economics and Planning, 2014

Gap analysis

To assess whether there is sufficient floorspace capacity available in each precinct to accommodate forecast floorspace demand to 2041, the estimated floor space capacity is compared to the forecast floor space demand to identify the gap in provision. Note that the third capacity scenario (i.e. the most conservative one) is used in the gap analysis.

As shown in the table below, while there is sufficient capacity across the LGA (under existing planning controls). It appears that St Leonards is expected to experience shortages, however the demand should be considered within the broader context of the centre and capacity across the entire centre. All other precincts which were analysed using this method are expected to have sufficient capacity.

TABLE 54. GAP ANALYSIS (SQM) – BASELINE

Precinct/centre name	Net capacity	Additional floor space demand	Gap: Capacity less demand
Artarmon Industrial	133,982	131,172	2,810
East Chatswood Industrial Area	50,867	41,516	9,351
Lane Cove Industrial	31,041	2,195	28,846
St Leonards	15,455	23,906	-8,451
Pacific Hwy Chatswood	20,863	3,281	17,582
Chatswood	280,287	191,444	88,843
Pacific Highway Boundary Street Chatswood	13,611	1,536	12,075
Total	**546,106**	**395,050**	**151,056**

Source: SGS Economics and Planning, 2013

Floor space demand scenarios

As noted earlier, the baseline BTS employment projections are trend based and broadly speaking, assume that the historical patterns persist. They therefore do not account for any unforeseen structural changes and their applicability to the main study area in particular is limited as a result. For this reason, we model three employment and floor space demand scenarios. These are described below.

Scenario 1: Lower demand for office space in Chatswood
This scenario assumes that the recent decline in Chatswood centre (336 office jobs during 2006 to 2011) persists till 2031, and then stabilises. All office jobs lost from Chatswood are absorbed by Macquarie Park. This scenario models to *2849 fewer office jobs in Chatswood* compared to the baseline forecast for 2041. It is assumed that these office jobs are from the following five service industries - finance and insurance, rental and real estate, professional services, administrative and support services, and public administration.

Scenario 2: Higher demand for office space in Chatswood, and higher employment in East Chatswood
This modelling scenario assumes that the North West Rail Link shuttle encourages office development in Chatswood, translating to 20 percent higher employment in office industries than baseline forecast at 2041. Assuming that this increase is a redistribution of metropolitan employment (that is, no overall increase), two thirds of the additional employment in Chatswood is leakage from growth in North Sydney, and one third of the increase is leakage from growth in St Leonards. This scenario translates to *1629 additional jobs in Chatswood centre* compared to the baseline forecast for 2041.

In addition, capacity constraints in Artarmon, and growth in mixed enterprise and demand for light industry in the Lower North Shore (from population growth), coupled with availability of sites at East Chatswood is assumed to facilitate growth in East Chatswood. This scenario models the increase in jobs at East Chatswood as a 60 percent increase on the total baseline growth for the precinct, and is distributed across the growth of all industries. This translates to a *total increase of 769 jobs in East Chatswood* compared to the baseline forecast for 2041. The total increase in employment in East Chatswood is due to leakage from North Sydney.

Scenario 3: Lower light industry employment in East Chatswood
In this scenario employment in light industry departs East Chatswood at an accelerated rate. Jobs in 2041 are 50 percent lower than the base case. This translates to *229 fewer jobs in East Chatswood* than the baseline forecast for 2041. Of the displaced jobs a third each is absorbed by Lane Cove, Northern Beaches and Western Sydney.

The table below shows the job forecasts for each scenario.

TABLE 55. JOB FORECASTS – SCENARIOS

Precinct	2011	2041				Change relative to baseline at 2041			
		Baseline	S1	S 2	S 3	Baseline	S1	S 2	S 3
Artarmon Industrial	8,824	11,297	11,297	11,297	11,297	0	0	0	0
Chatswood	20,000	26,553	23,704	28,182	26,553	0	-2,849	1,629	0
East Chatswood	3,253	3,859	3,859	4,629	3,630	0	0	769	-229
Lane Cove Industrial	5,834	7,137	7,137	7,137	7,213	0	0	0	76
Macquarie Park	53,777	76,004	78,853	76,004	76,004	0	2,849	0	0
North Sydney	51,616	64,980	64,980	63,894	64,980	0	0	-1,086	0
St Leonards/Crows Nest	31,629	42,556	42,556	42,013	42,556	0	0	-543	0
Rest of LGA	30,140	40,862	40,862	40,862	40,862	0	0	0	0
Northern Beaches	16,150	20,748	20,748	19,978	20,824	0	0	-769	76
Western Sydney	9,721	25,872	25,872	25,872	25,948	0	0	0	76
Total	**230,944**	**319,868**	**319,868**	**319,868**	**319,868**	**0**	**0**	**0**	**0**

Source: SGS Economics and Planning, 2015; using BTS (2014) employment forecasts.

Using the method described for the baseline floor space forecasts, the floor space demand for each scenario was estimated in the table below.

TABLE 56. FLOOR SPACE (SQM) FORECASTS – SCENARIOS

Growth in floor space	Baseline	Scenario 1	Scenario 2	Scenario 3
Artarmon Industrial	131,172	131,172	131,172	131,172
Chatswood	191,444	55,729	260,001	191,444
East Chatswood Industrial Area	41,516	41,516	108,047	32,288
Lane Cove Industrial	2,195	2,195	2,195	2,195
Pacific Highway Boundary Street Chatswood	1,536	1,536	1,536	1,536
Pacific Hwy Chatswood	3,281	3,281	3,281	3,281
St Leonards	23,906	23,906	19,720	23,906
TOTAL	**395,050**	**259,335**	**525,952**	**385,822**

Source: SGS (2015), using SGS land audit data, and BTS (2014) employment forecasts, which are adjusted for the scenarios.

And as before, estimated floor space capacity is compared to the forecast floor space demand at 2041 to identify the gap in provision. Results of the gap analysis for each scenario are shown below. Chatswood reveals shortages under Scenario 2, due to around 1,700 additional jobs. St Leonards shows shortages under all scenarios, and the baseline.

TABLE 57. GAP ANALYSIS (SQM) – SCENARIOS

Precinct/centre name	Max Capacity	Additional Floorspace Demand				Gap: Capacity less demand			
		Base	S1	S2	S3	Base	S1	S2	S3
Artarmon Industrial	133,982	131,172	131,172	131,172	131,172	2,810	2,810	2,810	2,810
East Chatswood Industrial	50,867	41,516	41,516	108,047	32,288	9,351	9,351	-57,180	18,579
Lane Cove Industrial	31,041	2,195	2,195	2,195	2,195	28,846	28,846	28,846	28,846
St Leonards	15,455	23,906	23,906	19,720	23,906	-8,451	-8,451	-4,265	-8,451
Pacific Hwy Chatswood	20,863	3,281	3,281	3,281	3,281	17,582	17,582	17,582	17,582
Chatswood	241,809	191,444	55,729	260,001	191,444	88,843	224,558	20,286	88,843
Pacific Highway Boudary Street Chatswood	13,611	1,536	1,536	1,536	1,536	12,075	12,075	12,075	12,075
Total	507,628	395,050	259,335	525,952	385,822	151,056	286,771	20,154	160,284

Source: SGS (2015)

APPENDIX 5: ANZSIC DEFINITIONS

TABLE 58. ANZSIC DIVISION DEFINITIONS

ANZSIC 1 digit category	Definition
Agriculture, forestry and fishing	Units mainly engaged in growing crops, raising animals, growing and harvesting timber, and harvesting fish and other animals from farms or their natural habitats. The division makes a distinction between two basic activities: production and support services to production. Included as production activities are horticulture, livestock production, aquaculture, forestry and logging, and fishing, hunting and trapping
Mining	Units that mainly extract naturally occurring mineral solids, such as coal and ores; liquid minerals, such as crude petroleum; and gases, such as natural gas. The term mining is used in the broad sense to include underground or open cut mining; dredging; quarrying; well operations or evaporation pans; recovery from ore dumps or tailings as well as beneficiation activities (i.e. preparing, including crushing, screening, washing and flotation) and other preparation work customarily performed at the mine site, or as a part of mining activity.
Manufacturing	Units mainly engaged in the physical or chemical transformation of materials, substances or components into new products (except agriculture and construction). The materials, substances or components transformed by units in this division are raw materials that are products of agriculture, forestry, fishing and mining, or products of other manufacturing units
Electricity, gas, water and waste services	Units engaged in the provision of electricity; gas through mains systems; water; drainage; and sewage services. This division also includes units mainly engaged in the collection, treatment and disposal of waste materials; remediation of contaminated materials (including land); and materials recovery activities.
Construction	Units mainly engaged in the construction of buildings and other structures, additions, alterations, reconstruction, installation, and maintenance and repairs of buildings and other structures.
Wholesale trade	Units mainly engaged in the purchase and onselling, the commission-based buying, and the commission-based selling of goods, without significant transformation, to businesses.
Retail trade	Units mainly engaged in the purchase and onselling, the commission-based buying, and the commission-based selling of goods, without significant transformation, to the general public. The Retail Trade Division also includes units that purchase and onsell goods to the general public using non-traditional means, including the internet. Units are classified to the Retail Trade Division in the first instance if they buy goods and then onsell them (including on a commission basis) to the general public
Accommodation and food services	Units mainly engaged in providing short-term accommodation for visitors. Also included are units mainly engaged in providing food and beverage services, such as the preparation and serving of meals and the serving of alcoholic beverages for consumption by customers, both on and off-site.
Transport, postal and warehousing	Units mainly engaged in providing transportation of passengers and freight by road, rail, water or air. Other transportation activities such as postal services, pipeline transport and scenic and sightseeing transport are included in this division.
Information media and telecommunications	Units mainly engaged in: – creating, enhancing and storing information products in media that allows for their dissemination – transmitting information products using analogue and digital signals (via electronic, wireless, optical and other means) – providing transmission services and/or operating the infrastructure to enable the transmission and storage of information and information products.
Financial and insurance services	Units mainly engaged in financial transactions involving the creation, liquidation, or change in ownership of financial assets, and/or in facilitating financial transactions.
Rental, hiring and real estate services	Units mainly engaged in renting, hiring, or otherwise allowing the use of tangible or intangible assets (except copyrights), and units providing related services.
Professional, scientific and technical services	Units mainly engaged in providing professional, scientific and technical services. Units engaged in providing these services apply common processes where labour inputs are integral to the production or service delivery. Units in this division specialise and sell their expertise. In most cases, equipment and materials are not major inputs. The activities undertaken generally require a high level of expertise and training and formal (usually tertiary level) qualifications

Administrative and Support Services	Units mainly engaged in performing routine support activities for the day-to-day operations of other businesses or organisations.
Public Administration and Safety	Units mainly engaged in Central, State or Local Government legislative, executive and judicial activities; in providing physical, social, economic and general public safety and security services; and in enforcing regulations. Also included are units of military defence, government representation and international government organisations.
Education and Training	Units mainly engaged in the provision and support of education and training, except those engaged in the training of animals e.g. dog obedience training, horse training.
Health Care and Social Assistance	Units mainly engaged in providing human health care and social assistance. Units engaged in providing these services apply common processes, where the labour inputs of practitioners with the requisite expertise and qualifications are integral to production or service delivery
Arts and Recreation Services	Units mainly engaged in the preservation and exhibition of objects and sites of historical, cultural or educational interest; the production of original artistic works and/or participation in live performances, events, or exhibits intended for public viewing; and the operation of facilities or the provision of services that enable patrons to participate in sporting or recreational activities, or to pursue amusement interests.
Other Services	A broad range of personal services; religious, civic, professional and other interest group services; selected repair and maintenance activities; and private households employing staff. Units in this division are mainly engaged in providing a range of personal care services, such as hair, beauty and diet and weight management services; providing death care services; promoting or administering religious events or activities; or promoting and defending the interests of their members.

Source: Australian Bureau of Statistics, 2006

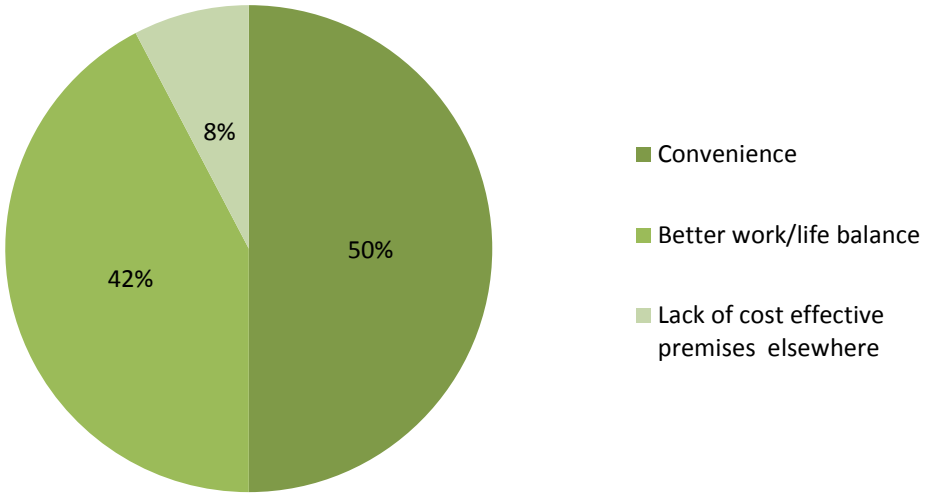
APPENDIX 6 BUSINESS SURVEY RESULTS

This section details the results from the business surveys conducted by Willoughby City Council.

Home Business Survey

Half of the home business survey participants indicated that the primary reason for choosing to locate a home was for convenience (refer to Figure 130). This response was followed by better work/life balance (42%). 8% of the participants identified the lack of cost effective premises elsewhere in the area as a driver for locating at home.

FIGURE 130. WHY DO YOU CHOOSE TO HAVE A HOME BUSINESS?

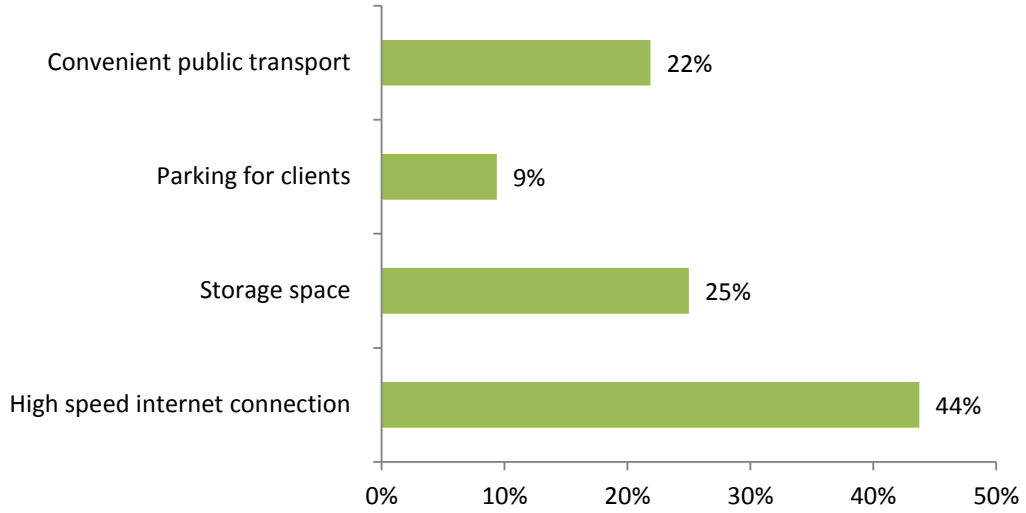


Source: SGS Economics and Planning using data provided by Willoughby City Council

Figure 131 indicates some of the key requirements for home business participants to operate. 44% of the participants indicated that access to a high speed internet connection was essential. Of the total survey participants, 25% included the need for storage space and 22% included convenient public transport.

The unavailability of high speed internet connection was listed by participants as a barrier to operating a home business. Other barriers included; children, unavailability of parking, having to clean the house for meetings and training, and the lack of a professional environment for client meetings. In relation to the parking, the units on Lane Cove side of Mowbray road were identified as experiencing a decrease in the availability of parking.

FIGURE 131. WHAT DO YOU REQUIRE FOR YOUR HOME BUSINESS TO OPERATE?



Source: SGS Economics and Planning using data provided by Willoughby City Council

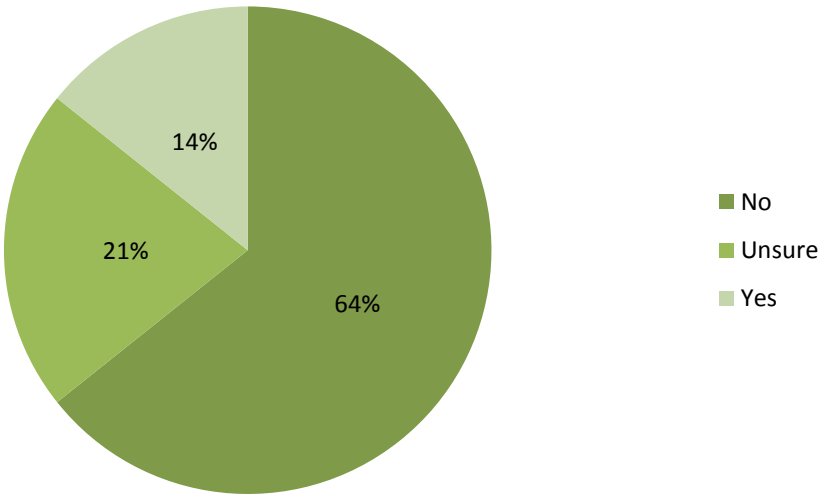
Council support for home based businesses

The participants listed a number of reasons as to how Council could support home based businesses. The NBN roll out and high speed internet connection were identified as key areas which Council could assist with. As discussed above, these were identified as key barriers which participants faced.

The participants also highlighted that Council has a role to address the availability of parking, supply of exhibition space and provide options for office waste recycling. Survey participants indicated that access is another issue affecting home based businesses, in particular the frequency of public transport during off peak periods.

Figure 132 details the responses to the question of whether participants intend to relocate in the future. The findings show that the majority (64%) of participants plan to remain working out of home, while 21% were unsure and 14% expressed the intention to relocate to a commercial premise.

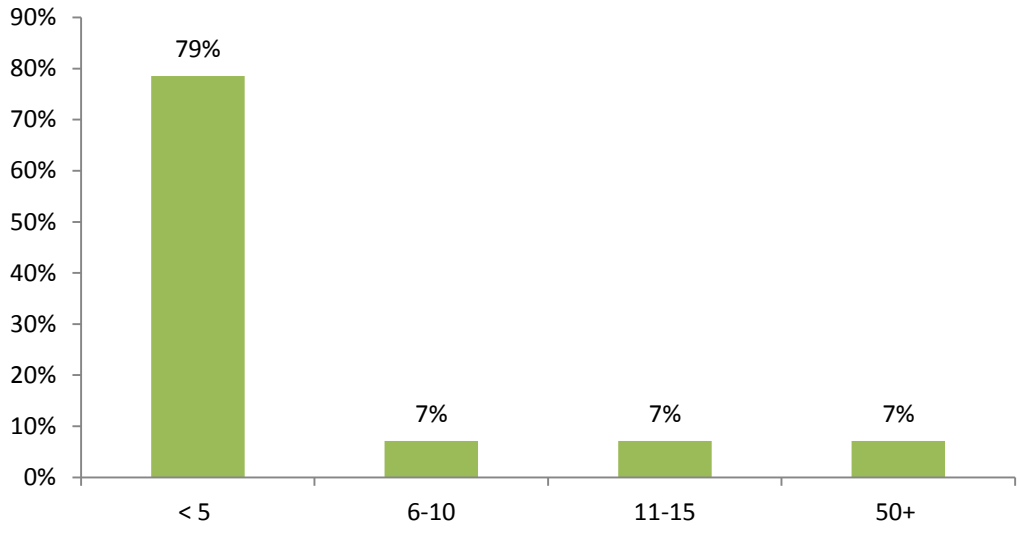
FIGURE 132. DO YOU PLAN TO MOVE INTO A COMMERCIAL PREMISES IN THE FUTURE?



Source: SGS Economics and Planning using data provided by Willoughby City Council

The survey found that of all the home businesses which participated in the survey, majority (79%) were small businesses with less than five employees (refer to Figure 133). It is likely that if home based businesses grew beyond five employees they would require additional space.

FIGURE 133. NUMBER OF EMPLOYEES



Source: SGS Economics and Planning using data provided by Willoughby City Council

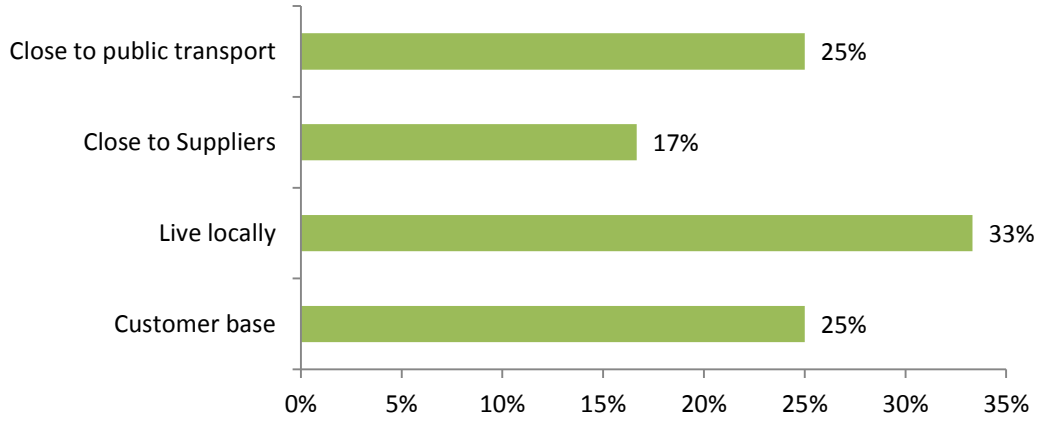
Further issues cited included Chatswood becoming crowded beyond capacity, decline in cleanliness and becoming disorderly, and becoming car dominant.

Industrial Business Survey

Artarmon/St Leonards Area

In the Artarmon/St Leonards area the main reasons participants gave for choosing that included proximity to their home (33% stated they live locally), followed by proximity to public transport (25%), the customer base (25%) and being close to suppliers (17%) (refer to Figure 134). Other reasons participants noted included proximity to Sydney freeway network, proximity to CBD, directors own the premises, proximity to associated companies and access to Sydney, North Sydney and Parramatta.

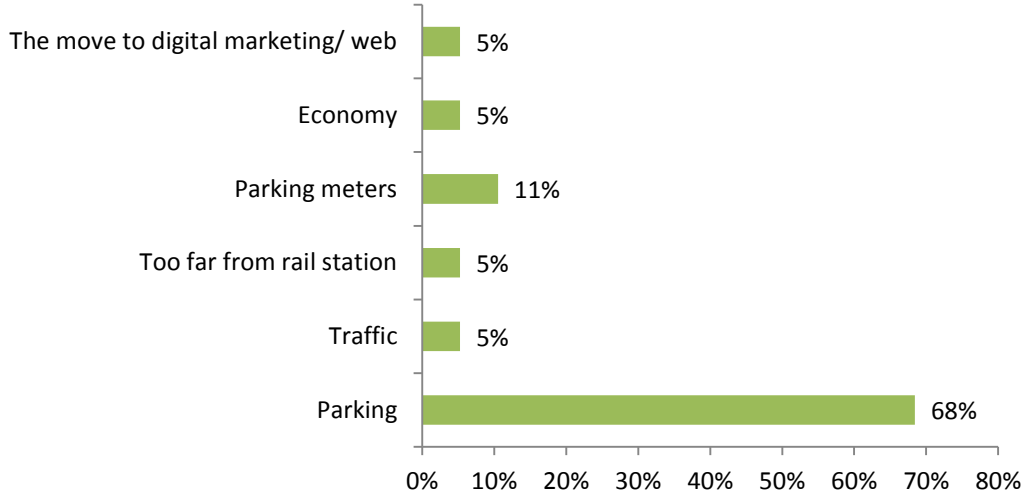
FIGURE 134. WHAT IS THE MAIN REASON FOR YOU TO LOCATE YOUR BUSINESS TO THE CENTRE



Source: SGS Economics and Planning using data provided by Willoughby City Council

The main issue identified by these businesses was parking (refer Figure 135), with 68% of participants listing this. 11% of participants indicated that parking meters were an issue, followed by the economy, the move to digital marketing/web, distance from railway stations and traffic.

FIGURE 135. WHAT ARE SOME OF THE MAIN ISSUES WHICH CURRENTLY AFFECT YOUR BUSINESS



Source: SGS Economics and Planning using data provided by Willoughby City Council

The survey findings indicate that 53% of participants do not own their own company whereas 47% identified that they do own their own business.

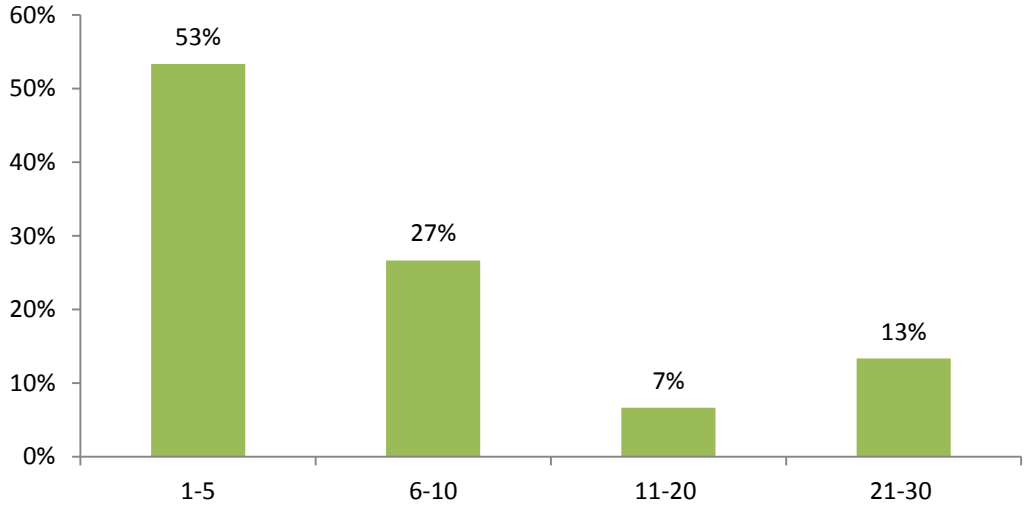
The location in which businesses experienced the most competition for space was identified as the Artarmon area itself, highlighting that Artarmon is considered to be a key area for industrial businesses. Bendigo, Sydney CBD, North Sydney, Macquarie Park, Melbourne and overseas were also noted by participants as competitor locations.

The most significant requirement for businesses in relation to location was parking. In particular, participants highlighted that there was the need for accessible parking for clients, free street parking and parking for trucks delivering cars to the area. Room for growth was also noted multiple times. Other requirements included innovation needs and a better road network.

The businesses surveyed within the industrial areas provided a range of services including car-related services, commercial photography, building design and management, sales and marketing, construction, computer related services, fast food, not-for-profit organisations, broadband related businesses, manufacturing and digital printing.

The majority (53%) of businesses surveyed were small businesses with less than five employees (refer to Figure 136) and all businesses had less than 30 employees. These results may not accurately reflect the opinions of all businesses located within the industrial precincts since the survey was skewed to small businesses.

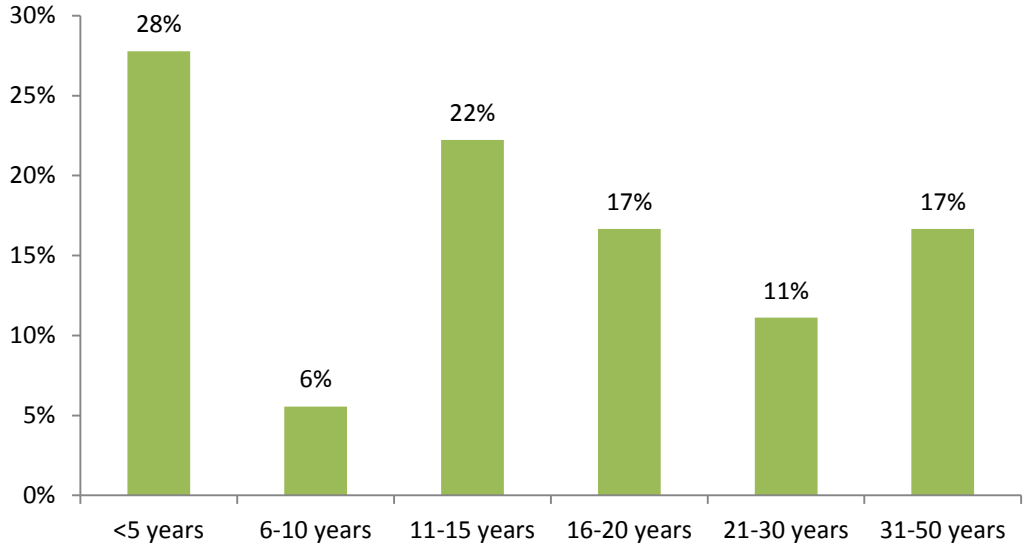
FIGURE 136. HOW MANY EMPLOYEES DOES YOUR BUSINESS HAVE?



Source: SGS Economics and Planning using data provided by Willoughby City Council

As illustrated in Figure 137, 28% of the businesses were surveyed were established within the last 5 years. However, overall the length of time that the businesses have been operating varies with some businesses operating for over 30 years.

FIGURE 137. HOW LONG HAS YOUR BUSINESS BEEN ESTABLISHED AT THIS LOCATION?

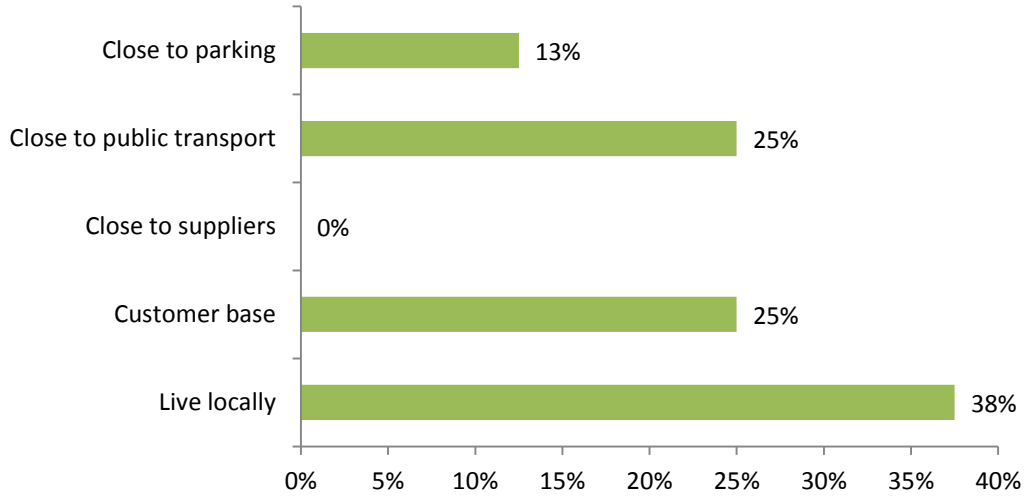


Source: SGS Economics and Planning using data provided by Willoughby City Council

East Chatswood, East Roseville Industrial Business

Figure 138 illustrates the main reasons cited by businesses for locating within the East Chatswood/East Roseville area. The majority of participants (38%) listed that living locally was the main reason. This was followed by the customer base (25%), proximity to public transport (25%) and proximity to parking (13%). Other motives participants noted included modern facilities and reasonable rates.

FIGURE 138. WHAT IS THE MAIN REASON FOR YOU TO LOCATE YOUR BUSINESS IN THIS CENTRE?



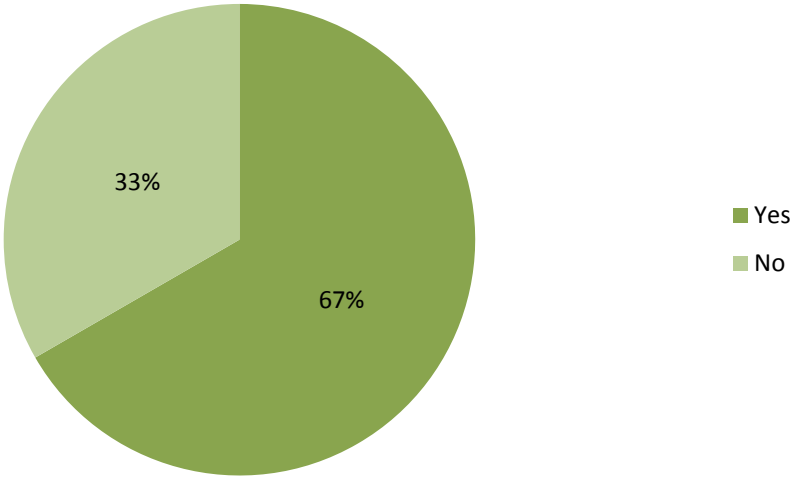
Source: SGS Economics and Planning using data provided by Willoughby City Council

Issues currently affecting businesses

The main issues identified by participants as affecting their business included parking and traffic congestion. In particular Smith St traffic was noted. Other issues were a lack of funds for further development, the reduction in the size of general garbage bins and the need for supermarket facilities. It is noted that some of the data here may be skewed due to the lack of participants.

As illustrated in Figure 139, 67% of businesses survey owned their premises.

FIGURE 139. DOES YOUR COMPANY OWN THE PROPERTY?



Source: SGS Economics and Planning using data provided by Willoughby City Council

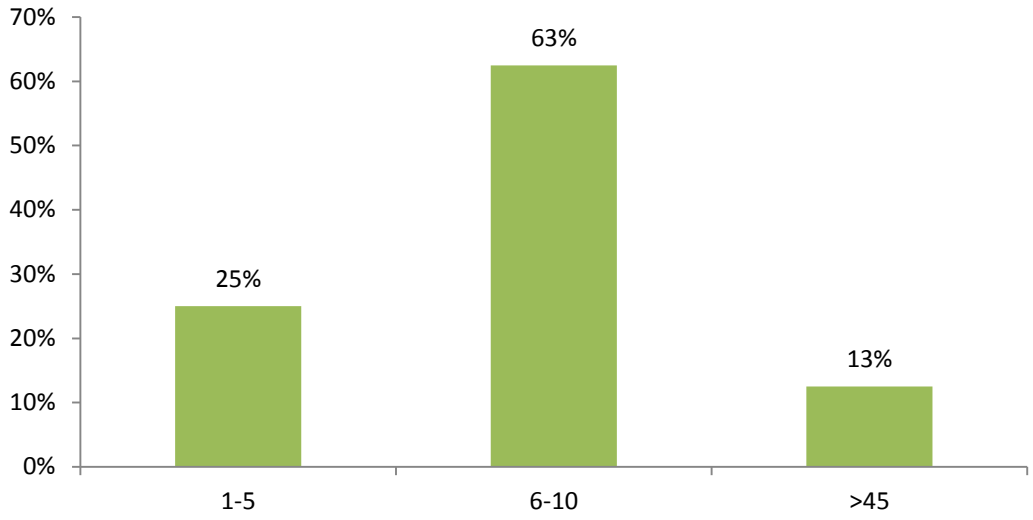
Participants noted that their biggest competitors were located in Riverstone, Brookvale, Artarmon, Victoria, Frenchs Forest and Victoria Ave.

Major requirements for businesses over the next 5 years
Businesses identified that access to parking and improved traffic conditions were major requirements for their businesses over the next five years. Other requirements identified include an NBN connection for high speed internet, less government restrictions and tax, economic confidence and a stable government.

Services or product offered by businesses
Businesses surveyed within the East Chatswood/ East Roseville area included commercial and wholesale clothing, sign manufacturing, hardware, IT, brand protection and marketing businesses.

Business size
As illustrated in Figure 140, the majority of businesses have 6-10 employees.

FIGURE 140. NUMBER OF EMPLOYEES

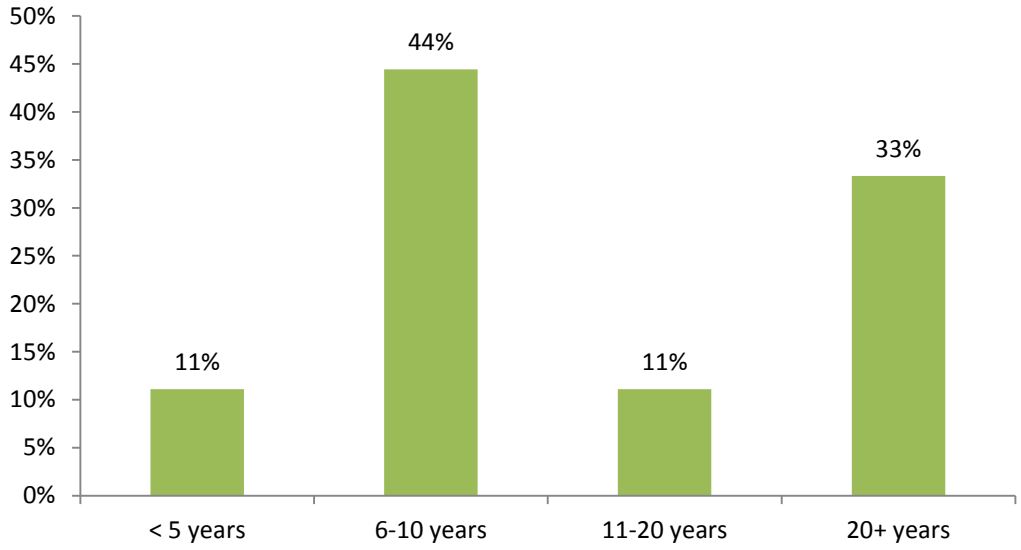


Source: SGS Economics and Planning using data provided by Willoughby City Council

Length of operation

As illustrated in Figure 141, a high proportion of businesses survey have been in operation for 6-10 years, and 33% of businesses have been in operation for 20 or more years.

FIGURE 141. HOW LONG HAS YOUR BUSINESS BEEN ESTABLISHED AT THIS LOCATION



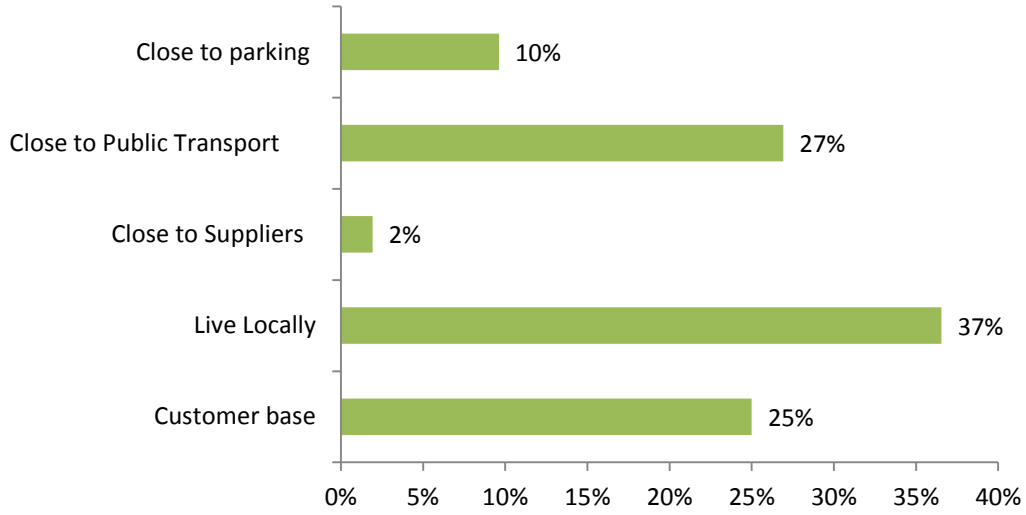
Source: SGS Economics and Planning using data provided by Willoughby City Council

Further comments from participants included a desire to vote in Council elections, work with the Council and concerns regarding gentrification of the area.

Local Business Survey

As illustrated in Figure 142, 37% of local businesses identified that living locally was the main reason for locating within Willoughby LGA. Other motives included proximity to public transport (27%), the customer base particularly in Chatswood and proximity to parking . Other reasons noted were the professional services available, the professional image of Chatswood as a business centre, amenities and having had a long-term establishment in the area.

FIGURE 142. WHAT IS THE MAIN REASON FOR YOU TO LOCATE YOUR BUSINESS IN THIS CENTRE



Source: SGS Economics and Planning using data provided by Willoughby City Council

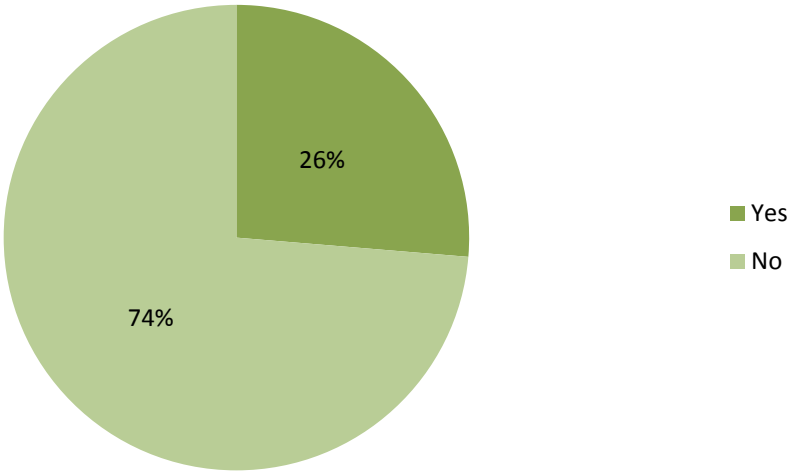
Main issues which currently affect local businesses

Survey participants noted that the key issues affecting their business were parking and congestion. Particular areas which were identified include Thomas St, Victoria Ave and Help St in Chatswood. Public transport and a lack of bicycle paths were also noted.

The economic issues identified by participants included uncertainty, falling income, cost of employment and taxation listed. Other issues affecting local business included utility access such as the NBN, red tape regulation and lack of flexible zoning. Another major issue cited was development in Chatswood being dominated by residential and less commercial being delivered. Concerns related to pressure being place on the supply of affordable commercial office space and its impact on the market. It is noted that some of the responses may be skewed due to the small number of participants.

As illustrated in Figure 143, 74% of participants own their own company.

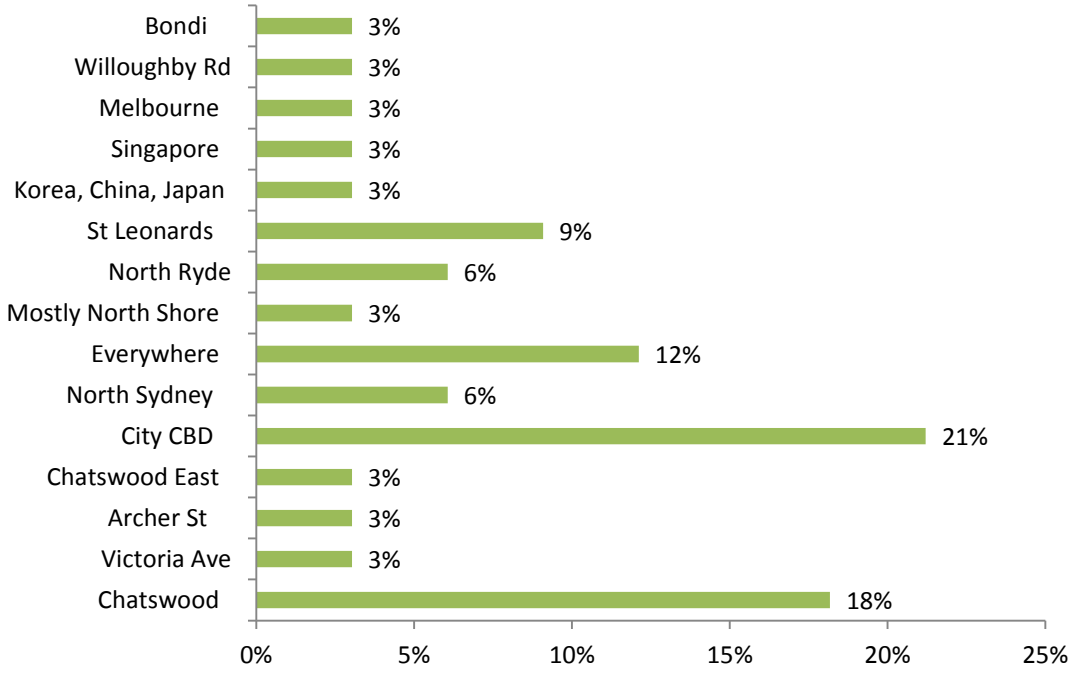
FIGURE 143. DOES YOUR COMPANY OWN THE BUSINESS



Source: SGS Economics and Planning using data provided by Willoughby City Council

As illustrated in Figure 144, the businesses surveyed identified that their competitors are mostly located in Sydney CBD, followed by Chatswood. Where the participant indicated everywhere, this meant that the type of industry was not confined to a particular location.

FIGURE 144. WHERE IS YOUR BIGGEST COMPETITOR LOCATED



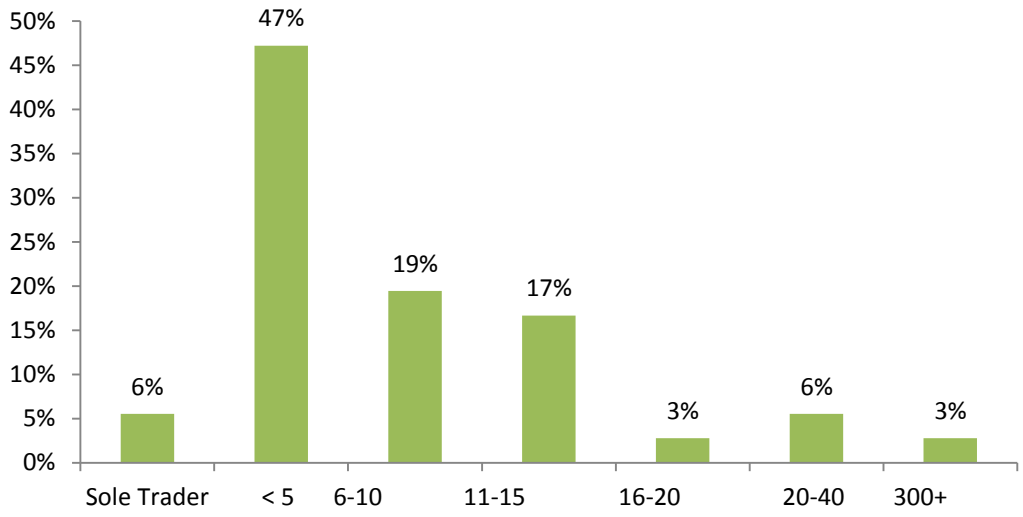
Source: SGS Economics and Planning using data provided by Willoughby City Council

What is the service or product that your business offers

The businesses surveyed included legal services, accounting and book keeping, health services, medical specialists and financial services. Other local businesses that participated included computer software and development, engineering design and consultancy, defence industries, commercial furniture and building fit-out services, retail, interpreting services, personal fitness training, labour hiring, video production, audit services, property management and development, hazardous waste recycling and risk advice management.

Figure 145 illustrates the number of employees within each business surveyed. The survey indicated that 47% of participants had less than five employees working in their business.

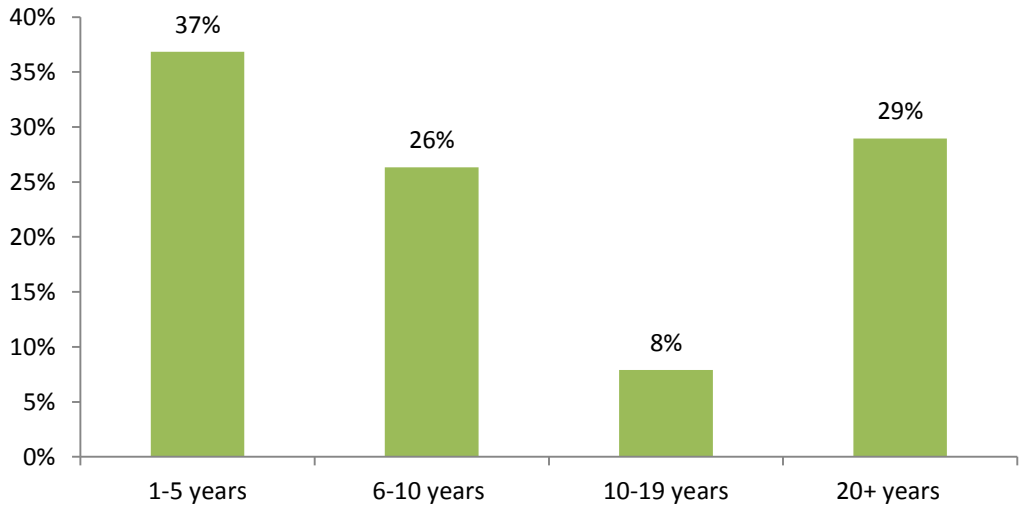
FIGURE 145. HOW MANY EMPLOYEES DOES YOUR BUSINESS HAVE



Source: SGS Economics and Planning using data provided by Willoughby City Council

Figure 146 highlights that 37% of businesses were established within the last 5 years, 29% of businesses were established 20 or more years ago and 26% of businesses surveyed were established 6-10 years ago which demonstrates that the businesses which were surveyed have been located in Willoughby LGA for both short and long terms.

FIGURE 146. HOW LONG HAS YOUR BUSINESS BEEN ESTABLISHED AT THIS LOCATION?



Source: SGS Economics and Planning using data provided by Willoughby City Council

Further comments made by local businesses included the need for Council to address street maintenance. Participants also wanted an amalgamation of local councils in NSW to improve efficiency and productivity.

APPENDIX 7: NCB ANALYSIS – TRAVEL COSTING MODEL

As aforementioned, the primary focus of the NCBT was to measure the differences in travel costs associated with different employment forecast scenarios. The following section outlines the inputs and method used to calculation the travel costs under different employment scenarios.

Inputs

The travel costing model used three types of data; cost estimates (adjusted to December 2014 dollar values[18]), network variables and journey to work data.

Cost estimates

- Public transport (PT) trips
  - Value of travel time (VTT) – the value of time for each non-working hour per person [$14.65 per hour[19]]
  - Fare charge[20] (FC) – the cost of ticket purchase [a function of distance travelled]
- Private vehicle trips
  - Value of travel time (VTT)– same as public transport VTT above [$14.65 per hour]
  - Vehicle operation cost (VOC) [21] – all cost associated with vehicle operation (resource costs, taxes, fuel excise, GST and sunk costs)
  - Congestions charge (CC) [22] – social costs from urban congestion [$0.32 per kilometre]

Network variables

- Public transport trips
  - Travel time matrix (TTM_{PT})[23] – Travel Zone to Travel Zone time matrix
  - Distance matrix (DM_{PT}) – direct distance Travel Zone to centre, distance matrix
- Private vehicle trips
  - Travel time matrix (TTM_{PV})[24] – Travel Zone to Travel Zone time matrix
  - Distance matrix (DM_{PV}) – SA2 x SA2 distance matrix

Journey to work

- Origin to Destination data[25] (Current mode split (CMS)) – number of workers from point A to point B by mode of travel. This dataset was used to generate workforce numbers and to calculate the proportion of public transport trips versus private vehicle trips for each centre.

Model

The method for calculating the travel costs for journeys to work at each centre is illustrated below.

[18] Australian Bureau of Statistics, Consumer price index, Australia, December 2014 catalogue website
[19] Transport for NSW 2013, pg 222, Principles and Guidelines for Economic Appraisal of Transport Investment and Initiatives
[20] SGS estimated fare costs
[21] Transport for NSW 2013, pg 231, Principles and Guidelines for Economic Appraisal of Transport Investment and Initiatives
[22] Transport for NSW 2013, pg 232, Principles and Guidelines for Economic Appraisal of Transport Investment and Initiatives
[23] Bureau of Transport Statistics, 2006 Travel time matrix – public transport (in vehicle)
[24] Bureau of Transport Statistics, 2006 Travel time matrix – Car (morning peak hour)
[25] Bureau of Transport Statistics, 2011 Origin to Destination by mode dataset, website

FIGURE 147. TRAVEL COSTING MODEL STRUCTURE

Inputs to model:

Cost estimates

VTT Value travel time: $14.51 per hour

FC Fare charge: ranging between $3.05 - $6.60

VOC Vehicle operation cost : $0.75 per vehicle kilometres travelled

CC Congestion charge : $0.30 per vehicle kilometres travelled

Network variables

TTM Travel time matrix - Public transport

DM Distance matrix - Public transport

TTM Travel time matrix - Private vehicle

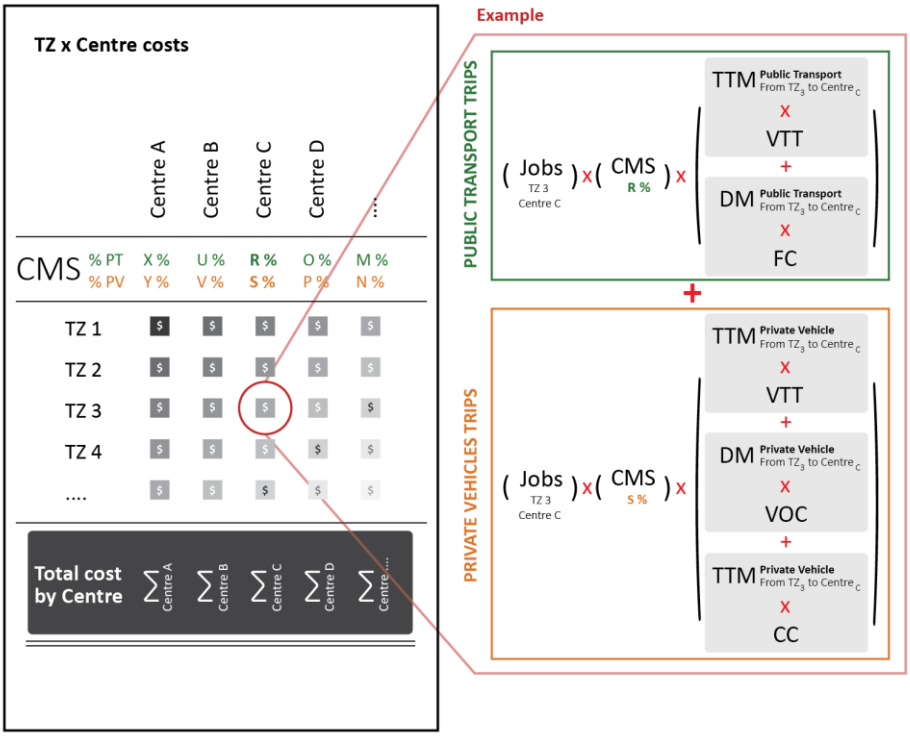
DM Distance matrix - Private vehicle

Journey to work

CMS Current mode split (at destination)

Jobs Current employment : origin - destination employment numbers by TZ11

Model structure:



Source: SGS Economics and Planning, 2015

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