Technical Note



Date 6 August 2008

Project No PB03178

Subject West Perth regeneration proposal –

Access, movement and car parking

1. Preamble

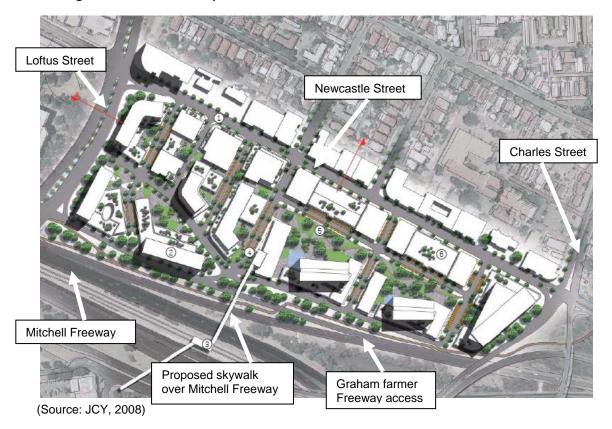
Sinclair Knight Merz (SKM) was contracted by Jones Coulter Young (JCY) to provide a review of access, movement and car parking requirements in the proposed redevelopment area to inform the West Perth Regeneration Master Plan. The principal objective of the Master Plan, in relation to access, movement and car parking, is:

"To create efficient, safe and comfortable systems of movement within the study area and identify the potential for transit oriented development"

JCY provided three different development proposals for the area. Transport advice in this report relates to the respective development yields. The development area is shown in Figure 1.



Figure 1 – The redevelopment area



2. Transit-Oriented Development (TOD)

Transit Oriented Developments are high-quality walking and cycling environments, which are anchored by rapid transit. The critical design characteristics of TOD, which contribute to reduced car dependence and use of cars, are high relative densities, mixing of land uses, excellent street network permeability, and a high-quality interface between pedestrian and cycling infrastructure, and public transport. Furthermore, high activity intensity provides good access for pedestrians and cyclists, and high potential patronage of public transport services.

In keeping with *Network City* planning principles, the proximity of the subject site to two train stations should be exploited. The redevelopment area is presently characterised by various showrooms and light industrial uses, many of which are single storey. Activity intensification will be in keeping with the central location of the subject site and there are no land use interfacing issues (i.e. where adjacent low density residential development would be dominated by higher density, mixed use development). Moreover, the site is located within one kilometre of City West train station, which is on the Perth-Fremantle rail line and Leederville train station, which is on the Perth-Joondalup rail line.

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However, there are some significant challenges to facilitating high-quality TOD. The subject site is adjacent to a confluence of major traffic arteries including Graham Farmer Freeway and Mitchell Freeway. Given a high-quality, legible and safe interface between pedestrian and cycling, and public transport infrastructure is an essential characteristic of TOD, existing deficiencies need to be addressed as part of redevelopment. In particular, it is SKM's opinion that the construction of the proposed skywalk across Mitchell Freeway is of critical importance, as it will contribute to making the redevelopment transit oriented rather than simply transit adjacent. Walking, cycling and public transport access and movement are discussed in more detail in later sections of this technical note.

In general, the following TOD planning principles relating to traffic and transport should apply to the Master Planning of the precinct:

- Dependency on and the use of cars should be reduced through a combination of good, safe access to public transport and constrained car parking supply
- A mix of residential development with commercial/ office and other activities should be provided to encourage a higher proportion of walking and cycling for short trips, and provide a range of destinations within the walkable catchment of City West and Leederville train stations
- A direct and permeable internal street layout should be provided to ensure legible vehicle and pedestrian/ cyclist movement within the precinct

3. Forecast development yields

JCY has provided yields relating to three development proposals. The first, defined as European-scale development, is characterised by 183,000m² gross floor area (GFA) of land uses (including apartments). This proposal includes ground floor and podium development. The second and third proposals, both defined as podium and tower developments, are characterised by 229,471m² GFA. The differences between proposals two and three relate principally to tower designs and do not affect yields. Yields by land use are shown in Table 1.

Table 1 – Yields according to redevelopment proposals

Land use	Estimated vehicle trips per day		
Land use	European-scale	Podium and tower	
Residential apartments	675	891	
Commercial/office	95,529m ² GFA	116,588m ² GFA	
Retail	3,176m ² GFA	3,176m ² GFA	

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Showroom 8,588m ² GFA 8,588m ² GFA
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4. Pedestrian and cycling access and movement

The quality of the existing pedestrian network is not good. Pedestrian safety and access to City West and Leederville train stations is compromised by poor infrastructure within the site and poor external linkages. In particular, there are major freeway exchanges immediately abutting the area and these are difficult for pedestrians and cyclists to negotiate.

Figure 2 shows Perth Bicycle Network infrastructure in the vicinity. Whilst there are signposted, shared paths parallel to the Mitchell Freeway and across the Loftus Street overpass, amenity is generally low. Moreover, the route to City West train station is circuitous and would be drastically improved if the proposed skywalk across Mitchell Freeway were to be shared use. Presently, Newcastle Street is considered a poor cycling environment (shown on the Perth Bicycle Network map as a pink road) and this will have to be addressed as part of precinct Master Planning.

In conjunction with cycling network improvements, a minimum of cycle parking bays should be provided within the precinct.



Figure 2 – Perth Bicycle Network in the vicinity of the redevelopment area



(Source: http://www.dpi.wa.gov.au/cycling/14679.asp, accessed 06/08/08)

A good practice example for provision of cycle parks associated with residential tenancies includes lengthening car parking bays by one metre and providing a secure cage at the end of the bay. If not used for storing cycles, the cage can function as a storage space for scooters. Commercial tenant cycle parks would largely be provided within buildings as part of end-of-trip facilities (which also include sufficient showers and lockers to serve the tenancy of each building). Visitor cycle bays should be provided adjacent to buildings and distributed throughout the precinct depending on the location of commerce and retail. SKM recommends the following rates of cycling parking provision:

- Residential 1 cycle bay per residence
- Commercial/ office (tenant) 1 cycle bay/ 200m² GFA
- Commercial/ office (visitor) 1 cycle bay/ 500m² GFA
- Retail/ showroom 1 cycle bay/ 200m² GFA

The following minimum supply of cycle parks is therefore derived:

- Residential 1,075 cycle bays
- \bullet Commercial/ office $-\,740$ (528 for tenants and 212 for the public) SINCLAIR KNIGHT MERZ

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- Retail/ showroom– 3 cycle bays
- Total 1,818 cycle bays

With respect for improving pedestrian safety, legibility and amenity, the provision of the skywalk is the most important external linkage required. However, improvements should also be made to infrastructure between the redevelopment area and Leederville train station. Principles for making these improvements would be as for improving infrastructure within the redevelopment area (see below).

Within the redevelopment area, the following principles relating to pedestrian network design should apply:

- Footpaths on both sides of streets, with sufficient widths to facilitate universal access
- Shade trees
- Street lighting
- Tactile paving, particularly at crossing points
- Safe crossing points with ramped kerbs to enable universal access
- Pedestrian refuges within medians at crossing points over multi-lane roads (such as Loftus Street).

5. Public transport access and movement

The precinct is advantaged by being both near to the central city (and a confluence of bus services) and rapid transit (see Figure 3). As previously discussed, the precinct is within the walking catchment of both City West train station (on the Perth-Fremantle rail line) and Leederville train station (on the Perth-Joondalup rail line).



Figure 3 – Train stations on two different rail lines and numerous bus services are a comfortable walk from the precinct



(Source:

http://www.transperth.wa.gov.au/LinkClick.aspx?fileticket=MP0bR4dKCGg%3d&tabid=283&mid=978&language=en-AU, accessed 06/08/08)

The addition of a new Central Area Transit (CAT) bus route along Newcastle Street, linking Leederville train station with Perth city would also support TOD in this area. SKM recommends that this option be pursued as part of the transport and land use planning process.

6. Car parking supply

6.1 Applicable car parking principles

For consistency with plans to redevelopment the subject site as a TOD, car parking supply should be carefully controlled. This is because an oversupply of car parking, especially cheap (or free) car parking, can induce vehicle trips, which in turn can increase local congestion, reduce the ease and safety of movement for pedestrians and cyclists, and diminish vibrancy within the precinct. However, the case for reduced car parking supply is contingent on the provision of the skywalk over Mitchell Freeway and much improved pedestrian and cycle access otherwise to City West and Leederville train stations.

The need for varied parking requirements in TODs has been recognised in several strategic State policy documents. For example, *Network City* (2004) indentified the need to:

"Set maximum limits for car-parking, rather than just minimum limits." (strategy 6-2, action 6-2bxiv)

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"Coordinating more frequent public transport services, reduced parking supply and increased parking fees at major activity centre." (strategy 6-6, action 6-6aii)

These strategic directions are also reflected at an operational level through policy such as Development Control Policy 1.6, which recommends, when developing planning provisions as part of a local planning strategy process, local governments should have particular regard to:

"The development and application of scheme parking standards that reflect the availability within the precinct of transit facilities and that provide discretion to vary standards."

"The potential to use planning provisions to provide incentives for appropriate development in transit oriented precincts, including reduced parking standards."

Given the potential for Master Planning TOD on the subject site, the following principles should inform car parking supply:

- A maximum number of residential car parking bays should be provided, based on an average number of bays per apartment, but the sale, lease or rental of parking bays should be unbundled from the sale or rental of apartments. This increases flexibility in the number of car parking bays that are available to apartments at any point in time. Over time, bays, like residences, will normalise to a market price. Residential parking bays, like apartments, could be bought, sold or rented for residential use, but should not be made available for use by workers commuting to the precinct.
- A maximum amount of non-residential car parking should be established based on the development footprint and the commercial yield of the planned development.
- A significant proportion of the car parking for commercial uses should be public, short term parking targeted at visitors and customers. Shared use of public parking allows for a more efficient and balanced use of car parking over different times of the day and week. On-street parking will supplement off-street short term visitor parking (residential and commercial visitors).
- 100% of retail and showroom car parking should be provided for visitors and customers. None should be provided for tenants.
- All non-residential parking should be managed through an appropriate combination of pricing and limits on the parking dwell time (both on-street and off-street).

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- Residential and commercial tenant bays should be provided in structures under or near to the buildings they serve. Off-street visitor bays should be provided in a single structure to minimise the need for visitors to 'cruise' looking for car parking.
- No surface car parking should be provided (with the exception of on-street bays).

6.2 Recommended car parking supply

Having taken into account the activity intensity proposed for the subject site and the opportunities for alternative mode use (assuming the provision of the skywalk and general improvements to pedestrian and cycling infrastructure), SKM recommends the following car parking standards for the precinct:

- Residential 1.2 bays per unit
- Commercial/ office 1.5 bays per 100m² GFA (40% tenant and 60% visitor)
- Retail/ showroom 1 bay per 118m² GFA (100% visitor)

Car parking supply would vary depending on the characteristics of development. Recommended supply relating to the development alternatives is shown in Table 2.



Table 2 – Varying recommendations for car parking supply depending on the type of redevelopment

Land use	Type of redevelopment			
Land use	European-scale	Podium and tower		
Residential	810	1,069		
Commercial/ office	1,433	1,749		
Retail	27	27		
Showroom	73	73		
Total	2,343	2,918		

7. Motor vehicle access and movement

7.1 Daily vehicle trip generation rates

Traffic generation associated with different land uses in TODs will be lower than for comparable uses in conventional suburban developments. This is because a lower frequency of car use is anticipated in TODs, due to the activity intensities that characterise them and is offset by increased use of modes other than the private vehicle. Within the subject area, traffic generation will also be moderated by constrained car parking supply. However, SKM has taken a conservative approach to calculating traffic generation.

Assuming an average occupancy rate of 1.8 persons per unit, 50% car driver trips and 15% visitor trips, it is estimated that around four car driver trips per residential unit could be expected in this area (i.e. $3.5 \times 1.8 \times 0.50 \times 1.15$).

For commercial/ office uses, six trips per day per 100m^2 GFA is assumed. It is anticipated that retail land uses will mostly service people who live or work in the local area. A vehicle trip generation rate of 30 trips per day per 100m^2 GFA of retail is assumed. Showrooms will generally attract a greater proportion of car drivers than other retail because bulky goods often have to be transported off site, but fewer persons per unit of floor area. SKM has assumed 20 trips per day per 100m^2 GFA. A summary of vehicle trip generation as a function of development yield is shown in Table 3.



Table 3 – Trip generation associated with different yields

Land use	Type of redevelopment			
Land use	European-scale	Podium and tower		
Residential	2,700	3,564		
Commercial/ office	5,732	6,995		
Retail	953	953		
Showroom	1,718	1,718		
Total	11,103	13,230		

7.2 Peak hour vehicle trip generation

The following proportions of the daily forecast traffic volumes are assumed to occur in the AM peak hour:

•	Residential	8%
•	Commercial	15%
•	Retail/ showroom	5%

The following proportions of the daily forecast traffic volumes are assumed to occur in the PM peak hour:

•	Residential	10%
•	Commercial	15%
	Retail	10%

In particular, the proportion of commercial trips in both peaks reflects the constrained parking supply. Given there would be fewer commercial bays available than under conventional standards and that they would all be allocated as short-term public bays rather than for tenants, vehicle commute trips are not facilitated. This would lead to a flatter distribution of trips throughout the day. Morning and afternoon peak hour motor vehicle trip generation associated with the different yields are compared in Table 4.



■ Table 4 – Comparative peak hour trip generation

	AM pea	k hour	PM peak hour		
Land use	European	Podium and tower	European	Podium and tower	
Residential	216	285	270	356	
Commercial/ office	860	1,049	860	1,049	
Retail	48	48	95	95	
Showroom	86	86	172	172	
Total	1,210	1,468	1,397	1,672	

During morning and afternoon peak hours, traffic typically follows the pattern shown in Table 5.

Table 5 – Directional movements of peak traffic generated by different land uses

Land use		In	Out
Residential	AM peak	10%	90%
Residential	PM peak	80%	20%
Commercial/ retail/	AM peak	85%	15%
showroom	PM peak	20%	80%

7.3 Traffic impacts

It is likely most traffic will enter and exit the redevelopment site along Newcastle Street. Newcastle Street has two lanes with parallel parking on both sides, although there are auxiliary turning lanes at signalised intersections. In 2003/2004, it carried 10,240 vehicles per day west of Charles Street (Main Roads Western Australia, 2007). Between Charles Street and Loftus Street, it is defined as a Local Road in the Metropolitan Region Scheme (1963) and a Local Access Road in the Functional Road Hierarchy developed by Main Roads Western Australia.

During the morning and afternoon peak hours, around 1,000 vehicle movements are estimated to occur. Weekday evening traffic counts suggest about 56% of vehicle movements along Newcastle Street, between Charles and Loftus Streets, are from west to east, whilst 44% are from east to west.

Within the redevelopment area, the following intersections (from east to west) are signalised:

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- Newcastle Street and Charles Street
- Newcastle Street and Cleaver Street
- Newcastle Street and Loftus Street

Pictures of the intersections of Newcastle and Charles, and Newcastle and Loftus are provided as Figures 4 and 5. Signal phasing at Newcastle and Charles was timed at 50 seconds (Newcastle) and 60 seconds (Charles); at Newcastle and Cleaver, 40 seconds (Newcastle) and 15 seconds (Cleaver); and at Newcastle and Loftus, 45 seconds (Newcastle) and 100 seconds (Loftus). Right turn arrows are provided at all signalised intersections. During the red signal phases along Newcastle Street, 10-24 vehicles were observed idling at the intersections with Charles and Loftus Streets and 7-14 at the Cleaver Street intersection.

Traffic cannot continue north along Cleaver Street after the intersection with Newcastle Street because of preventative traffic calming measures. Traffic may only continue north along Cleaver Street when turning left from Newcastle Street, whilst traffic approaching the area from the north along Cleaver Street may only turn left into Newcastle Street.

 Figure 4 – Intersection of Newcastle Street and Charles Street (viewed from the east along Newcastle Street)



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Figure 5 – Intersection of Newcastle Street and Loftus Street (viewed from the west along Newcastle Street)



During the site visit, very little traffic was observed entering the area from the south (Aberdeen Street). During the morning peak, however, a much greater volume of traffic is predicted to enter the site via this route, as it provides the most access to the site for south-bound traffic from the Mitchell Freeway. Traffic cannot exit to the south via Aberdeen Street therefore exiting traffic will use Newcastle Street.

The remainder of the existing street network within the area (i.e. Douglas Street, Tandy Street and Golding Street) is low capacity, with significant use of on-street parking (refer to Figure 6).

On balance, SKM considers that the trip generation range associated with the redevelopment options (11,103-13,230) is likely to add a significant volume of traffic to Newcastle Street. At full development, in the morning and afternoon peak hours, traffic volumes along Newcastle Street could be expected to double. Whilst the redevelopment is not predicted to significantly SINCLAIR KNIGHT MERZ



increase congestion at the non-signalised intersections within the area, the removal of Tandy Street (as proposed under option 2A) will increase traffic volumes using other routes to enter and exit Newcastle Street. More importantly, it is likely that congestion will significantly increase at the intersections of Newcastle and Charles Streets; Newcastle and Cleaver Streets; and Newcastle and Loftus Streets, particularly during peak periods.

Figure 6 – Tandy Street (viewed from the north)





8. Further Work

Whilst the area is strategically located with good opportunities for TOD, there are a range of issues associated with the existing transport system and the impacts that traffic generated by redevelopment would have on the street network. Based on our analyses, SKM recommends that a full strategic traffic assessment (including SIDRA analyses) would need to be undertaken - principally to ascertain the full impacts of the proposals on the Newcastle/ Loftus and Newcastle/ Charles intersections - before precinct planning proceeds.

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report

JONES COULTER YOUNG

Leederville Extension Project

Report No:

February 2008





Disclaimer

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1 Introduction

Pracsys have been commissioned by JCY Architects and Urban Designers on behalf of the Town of Vincent to conduct a retail and commercial analysis as well as expenditure modeling and analysis based on possible development options for the Leederville East Precinct.

The immediate study area can be defined within the boundaries Loftus Street to the South, Carr Street to the North, Charles Street to the East and Old Aberdeen Place to the South. The current mix of land uses include industrial, commercial and residential. Within the commercial and industrial areas between Newcastle Street, Loftus Street, Charles Street and Old Aberdeen Place there is a hangover of 'old' industry from this previously inner-city industrial area. The commercial and industrial land uses within the study area are not being utilised to their potential resulting in a lack of high quality land use. The residential area North of Newcastle Street has a low resident and dwelling ratio especially given that the current zoning for this land is R80.





2 Qualitative Assesment

****JCY***





3 Land Details

Within the commercial and industrial area there are approximately 20 separate owners holding 33 parcels of land. Further description of the mixed use of the commercial and industrial areas can be seen in the below figure 1.1 where uses are broken down into their use by appropriate PLUC code.

Commercial Land Use				
PLUC Code	No. of Businesses	FTE Equivalent	Floor Space (sqm)	sqm per worker
Health / Welfare / Community	2	8	337	45
Office / Business	3	17	172	10
Sub Total	5	24	509	21

	Industrial Land Use				
PLUC Code	No. of Businesses	FTE Equivalent	Floor Space (sqm)	sqm per worker	
Manufacturing	2	14	540	40	
Office / Business	14	101	2,878	28	
Retail	2	4	190	54	
Service Industry	10	63	4,347	70	
Shop	2	2	196	98	
Storage	5	30	2,068	70	
Vacant Floor Area	5	0	872	0	
Sub Total	40	212	11,091	52	
Grand Total	45	236	11,600	49	

Source: Commercial Land Use Survey and Industrial Land Use Survey





Key stakeholders of land with the study area have been identified in the following list, this list shows the owner of the key site or sites as well as management details including contact particulars:

Key stakeholders of land have been identified as the following land holders:

Property:

12-16 Cleaver Street

5, 15-17 Old Aberdeen Place

Property Owner: Re Store

Property Manager: Realmark Property Consultants

Contact Details: Michael Ridge, Senior Property Manager (Realmark) 9328 0992

Property:

• 15-17 Old Aberdeen Place

Property Owner: WA Flour Mills Pty Ltd & Ladrift Pty Ltd

Property Manager: AB Chapman

Contact Details: A B Chapman 0418 904 408, 3rd Floor 225 St Georges Terrace

Property:

• 463 – 525 Newcastle Street

Property Owner: Automotive Properties Pty Ltd

Contact Details: Michelle Prater (Automotive Properties Director) 9380 0444

Property:

• 513 – 525 Newcastle Street

Property Owner: Rafe Snader (90+ Years Old)

Property Manager: Knight Frank

Contact Details: Joanne Metcalf (Knight Frank) 9325 2533





4 Economic Analysis

4.1 Method

As can be seen in the attached appendix 1 Pracsys have applied the worker numbers and total residential units from three plot ratio options supplied by JCY to economic models resulting in total available expenditure which would result from each.

In calculating workers available expenditure we multiply 14 dollars per working day (five days per week, 48 weeks a year) to result in a total worker spend per year. In order to calculating the value of this total spend to the immediate study area and the greater Leederville area a percentage of the total worker spend has allocated to each area. The Immediate catchment retention has been calculated at five percent, while the greater Leederville area has been calculated at a retention rate of twenty percent. These retention rates are in place to provide a more accurate and realistic available expenditure pool allowing for expenditure leakage into other areas which attract spending.

The same principal was used in calculating the available expenditure pool for residential spend. The same retention ratios of five percent for the immediate catchment and twenty percent for the greater Leederville area have been used to calculate this expenditure pool.

This additional expenditure created would be a result of development of the area which would require considerable construction costs.

4.2 Possible Supply

Within the study area it is recommended that sustainable areas of retail are established given the future increase of both worker and residential populations that would be there to support them. Also given the shortage of office space within the study area and the greater Perth, establishing large amounts of office space will not only be sustainable but profitable and helpful to the situation. Similarly, due to the shortage in quality apartments with the central Perth area, establishing large amount of apartment dwelling would be sustainable. This would contribute to dwelling diversity within the inner north where low densities are common.

Option 1 Plot Ratio 1

Business Type	Benchmark Turnover (\$) (updated)	Immediate Pool of Expenditure (\$)	Maximum Multiple
Supermarket / Deli (400m²)	1,995,360	2,945,030	1.48
Café	550,000	1,104,530	2.01
Restaurant	1,350,000	2,577,045	1.91
Newsagency	722,520	344,448	0.48
Fashion	734,640	425,967	0.58

Source: CCH Benchmarks





	No.	Total Expenditure	Total Retention
Existing Dwellings	224	9,268,224	2,317,056
Future Dwellings	552	22,839,552	5,709,888
Workers	920	3,091,200	772,800
Total		35,198,976	8,799,744

Source: ABS Household Expenditure Survey 2003/04

Option 2 – Plot Ratio 2

Business Type	Benchmark Turnover (\$) (updated)	Immediate Pool of Expenditure (\$)	Maximum Multiple
Supermarket / Deli (400m²)	1,995,360	5,890,061	2.95
Café	550,000	2,209,060	4.02
Restaurant	1,350,000	5,154,090	3.82
Newsagency	722,520	688,896	0.95
Fashion	734,640	851,935	1.16

Source: CCH Benchmarks

	No.	Total Expenditure	Total Retention
Existing Dwellings	224	9,268,224	2,317,056
Future Dwellings	1,104	45,679,104	11,419,776
Workers	1,840	6,182,400	1,545,600
Total		61,129,728	15,282,432

Source: ABS Household Expenditure Survey 2003/04

Option 3 – Plot Ratio 3

Business Type	Benchmark Turnover (\$) (updated)	Immediate Pool of Expenditure (\$)	Maximum Multiple
Supermarket / Deli (400m²)	1,995,360	8,835,091	4.43
Café	550,000	3,313,590	6.02
Restaurant	1,350,000	7,731,135	5.73
Newsagency	722,520	1,033,344	1.43
Fashion	734,640	1,277,902	1.74

Source: CCH Benchmark





	No.	Total Expenditure	Total Retention
Existing Dwellings	224	9,268,224	2,317,056
Future Dwellings	1,656	68,518,656	17,129,664
Workers	1,656	5,564,160	1,391,040
Total		83,351,040	20,837,760

Source: ABS Household Expenditure Survey 2003/04

5 Development Incentives

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6 Statutory Issues

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Leederville Extension Project

7 Appendix 1 - Potential Yeild Scenarios and Economic Generation

Plot Ratio 1	No.	spend / year	total spend	Immediate Catchment Retention	Immediate Catchment Expenditure Retention	Leederville Retention	Leederville Expenditure Retention	Total Expenditure Retention
Workers	920	\$3,360	\$3,091,200	5%	\$154,560	20%	\$618,240	\$772,800
Total Residential Units	552	\$41,376	\$22,839,552	5%	\$1,141,978	20%	\$4,567,910	\$5,709,888
Total			\$25,930,752	5%	\$1,296,538	20%	\$5,186,150	\$6,482,688
Plot Ratio 2	No.	spend / year	total spend	Immediate Catchment Retention	Immediate Catchment Expenditure Retention	Leederville Retention	Leederville Expenditure Retention	Total Expenditure Retention
Workers	1,840	\$3,360	\$6,182,400	5%	\$309,120	20%	\$1,236,480	\$1,545,600
Total Residential Units	1104	\$41,376	\$45,679,104	5%	\$2,283,955	20%	\$9,135,821	\$11,419,776
Total			\$51,861,504	5%	\$2,593,075	20%	\$10,372,301	\$12,965,376
Plot Ratio 3	No.	spend / year	total spend	Immediate Catchment Retention	Immediate Catchment Expenditure Available	Leederville Retention	Leederville Expenditure Available	Total Expenditure Available
Workers	1,656	\$3,360	\$5,564,160	5%	\$278,208	20%	\$1,112,832	\$1,391,040
Total Residential Units	1656	\$41,376	\$68,518,656	5%	\$3,425,933	20%	\$13,703,731	\$17,129,664
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Source: ABS HH Expenditure Survey 2003/04, Pracsys Modelling