



City Of Wanneroo Neerabup District Planning Car Parking Strategy

November 2021

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1. Introduction

The City of Wanneroo (the City) has engaged GHD to develop a revised planning and implementation framework for the Neerabup Industrial Area (NIA) to complement the City's concept zoning plan for the area.

The project requires translating the concept planning undertaken to date through a revised structure plan and amendments to the City of Wanneroo District Planning Scheme 2 (DPS 2), as required. The revised planning framework for the NIA will be informed by several technical studies that are to be completed.

This report provides a Car Parking Strategy in support of the NIA Planning Study. The current NIA Agreed Structure Plan 17 (ASP 17) is shown in Figure 1.

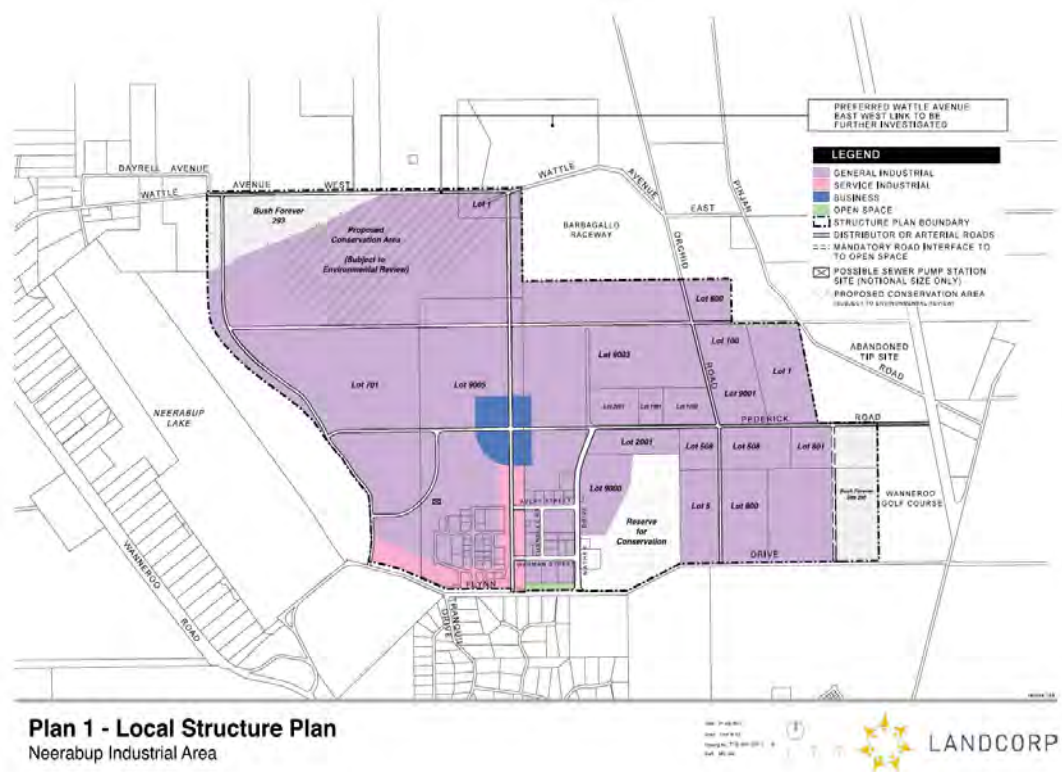


Figure 1 Neerabup Industrial Area Local Structure Plan

The City's concept zoning plan is shown in Figure 2.

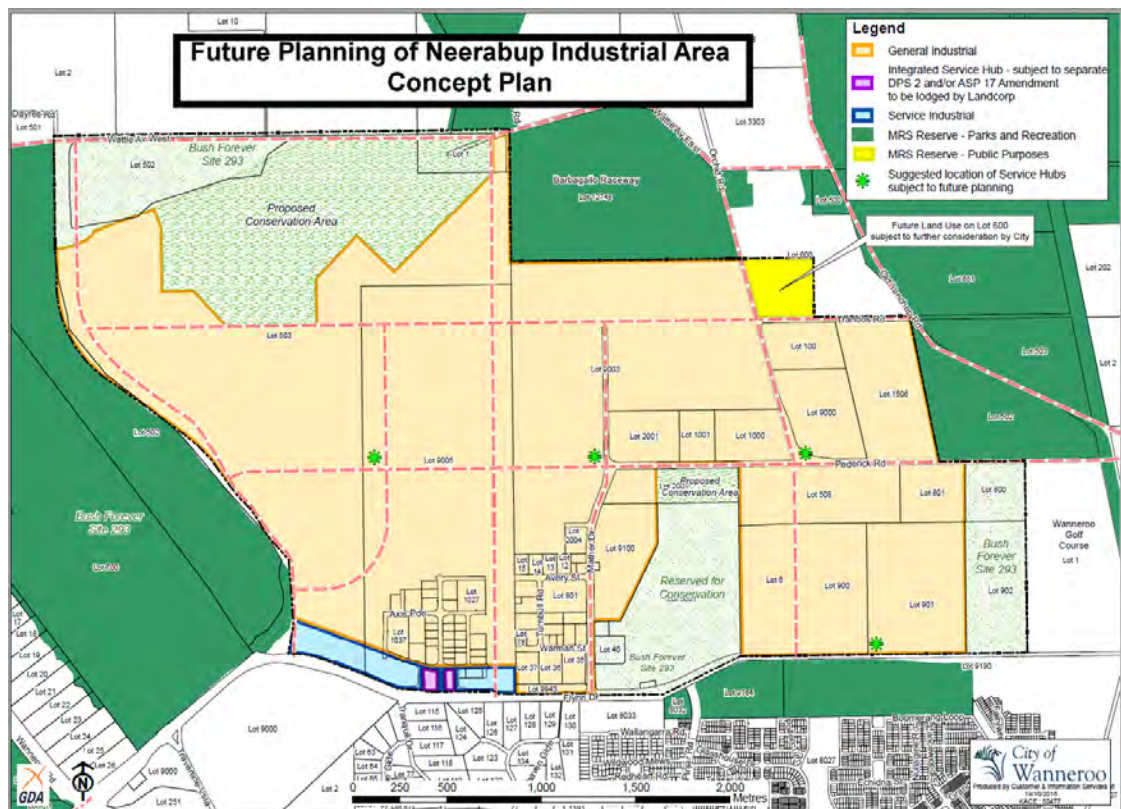


Figure 2 Future Planning of Neerabup Industrial Area Concept Design

1.1 Scope of work

The City's DPS 2 sets out the car parking requirement for industrial land uses, however the City has found that the current requirements are sometimes insufficient to accommodate the needs of industrial development (which has been found to be the case in the Wangara industrial area). This can cause employee and visitor parking to overflow onto streets and verge areas, which the City is seeking to avoid given the negative impact this has on streetscape and traffic flow.

This car parking strategy seeks to address car parking issues that would arise from current and future subdivision and development in the NIA. In particular, the strategy provides:

- A qualitative analysis of car parking issues and experience from other industrial areas within the Cities of Canning, Stirling and Swan and input/background information from the DoT, the DPLH, DevelopmentWA and the Western Australian Local Government Association (WALGA).
- A quantitative comparison of car parking ratios applied in other Perth metropolitan area industrial areas and a recommendation on the car parking ratios to apply for each land use likely to be carried out in the NIA, based on the City's desire to avoid parking overflow onto streets and verges.
- Comment on the efficiency/viability of the City providing user-pay or free public car parking areas at suitable locations within the NIA to discourage verge parking. For example, the provision of public parking on lots created through subdivision, which could be removed (and the land prepared and sold for industrial use) should public transport services improve in the area.
- Discussion of other strategies that would be appropriate for the City to consider imposing in the NIA to minimise verge parking and other negative car parking impacts on streetscape and businesses.

2. Qualitative analysis

Prior to considering potential ratios for the provision of car parking by land use type within the NIA, a qualitative analysis of car parking issues and experience from other industrial areas in Perth was undertaken. For this, the Cities of Wanneroo, Canning, Stirling, and Swan were approached for comment, along with the Australian Marine Complex (AMC).

The Department of Transport, the Department of Planning, Lands and Heritage, DevelopmentWA and the WA Local Government Association were also contacted for a policy perspective. Main Roads WA was also contacted, however did not make comment.

2.1 City of Wanneroo

The City of Wanneroo was contacted for comment, particularly regarding their experience with the Wangara industrial area (WIA).

The City advised that the WIA has been facing a shortage of parking due to an intensification of land use over time. This shortage has resulted in parking overflow onto the street (harming traffic flow) and undesirable verge parking (aesthetically displeasing). The majority of on-street parking that is occurring in the WIA is believed to be a result of business staff and/or visitors not having sufficient space to park on-site, caused either by greater demand than supply or due to materials being stored in parking areas, reducing bay availability. This results in parking being pushed to the verge or on-street. The City highlighted the value of a study evaluating how many businesses in the WIA are non-compliantly utilising on-site parking for storage of material.

Regarding parking strategies employed in the WIA, the City has, and continues to, implement parking prohibitions throughout the WIA to assist in controlling the amount of on-street parking that occurs. At this stage, only some roads in the WIA have parking prohibition signage in place, which is a problematic approach as it simply moves the on-street parking issues to neighbouring streets. The City stated that these signs should have been implemented upon the establishment of the WIA. It was noted that the installation of parking prohibitions to restrict on-street parking should be a consideration in the development of the NIA.

2.2 Cities of Canning and Stirling

Queries and responses regarding car parking issues and experiences in industrial areas within the Cities of Canning and Stirling are included in Table 2-1.

Table 2-1 Queries and responses from the Cities of Canning and Stirling

Query	City of Canning	City of Stirling
Are you aware of the effectiveness of your car parking ratios, i.e., is overspill parking a problem, or are parking areas underutilised?	The parking is generally ok in Canning Vale. We have issues in Welshpool in the older areas where there are narrower lot frontages.	Though industrial areas are zoned industrial area, they are actually employment areas, and, in some cases, industrial uses are the minority of uses. For example, Herdsman Business Park was zoned industrial but had about 70% office floor space. Scarborough Beach Road was zoned industrial but was 100% showroom and retail. They have a totally different employment density, different operating times, and more propensity to have alternative transport modes than industrial land uses. There are very few pure industrial areas these days.
Is business automation reducing employee parking demand?	Not that we have seen.	Not answered.
Has centralised user pay public parking been considered to serve industrial areas?	No, and I doubt whether it would be effective. May be ok in an industrial park area.	Yes, and was implemented because of parking spill over in the area (as per question 2). Parking spill over occurred first and clearly demonstrated that demand existed so car parks were built on existing land and paid parking implemented.
Have centralised free public parking areas been considered to serve industrial areas?	No.	No, the tenants/owners are responsible for ensuring the premises can accommodate their needs (includes parking). Rate payers should not contribute to a car park that most rate payers will likely never use, unless costs can be recovered through a user pay principle i.e., paid parking.
Have you found that parking restrictions are necessary in industrial areas?	We have introduced some two-hour parking in other areas where staff were parking on the street to free up spaces for clients.	Yes, but depends on the pressures. Some streets will have no issue, particularly when the 'planning parking ratios' are satisfactory. Council reserves the right to waive DAs that don't meet the required parking ratios – over time this can lead to employees/visitors using the streets to park.

Query	City of Canning	City of Stirling
Are formal paved verge parking areas provided in industrial areas?	The very few properties that do not have enough parking (food processing for mining sites), have constructed verge parking along theirs and other property frontages. Whilst the parking was provided by one property owner, they knew that it could be used by anyone. We then had another nearby property ask his staff to park in these embayments so that he could use his parking for storage. After we spoke to this property owner, we have not had further issues.	When a DA is short of the required parking ratios, Council can stipulate that formalised public parking bays are to be built on the verge area and paid for by the developer. We have these scenarios in Stirling and paid parking has been applied to some of these verge parking bays.
How is illegal verge parking controlled?	You can always park on your own verge. It is an offence to park on someone else's verge. When people continue to park on their verge, we try and encourage them to construct a formal embayment which has worked 50% of the time.	With enforcement, infringements are issued.
Are you aware of carpooling strategies within industrial areas?	No.	No, however the introduction of paid parking does encourage this, particularly if it is priced correctly. If it's too cheap, people will happily drive and pay. Too expensive, and motorists will not use the car park and the costs associated with construction and management of the car park will not be recovered in a timely manner.
Have shuttle bus services been considered/implemented for industrial areas?	No.	Yes. A shuttle bus operates between Glendalough Station and Herdsman Business Park. With the expansion of Westfield Innaloo, it is proposed to extend this bus route past Westfield to Stirling Station as a condition of development. This would result in a full loop linking both stations with major retail and the business park. Introduced within Herdsman in conjunction with PTA and developers.
Have discussions been held with PTA regarding improved bus services to industrial areas?	Yes, but they cannot justify any services.	Yes, see above.

Query	City of Canning	City of Stirling
How is cycling/walking encouraged within industrial areas?	It is quite difficult to get cycling into industrial areas and staff generally come from a long way away. We do have a network of shared paths, but no on-road cycle routes.	By providing a safe connected cycling network, linking the areas to rail stations and to other uses. Implemented progressively on a needs basis.
Is the influence of future autonomous vehicles being considered for industrial areas?	No.	Not specifically for industrial areas at present. Some consideration is being given in strategic planning to the likely impact of AVs on transport and parking. Still early days.
Have you considered capped parking for industrial areas to limit impact on road networks?	No.	Capped parking is being applied to activity centres such as Stirling strategic regional centre. A parking policy like the Perth Parking Policy is being considered for the broader Stirling centre area, including the Osborne Park industrial area.
Any other comments?	When Landcorp (DevelopmentWA) developed some land that had 22 m frontages, there was a real problem with trucks accessing the site. Trucks would all have to reverse in, causing problems on the street. Later subdivisions required a minimum 28 m frontage to allow single unit trucks to enter and exit in forward gear. This seems to be working. Also, lunch bars have been required to construct on street parking embayments to accommodate truck parking.	

2.3 City of Swan

The City of Swan did not specifically respond to the queries in the above table but did provide its Parking Strategy for Malaga (Version 2 November 2014). Whilst this strategy was prepared for a different context (an established industrial area going through an evolution of land uses), some salient points are documented as follows:

- 250 verge parking bays were installed between 2011 and 2014.
- There has been an emphasis on education of businesses about the ongoing requirements of development approvals including vehicle parking expectations.
- It is evident that Malaga has undergone transformation from industrial into a more complex makeup. Commercial, retail and office are now common. Road congestion is apparent.
- Zoning changes were considered due to land use limitations.
- There was traffic flow issues and a general perception of a lack of parking.
- There was a lack of alternative transport options.
- 3% of workers arrived by bus, cycle or on foot. A poor example of a bus stop location in Victoria Road, Malaga with no path facilities is shown in Figure 3.



Figure 3 Bus stop in Malaga with poor amenity

- Despite continued parking improvements, undesirable parking persists.
- A future free public bus will be necessary to transfer workers from a separate parking area.
- Uptake of additional verge parking was high.
- Parking compliance is not typically undertaken by the City of Swan, however persistent breaches of DA approval will result in compliance activity.
- Using aerial photography, detailed land use and parking behaviours were identified. Main causes of street parking were the incorrect or illegal use of required parking on business sites.

- In areas where additional parking was constructed, development compliance was improved. Together with improved information for businesses, these activities resulted in significant improvement to access and parking in streets.
- Habitual parking on roadways by businesses involved in motor vehicle services was an issue.
- Many constructed parking bays within properties became unavailable because of business use of that space (e.g., for storage).
- Natural evolution from mainly manufacturing toward non-industrial use, which required more parking per square metre of floor space.
- Council may accept cash in lieu to facilitate coordinated and consolidated development through provision of common parking reserves in public areas. Before acceptance, Council must either have provided a public parking station or have firm proposals to provide one within five years. Implementation requires the identification of suitable locations on public land on which these parking areas can be provided.
- Challenges included Council not owning land that can be developed as a public car park/shuttle bus site.
- Customers expected to park at the entrance to a destination and if not available, park in undesirable, unsafe locations.
- Verge parking cost \$3,500 to \$4,500 per bay to construct (2013/14).

2.3.1 Actions

Through the Malaga Parking Strategy, the City of Swan identified several actions to pursue in relation to parking in the Malaga Industrial Areas as follows:

- Continued provision of additional verge parking.
- Increased compliance activity.
- Seek contribution from business/landowners toward additional public or verge parking.
- Make use of unmade road reserve for a car park.
- Further review of the strategy.
- Education of businesses.

2.4 Australian Marine Complex

The Australian Marine Complex (AMC) provided the following comment regarding the use of parking within the complex and the parking management strategies they use.

Due to the parking capacity remaining below full since 2014 and the large volumes of space within the industrial area (total complex size of 280,000 m²), there is currently no need for the AMC to employ any extensive parking management strategies. However, in the situation where parking negatively impacted users of the complex, users would be prioritised as the focus point of any strategy.

GHD was informed that parking in the AMC is currently allocated within the complex by means of laying and removing painted line markings as necessary. It was noted that the City of Cockburn oversees parking outside of the AMC and does not have direct involvement regarding parking practices within the complex.

2.5 Department of Transport

A meeting was held with the Department of Transport (DoT) on 1 October 2019 with the following issues discussed and associated comments/points made by the Department.

2.5.1 Car parking ratios

- Car parking ratios are often ineffective and not reflective or responsive to actual parking needs. DoT's suggested approach is the use of an overall parking rate (i.e., two bays per unit plus one bay per 50 m² / occupancy rate) to cover the range of different uses contemplated to occur within the area to allow for a seamless change of use when the use of building changes.
- Minimise the number of land uses.
- Barberry Way, Bibra Lake is a good example of what to avoid.

2.5.2 User-pay or free car parking areas to discourage verge parking

- Premise of free or subsidised car parking is the provision of public parking as a public good – the more parking provided, the greater ability to accommodate overflow.
- Encourage Council's involvement in the parking business i.e., ensure direct involvement – dedicated parking assets / ownership of parking areas.
- Utilise DoT's Car Parking Financial Model available on its website¹.
- If the Council decides to provide free public parking areas for staff of NIA businesses, the cost of providing the parking area must be clearly communicated and accounted for (i.e., separate line item) in the Council's budget. Providing free staff car parking areas incentivises driving, and it is important to recognise and clearly account for the opportunity cost of providing this subsidy.
- Recognise parking as a business to operate – Herdsman Business Park is a good example.
- If providing multi-storey car parks, design them with the ability for adaptive re-use in the future to provide the ability to re-purpose for alternative uses in the future when no longer required for parking.

2.5.3 Other parking strategies

- Consider shared parking areas – decoupling parking from the land use.
- Consider landscaping and storage areas in the design process rather than an afterthought.
- On-street parking – minimise number of crossovers.
- Working together, and consistent in approach with the WALGA Local Government Car Parking Guideline. Key issues echoed are underutilised parking bays in non-peak periods, traffic, noise, and air pollution.
- Innaloo Shopping Centre provides a good example of shared parking requirements – 50 percent of all parking required to be provided as public parking. Three Oceans development on Scarborough Beach provides example of a similar approach.

¹ <https://www.transport.wa.gov.au/projects/transport-planning-guidelines.asp>

- Never strata title parking bays. Whilst there is a possibility of imposing an easement in gross over parking bays, this can create an administrative burden on the LGA, and it is not a public interest matter. Right of access may be a more suitable alternative.

2.5.4 General comments

DoT also referred to an article regarding a book entitled *The High Cost of Free Parking* (Donald Shoup), which, in summary, recommends three parking reforms that can improve cities, the economy, and the environment:

1. Remove off-street parking requirements. Developers and businesses can then decide how many parking spaces to provide for their customers.
2. Charge the right prices for on-street parking. The right prices are the lowest prices that will leave one or two open spaces on each block, so there will be no parking shortages. Prices will balance the demand and supply for on-street spaces.
3. Spend the parking revenue to improve public services on the metered streets. If everybody sees their meter money at work, the new public services can make demand-based prices for on-street parking politically popular.

In this instance, DoT's recommendations towards parking are considered unsuitable in the case of the NIA. This is further discussed in Section 4.

Following discussions with GHD and the City, DoT advised that there is a definite need for some guidance and consistency across local authorities that relates specifically to bulky goods, service industry, light industry, and industrial areas. DoT suggested further consideration by the WALGA parking local government reference group.

2.6 Department of Planning Lands and Heritage

DPLH advised that limited information is available regarding parking requirements (industrial estates or otherwise). DPLH advised liaison with DevelopmentWA (see section 2.7) and also suggested desktop review of similar industrial estates, such as:

- Kwinana (City of Kwinana)
- Malaga (City of Swan)
- Forresterfield (Shire of Kalamunda)

2.7 DevelopmentWA

DevelopmentWA provided the following comment regarding industrial area parking ratios and parking management strategies.

2.7.1 Parking ratios

DevelopmentWA expressed the opinion that, as industrial estates age, land uses change and typically employment densities increase, resulting in additional parking needs. Wangara and Osborne Park were offered as examples of mature industrial estates facing a shortage of parking due to an intensification of land use that has occurred over time.

It was advised that the general requirement of one bay per 50 m² GFA and one bay per staff member with a minimum of five bays is a base level that does not typically provide for future densification. Furthermore, capped parking limits may have a potential to negatively impact economic development, restrict clustering and limit potential growth.

DevelopmentWA also noted that business automation reduces parking demands and therefore, parking needs.

2.7.2 Parking management strategies

2.7.2.1 Paid parking (centralised)

- Parking within industrial estates is typically site specific, i.e., for employees or customers (and usually a blend of both) and not generally offered through a centralised user pay public parking facility.
- Demand is for parking close to the source, particularly if collections of goods are involved – centralised parking does not suit this situation and is less likely to be patronised. Illegal parking more likely to occur as a result.
- Adjacent free on street or verge parking is favoured.

2.7.2.2 Free parking (centralised)

- Free parking in a centralised location would be viewed more positively by estate users and occupiers than paid parking. However, it is not the preferred solution and like centralised paid parking, access issues will likely arise.

2.7.2.3 Parking restrictions

- Generally, parking restrictions are not supported.
- Parking restrictions in industrial areas should be circumstantial, being only considered if a particular user or precinct persisted in creating parking issues to the detriment of the functionality of the estate.

2.7.2.4 Verge parking

- With appropriate design (street widths, driveway clearances, site lines, tree shading, etc.) verge parking is effective.
- Uncontrolled verge parking can be “chaotic and dangerous”.

2.7.2.5 Rail access

- A freight service would be valuable, though almost certainly not possible/viable.
- The introduction of a train station at the northern end of the NIA (south to southwest of Wanneroo Raceway) is considered impractical given the conservation land, Lake Neerabup, State Forest, and generally difficult terrain it would traverse. An alternate alignment further north may be less constrained.

2.7.2.6 Shuttle bus

- If a shuttle bus could provide a low-cost reliable connection to the estate from rail station/s or bus set down points at peak times, there is the potential to reduce commuter on-site parking which is a positive outcome.
- In shuttle bus trial areas e.g., Belmont Forum (a retail application, however, the same principles apply) patronage and general support is quite low. Therefore, it is likely an industrial estate would need to be mature to make any such service viable.

2.7.2.7 Public transport

- Public bus service frequencies in current industrial areas (Perth metro area) are typically inadequate to have any meaningful benefit and this is due to low levels of patronage.
- The concept of a passenger rail service to the estate is generally supported.

2.7.2.8 Active transport

- Safe cycling routes to industrial estates are always in demand.

- Roundabouts and bridges pose dangerous conflict points for cyclists.

2.7.2.9 Considerations of autonomous vehicles

- Once autonomous vehicles (AVs) increase in number, they will undoubtedly impact industrial estates.
- The nature of any AV related impact is unknown and subsequently, so is the required design response – possibly less parking will be required, there may be a need for designated drop off and pick-up points, free flowing through traffic movements, etc. These design patterns are still emerging, however, should be considered in the design of industrial estates.

2.8 Local Government parking requirements - WALGA

The document '*Local Government Car Parking Guideline*' (2020), prepared in collaboration between WALGA, DoT and DPLH, outlines a range of key parking issues and local government car parking requirements. The Guideline highlights that current approaches to parking control generally result in underutilised parking bays in non-peak periods, traffic, noise, and air pollution. Content is intended for a Local Government audience who may wish to investigate alternative policy approaches.

Key to the preparation of the Guideline, the *Local Government Car Parking Discussion Paper* (2019) set out the premise:

- That the design of existing parking requirements in Western Australia is poorly related to demand and broader community needs.
- Parking requirements have usually been informed by a patchwork of sources, including:
 - Parking surveys completed in the USA and Sydney, some as long ago as the 1970s.
 - Results of an investigation for a single development application that then become the standard for all subsequent developments.
 - Requirements applied by a neighbouring Council which may be perceived to be attractive to users and as such, are adopted more broadly without proper analysis.
 - An evolution from previous requirements, adjusted incrementally to reflect changing attitudes to the local parking supply.

Findings of the Discussion Paper suggest that while the previously mentioned sources provide a convenient set of tools for identifying and codifying new development parking requirements, these sources are not designed to achieve the environmental, economic, or social development goals of individual Local Governments and their communities, such as integrated transport systems, higher usage of public transport, pedestrian friendly town centres and efficient use of urban land.

The Guideline classifies parking into the three categories of Off-Street Private Parking, On-Street Parking and Off-Street Parking, linking parking supply with trip generation, public transport use, active transport uptake, road upgrades, sub optimal land use and congestion.

Key areas of the Guideline that are relevant to the desires of the NIA and development of associated parking controls include:

- The benefits of categorising grouped land uses with similar parking demand/function to assist in rationalising the number of different parking ratios in statutory planning controls. Highlighting that such an approach simplifies the planning application process for proponents and complexities surrounding change in use functions.
- Ensuring that minimum parking ratios set via local government planning controls ensure demand generated by development is internalised, limiting impact from overspill to surrounding private and public land.
- The State Government's desire for planning authorities to manage parking supply at activity centres and precincts in mind of accommodating road network capacity and encouraging public transport and active transport use. Noting the management of off-street parking through appropriate strategy is critical to preventing parking overspill where such caps are in place.
- The importance of considering time and paid parking limits to encourage bay turnover, increase customer volume and encourage a shift to other modes of access, such as public transport and active transport. Such measures will help in the prevention of parking overspill (particularly during peak times).
- Discussion surrounding the development and adoption of technology that may influence transport behaviours, such as on-demand transport. Highlighting that on-demand travel may result in a plateau of parking requirements.

3. Quantitative analysis

3.1 Local car parking ratio comparison²

3.1.1 City of Wanneroo

The City of Wanneroo's current car parking requirement for an industrial area is one space per 50 m² of gross floor area (GFA) or one space per employee, as shown in Table 3-1.

Table 3-1 City of Wanneroo industrial area car parking ratios

Industrial	
Abattoir	1 per 50m ² GFA
Concrete Batching Plant	1 per staff member but not less than 5
Factory Unit	1 per 50m ² GFA
Fuel Depot	1 per staff member but not less than 5
Industry – General	1 per 50m ² GFA
Industry – Hazardous	1 per staff member but not less than 5
Industry – Light	1 per 50m ² GFA
Industry – Rural	1 per 50m ² GFA
Milk Depot	1 per staff member but not less than 5
Salvage Yard	1 per 50m ² GFA
Smash Repair Station	1 per 50m ² GFA
Storage Yard	1 per 50m ² GFA
Transport Depot	1 per staff member but not less than 5
Vehicle Wrecking	1 per 50m ² GFA
Woodyard	1 per staff member but not less than 5
Warehouse	1 per 50m ² GFA

3.1.2 Other LGAs

As a comparison, the industrial area parking requirements for the Cities of Canning, Stirling and Swan are shown in Table 3-2, Table 3-3 and Table 3-4 respectively.

Table 3-2 City of Canning industrial area car parking ratios

Land use	Centre Zone	Other Zones
Industry	N/A	1 space per 100 m ² NLA (net lettable area)
Industry - Cottage	Minimum 0.5 spaces per employee in addition to residential requirement. Maximum: 1 space per employee in addition to residential requirement.	1 space per employee in addition to residential requirement.
Industry - Extractive	N/A	1 space per 100 m ² NLA
Industry - Hazardous	N/A	1 space per 100 m ² NLA
Industry - Light	N/A	1 space per 100 m ² NLA
Industry - Noxious	N/A	1 space per 100 m ² NLA
Industry – Primary production	N/A	N/A
Industry - Service	N/A	1 space per 100 m ² NLA

² Car parking requirements in this section are derived from respective local planning schemes

Table 3-3 City of Stirling Car Parking Ratios

Industry - Extractive Industry - General Industry - Light Industry - Noxious	1 bay per 50m ² of GFA
Industry - Service	1 bay per 50m ² of GFA (industry component); and 8 bays per 100m ² of GLA (retail component).

Table 3-4 City of Swan Car Parking Ratios

Industry - Cottage	1 space per 100 square metres of GLA or 1 space per person employed, whichever is the greater.
Industry - General	3 spaces per 100 square metres GLA; or 2 spaces per person employed; or a minimum of 6 spaces; whichever is the greater.
Industry - Light	3 spaces per 100 square metres GLA; or 2 spaces per person employed; or a minimum of 6 spaces; whichever is the greater.
Industry - Rural	1 space per 100 square metres GLA; or 1 space per person employed; whichever is the greater.
Industry - Service	4 spaces per 100 square metres of shop area and 2 spaces per 100 square metres industrial GLA

3.2 Interstate comparison

3.2.1 City of Port Adelaide

For further comparison, a check against provision in an interstate locality was also made.

The Parking Spaces for Urban Places: Car Parking Study (City of Port Adelaide, Enfield March 2013) aims to update the South Australia (SA) Planning Bulletin's recommended car parking rates. The Technical Report provides the detailed analysis and research outcomes from this study.

The SA study analysed the resulting car parking demand and supply of industrial development. Advice from the Property Council of Australia (PCA) indicates that parking be provided at a rate per 100 m² or per employee, whichever is the greater. The rate per 100 m² often results in two to three times the parking provision of the employee rate.

To maintain competitiveness, Australian manufacturing has reduced labour costs, employing the use of computers and robotics. The current historic parking rates do not reflect the current manufacturing methods. The PCA has strong anecdotal evidence that parking areas are underutilised, with large parking areas an unnecessary cost that reduces their competitiveness.

Given the above, the recommended rate range in this document is:

- 1.5 to 1.85 spaces per 100 m² of GFA; or
- 0.8 to 1 space per space per employee (if employee numbers known)

4. Parking management strategies

This section discusses a range of parking management strategies that may be appropriate for the City to consider imposing in the NIA to minimise verge parking and other negative car parking impacts on streetscape and businesses should an increased minimum on-site parking ratio be insufficient to meet the parking demand.

The implementation and operation of the below strategies should be investigated once land use and development plans are known for the NIA. By doing so, a more comprehensive approach to parking management that aligns with the City's goals and objectives can be undertaken.

4.1 User-pay and free public car parking

Consultation with other local Councils indicates that paid car parking in industrial areas is not common. Osborne Park is currently the only industrial precinct in the Perth metropolitan area that charges for parking, however Osborne Park's land use is quite different to that proposed within the NIA. In Osborne Park, paid parking was only adopted once parking spill over became a regular occurrence, clearly demonstrating that demand existed. Car parking was then built on existing land and paid parking implemented.

Free public car parking areas are not considered viable by the other local authorities that were consulted. If the City wishes to introduce paid parking, then prices should be set so that one or two spaces on each block are open. Thereby, there will be no parking shortages, balancing supply, and demand.

If an adequate supply of parking is provided on individual lots in the NIA via a generous minimum parking ratio as outlined in Table 5-2, then public parking areas (free or paid) are unlikely to be required.

It is also worth considering that businesses within the NIA will be competing with similar businesses in other surrounding industrial areas to attract customers. If the NIA charges visitors to park on-street or within dedicated public parking areas, this is likely to be a deterrent to potential customers, particularly if they can visit similar businesses in nearby industrial areas and park for free.

4.1.1 At grade parking lots

The NIA will feature low density land use, resulting in a significant spread of trip generators and attractors. For a parking area to be of utility for employees and visitors to the NIA, it needs to be located within a short walk of the end destination – usually no more than 400 metres, or a five-minute walk. This will require multiple small parking lots to be located at regular intervals throughout the NIA.

Establishing free at grade public car parks on yet to be developed lots would require limited capital investment but are unlikely to be required if generous minimum parking requirements (as outlined in Table 5-2) are implemented in the NIA. However, if a clear need is identified in an area, these would provide a cost-effective option but would need to be developed so that there was minimal negative impact on surrounding lots and on traffic flow and safety. Should the City wish to retain the ability to pursue such an option, it is recommended that City owned sites, upon which parking areas could be potentially established, be identified now. Lot 9003 and Lot 9100, both owned by the City, would likely provide the best opportunities to establish one or more parking areas given their relatively central locations.

If any parking areas were established, charging to use these lots is not likely to be economically feasible (especially if the use is to be temporary). This is because the capital cost to develop

them to a reasonable standard (e.g., asphalt, drainage, line marking, lighting, signage, security, etc.) would be higher than if they were a more basic facility (e.g., compacted blue metal) that is free to use. This is because when a charge is implemented for any item, users expect a higher standard of amenity. The ongoing cost of installing and maintaining ticket machines over multiple locations, along with enforcement, would also be costly. The parking charge that could realistically be applied within the NIA would be low, which, combined with low parking volumes, will result in insufficient revenue to justify the capital and operational costs.

GHD's reference rates for parking (in Perth) suggest an indicative cost to develop an at-grade parking lot would range between \$8,000 and \$9,000 per bay. This indicative cost is inclusive of aisles, accesses, kerbs, stormwater accommodation, islands, landscaping, fencing, surveillance cameras, signs, and lighting. However, due to the influence of location and changing market values, this cost does not include the cost of the land on which the parking is supplied.

In the event that any at grade parking lots are developed within the NIA, consideration must be given to the potential inclusion of electric vehicle charging infrastructure within the lot/s. While the benefits of electric vehicles are understood, the supply and management of charging infrastructure remains an uncertainty for the future planning of parking facilities. The implementation of electrical charging stations within any lot that may be developed in the NIA would be a commercial decision, but if they are included, it is suggested that they be metred.

4.1.2 Multi storey parking lots

Multi-storey parking facilities are another potential model of public parking supply for the NIA. GHD's reference rates for parking (in Perth) suggest an indicative cost of constructing a multi storey car park is in the order of \$34,000 to \$40,000 per bay. This indicative cost is inclusive of internal ramps, accesses and necessary access roadway elements, access control equipment, stormwater accommodation, power and lighting, staircases, lifts, roofing, line painting, islands and kerbs, landscaping, fencing, surveillance cameras and signs. However, due to the influence of location and changing market values, this cost does not include the cost of the land on which the parking is supplied.

Given this significant cost, the facility needs to be large enough to achieve economies of scale and the cost to park within it needs to be sufficiently high to recover the capital and operating costs of the car park. The low land use intensity of the NIA, combined with the low land value and high minimum on-site parking provision, would likely render a multi storey car park economically unviable.

An additional constraint to the establishment of a multi storey car park in the NIA is the low-density land use. Unlike central business district locations where there are typically thousands of employees located within 400 metres, or a five-minute walk, of a car park, the lack of significant parking demand within a five-minute walk of a car park in the NIA would render the facility unviable.

As with at grade parking lots, multi storey parking lots must also consider the potential inclusion of electric vehicle charging infrastructure within the lot/s. Again, this would be a commercial decision, and it is considered likely that they would be metred.

4.1.3 On street parking

Land uses that occupy larger lots greater than 10,000 m² (e.g., large warehouses, etc), are not likely to require, or benefit from, on street parking. Furthermore, these lots will primarily be located on higher category roads, which would not be conducive to on street parking.

Formalised on street parking, whether it be paid or free, that is appropriately designed and located should be considered on streets that feature lot sizes under 5,000 m², where there is

limited further subdivision potential, and adjacent to “service hub” precincts which would benefit from having some provision of on street parking close by, or via CAPS if traffic volumes warrant, to provide convenient access for customers.

In principle, for locations with lot sizes between 5,000 m² and 10,000 m², each land use should accommodate car parking on site, however on street parking provision could be permitted dependent upon land use typology, traffic volumes and road function. However, where traffic volumes exceed 6,000 vehicles per day, any on-street provision should be carefully considered and located accordingly.

Four service hubs are proposed within the NIA, located to maximise walkability potential and co-location opportunities with major transport links, public open space, and drainage reserves. These are under the umbrella “Service Commercial” and will include land uses such as: bank, lunch bar, limited fast food, industry related retail like Work Clobber, etc. A base area for the various lots is 1,500 m². A small number of truck/freight parking bays should be allocated in the vicinity of the service hubs to allow for customer use and for small truck/van delivery/collection. Timed parking should be considered to accommodate/ensure parking turnover and prevent parking by patrons attending other areas.

Three of the proposed sites are in the vicinity of major internal road intersections and one served by internal roads adjacent to Flynn Drive at Greenwich Parade, as shown in Figure 4.

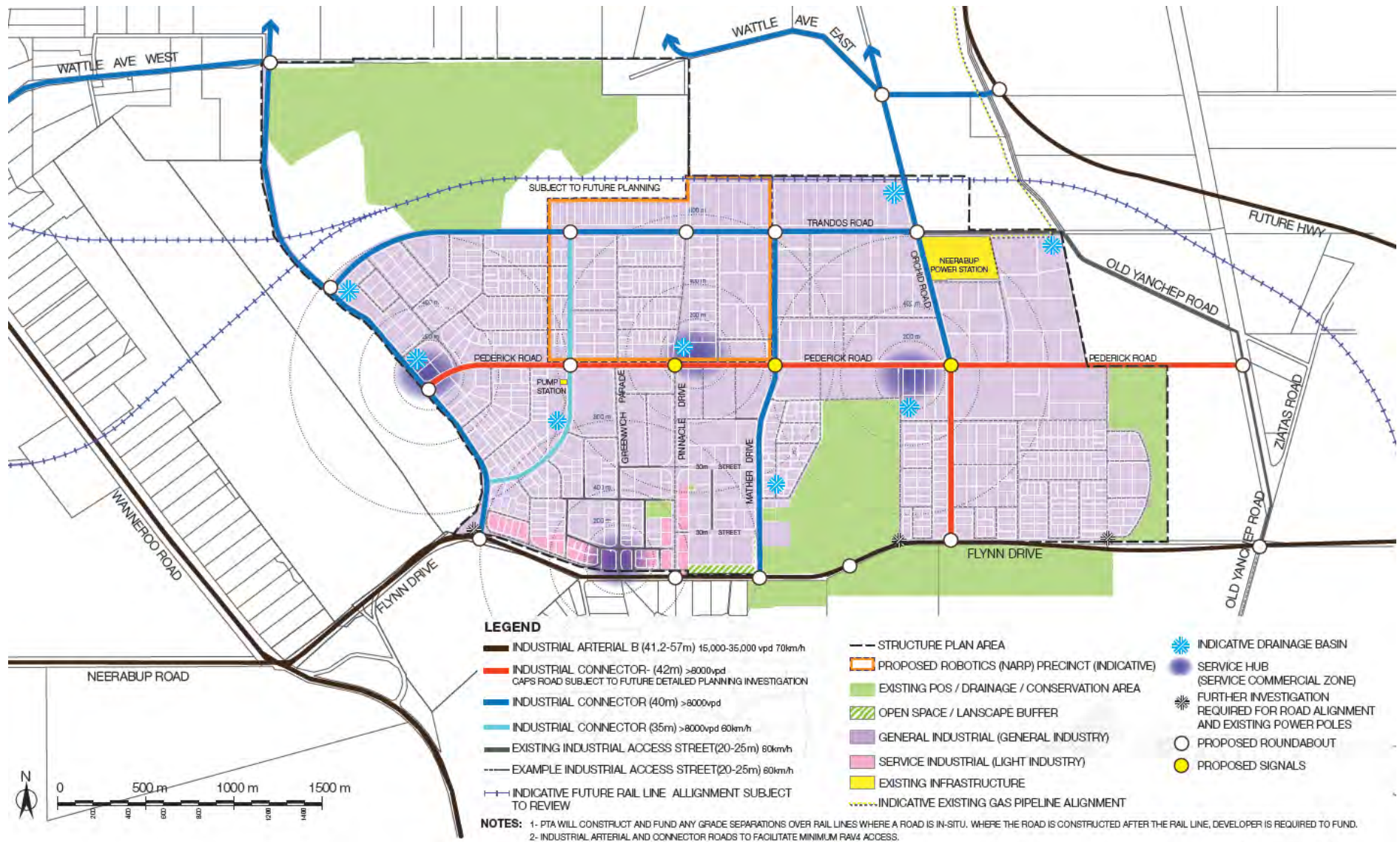


Figure 4 NIA service hub locations

4.2 Cash in lieu

Local Governments, such as the City of Bayswater, allow for cash contributions to be made for car parking where commercial developments have a shortfall of car parking. It is common practice for a local authority to accept a payment for this shortfall which is used to provide car parking bays in an adjacent or nearby existing or proposed public 'car park', if possible. If implemented in the NIA, such payments could be used to fund the options identified in section 4.1 above. This strategy may need to be reviewed following any changes to the *Planning and Development (Local Planning Schemes) Regulations 2015*.

4.3 Parking restrictions

Parking restrictions are common within most of Perth's industrial areas. Typical restrictions include prevention of parking and time limitations on parking, both usually applied via on street signage. The implementation of parking restrictions will be influenced by the function of the road and safety requirements. Due to likely undesirable parking around access points and intersections and curved road geometry, parking restrictions should be implemented and enforced on most roads and verges within the NIA.

The introduction of a parking ratio that results in sufficient provision of parking on individual lots should prevent, or at least minimise, the need to park on verges within the NIA. Furthermore, timed parking aimed at visitors should be considered at specific NIA locations where parking overspill occurs and businesses that have a frequent visitor rate in particular the Service Hubs.

4.4 Barrier kerbing/pine pole bollards/fencing or similar

Where parking on verges is likely to be particularly undesirable and unsafe, physical measures may need to be installed to complement any signed restrictions, including barrier kerbing and physical barriers. Locations may include bends or where sight distance may be restricted by parking on a verge. Use of pine poles should be limited in view of on-going maintenance issues, with the use of barrier kerbing more likely to be suitable in the NIA.

The utility of these measures may be low if a sufficiently high minimum parking ratio is adopted, negating demand for verge parking.

4.5 Formal paved verge parking areas

Some Local Authorities (such as the City of Stirling) have implemented formal verge parking when a development is short of the required parking ratio. However, in the case of the NIA, the City of Wanneroo has expressed that verge parking is undesirable from a street scape perspective. The parking ratio recommended in Section 5.2 has been developed to supply sufficient parking without the need for verge parking. Therefore, formal paved verge parking, whilst a feasible option that is used in other industrial areas, is not favoured by the City of Wanneroo for use within the NIA.

4.6 Audit of premises for opportunities to provide onsite parking

As development occurs and businesses develop their operations, internal hardstand/parking areas are often used for storage or business operation resulting in spill over parking onto the verge or street. Regular audits of premises using drone technology may be a potential means of checking business operation and site use and spill over parking. Follow up notices to the business operator and site visits would then be undertaken.

Rangers or City staff that visit or travel through the area can also be tasked with noticing parking spill over. This can be reported through internal processes and followed up formally as required.

4.7 Carpooling

Parking availability may encourage or discourage car-based trips. Carpooling will be influenced by parking availability, cost of paid parking, accessibility to public transport and the availability of someone else with similar travel patterns. Businesses within the NIA could be encouraged to develop their own carpooling schemes by the supply of information leaflets that outline and promote the benefits. Such schemes can:

- Help match commuters
- Offer benefits to car share drivers
- Offer incentives and cost saving

As an example, the Government of South Australia has produced an information leaflet on carpooling, shown in Appendix item A.

4.8 Rail access

Currently, there is no access to the NIA by rail. However, the *Perth and Peel @ 3.5 Million Transport Plan* identifies a potential East Wanneroo Rail Link to connect the Joondalup and Ellenbrook Lines in the long-term. A preliminary alignment that is subject to further assessment, is shown in Figure 5. This alignment runs along the northern boundary of the NIA and should it be delivered on or near the identified alignment, there would be potential for the development of a station within the 2.2 km section between the proposed conservation area and Orchid Road. Whilst there is no determination of a station being located near the NIA, if one was to be established, it may lead to a reduction in the amount of parking required, particularly for locations within approximately 800 metres, or a ten-minute walk, of the station.

Following Transit Oriented Development principles, a train station would only be considered by the PTA if surrounding land uses were of sufficiently high intensity and/or featuring large staff to floor space ratios (ideally higher intensity commercial/office type land uses), which would provide a source of patronage for the station. Given that the industrial zoning of the NIA would not permit higher intensity commercial/office type land uses, the PTA would likely deem that a NIA station would be unlikely to achieve the required level of patronage and therefore, it would be difficult to justify delivery of a station in the area.

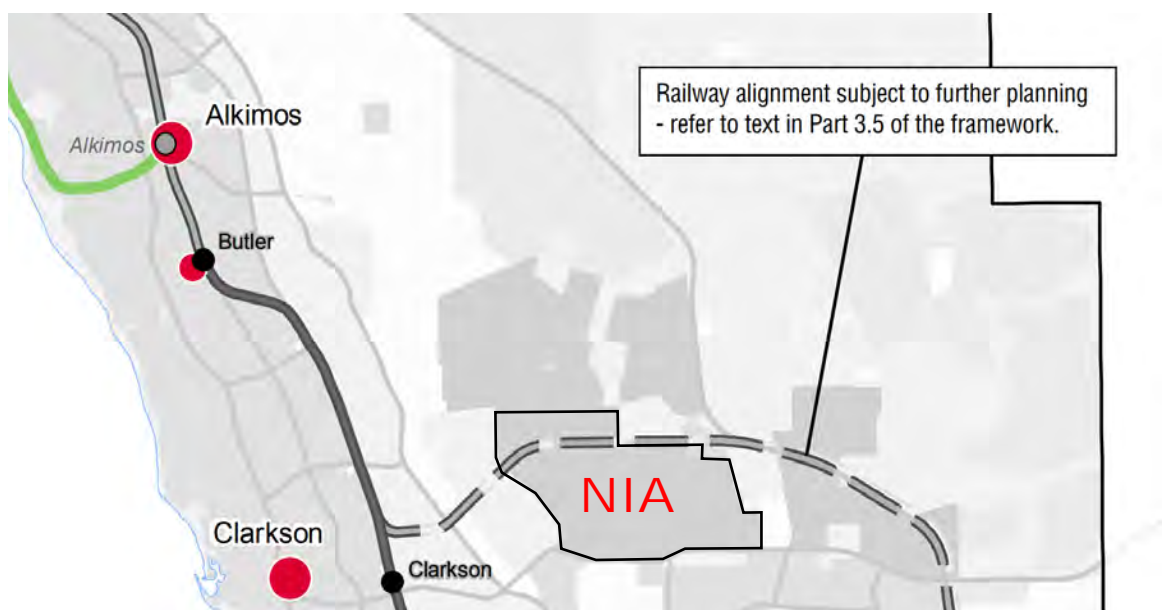


Figure 5 Potential future rail link (*Perth and Peel @ 3.5 Million Transport Plan*)

Whilst a station is unlikely to be established within or adjacent to the NIA, it should be noted that some Local Governments provide a statutory reduction on the number of car parking bays required to be provided by land uses that are within close proximity of a passenger rail station. These statutory reductions generally operate on a percentage discount for land uses within a 400-800 metre catchment of the station, such as the City of Stirling’s criteria shown in Table 4-1.

Table 4-1 City of Stirling criteria for car parking reductions

Reduction %	Performance Criteria
20% or 10%	The proposed development is within 400 metres ^(a) of a rail station ; or The proposed development is within 800 metres ^(a) of a rail station.

For land uses that are not located within close proximity to a rail station (i.e., those outside of an 800-metre catchment), a feeder bus or shuttle service (as discussed in the following section) can help to grow rail patronage, further reducing parking needs.

4.9 Shuttle bus service from parking area/transit stops

Should the parking ratios implemented within the NIA not meet demands, a shuttle bus service that transports staff from a central parking area or a rail station to locations within the NIA is another strategy that could be considered. Such a strategy is currently being employed within the City of Stirling. As mentioned in section 4.1, a central parking area is unlikely to be viable in the NIA. Whilst the establishment of a rail station within or immediately adjacent to the NIA is unlikely (see previous section), there may be potential for shuttle access from another station in proximity to the NIA, e.g., Clarkson. However, the volume of users would need to be sufficiently high to justify the cost of provision of a shuttle service.

If it was determined that sufficient demand existed for a shuttle service, consideration would need to be given as to how it is developed, i.e., whether it is a joint effort between the City and the PTA and whether there is any tolerance by users for a charge.

4.10 Improved bus services

As discussed in section 4.7.1 of the *NIA Traffic and Transport Study*, Transperth advises that patronage of bus services within industrial areas is typically low, however they do have long term plans to introduce services to the NIA, including to Banksia Grove and Clarkson Station. However, these are considered low priority projects and are currently unfunded.

4.11 Active transport infrastructure and facilities

Section 5.3 of the *NIA Traffic and Transport Study* outlines the recommended pedestrian and cycling facilities and infrastructure for the NIA. The following approaches are recommended to assist in improving the mode share of active transport to the NIA:

- A pedestrian and cycle path network that includes paths adjacent to all roads, connections to bus stops and suitable crossing facilities.
- Path and crossing connections to surrounding residential areas.
- Good cycling connectivity to Clarkson Station located to the west of the NIA.
- Sufficient end of trip facilities should be provided with all development, i.e., showers, bicycle parking, lockers.

4.12 On-demand transport

On-demand transport is a user-oriented form of transport characterised by flexible routing and ad-hoc scheduling of small/medium vehicles operating between pick-up and drop-off locations according to the passenger's wishes [that is] provided by the private sector³. On-demand transport businesses (e.g., Uber) are becoming a common means of transport for a wide range of trip purposes. Most trips occur:

- on Friday and Saturday nights; and
- at the start and end of the workday.

There is also diverse demand from patrons that are reliant on taxis/on-demand services due to a lack of access to a private vehicle, or their inability to drive (i.e., due to disability), or due to the limited provision of public transport services to and within the NIA.

The use of on-demand transport to access the NIA would reduce the ultimate car parking demand to the NIA but would not reduce car trips unless car-pooling also occurs. While it is unlikely that persons would routinely or regularly access the NIA via on-demand transport, it is important to recognise the potential impact of this mode.

4.13 User/staff surveys

Understanding the barriers that NIA staff may face with regard to reducing car usage would be an important next step in informing the City's approach to parking management and transport infrastructure provision. This would also be useful in identifying the degree to which staff and visitors themselves could contribute to managing traffic and safety issues through increasing walking, cycling and public transport access to and through the NIA.

To achieve this, an online survey of NIA staff could be administered via the City's website, including questions about:

- Street of residence (to calculate approximate actual walking/cycling, public transport distance and to potentially identify alternative mode access routes).
- Age and sex of staff member (to identify any demographic barriers).
- Usual mode of travel to the NIA in fine weather and in inclement weather.
- Openness to walking, cycling, and using public transport; questions about any limiting factors/suggested improvements (this usually identifies things the City could address, such as gaps in the foot/shared path network).
- Miscellaneous questions about access to the NIA – this can include any other questions for which responses may be of interest to the City.

The survey should be strictly anonymous and confidential. Results should be analysed by the City, with findings presented as aggregated statistics, high-level colour-coded maps, and anonymised comments only. The findings would help to inform which parking strategy or strategies may be appropriate for implementation.

4.14 Shared parking areas

Shared/reciprocal parking involves the full or partial decoupling of parking from the land use. An example of the implementation of a shared parking strategy can be found at Innaloo Shopping Centre where half of all parking is required to be provided as public parking. The proposed Three Oceans development at Scarborough Beach provides another example of a similar

³ WA Government On-Demand Transport Green Paper

approach, with the provision of a 100-bay public car parking facility to accommodate wider demand. Such an approach could be considered within the NIA service hubs.

Where adjacent or nearby businesses have completely different periods of peak car parking demand (i.e., there is no overlap), shared/reciprocal car parking facilities may provide a more efficient use of land rather than each business providing large private parking areas that are never used at the same time. Where this is the case, up to 100 per cent of the parking requirement of one of the sites could be waived. Alternatively, where there is partial overlap of parking demand, up to 50 per cent of the parking requirement of one the sites could be waived.

Such an arrangement should only be considered for the NIA where it can be shown that:

- i. an appropriate level of car parking is provided for the uses on the subject site and any other site applicable to the shared/reciprocal arrangement
- ii. the parking facilities serving the uses will be located on the one lot, or if located on a separate lot, the parking arrangements are permanent (e.g., through an easement, amalgamation, legal agreement, condition of approval, or any other formal arrangement acceptable to the City
- iii. the parking facilities are conveniently located to both developments.

However, it is likely that most land uses in the NIA will operate at similar times, and as such, opportunities to employ shared/reciprocal parking facilities may be limited.

5. Recommendations

5.1 Land use classifications

As part of the following recommendations, land uses within the NIA have been classified within the below typologies to enable flexibility and broadly encompass development in the allocation of parking provisions.

Table 5-1 Land use classification descriptions

Land use Group / Category	Description
Extractive / Mining / Basic Raw Materials	Uses associated with the processing of raw materials (such as crushing, washing, blending, or grading), the treatment, storage, and the manufacturing of products from those materials and/or those uses which may result in odour, dust, noise, and other emissions which must implement practicable measures to prevent or minimise emissions from their premises.
General Industry / Warehousing / Distribution	means premises used for the manufacture, dismantling, processing, assembling, testing, servicing, maintenance or repairing of goods, and includes, if carried out on the same land and incidental to any of these activities – (a) the storage of goods (b) administration or accounting (c) the sale of goods by wholesale or retail (d) the provision of amenities for employees
Light / Commercial	Means a range of industrial uses and commercial industries – (a) in which the processes carried on, the machinery used, and the goods carried to and from the premises would not affect the amenity of the locality; and (b) the conduct of which would not impose an undue load on any existing or proposed service for the supply of water, gas, electricity, sewerage facilities or other similar services. (c) Premises accommodating a range of commercial facilities and services not generally considered appropriate to main shopping areas, such as those involving large areas for the display of bulky goods or catering for the through movement of vehicles
Business Services – Intense	Means premises used for the provision of services which are predominantly administrative, retail, industrial and/or convenience in nature

5.2 Parking provision

From the quantitative and qualitative analysis undertaken, car parking ratio provision in industrial areas is typically based on floor area or a mixture of floor area and employee numbers, with a minimum provision required.

The DoT has advised that there is a clear need for guidance and consistency on industrial area parking provision across local authorities that relates specifically to bulky goods, service industry, light industry, and general industry areas. Accordingly, a ratio with a reasonably consistent approach would be ideally adopted for industrial areas across the Perth metropolitan area.

Ideally, parking ratios should be set so that they provide some level of flexibility to meet the specific needs and desired outcomes of the NIA. They should not be too low so that overflow parking becomes a problem, nor too high so that there is an over provision of parking resulting in underutilised and undervalued land.

The City's current parking provision generally exceeds the provisions in other comparative industrial areas that were assessed by GHD (refer to section 3.1). However, the City has a stated desire to avoid overspill of parking onto streets and verges within the NIA (an issue that has impacted the Wangara Industrial Area). Furthermore, the analysis undertaken has found that as industrial estates age, there is typically an intensification of land use (and employment) that occurs over time, resulting in additional parking needs. As a result, parking requirements should provide for future densification. However, in contrast to intensification is automation. This is where the land use remains largely the same, but where processes become more automated which results in reduced staff numbers and therefore, reduced parking demand. Should this occur within the NIA, it would provide the opportunity for businesses to re-purpose parking areas for other uses, such as storage or an increase in building footprint.

Following discussion with the City, it was considered that the best way of achieving sufficient parking provision to meet current requirements, as well as to provide for likely future needs, is to implement a higher minimum parking provision for developments within the NIA. As shown in Table 5-2, four 'Parking Land Use Groups' (plus an "N/a" category) that were considered appropriate for the NIA were developed with input from the City. Each group was allocated a range of land uses that corresponded with those listed within the City's DPS 2. A proposed minimum parking ratio for each land use group was then developed, again with input from the City. For flexibility, the ratios are based on GFA, NLA and/or per employee. For land uses not listed in the table (i.e., per the "N/a" category), reference is to be made to the City's DPS 2.

To provide for visitor parking demand at retail related land use typologies ("Business Services – Intense"), a higher NLA figure has been provided in reference to existing Local Government standards (Section 3.1). In addition, a small number of truck/freight parking bays should be allocated in the vicinity of the service hubs to allow for customer use and for small truck/van delivery/collection.

Table 5-2 Proposed minimum parking ratios for the NIA

Parking Land Use Group	DPS 2 Use/s that fit in this Land Use Group	Proposed Minimum Parking Ratio
Extractive / Mining / Basic Raw Materials	Industry - Extractive	2.5 spaces per 100 m ² of GFA; and/or
	Concrete Batching Plant	1.25 spaces per employee but not less than 5 spaces.
	Resource Recovery Centre	
	Salvage Yard	
	Waste Storage Facility	
General Industry / Warehousing / Distribution	Fuel Depot	2.5 spaces per 100 m ² of GFA; and/or
	Industry	1.5 spaces per employee but not less than 5 spaces.
	Storage Yard	
	Transport Depot	
	Warehouse / Storage	
	Factory Unit	
	Vehicle Wrecking	
	Motor Vehicle Repairs	
	Smash Repair Station	
Light / Commercial	Industry – light	2.5 spaces per 100 m ² of GFA; and/or
	Open Air Display	1.75 spaces per employee but not less than 5 spaces.
	Trade Display	
	Vehicle Sales / Hire Premises	
Business Services – Intense	Shop	7 spaces per 100 m ² of NLA

Parking Land Use Group	DPS 2 Use/s that fit in this Land Use Group	Proposed Minimum Parking Ratio
	Bakery Convenience Store Lunch Bar Take-Away Food Outlet Pharmacy Restaurant	
N/a	N/a	Uses not listed for the purposes of this table require parking to be calculated as per Table 2 of DPS 2

As identified in the *Neerabup Industrial Area Economic and Employment Strategy*, it is expected that population growth in the City of Wanneroo and urban expansion within the coastal corridor of the North-West subregion will occur at a much faster rate than that of the Greater Perth Metropolitan Area. This is likely to increase demand for population driven industrial products and services and therefore, may result in land use intensification within the NIA. Such an intensification of land use may allow for a change in the methods of access to the industrial area (e.g., increased public transport provision), resulting in reduced parking needs. It is suggested that the parking strategy and accompanying parking ratio is reviewed when significant intensification occurs in the future.

5.3 Parking management strategies

Of the parking management strategies discussed in section 4, the following are recommended for consideration and/or implementation within the NIA:

- timed on street parking adjacent to the service hubs to provide for short term demand and ensure turnover
- bus service/s through the NIA
- active transport infrastructure and end of trip facilities

Additionally, user/staff surveys that seek to identify such information as the number of employees, available parking, car parking demand/use and building floor area could be conducted by the City to identify such things as how parking is being used and can aid in determining what parking management strategies may be most appropriate or effective for various land use typologies and/or locations in the NIA.

6. Reference documents

The following documents have been referred to in this report:

- City of Canning Local Planning Scheme 42
- City of Port Adelaide Enfield The Parking Spaces for Urban Places: Car Parking Study, 2003
- City of Stirling Local Planning Policy 6.7 Parking and Access
- City of Swan Parking Strategy for Malaga Version 2, November 2014
- City of Wanneroo District Planning Scheme 2 (DPS 2)
- Donald Shoup, The High Cost of Free Parking, 2005
- Perth and Peel @ 3.5 Million Transport Plan
- Planning and Development (Local Planning Schemes) Regulations 2015.
- Western Australian Local Government Association, Local Government Car Parking Guideline' (2020)

Appendices

Appendix A - SA Government carpooling brochure

Carpooling

A smarter way to travel to work



Carpooling occurs when two or more people make arrangements to travel together in a single car. Carpooling is a practical way to share transport costs and reduce road congestion and vehicle pollution.

Carpooling can be a suitable initiative for workplaces where there is a demand among staff to share their drive to work. Similarly, carpooling can be an environmentally friendly and cost effective means of travel between locations during work time.

This fact sheet provides information and practical suggestions to make carpooling successful for your workplace.

Benefits

Carpooling provides staff with flexible options for their journey to work. Sharing a trip to work just one day a week can result in significant savings in travel costs over a year. Where the trip to work is longer for some people, passengers may join for only part of the drive. This gives carpooling extra flexibility, and enables more people to participate.

Benefits to employees:

- reduce fuel, parking and vehicle maintenance costs
- reduce stress by driving less frequently

- improve social networks
- make better use of commuting time
- contribute to a cleaner environment
- increase mobility options for non-drivers.

Benefits to the community:

- reductions in vehicle emissions
- reductions in traffic volumes and congestion
- safer roads
- an alternative, cost effective travel choice.

Benefits to your workplace:

- cost savings
- contribute to corporate social responsibility or environmental objectives
- reduce risk and staff exposure to road crashes
- relieve parking pressure.

How to begin

Developing your carpooling program will begin with investigating how it could work best for your organisation.

Consideration will need to be given to the likelihood of carpooling being successful within your particular workplace. Carpooling is likely to attract interest at sites where public transport, walking and cycling networks and parking are limited or are not easily accessible.

Gaining the support of staff and management to begin the program will be important to ensuring its success. Engaging employees in a discussion about their current travel modes and preferences can be an effective way of gauging whether carpooling is an option for your workplace. This can be done informally or through a staff travel survey. A staff travel survey can assist in determining:

- current modes of staff transport, particularly the proportion of staff currently driving alone or those already carpooling
- attitudes to carpooling and whether staff would be happy to travel together
- ideas and suggestions about how to promote carpooling in your organisation
- locations staff currently commute from.

The Department of Planning, Transport and Infrastructure can assist you to undertake a staff travel survey through the smarter travel @ work program. The smarter travel @ work program helps businesses reduce the number of single occupant car trips used for business and commute travel by providing safer, greener and more active travel options. A staff travel survey will assist in identifying the potential demand for a carpool program within your organisation.

How can we encourage people to participate?

There are a variety of strategies that workplaces can consider to promote carpooling and motivate people to change their travel behaviour. These include:

- sign-up incentives such as a morning tea and coffee vouchers
- an informal staff get together during work time to allow potential carpool partners to self-organise
- priority parking for carpool users

- promote the success of your carpool and staff through your newsletter / intranet
- providing information on the carpool program to new staff through the induction process
- providing a shared fleet car booking system that prompts staff to share journeys
- a guaranteed ride home for carpool passengers if circumstances change.

Maintaining the carpool program

Reviewing the carpooling program will assist in determining any improvements that may be needed to maintain its ongoing success. Common methods used to review carpooling programs include focus groups, feedback surveys and targeted conversations with staff.

Identifying and acting on the outcome of the review will assist in maintaining the momentum of the carpool program and maximising the participation of staff.

Adelaide Carpool

The Department of Planning, Transport and Infrastructure is currently trialling the [Adelaide Carpool](#) program. If your workplace is interested in joining, e-mail support@adelaidecarpool.com.au



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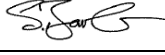
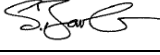
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https://projectsportal.ghd.com/sites/pp18_01/neerabupdistrictplan/ProjectDocs/Transport/12515608-REV-0-Neerabup%20Structure%20Plan%20Car%20Parking%20Strategy.docx?web=1

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