Neerabup Industrial Area

Subdivision and Built Form Report

City of Wanneroo

26 August 2021

→ The Power of Commitment

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1. Introduction

The City of Wanneroo (the City) has engaged GHD to review and revise the local planning framework which currently applies for the Neerabup Industrial Area (NIA). The project scope requires translating the planning analysis undertaken to-date through the preparation of a new structure plan and associated amendments to the City of Wanneroo District Planning Scheme No. 2 (DPS 2). The revised planning framework for the NIA will be informed by several technical studies.

1.1 Project background

The City has previously commissioned the preparation of a Market Positioning and Viability Assessment (Viability Assessment) for the NIA. The scope of the studies undertaken as part of the Viability Assessment was to provide critical information for the staged success of the NIA. The study includes a 'vision' and a development pathway aiming to establish the NIA as a leader in globally recognised industrial and technology precinct planning. The Viability Assessment Vision is as follows:

> ***'the vision for the NIA is of an employment centre that specialises in the smart urban technology industry, with the objective to attract global leading enterprises that develop, test, implement, manage and maintain the services and solutions associated with Smart technologies'*[1].**

In acknowledging the Vision outlined in the Viability Assessment, built form in the NIA should present as 'smart', as are the industries and technologies that the City is seeking to attract to the NIA. To complement this Vision, the NIA would need to provide an improvement from how subdivision and development has traditionally been delivered in industrial areas.

1.2 Purpose of this report

The purpose of this report is to provide analysis and commentary to address shortfalls in the provisions of the City of Wanneroo Agreed Structure Plan No. 17 (ASP 17) and DPS 2. Following an analysis, this report will provide recommendations to encourage a high-quality subdivision layout and built form outcome for the NIA in order to deliver:

- A streetscape that is inviting and attractive; with street trees, verge treatments and infrastructure suitable in minimising negative visual impacts that are inevitably caused by industrial development and onsite car parking areas
- Subdivision layout and lot size appropriate for an industrial area like Neerabup – which invites the establishment of smart urban technology industry as well as other industrial uses
- Provisions to assist the City in requiring a built form that is attractive, and suitable for an industrial area that is seeking to attract smart urban technology industries[2].

The NIA's proximity to a fast-growing population base and improving transport links means over time it will have enhanced connectivity to road networks supported by a large and available labour pool. The implementation of appropriate land development and built form standards and deployment of high-speed data networks and infrastructure will ensure that the NIA is an attractive target for investment and employment into the future.

This report will explore the benefit of developing detailed design guidelines applicable across the entirety of the NIA, (expanding beyond Meridian Park) and provide analysis and recommendations on design guidelines and development provisions that will attract and then meet the needs of an emerging smart urban technology industry precinct and more traditional industrial uses in the NIA.

[1] Extract from City of Wanneroo RFQ No: 19078 Section 1.3
[2] Extract from City of Wanneroo RFQ No: 19078 Section 2.2.5

The report also provides commercial and property advice supplied by Burgess Rawson regarding lot size and layout and the needs of end users, including smart urban technology industries as well as other industrial users.

Please note in addition to the Burgess Rawson Market Commentary in Appendix B, Chad Henville of Burgess Rawson has provided progressive advice and commentary during the drafting of the report. This input has been considered and integrated within the body of GHD's report as appropriate.

The principles set out in the report recognise that public realm amenity is a factor in attracting innovative businesses (and their staff) pursuing advanced and innovative technologies. The report also acknowledges that built form amenity must be complemented by appropriate physical, transport and digital infrastructure that supports innovation activity and business global connectivity.

The principles related to subdivision and built form outlined in this report have already been incorporated where appropriate into the Draft Concept Masterplan that has been developed over the past 12-18 months.

1.3 Scope and limitations

GHD has prepared this report for the City of Wanneroo and it may only be used and relied on by the City of Wanneroo for the purpose agreed between GHD and the City of Wanneroo as set out in this report. GHD otherwise disclaims responsibility to any person other than the City of Wanneroo arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report. The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared. The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by the City of Wanneroo and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. Overview of industrial development in Perth metropolitan northern corridor

The following section summarises commentary provided by Burgess Rawson as well as information found in the Economic and Employment Lands Strategy.[3] A general overview is provided of the industrial land demand drivers as well as a historical evolution of selected industrial areas in the Perth metropolitan northern corridor. The section provides examples of how industrial areas in the region have evolved and how industries have migrated over time to newer industrial areas as the surrounding population has grown and transport networks / infrastructure has improved, while land costs and rental rates have increased in existing industrial estates.

This section provides context to the recommendations contained in the later sections of the report by highlighting development factors that drive the growth and the development of newer industrial areas.

Based upon discussions and opinions provided by Burgess Rawson the evolution of the NIA is likely to follow (over time) a generally similar path to other industrial areas located in Perth's northern corridor. Noting the NIA's evolution will be moderated by some unique factors related to the industries it caters for and its location, environmental context and transport links. Unique factors that include resources extraction, a range of regulated land uses, large expanses of bush conservation area and a relatively isolated location with maturing transportation links.

Accompanying this report is Appendix A - Background Analysis which formed part of the first draft report providing a comparison of other industrial areas in the Perth's northern corridor. This comparison addresses road networks, location of industrial typologies and resultant outcomes and has assisted in the formulation of our final subdivision and built form recommendations.

2.1 Economic and Employment Lands Strategy

In response to a recognised shortfall in industrial land supply, the Economic and Employment Lands Strategy: non-heavy industrial (EELS) was prepared across a 4 year period and published in April 2012. EELS focused on general and light industry needs and was prepared with an aim to ensure that adequate forward planning is undertaken to provide employment land in both the Perth metropolitan and Peel regions over the next 20 years and beyond.

It is widely acknowledged that one of the greatest challenges in industrial land use planning is being able to predict future demand and from where it will originate. Fundamentally, the demand for industrial land is influenced by a combination of local, national and/or international demand for goods and services, with value adding to both locally generated products and products generated in other regions[4].

Part 8 of EELS discusses the north-west subregion, a region which comprises the local government areas of the City of Wanneroo and the City of Joondalup. The total area of zoned land in this sub-region is 78,430 hectares, of which 1770 ha is industrial land (2 per cent)[5] which represents 17 per cent of the metropolitan total of industrial zoned land. The EELS provides the following overview relative to the NIA area:

- *City of Wanneroo accommodates most of the sub-region's industrial land. Currently, within the City of Wanneroo there are four industrial estates that service the North-west sub region. These are Wangara, Landsdale, Neerabup and Yanchep.*
- *the Neerabup Industrial Estate to the north is currently being developed and will be the centre of up to 20,000 local jobs*
- *One of the missing components of the sub-region's road network is its connection with the North-east sub-region, particularly in respect to freight movements*
- *No intermodal sites are planned or being considered for this sub-region*
- *The identified drivers of this demand for the North-west sub-region are considered to be:*

[3] Economic and Employment Lands Strategy: non-heavy industrial Perth metropolitan and Peel Regions, April 2012, WAPC
[4] Extract from EELS
[5] Extract from EELS

- *Population growth;*
- *Sustained levels of economic growth and employment targets;*
- *Increased industrial land values;*
- *Improvements in the transport network;*
- *Improvements in service infrastructure; and*
- *Resolution of environmental issues.* [6]

2.2 Osborne Park industrial area

The development of Osborne Park in the 1970/80's as an industrial area close to the city and transport links saw it become one of Perth's premier industrial locations. Over time, the area's character has evolved from market gardens and residential to light and medium industrial into a mixture of bulky goods retail, car showrooms and high-end showroom/warehouse/distribution and commercial (office). Osborne Park has since been fully built-out and developed its current mixed-use character with its land values and rental rates continuing to rise.

2.3 Malaga industrial area

The pressure on rental rates in Osborne Park and the opening up of the Malaga industrial area saw the relocation of industrial activities and light manufacturing to Malaga in the early to late 1990's. These activities capitalised on Malaga's relative proximity to the CBD and Reid Highway (opened mid-nineties which use the catalyst for the suburbs major growth), and the intermodal transport opportunities adjacent to Perth Airport and Kewdale freight interchange.

Malaga has grown to a point where there are now more than 3,000 businesses providing employment for 15,500 workers. Approximately 20 percent of these workers are residents of the City of Swan. The top four industries of employment are manufacturing, construction, wholesale trade and retail. Collectively they employ about 70 percent of all workers in Malaga.

Over time, as the estate has reached capacity, the area has seen the introduction of bulky goods retail within its main arterial road network. The area has struggled to accommodate the growth of businesses in the suburb. High pricing has encouraged businesses to look further north.

It is worth noting that resource extraction had not occurred in Osborne Park and Malaga to the scale it is occurring in the NIA.

2.4 Wangara – Landsdale industrial area

The evolving character of Osborne Park, the continued growth of Malaga and the expanding population in the northern corridor of Perth has promoted the development of Wangara as a viable alternative. Wangara has followed a similar trajectory to its southern neighbours with the industrial/retail activities and quality of the built form changing over time as land values rise and economic drivers change. While Wangara remains partly underdeveloped at this stage, with only modest surplus land available, its value as a hub for car showrooms, bulky goods and showroom/warehouse continues to grow. The changing character of Wangara means that, over time, the NIA will steadily attract uses seeking larger building footprints or lower land values compared to Wangara, particularly as Wangara moves closer to a character more reflective of Osborne Park. Available serviced industrial land is steadily reducing, particularly smaller lots within the suburb

2.5 Neerabup industrial area

The existing NIA is characterised by a broad range of land uses that include large scale natural resources extraction, transport and heavy industry through to light industrial/showroom uses and agricultural activities.

The existing built form reflects the age and range of businesses within the NIA. The early industrial development not subject to design guidelines demonstrates inconsistent built form and public realm outcomes. The newer

[6] Extract from EELS

Development WA Meridian Park Area reflects the benefits of contemporary industrial design guidelines, producing more consistent built form product and sustainable public realm and landscape outcomes.

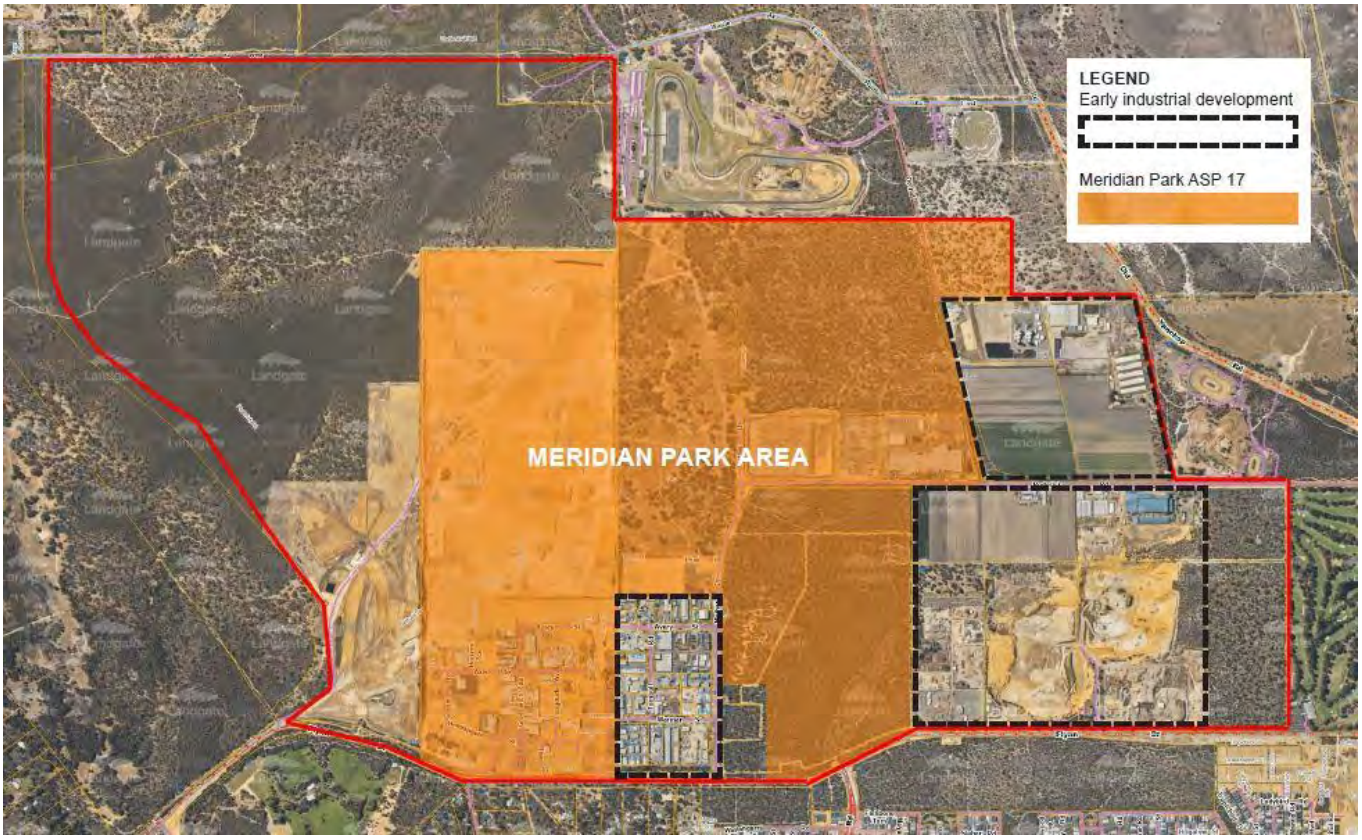


Figure 2-1 Map describing areas of early industrial development

The NIA is to become a strategic hub for employment growth within the City of Wanneroo. Excluding environmental constraints, the precinct has approximately 600[7] hectares of developable land to support employment and the region's industrial growth.

The businesses which currently operate within the NIA, as listed in the Economic and Employment Strategy Report, are characterised by the following key land use planning floorspace types:

- Manufacturing, Processing and Fabrication
- Storage and Distribution
- Utilities and Communications
- Office and Business floorspace
- Service Industry
- Primary and Rural (expected to diminish as more intensive industrial activities occur).

The development of the NIA is expected to be predominantly influenced by rapid population growth in surrounding population centres, as well as the Greater Perth Metropolitan Area's economy, and the broader Western Australian economy. Macroeconomic forces including population growth play a large role in the demand for industrial lands in the area, which align with the Perth industrial real estate market.[8]

Major drivers for this growth arise on both the supply and the demand side. In terms of supply, the Wangara-Landsdale industrial area is approaching its limits of growth and is expected to exhaust its supply of industrial land by about 2030. Upon this time, the NIA will be a in a prime position to offer competitive industrial land to the demands of the market. On the demand side, the NIA is positioned adjacent to the fasted growing populations in

[7] Footnote: the 600 ha is an estimate and is sourced from the GHD Economic and Employment Strategy report which arrived at this figure.
[8] GHD Economic and Employment Strategy report

the Perth northern corridor and as such it is expected that demand for industrial land will increase significantly over time.

GHD has consulted with Chad Henville of Burgess Rawson over the course of 2019, 2020 and 2021 to source commercial advice on market conditions and help inform the recommendations contained in this report. While the impact of Covid-19 has seen accelerated demand for industrial land, the original 2019/20 observations provided by Burgess Rawson remain largely unchanged. However, Burgess Rawson have identified the following sectors as benefiting from rising business confidence in the current COVID-19 environment and Burgess Rawson see real opportunities for growth related to the following sectors in the near term:

- Food services and supply sector
- Mining and resource and maintenance sector
- Housing construction sector including building, maintenance & landscaping.

The industry groups listed above have been derived from inputs received from the Economic and Employment Strategy prepared by GHD and advice received from Burgess Rawson.

2.6 Advanced manufacturing and smart technologies

The ultimate vision for the NIA is of an employment centre that supports the attraction and growth of industries which incorporate the latest innovations in technology as part of their day-to-day operation.

> ***This new 'innovation economy' is emerging rapidly as new technologies transforming established industries. While technology platforms enable work to be done remotely, innovation is helped by collaboration – something which is often easier in person. The benefits of collaboration – the sharing of knowledge, services and infrastructure – have led many businesses and institutions to co-locate in specific hubs or clusters[9].***

The NSW Innovation Precincts document "Lessons from international experience" highlights the importance of "Infrastructure" and "Amenity" amongst its seven factors for success to attract a new generation of technologies and industries.

We know through our work with Murdoch University developing the campus wide Integrated Infrastructure & Sustainability Strategy and the University's Knowledge and Health Precinct Strategy within the Murdoch Specialised Activity Centre, that subdivision design and built form are only a part of the equation when it comes to attracting the industries outlined in the City's vision.

Nevertheless, in our view key elements which will attract the latest industrial innovation and technology to the NIA will include the provision of a high-quality public realm and built form that delivers superior levels of amenity compared to competing industrial estates. Furthermore, the streetscape and amenity must also be supported by a high-quality infrastructure encompassing roads, public transport, sustainable electrical power, heating and cooling energy, water and waste treatment as well as a high-speed communications and data networks, if the NIA is to attract new and innovative forms of industry as opposed to only traditional forms of industry.

However, given the infancy of establishment and competing industrial estates in the region, the vision of attracting industry with a new generation of technologies and creating a superior industrial precinct will need to be carefully balanced with supporting existing industries that have traditionally underpinned employment in the area. The planning and design framework will need to provide sufficient flexibility to cater for existing and emerging industries while lifting the overall standard of the NIA.

2.7 Factors influencing the NIA's growth

Factors influencing growth of the NIA can be summarised based on the following key components:

[9] Source NSW Innovation and Productivity Council - NSW Innovation Precincts

- **Affordable land** – in the short term, the NIA is expected to provide an affordable option for owner occupiers and developers seeking accessible and developable land. Future growth in demand may, however, negatively influence affordability in the longer term
- **Flexible lot sizing** – the greenfield profile of the NIA means there is opportunity to provide a range of lot sizes and for development to be tailored to meet the specific operational requirements of certain uses
- **Rapid residential growth** – rapid residential growth in the region is expected to increase the demand for general industrial land, particularly in relation to population driven industries such as food processing and building construction
- **Existing and future transport corridors** – Compared to some existing industrial areas the NIA has constrained level of accessibility. This may impact on the area's ability to attract investors over the short to medium term. However, over the longer-term, opportunities do exist to enhance the area's connectivity as future transport corridors develop. It is also noted a large number of major infrastructure developments are underway, expected or planned to be completed in coming decades, notably the Mitchell Freeway extension, extension/realignment of Flynn Drive/Neaves Road and continued development of Muchea and Bullsbrook industrial areas – refer Table 2.1 for a list of major infrastructure projects in the surrounding locality.
- **Infrastructure development** – infrastructure development such as transport and logistics and communications have significant potential to increase the competitiveness of the area, and therefore drive growth
- **Regulated land uses** – the suitability of industrial lands in the NIA for a range of regulated land uses including those considered undesirable in areas in closer proximity to residential areas or transport corridors, such as recycling depots, car wrecking or sand blasting, make the area an attractive option for these usages. Importantly the NIA provides an opportunity for 'regulated land uses' that cannot be accommodated elsewhere in the City of Wanneroo
- **Government land uses** – the NIA is well equipped to accommodate a range of government uses such as the Water Corporation, Transperth, Main Road Western Australia and the City of Wanneroo [10]
- **Activity centres** – the NIA is well located in respect to existing and activity centres such as the Banksia Grove District Centre, Clarkson Secondary Centre and Butler District Centre.

Table 2.1 Proposed major infrastructure projects

Project Name	Infrastructure Class	Status
Intermodal Facility for Bullsbrook	Transport	Proposed
Train line through the NIA	Transport	Proposed
NIA Solar energy park	Energy	Mooted
Whiteman Yanchep Highway	Transport	Proposed
Ocean Beach Marina	Tourism and Recreation	Committed
Waste to Energy Facility	Energy	Mooted
Mitchell Freeway extension	Transport	Committed
Extension/realignment of Flynn Drive/Neaves Road	Transport	Future

[10] GHD Economic and Employment Strategy report – 2.2 Growth Drivers in the NIA

3. Analysis of existing NIA subdivision and design controls

The overall character, efficiency and built form quality of industrial estates is typically a result of a combination of factors that can include permitted land uses, transport connections, infrastructure, subdivision layout, planning and design guidelines and restrictive land use covenants.

Development of the NIA is informed by a range of State level planning and development controls as well as provisions contained within the DPS 2, the provisions of ASP 17 along with a range of local development plans and local planning policies.

The City considers that the ASP 17 provisions are deficient in ensuring that a high-quality subdivision layout and built form is delivered in the NIA and have requested GHD suggest how the existing provisions can be enhanced for the purpose of providing positive outcomes for the following items:

- A streetscape that is inviting and attractive
- Subdivision layout and lot size appropriate for an industrial area like Neerabup
- A built form that is attractive and invites innovative, technology related industries
- Notwithstanding the above, it is important to note that the Meridian Park area, is subject to additional design guidelines as defined in Section 16 of ASP 17.

To enable easy comparison between the various subdivision and built form controls that govern the NIA, an analysis of the relevant provisions of ASP 17, DPS 2 and the Meridian Park Design Guidelines is outlined further below.

3.1 Operational Policy 1.1 – Subdivision of land (general principles)

Published in February 2020, Operational Policy 1.1 (OP1.1) sets out the general principles that will be used by the WAPC in determining applications for the subdivision of land. It also indicates the basic requirements for the creation of new lots and the procedures the WAPC will follow to process subdivision applications.

The Policy measures addressed within OP1.1 comprise 12 key areas, these being:

- *Consistency with long-term planning goals*
- *Context and site analysis*
- *Site responsive design*
- *Structure plans*
- *Super lot subdivisions*
- *Development contributions*
- *Lawful development*
- *Leasehold strata*
- *Utility services provision*
- *Vehicular access*
- *Capability for development*
- *Other policy requirements.*

These policy measures are captured within Development Control Policy 4.1 – Industrial Subdivision. They have also guided the formation of the concept master plan and the recommendations of this report.

3.2 Development Control Policy 4.1 – Industrial Subdivision

Adopted in July 1988, Development Control Policy 4.1 (DC 4.1) provides guidance on the matters considered by the WAPC when determining applications for industrial subdivision throughout WA. Whilst adopted in 1988, DC 4.1 is still considered to be relatively contemporary in its operation.

Subdivision controls addressed under DC 4.1 include lot size and shape, road layout, servicing and open space requirements. Whilst DC 4.1 contains these sub-sections relating to a range of subdivision considerations, it lacks any prescriptive control. This is due to the fact that the driving philosophy of DC 4.1 is that due to the varying nature of industrial demand and uses, there is an inherent need to allow flexibility. This flexibility is achieved through not imposing minimum lot sizes. The rationale for the need for flexibility is captured under section 3.4 of DC 4.1 where four examples are provided on the various circumstances and objectives that drive a subdivider / developer when creating industrial land, these being:

a) *subdivision of an area into a series of modules or basic site-units, with firms selecting the number and combination of units that suit their needs;*

b) *the design of services so that larger lots can later, if required, be subdivided into smaller units with a minimum of cost and disruption;*

c) *preparation of a structure plan showing only major roads and activity areas with inclusion of policy statements for lot sizes and location of different industrial types;*

d) *in the case of larger subdivisions, by adopting a staged development strategy and progressively adjusting lot sizes to take account of the market experience in the earlier stages*[11].

These scenarios are still relevant and DC 4.1 has provided an adequate level of development control to ensure industrial areas are provided with the base level road network, services and open spaces necessary to facilitate further development. It is noted that DC 4.1's expectation for more detailed development control requirements such as car parking, landscaping and the design and siting of industrial buildings is that they are contained within the local planning framework of the relevant local authority. This report examines this latter aspect in further detail relative to the NIA.

3.3 Neerabup Industrial Area ASP 17

ASP 17 was first adopted on 11 January 2005 and has been the subject of a number of amendments, the most recent amendment being amendment No. 6 on 9 October 2020. Since its inception, the introduction and subsequent amendments to the *Planning and Development (Local Planning Schemes) Regulations 2015* (Regulations) have resulted in the introduction of a set of deemed provisions that now form part of every local planning scheme across Western Australia. Under this new regime, planning decision-makers are to give due regard to the provisions of ASP 17 when making decisions on the subdivision and development of land within the structure plan area.

Structure plans are not intended to determine built form. However, the local government and the WAPC need to consider whether the proposed lots are capable of being developed for their intended use, in accordance with the provisions of the local planning scheme. If guidelines on built form are required for specific sites within the structure plan area, local planning policies or local development plans are to be prepared.

ASP 17 comprises two main components –Implementation (Part One) and Explanatory and Technical Appendices (Part Two). Part one is the implementation component of the structure plan, which contains the structure plan map and outlines the purpose and intent of the structure plan. Part Two is the explanatory component of the structure plan that contains the background and explanation of the structure plan, including design methodology, relevance and compliance with the planning framework at the State and local levels, as well as the technical appendices.

Based on the above, a review of ASP 17 has identified the following key sections which address matters relating to subdivision and built form design:

[11] Extract of DC 4.1

Part 1 - Implementation

Section 13.0 Additional Plans and Guidelines

13.1 Design Guidelines and Landscape Master Plan

Section 16.0 Provisions relating to Meridian Park

16.1 Landmark Sites

16.2 Parking Provisions

16.3 Rainwater Tanks

16.4 Energy Efficiency

16.5 Fencing

16.6 Landscaping

16.7 Glazing

16.8 Natural Lighting

16.9 Inclusion of Blade Walls

16.10 Architectural Endorsement

Part 2 – Explanatory and Technical Appendices

Section 7.0 NIA Design Concept

7.6 Open Space & Drainage

7.7 Landscape

Section 8.0 NIA Structure Plan

8.2.3 Business

Section 10 Implementation

10.3.1 Preparation of Design Guidelines and Landscape Master Plan

The following sections below provide further commentary and analysis of each of the relevant sections of ASP 17 as identified above.

3.3.1 Commentary and Analysis

In response to the project scope to review the subdivision design and built form provisions of ASP 17, the following analysis is provided as outlined under Table 3.1 below. It is noted that the observations identified in this section have then informed the recommendations contained under the subsequent sections of this report.

Table 3.1 Analysis of ASP 17 provisions

Ref. No.	Provision	Commentary
Part 1 - Implementation		
13.1	***Design Guidelines and Landscape Master Plan*** *Prior to subdivision commencing within the Structure Plan Area, Design Guidelines and a Landscape Master Plan should be prepared, addressing the key elements of the Structure Plan, including, but not limited to:* • *Main estate entries* • *The core business area* • *Areas adjacent to the Lake Neerabup Parks and Recreation reserve* • *Service Industrial areas fronting Flynn Drive.* *The cost of preparing the Design Guidelines and the Landscape Master Plan shall be included as a Cell Work under the developer contribution arrangement*	– Design Guidelines provisions do not automatically apply to works within existing subdivisions – This provision lacks clarity on when and how the need for a design guideline should be prepared – Market advice indicates a need for a varying levels of design controls to accommodate a diverse range of industries – As part of this report a recommendation on the application of various design standards has been outlined to address the issues above.

Ref. No.	Provision	Commentary
16.1	***Landmark Sites*** *Landmark Site(s) shall be identified at the subdivision stage and be subject to a Detailed Area Plan as a condition of subdivision approval. Prior to the clearance of subdivision containing landmark site(s), Detailed Area Plans shall be submitted by the developer for the approval of the City. No development shall commence on a landmark site other than in conformity with an Agreed Detailed Area Plan.*	– ASP 17 does not identify landmark sites on Plan 1. – It is unclear what criteria warrants a site to be considered 'landmark'. Typically, it is based on topography or corner lot location. – Arguably superfluous to identify landmark sites at subdivision stage. These should be at least recognised now based on the planning framework.
16.2	***Parking Provision*** *On-street parking, where provided, can be offset against the City of Wanneroo District Planning Scheme No. 2 parking requirements for the adjacent development across the entire site and not for individual tenancies.*	– Provision is very brief and seemingly promotes on-street parking across the entire NIA which would not be desirable. Additional detail required.
16.3	***Rainwater Tanks*** *Rainwater tanks are to be located behind the setback area and integrated into the building or appropriately screened from view of the street or other public space.*	– Beneficial, however, lacks incentive for applicants / owners to provide. – Incentivising through dispensations in parking may be opportune.
16.4	***Energy Efficiency*** *All buildings to comply with Section J (Energy Efficiency) of the Building Code of Australia.*	– Only deals with Energy Efficiency and does not address broader sustainability factors.
16.5	***Fencing*** *Front fencing shall be 'open style' and integrated with the building where possible.*	– Agree with provisions however additional measures are recommended.
16.6	***Landscaping*** *Applications for Approval to Commence Development shall include a 'Landscaping Plan' which promotes the use of drought tolerant planting.*	– Agree with provisions however further detail is recommended.
16.7	***Glazing*** *The street elevation of the proposed building is to include a high percentage of glazing to contribute to and activate the facade and complying with the Energy Efficiency provisions of the Building Code of Australia.*	– Agree with intent of provisions however further detail is recommended to clarify its application based on context (e.g. industrial versus commercial). This level of information would typically be addressed as part of detailed design guidelines, not at structure plan level.
16.8	***Natural Lighting*** *Subject to compliance with the Energy Efficiency provisions of the Building Code of Australia, natural lighting should be provided to the uppermost floor area of all buildings by incorporating strategically placed windows and light shelves, light wells and/or awning reflectors to capture light.* • *Minimum 50% of the total floor area of all buildings to have access to natural light from skylights, light shelves, light wells and northern glazed windows.* • *Minimum of 15% of the total roof area to be fitted with skylights designed, shaded and/or oriented to minimise heat gain during the summer months.* • *Minimum 20% of the northern facade to be glazed or provided with openings to allow daylight to infiltrate*	– Agree with intent of provisions however further detail is recommended to clarify its application based on context (e.g. industrial versus commercial). This level of information would typically be addressed as part of detailed design guidelines, not at structure plan level.

Ref. No.	Provision	Commentary
	internal floor areas. Provide awnings or other architectural elements to adequately shade direct summer light. Best Practice Recommendations.	
16.9	***Inclusion of Blade Walls*** *The inclusion of blade walls protruding a maximum of 3 metres into the 6 metre front setback area may be acceptable, subject to the main portion of the building being setback behind the 6 metre setback line.*	– Provision is brief and does not consider building context (i.e. regular site versus corner site, sightlines etc). Does not provide any flexibility for an alternative to a 6m front setback and will create a conflict should an alternative setback be proposed in future design guidelines. – Detail would be better addressed as part of a detailed design guideline as opposed to a structure plan.
16.10	***Architectural Endorsement*** *All applications for planning approval within Meridian Park Industrial Estate shall be accompanied by an endorsement of LandCorp via its appointed 'Estate Architect'.*	– This provision needs to be reviewed in terms of consistency. Currently, there is an inconsistency with the Meridian Park industrial estate boundary that is illustrated under ASP 17 versus the Meridian Park Design Guidelines. – Where the City owns land within the estate, it may not wish to be the subject of DevelopmentWA (LandCorp) endorsement.
Part 2 – Explanatory and Technical Appendices		
7.6	***Open space and drainage*** *Public open space within an industrial area shall be provided in accordance with clause 6.3 of the Commission's Policy DC 4.1 Industrial Subdivision. There is also the opportunity to accommodate drainage within areas of public open space. These will perform both drainage and aesthetic functions and will provide some passive recreation opportunities for workers.* *An area of 5,000 m2 of open space is to be provided in the estate core (business park). This should be included on either Lot 22 or Lot 4. This may include seating areas, public art, etc.*	– These provisions lack a prescriptive requirement for minimum area of open space within the NIA.
7.7	***Landscape*** *The approach to be adopted for the landscape of the industrial estate is to create a low maintenance street tree scheme which will aid orientation within the site (by giving different avenues individual character) while helping integrate the area within the wider context. It is envisaged that streetscape tree planting will be determined as part of the preparation of design guidelines.*	– These provisions are very high level and do not detail landscape expectations within the lot boundary.
8.2.3	***Business (Service Hubs)*** *The Business Zone is located at the centre of the Structure Plan on the major north south spine road. This precinct has been identified in recognition of its strategic location at the centre of the Structure Plan area to encourage more service uses such as banks, local shop, newsagent etc to service the Industrial Estate, both businesses and employees.*	– These provisions do not relate to any built form design requirements – Specific design requirements for Service Hubs are recommended.
10.3.1	***Preparation of Design Guidelines and Landscape Master plan***	– Refer response in Part 1 - Section 13.1 above.

Ref. No.	Provision	Commentary
	The visual amenity and design standards are important to ensuring quality industrial development. It is therefore, recommended that Design Guidelines and a Landscape Master Plan are prepared covering key elements of the NIA *These include:* • *Main estate entries* • *The Core Business area* • *Areas adjacent to the Lake Neerabup Parks and Recreation reservation* • *Service Industrial areas fronting Flynn Drive.*	

3.4 City of Wanneroo District Planning Scheme No. 2

Summarised under Table 3.2 below is a summary of some of the key development controls set out under DPS 2 that relate to development within the NIA.

Table 3.2 Summary of DPS 2 development controls

Section	Provision	
Setbacks for Non-Rural and Non-Residential Development	– Street boundary – 6 metres – Side and rear boundaries – nil – Corner lot – 6 metres (primary) and 3 metres (secondary) – Portion of lot within 3 metres of street alignment is only permitted for the purpose of access and landscaping – Portion of lot between 3 metres and building setback line is only permitted for: • Access • Loading and unloading of vehicles • Landscaping • Trade display • Daily parking of vehicles (employees and customers).	
Building Facades for Non-Rural and Non-Residential Development	– Be of a high standard of architectural design and constructed in brick, masonry and/or plate glass or other approved material – Metal clad walls to have a factory applied paint finish – The facade or facades shall have incorporated in their design, integrated panels for the purpose of signage.	
Landscaping Requirements for Non-Rural and Non-Residential Development	– Landscape minimum 8%. – Portion of lot within 3 metres of street alignment to be landscaped. – Shade trees / tree wells provided at a rate of 1 for every 4 car bays.	
Height controls	Nil	
Car Parking	Abattoir	1 per 50m2 GFA
	Concrete Batching Plant	1 per staff member but not less than 5
	Factory Unit	1 per 50m2 GFA
	Fuel Depot	1 per staff member but not less than 5
	Industry – General	1 per 50m2 GFA
	Industry – Hazardous	1 per staff member but not less than 5
	Industry – Light	1 per 50m2 GFA
	Industry – Rural	1 per 50m2 GFA
	Milk Depot	1 per staff member but not less than 5
	Salvage Yard	1 per 50m2 GFA
	Smash Repair Station	1 per 50m2 GFA
	Storage Yard	1 per 50m2 GFA
	Transport Depot	1 per staff member but not less than 5
	Vehicle Wrecking	1 per 50m2 GFA
	Woodyard	1 per staff member but not less than 5

Section	Provision	
	Warehouse	1 per 50m2 GFA

3.5 Meridian Park Design guidelines

DevelopmentWA's Meridian Park Design Guidelines were first prepared in 2010 and have been applied to estate development since. A number of amendments have been applied during this time. The Design Guidelines set out the Key Principles and Mandatory Elements that govern new development in the Meridian Park area as described in ASP 17.

3.5.1 Key principles

The key principles of these guidelines are set out below[12]:

- *To create a landmark industrial estate with a strong sense of place which demonstrates efficient use of land, water, energy and resources*
- *Display innovative urban design principles*
- *Set new benchmarks for sustainable industrial development and design in Western Australia*
- *Create a strong sense of place for users and visitors by developing a strong architectural character that is contemporary, distinctive and original*
- *Attract businesses that will provide employment self-sufficiency for the region*
- *Support and encourage the growth of businesses following establishment in Meridian Park*
- *Generate job diversity and choice in the Northwest Corridor*
- *Attract smart businesses and 'knowledge workers' to the region*
- *Attract investment and business uses that will present the best land-use opportunities for the region.*

3.5.2 Mandatory elements

The guidelines include specific requirements in relation to the following key mandatory elements:

- *Urban Design and Architectural Form*
- *Passive Design*
- *Parking and Access*
- *Landscaping*
- *Service, Storage and Display Areas*
- *Fencing and Signage*
- *Energy Management*
- *Water Management*
- *Management.*

[12] Extract from Meridian Park Design Guidelines

3.6 Comparison of DPS 2 and Meridian Park Design Guidelines

The planning controls set out in DPS 2 are less prescriptive in character compared to the Meridian Park Design Guidelines discussed in Section 3.3 and as a result, in our opinion generally result in a less consistent, lower quality and less attractive streetscape and built form.

Importantly, ASP 17 only provides general guidance on built form for the Meridian Park area and the remainder of the NIA.

In comparison, the DevelopmentWA Meridian Park Design Guidelines provide a more prescriptive approach to the development of the Meridian Park area defined in ASP 17 by delving into more detail across a range of principles and design elements.

In our view, this results in a more consistent and visually attractive built form and public realm as site planning, landscaping, setbacks and building appearance are significantly more prescriptive compared to DPS 2 and the broad provisions referenced in ASP 17.

Detailed below is a summary of some of the key differences between the DPS 2 planning controls and the Design Guidelines for Meridian Park.

In summary the Meridian Park Design Guidelines when compared to the provisions to DPS 2:

- may add cost to development for some landowners and developers
- may constrain innovative design
- target market sector is the middle to upper end
- may inhibit tenants to redevelop sites in the future in response to need to expand.

3.6.1 Streetscape

The existing Meridian Park design guidelines deliver a high-quality built form product through careful consideration of the interfaces between the public realm and built form.

Figure 3-1 referenced from the Meridian Park design guidelines illustrates how the specific design requirements, such as the landscape setback zone, blade wall and microclimate zone all to contribute to a consistent and articulated street façade and mandatory level of onsite amenity.

Whilst the guidelines have produced a highly consistent public realm outcome, they are prescriptive with regard to building setbacks and building placement. For example, the mandatory 6 m setback and Priority Office Zone may not be ideal for landowners/tenants with specific operational requirements. This includes uses operating on lots of more than 5,000 m2 where a high-density street frontage may not be desirable.

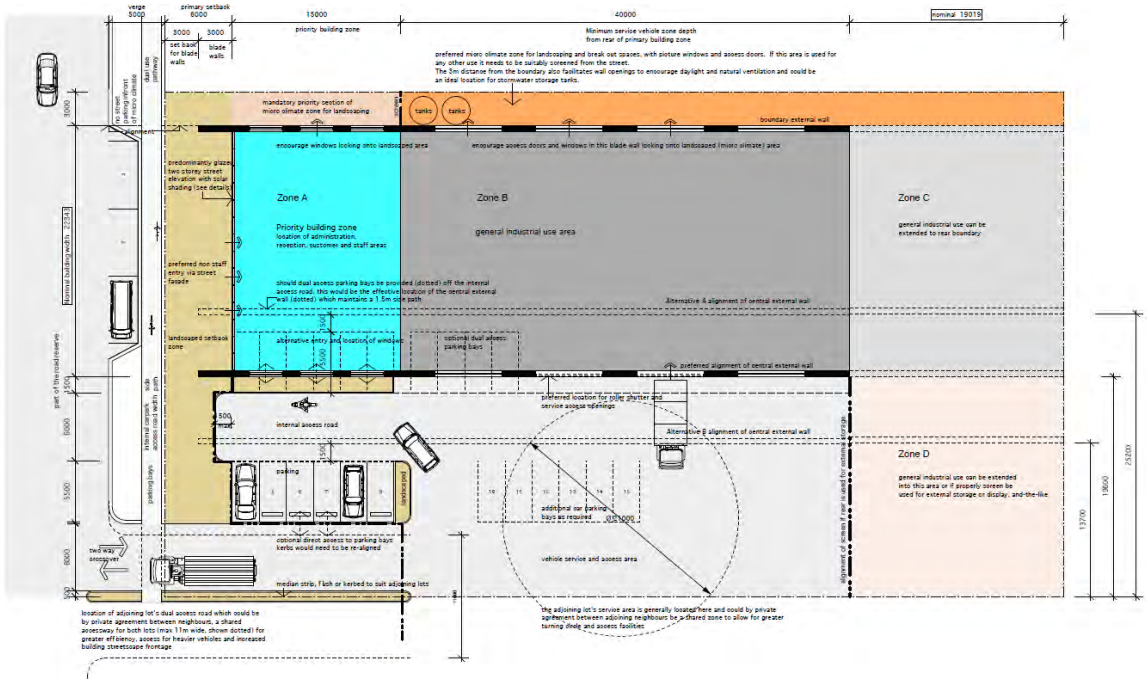


Figure 3-1 Meridian Park design guidelines – detailed site layout [13]

3.6.2 Building setbacks

DPS 2 takes a simple approach to street setbacks by applying a blanket 6 m primary street setback and 3 m secondary street setback without any delineation between the nature of the buildings function.

In contrast, the Meridian Park Design Guidelines clearly articulates a zoning of function within the lot boundaries, requiring the office/showroom functions be located adjacent to the primary street, with constraints of where factory/warehouse/outdoor storage functions may be located to improve visual amenity.

The overall site planning controls ensure a consistent streetscape approach and opportunities for energy efficient sustainable design, through side setbacks combined with various passive and active environmental initiatives specified in the guidelines.

3.6.3 Building form and facades

DPS 2 does not provide a definitive set of controls in relation to building form and façade design quality, unlike the Meridian Park Guidelines which provide a framework in which to assess proposals and evaluate the quality of the responses against an expressed set of design principles and/or design criteria.

If a high-quality built form outcome is seen as desirable, then the inclusion of controls which extend beyond broad and subjective statements should in our opinion be pursued when drafting the town planning controls for the NIA.

3.6.4 Landscape buffer zones

The Meridian Park Guidelines require a 6 m wide landscaped zone adjacent to the primary street frontage and 3 m to a secondary street, while DPS 2 requires a blanket 3 m wide landscaped zone adjacent to the street alignment and 8% minimum area.

In comparison the Meridian Park Guidelines are focused upon setting a minimum depth of landscape area adjacent to the street and in support of onsite staff amenity ion the form of the 3 m wide microclimate zone.

[13] Plan sourced from Meridian Park Design Guidelines – Site Layout Detailed

4. Subdivision and lot design considerations

The NIA's subdivision design will influence its operation and long-term development. As discussed earlier, the composition and nature of strategic industrial areas changes over time with changes in market demand and land uses. The subdivision planning and design controls must therefore be flexible to allow for the area to adapt and respond over time as land uses and activities change.

The subdivision layout of the NIA must address the local context and existing broader regional planning framework, whilst providing for the safe and efficient movement of goods and people. This includes integrating the area with the surrounding locality and taking into consideration future planning and transport infrastructure development.

The NIA subdivision controls must foster the development of a safe, efficient, cost effective industrial area with an attractive public realm that entices businesses to establish and/or relocate to the NIA.

Subdivision design must provide an industrial precinct structure that achieves:

- Good quality access by way of an interconnected network of streets which facilitate safe and efficient movement of people, vehicles, goods and commodities
- Creates active street land use interfaces with building frontages to streets to improve the appearance of the streetscape as well as safety through surveillance and activity
- A variety of lot sizes which promote a wide range of uses which provides a variety of employment and business opportunities, capable of adapting over time as the precinct evolves
- Space for services and infrastructure critical in the current and future evolution of the precinct
- Avoids, retains and embraces key environmental and/or culturally significant areas
- Provides an integrated approach to the design of open space and urban water management
- Maximises land efficiency wherever possible.

However, there is an inherent tension between catering for the traditional NIA land uses and businesses and also attracting advanced manufacturing and smart technologies, as the built environment and infrastructure expectations can be quite different as discussed in Section 2.6. For example, a car wrecking business will be less concerned with the quality of the public realm and built form compared to a business seeking to showcase advanced manufacturing and attract specialists' skills.

We know from research conducted into innovation hubs by the NSW Innovation and Productivity Council that the quality of the built form and associated infrastructure; roads, public transport, sustainable electrical power, heating and cooling energy, water and waste treatment as well as a high-speed communications and data networks all play a part in attracting smart urban technology industries.

Therefore, it is important that at a subdivision design level the NIA provides opportunities to create in selected areas the environment attract smart urban technology industries. To achieve this outcome and not drive away existing industries a two-tier Design Guidelines framework is recommended enable a landowner flexibility to respond to varying market needs.

The following sections outline the key principles/characteristics to be considered in the delivery of efficient, flexible and sustainable subdivision design and associated built form outcomes:

- Consideration of future transport infrastructure
- Street network form
- Integration with existing street networks
- Orientation of the street network to optimise passive solar built form outcomes
- Road network design that provides surveillance of natural features and public infrastructure
- Street hierarchy to enable the safe and efficient passage of goods and people
- Public realm & landscape
- Lot layout considerations.

While the following sections set out a range of desirable subdivision design principles they must always be considered within the overall constraints of the NIA and its local context. In some circumstances the implementation of one principle may well be at odds with another due to local site conditions and a compromise solution may be required to balance conflicting needs.

4.1 Future transport infrastructure

The Mitchell Freeway extension and extension/realignment of Flynn Drive/Neaves Road will provide enhanced connectivity to the NIA and easy access to the growing population of the region.

The future rail corridor will also provide opportunities for increased levels of connectivity to the broader Perth region through access to PTA's passenger network once stations are constructed to service surrounding residential suburbs.

4.2 Road network

Burgess Rawson have highlighted the importance from a commercial perspective of a super-efficient road design in and out of the precinct to encourage businesses to relocate to the NIA. The configuration of the street network will influence the presentation, legibility and efficiency of the NIA and its connectivity to the surrounding area.

A regular grid network with careful consideration of how intersections are controlled will generally deliver the most efficient design solution that best addresses land utilisation, sustainability and transport objectives. Where practicable, irregular geometry and cul-de-sac arrangements are to be avoided, as they lead to inefficient building outcomes at a lot design level and create inconsistent streetscapes. Furthermore, the road network should minimise uncontrolled cross intersections and provide signals or roundabouts for major intersections. If signals or roundabouts are not appropriate, the offset of intersecting minor roads to form a T-intersection is recommended to enable safe turning of cars and trucks.

The various road types which form the NIA have been illustrated in the concept Master Plan. The general objectives and characteristics of the design rationale for each road type has been informed by the Traffic and Transport Study prepared by GHD and the following design rationale as summarised in Table 4.1 below:

Table 4.1 Road type design rationale

Road Type	Speed Limit (km/h)	Role and core considerations	Characteristics
Industrial Arterial	70	Regional distributor	Regional distributor along the southern edge of the NIA. Wide road reserves and median for drainage.
Industrial Connector-CAPS	60	Requirement for a high-capacity entry road. Existing and established roads such as Mather Drive and Meridian Drive hardly meet the capacity for the anticipated traffic into the NIA. Maximise flexibility for the future growth. Maximise legibility Facilitate urban corridor between the nodes such as future	Facilitates access to the NIA from Flynn Drive. Aligns to the east-west orientation of the NIA and is centralised for further legibility as a spine holding all north-south roads together. Generous median and verges with safe CAPS roads on both sides sets up an inviting and attractive streetscape at the entry and along the spine. Potential for high quality build form and urban corridor. Maximises subdivision flexibility along the main entry roads to the NIA to accommodate small medium and large lot sizes through CAPS.

Road Type	Speed Limit (km/h)	Role and core considerations	Characteristics
		thriving industries, service hubs, business nodes, etc.	
Industrial Connector-Major A	60	Objectives to establish more efficient road infrastructure for either shorter or peripheral roads adjoining POS or environmentally restrictive open spaces. Provision of turning lanes to create flexibility for access as well as turning to smaller streets (connector minors).	Integrated to connect the minor connectors to the industrial connector (CAPS). Serves the corner lots for better representing the industrial activity on the lot. Opportunity for secondary exit for the corner lots. Generous median and verges contribute to create high quality streetscape for the visitors. Subdivision to smaller lots may require design solutions.
Industrial Connector-Major B	60	In the presence of possible site restrictions and established servicing infrastructure, turning lane can be limited to the median. Subdivision to small lots along these roads must be further investigated in traffic studies.	Integrated to connect the minor connectors to the industrial Connector (CAPS) and Industrial Connector Major B. Serves the corner lots for better representing the industrial activity on the lot. Opportunity for secondary exit for the corner lots. Generous median and verges contribute to create high quality streetscape for the visitors. Subdivision to smaller lots may require design solutions.
Industrial Connector Minor	50	Low speed accessible roads provide flexibility to accommodate different types and sizes of industrial activities in the future. Provisions of on-street parking to support flexibility for industrial evolution, visitor, and traffic turnovers.	Integrating with higher road hierarchy, allows for future growth of the NIA with enough flexibility to accommodate small, medium and large lots within appropriate block sizes. With designated parking lanes on the street, there are opportunities to compensate verge loses accommodating driveways with tree planting between the embayment.

These underlying principles have culminated in the formation of the concept masterplan (refer Figure 4-1) in order to facilitate regular lot geometry, maximise functionality and optimise street network connectivity with the surrounding regional transport network.

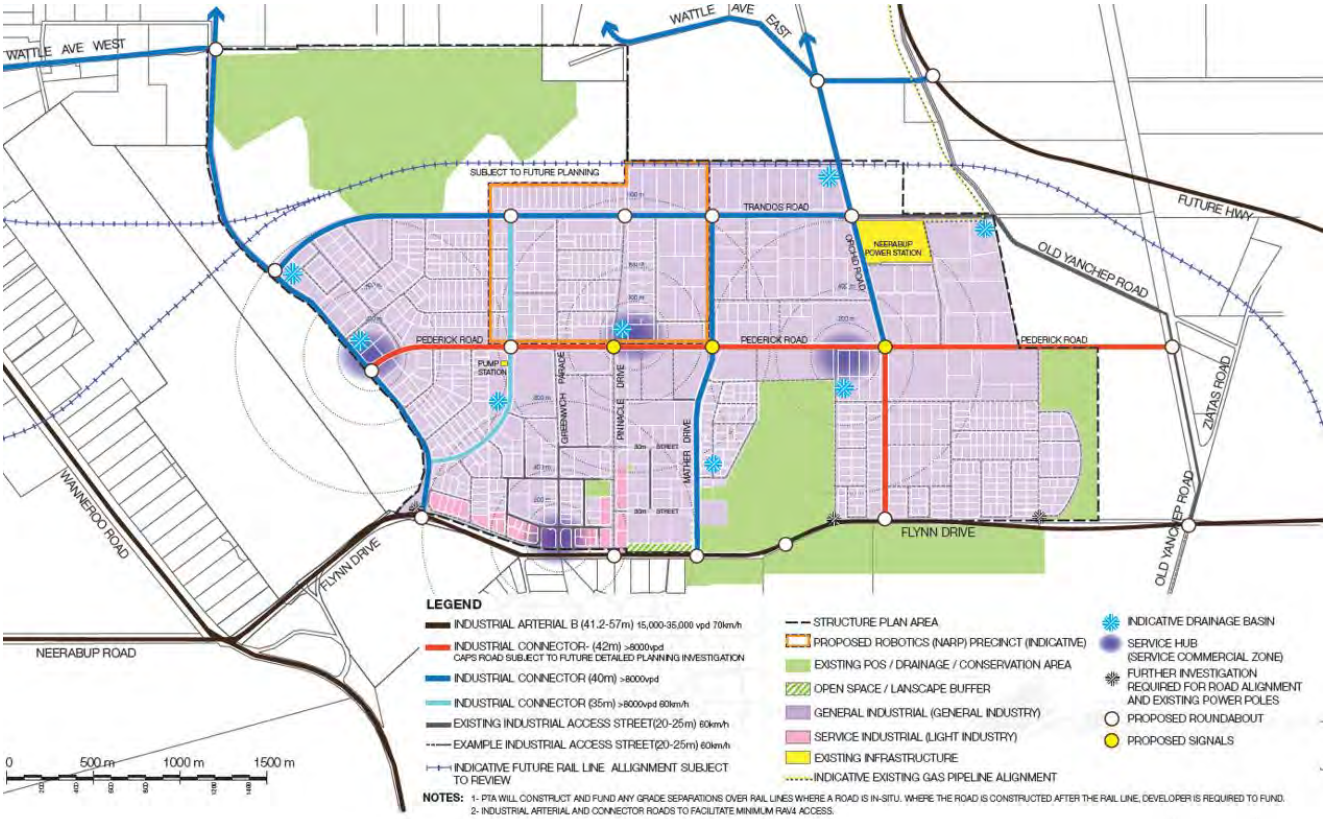


Figure 4-1 Concept Master Plan with indicative road hierarchies

4.3 Road cross sectional design

The provision of an appropriate road hierarchy that will accommodate all modes of transport is essential (refer to Figure 4-2 to Figure 4-7).

The following specifications shall be incorporated into the design and construction of all roads within NIA. Some key objectives which are common are:

- **Carriageway**: Minimum of designated sealed carriageway width as shown in the diagrams in each diraction including traffic lanes and shoulders separated by a planted median and borderd by a verge on each side
- **Footpath**: A minimum of 2.4 m on either edge of the road is specified for footpath paving
- **Verge**: A minimum of 5 m on either side of the road is specified to accommodate servicing and utilities across the NIA area. This will accommodate trees, landscaping, and lighting of the street. For further information refer to GHD Servicing Report Appendix D – Extract from UPSC Code of Practice – Road Reserve Allocation.
- **Landscaping**: All landscaping including median must be waterwise and in accordance with the Local Water Management Strategy.

Figure 4-2 Industrial arterial

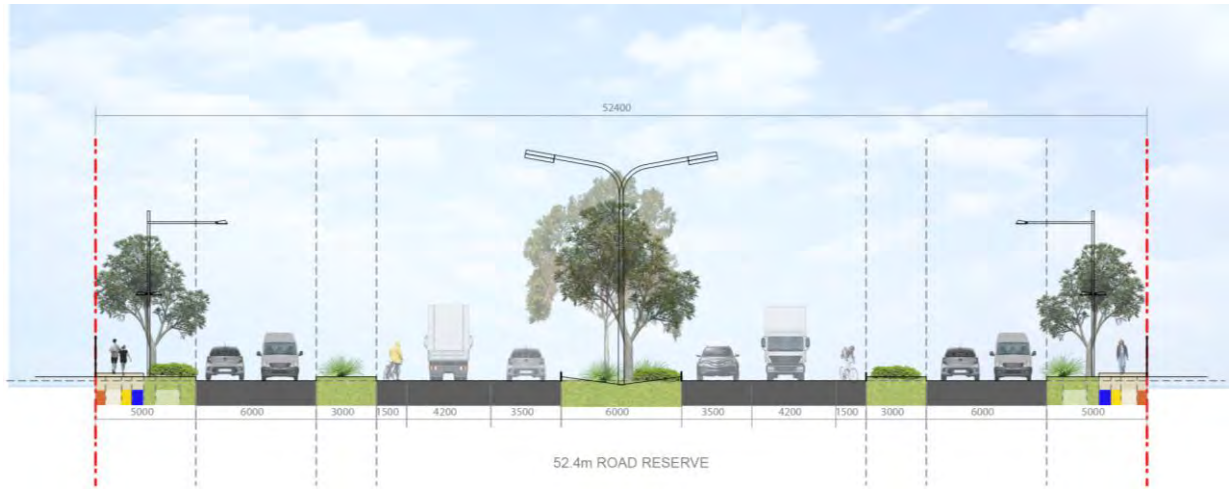


Figure 4-3 Industrial connector – CAPS

Figure 4-4 Industrial connector – Major A

Figure 4-5 Industrial connector – Major B

Figure 4-6 Industrial connector - minor

Figure 4-7 Access road (Local roads)

4.4 Future street network configuration

The street network should connect new streets with the existing street network to enhance permeability and provide logical and easily identifiable layout for vehicles, pedestrians and cyclists to navigate.

Figure 4-8 describes the principle of connecting and integrating existing road networks with new networks. Please note the diagram is not seeking to describe the detailed intersection arrangements but rather the principle of the continuation of major circulation routes and connectors to aid in safety, wayfinding and legibility.

This principle has been applied as the current masterplan has been developed to optimise safe, internal vehicle movement within the NIA.

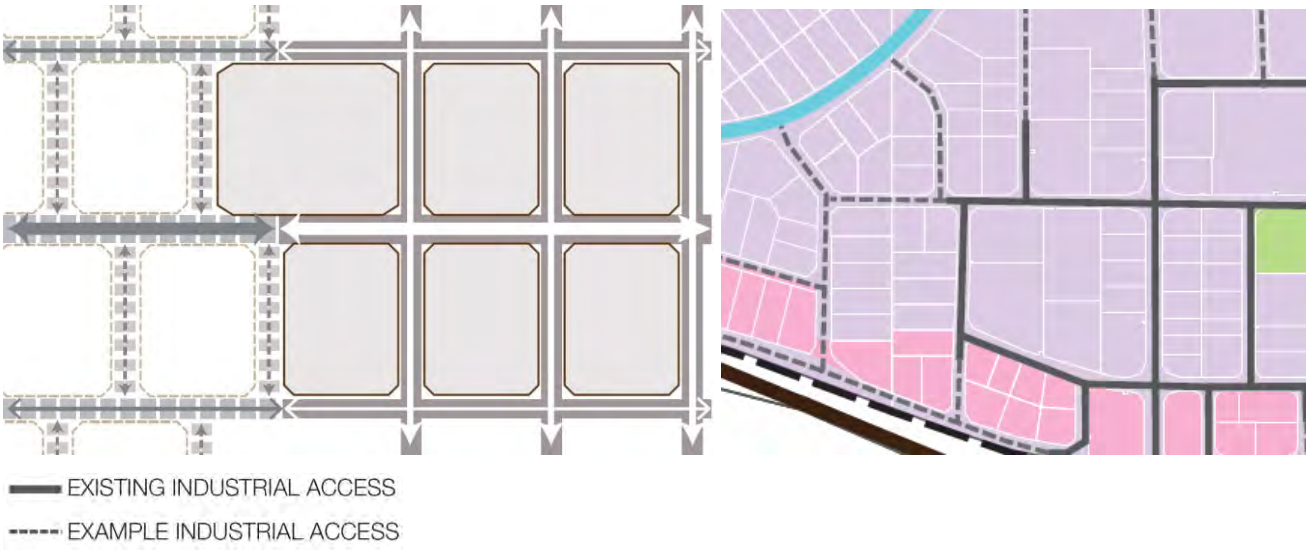


Figure 4-8 New streets connecting with existing street network (principle and masterplan)

4.5 Street network solar orientation

As a general principle in subdivision design, it is desirable from a sustainability perspective to align the street network as closely to the points of the compass as possible, given local site conditions and existing road networks.

The site planning / orientation of an industrial building is generally determined by its relationship to the lot boundaries and surrounding street network. If the overall subdivision and street layout can achieve the solar orientation criteria set out below this will generally result in a more cost-effective building design.

- Orientate streets north-south and east -west where practical to optimise opportunities for passive solar design (maximum +/- 15% off east – west axis recommended) (refer to Figure 4-9)
- Control direct sunlight and glare by aligning the lot/building axis as closely as possible with the points of the compass.

The inherent environmental performance of a building is heavily influenced by its relationship to north and while all building can be designed with energy efficiency in mind, typically buildings not aligned on the compass points will require additional measures to control solar impacts, such as sunscreens, additional roof lights, courtyards, etc.

The majority of NIA's street network is oriented to achieve the criteria set out above with only the north-western corner orientated off north to address the local site and road conditions, as is logical.

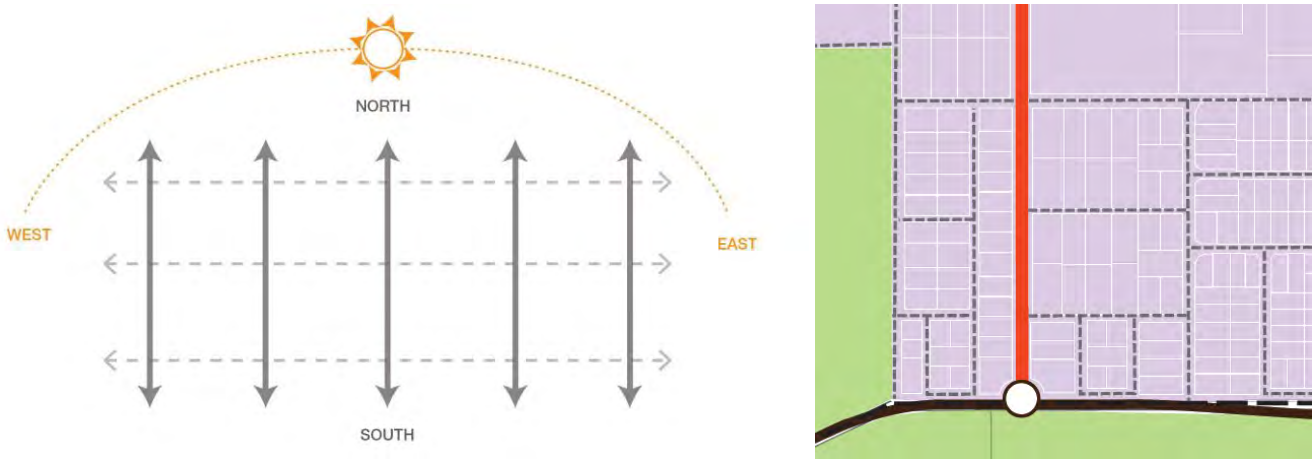


Figure 4-9 Example of preferred street network s to maximise sustainability outcomes

4.6 Public Open Space

At a state planning level, whilst DC 4.1 provides provisions relating to public open space (POS), there is no general requirement for the provisions of POS within industrial areas. However, it does express that it may be "*…necessary to ensure that adequate facilities are available for both passive and active recreation during workers leisure periods, and it may require land to be given up free of cost for this purpose in particular circumstances"*[14]. In this instance, the size of workforce in the area, the proximity of existing public open space and the scale of new development being proposed is taken into consideration. In addition, POS may also be required to be given up in order to provide for buffer strips and/or suitable planted areas between industrial uses and any adjacent non-industrial areas.

Supplementary to DC 4.1, the City of Wanneroo Local Planning Policy 4.3: Public Open Space (LPP4.3) articulates Council's position on the planning, provision, location, design, development and interim maintenance of POS. LPP4.3 is to be considered in the design, assessment, and determination of scheme amendments, structure plans, local development plans, subdivision applications and development applications. Section 7 of LPP4.3 specifically address the provision of POS within industrial areas with section 7.2 outlining the following requirements:

- *POS in industrial areas should constitute between 2% and 5% of the gross subdivisible area. The City will accept 2% provided sufficient POS areas are provided for the following functions:*
    - *a) Provide an opportunity for unstructured recreation during working hours (lunch breaks etc.) and to improve amenity within a built environment;*
    - *b) Be located where walkable catchment can be maximised and of appropriate size to provide an area protected where possible from the impacts of surrounding industry;*
    - *c) Contribute to improved stormwater quality through water sensitive urban design;*
    - *d) Act as a buffer to non-industrial land uses where necessary;*
    - *e) Retain natural assets where possible; and*
    - *f) Seek to activate for recreation those environmental assets already ceded for ongoing management.*

Notwithstanding the above, POS is not required under LPP4.3 in the following circumstances:

- The industrial area is not of sufficient size to warrant POS provision;
- There is appropriate POS located within an 400m radius of the industrial area that can provide sufficient opportunity for recreation; and
- Stormwater can be appropriately treated without using POS to serve a drainage function[15].

[14] Extract from DC 4.1
[15] Extract from LPP4.3

In the case of the NIA, notwithstanding the existence of both DC 4.1 and LPP4.3, it is not evident that POS has been sought and/or approved by the WAPC as part of subdivisions approved to-date. Whilst investigating the reasons for this are beyond the scope of this report, there are a number of reasons why POS may not be warranted for the majority of the general industrial area of NIA. These reasons are as follows:

- By virtue of a number of Bush Forever sites[16] located throughout the NIA, there is a substantial amount of 'nature POS' that is proposed to be reserved as illustrated in the concept Master Plan. These areas are also spread throughout the NIA area and a 400m radius encompasses a notable portion of the NIA
- The Local Water Management Strategy prepared as part of the NIA project has not explicitly identified the need to use any POS to serve a drainage function
- The Meridian Park design guidelines include the need to provide, amongst other matters, extensive / water sensitive landscaping and micro-climate zones on each development. These requirements do provide opportunity for unstructured recreation during working hours as well as improving the streetscape amenity, without the need to set aside separate POS space for these functions.

4.6.1 Service hubs and public open space

The Concept Master Plan has been developed at present without any allocation of POS within or adjacent to the proposed service hubs. It does however seek to co-locate indicative drainage basins, notwithstanding the fact that such areas would not technically be accepted as POS under the provisions of LPP4.3. Given the uncertainly with the number, location and size of the service hubs, it is considered premature at this stage to assign POS within the service hub locations.

However, it is considered that through the provision of a drainage basin (where applicable) and the application of the Tier 1 / Meridian Park Design Guidelines with respect to the built form, landscaping etc for the service hubs, it is our view that adequate planning controls would exist to allow the City to ensure a high-quality built form outcome is developed during the development application stage.

Notwithstanding the above, should the City require additional certainty on the built form outcome, it could consider imposition of the requirement for Local Development Plans for each service hub location, similar to what Meridian Park has done relative to its landmark sites. As outlined in the key objectives for landmark sites, this will allow an additional level of built form control to ensure that the allocation of private open space is considered early in the design process and integrated into the overall design and functionality of the service hubs, having regard to the following considerations as extracted from Section 5 of the Meridian Park Design Guidelines:

- *To promote prominent architectural form on corner elements to provide a reference point in the built form and landscape*
- *Encourage additional height elements where appropriate to keynote a point of difference with the balance of the estate and demark estate points of entry*
- *Ensure articulated facades which provide aesthetic appeal and overlook to feature open spaces*
- *Provide for variations to setback requirements where necessary to create prominent feature elements[17].*

4.6.2 Lot frontages to address public open space

To provide passive surveillance of public open space (POS) areas in line Crime Prevention Through Environmental Design (CPTED) principles, it is encouraged (where feasible) to place a street adjacent to the POS and have the lot frontage address the POS. (refer to Figure 4-10).

[16] Part of Bush Forever Site 295 within the NIA is protected through the conditions of clearing instrument 6359/1. Bush Forever Site 295 also includes Lot 902. The retention and protection Lot 800 was negotiated as part of previous subdivision approvals. The portion of Bush Forever Site 293 located in the northwest corner of the NIA on Lot 502.
[17] Extract from Meridian Park design Guidelines

Figure 4-10 Example of lots orientated to address POS natural features

The increased opportunity for physical and electronic surveillance that comes with the activated building facade fronting the POS as opposed to a blank tilt up concrete façade. The orientation of the lot frontage to the POS (where feasible) will help mitigate the risk of undesirable unsightly graffiti and undesirable behaviour

This principle has been considered as the current masterplan has been developed and applied to the perimeter of the NIA increase passive surveillance of public open spaces, where possible.

4.7 Public realm & landscape

The character of the road reserve and the public realm design can be instrumental in determining the quality and overall amenity of an estate. The provision of public open space, landscaped zones, footpaths, cycle paths, street trees, parallel on-street parking and standardised crossovers all contribute to high quality, attractive and sustainable environmental outcomes.

The design of the public realm should incorporate the following parameters:

- Provide street trees along the verge at regular intervals.
- Provide footpaths (both sides) and cycle paths to major connector roads.
- Provide footpaths to minor roads (both sides).
- Incorporate water sensitive landscaping to verge areas and street trees (refer to Figure 4-11).
- Consider the merits of providing on-street parking in higher density precincts with lots below 5,000 m2 and located adjacent to service areas (refer to Figure 4-12).
- Prohibit 90 degree verge parking, as cars dominate the streetscape and such parking can lead to unsafe traffic conditions (refer to Figure 4-13).
- Require landscape treatments that prevent verge parking within the road reserve (refer to Figure 4-11 and Figure 4-15).
- Implement consistent fencing and gate standards to all street frontages (refer Section 6.9).

Figure 4-11 Example of water sensitive verge landscape treatment

Figure 4-12 Example of on street parking and street trees

Figure 4-13 Example of prohibited 90-degree verge parking

Figure 4-14 Example of prohibited informal verge parking

Figure 4-15 Landscape treatment that deters verge parking

4.8 Lot size and layout considerations

The subdivision of the NIA into individual lots will be largely influenced by market demand at the time of subdivision. However, the concept master plan layout that has been developed has provided the blueprint to encourage the creation of uniform, rectangular lots (where feasible) that are capable of satisfying future demand (large or small).

The chart below (refer to Figure 4-16) profiles lot sizes across Neerabup, Osborne Park and Wangara and highlights the dominate developed lot sizes within the NIA which are between 2,000-3,000 sqm and 5,000 sqm to 1 ha. Not unexpectedly undeveloped lots 10 ha and above currently makes up approx. 50% of the NIA.

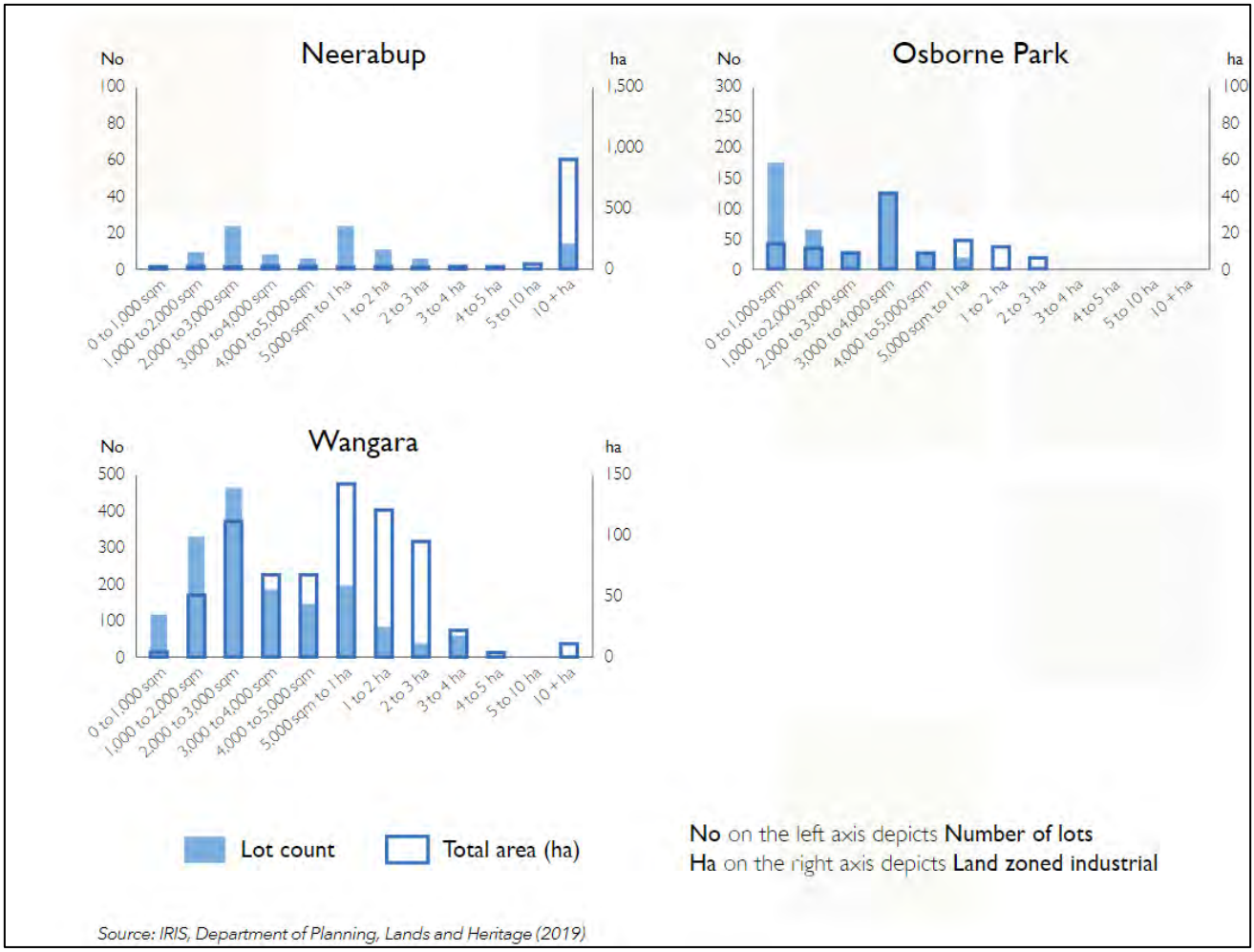


Figure 4-16 Lot count by lot area Neerabup, Osborne Park and Wangara[18]

Future subdivisions within the NIA should:

- Facilitate a diversity in lot product in the NIA by creating lots ranging from 1,000 m^2 to 5 ha in size. It is noted that 'super lots' of 10 ha may also be appropriate in the initial stages, to cater for large scale manufacturing and industrial uses. Should there be no demand for these large lots, then they are generally easily subdivided further
- Provide a range of free hold lot sizes with a minimum lot size of 1,000-1500 m2 and a minimum frontage of 30 m which will appeal to a large volume market including owner occupiers, developers and investors as highlighted in advice provided by Burgess Rawson
- Burgess Rawson have recommended the inclusion of smaller freehold lots to broaden the appeal of the NIA and to respond to the owner / occupier market and small-scale investors. Refer to Figure 4-17 for an example of this typology that as proven attractive within other estates
- Implement consistent retaining wall standards to all boundaries and minimise retaining where possible on the primary and secondary street frontages.

[18] Economic and Employment Land Monitor June 2020

Figure 4-17 Example of potential small lot development

- Orientate lots so that the primary street frontage is to the main access street. However subject to local factors (location, lot size, road network) it may be more appropriate for vehicular access to be obtained from a secondary street
- Address the impacts of buffer zones (i.e. bushfire, noise and rail) (refer to Figure 4-18)

Figure 4-18 Example of impact of bushfire buffer zone (yellow) on adjacent lots

- Designate relatively flat land for larger industrial sites
- Create larger lots where natural features (i.e. gradient change, bushfire contours and karst regions) reduce the developable area
- Create regular shaped lots that address the street frontage and have an appropriate “depth to width ratio” to facilitate efficient built form and on-site vehicle movement.

  After discussions with Jim Williams GHDWoodhead’s National Industrial Sector Leader, Jim has observed that based upon his experience the appropriate depth to width ratio is very dependent upon the target lot size, its location and in many cases the nature of the activity to be undertaken. For example, a large 20,000 -40,000 sqm building will often require a higher aspect ratio, 2:1 to 3:1 to optimise the structural system and permit onsite vehicle circulation. While smaller freehold lots will generally have a slightly

squarer ratio. While Meridian Parks smaller lots of 2,500 -3,000 sqm lots generally have a ratio of 1.5:1 and the larger 5,000 sqm lots have a ratio closer to 2:1. However there are no hard and fast rule based upon our national experience in industrial lot and building design, as final configurations are often very dependent on market requirements and precinct road networks

- Minimise irregular lot configurations typically create inefficient built form and accessibility constraints, particularly for larger vehicles (refer to Figure 4-19). Irregular lots from a building design perspective typically result in a higher capital cost per sqm and less efficient space utilisation, which means a larger building than one with a regular structural grid.

Figure 4-19 Example of inefficient, irregular lot configuration

- Provide a primary internal road network that addresses the site's topography, that allows for staging and a responsive, subdivision developments that address the markets requirements. An example of this is large scale land uses that will require flat lots with minimal gradient change and access to legible and efficient transport links
- Design the road network and crossovers to include appropriate swept paths to accommodate the wide range and size of vehicles that will access the area. Inadequate crossover widths can have an adverse impact on vehicular movements and the public realm.

4.9 Buffer Zones

Buffer zones that affect the NIA area comprise bushfire and road and rail noise which are addressed under State Planning Policy 3.7 - Planning in Bushfire Prone Areas (SPP 3.7) and State Planning Policy 5.4 – Road and Rail Noise (SPP 5.4) respectively.

SPP 3.7 provides a framework in which to implement effective, risk-based land use planning and development outcomes to preserve life and reduce the impact of bushfire on property and infrastructure. The policy emphasises the need to identify and consider bushfire risks in decision-making at all stages of the planning and development process whilst achieving an appropriate balance between bushfire risk management measures, biodiversity conservation and environmental protection.

The policy applies to all land which has been designated as bushfire prone by the Fire and Emergency Services Commissioner as well as areas that may have not yet been designated as bushfire prone but is proposed to be developed in a way that introduces a bushfire hazard. SPP 3.7 should be read in conjunction with the deemed provisions, Guidelines for Planning in Bushfire in Prone Areas and Australian Standard 3959: Construction of buildings in Bushfire Prone Areas.

SPP 5.4 provides guidance for the performance-based approach for managing and mitigating transport noise associated with road and rail operations. This policy applies where noise sensitive land uses are located within a specified distance of a transport corridor, new or major road or rail upgrades are proposed or where works propose an increase in rail capacity resulting in increased noise. The policy also sets out specific exemptions for where the policy requirements do not apply. SPP 5.4 supports noise impacts being addressed as early as possible in the planning process for the purpose of avoiding land use conflict and achieving better land use planning outcomes. Considerations for decision-makers include ensuring that the community is protected from unreasonable levels of transport noise, whilst also ensuring the future operations of transport corridors. SPP 5.2 is supplemented by the Road and Rail Noise Guidelines.

Figure 4-20 illustrates the bushfire and noise buffer zones which currently affect the NIA. It is noted that as the NIA area is cleared and developed, bushfire risk will reduce from the current extent. Nevertheless, subdivision and development applications will generally need to be accompanied by a bushfire management plan prepared in accordance with the provisions of SPP 3.7.

With regard to noise impacts, it is considered that the majority of the uses that will occupy the NIA will not constitute a 'noise-sensitive land-use and/or development' as defined under SPP 5.4, this being *"Land-uses or development occupied or designed for occupation or use for residential purposes (including dwellings, residential buildings or short stay accommodation), caravan park, camping ground, educational establishment, child care premises, hospital, nursing home, corrective institution or place of worship"*[19]. Where a use falls under the above definition, an assessment against the policy provisions of SPP 5.4 is required to determine the likely level of transport noise and management / mitigation required.

[19] Definition from SPP 5.4 – Road and Rail Noise (Sept 2019)

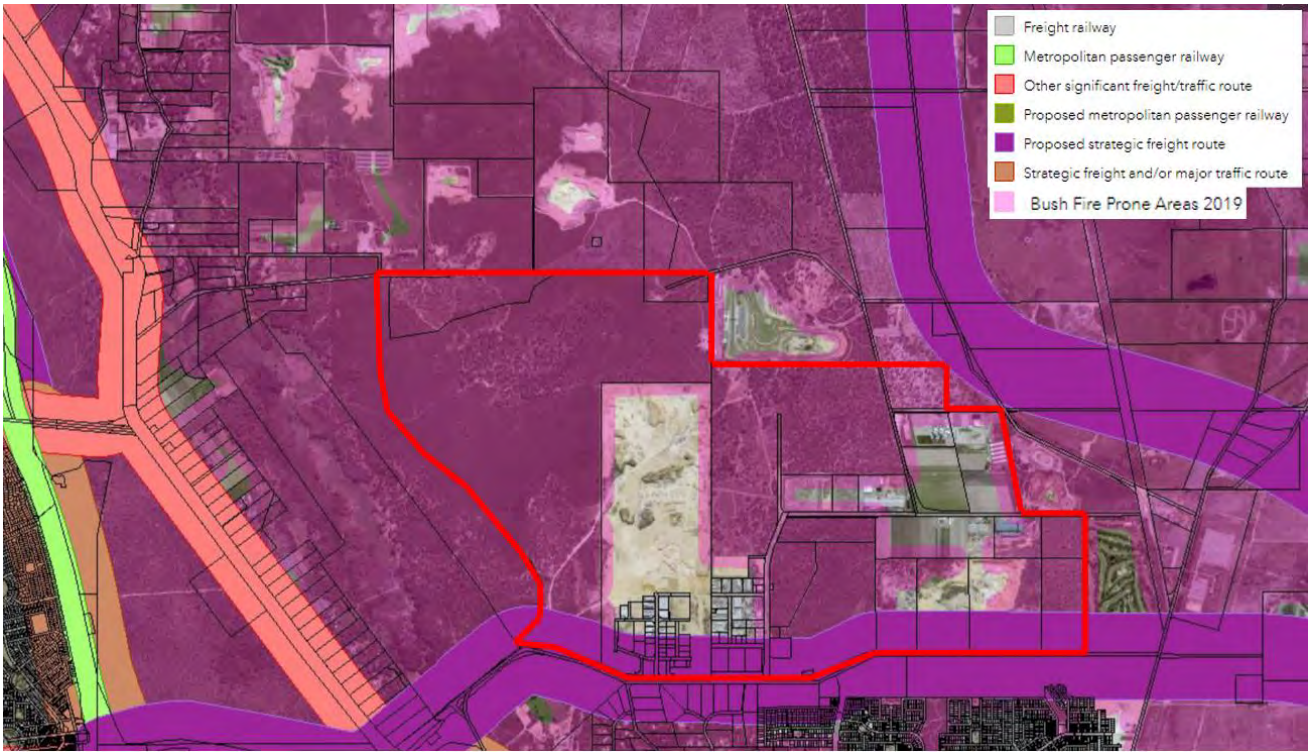


Figure 4-20 noise and bush fire buffers affecting NIA

4.10 Summary of Subdivision recommendations

It is our view, given the diversity of industrial uses contemplated for the NIA, two tiers of design controls are appropriate to address the City's objectives set out below to attract technology related industries and recognise that many traditional existing uses do not require the higher standard of built form design.

- A streetscape that is inviting and attractive
- Subdivision layout and lot size appropriate for an industrial area such as the NIA
- A built form that is attractive and attracts innovative, technology related industries.

To create streetscapes that are inviting and attractive and achieve lot products through subdivision which are appropriate for the NIA, the following recommendations are provided.

Table 4.2 Summary of Subdivision recommendations

Ref. No.	Heading	Commentary
4.1	Future transport infrastructure	Ensure subdivision design optimise links to existing and future transport corridors. Connectivity is a key factor for the attraction of smart urban technology industries.
4.2	Road network	A regular grid network with careful consideration of how intersections are controlled will generally deliver the most efficient design solution that best addresses, land utilisation, sustainability and transport objectives. Provide an appropriate road hierarchy that will accommodate all modes of transport.
4.3	Road cross sectional design	Refer to proposed cross sections for recommended profiles.
4.4	Future street network configuration	Connect new streets with the existing street network to enhance wayfinding and permeability and provide logical

Ref. No.	Heading	Commentary
		and easily identifiable layout for vehicles, pedestrians, and cyclists to navigate.
4.5	Street network solar orientation	Align the street network as closely to the points of the compass as possible, subject to local site conditions and existing road networks to enable a more cost-effective building design. Many smart urban technology industries will consider sustainability factors more strongly in their decision-making.
4.6	Public Open Space	Provide passive surveillance of public open space (POS) areas in line with CPTED principles.
4.7	Public realm & landscape	Provide public open space, landscaped zones, footpaths, cycle paths, street trees, parallel on-street parking and standardised crossovers all contribute to high quality, attractive and sustainable environmental outcomes. Provide street tress at regular intervals and footpaths and cycle paths as appropriate to the road reserve typology. Prohibit verge parking and provide on street parking to high density areas and set landscape standards that actively deter verge parking. Implement consistent fencing and gate standards to all street frontage. The quality of public realm is a key factor for the attraction of smart urban technology industries. A two-tier set of Design Guidelines will allow the creation of high-quality environments where appropriate within the NIA.
4.8	Lot size and layout considerations	Provide a range of lot sizes from 1,000 m2 to 10 ha and above. Provide minimum freehold lot size of 1,000-1500 m2 and a minimum frontage of 28-35 m which will appeal to a large volume market including owner occupiers, developers and investors. Implement consistent retaining wall standards to all boundaries and minimise retaining where possible on the primary and secondary street frontages.
4.9	Buffer Zones	Bushfire management plans to be prepared where lots are identified as bushfire prone. assessment against the policy provisions of SPP 5.4 is required to determine the likely level of transport noise and management / mitigation required where a ‘noise-sensitive land-use and/or development’ is proposed.

5. Design guidelines

At present, only part of the NIA is subject to design guidelines, this being Meridian Park with the remainder of the NIA having no design guidelines, unless triggered by a new subdivision application. In fact, there is ambiguity on when and where the provisions of DPS 2, ASP 17 and/or Meridian Park Design Guidelines apply based on the following observations:

- ASP 17 refers to the Meridian Park area best described as a central section of the overall NIA area. Areas to the east and west are described as the NIA
- DevelopmentWA's Meridian Park Design Guidelines identify a notably larger Meridian Park boundary which includes DevelopmentWA's large land parcel to the west as well as a number of the City of Wanneroo land holdings. These guidelines sit outside of the City's planning framework
- Clause 16.10 of ASP 17 requires architectural endorsement of DevelopmentWA's estate architect, prior to application for planning approval. To this end, notwithstanding the fact that DevelopmentWA's guideline sit outside of the City's planning framework, it appears to be indirectly linked back to Clause 16.10 of ASP 17.

This section explores the advantages and disadvantages of design guidelines and suggests how design guidelines could be more broadly applied to the NIA to cater for existing industrial subdivisions and also provide an environment that attracts and supports advanced manufacturing, logistics and smart technology related industries.

In addition to design guidelines further control may be implement through the application of restrictive covenants as recommended in the Burgess Rawson report to accommodate unsightly businesses in a separate precinct, eg. vehicle wrecking, extraction, construction, mining, sand blasting yards, maintenance etc. As previously discussed with the City this is not an option the City wishes to explore, so the following commentary on built form controls is focused upon design guidelines.

5.1 Benefits of design guidelines

One of the key questions for the NIA landowners and the City is the level of control they desire over the built form outcome (and amenity of the area to attract smart urban) versus the commercial attractiveness of the NIA for investors, developers, owner occupiers and tenants. The outcome of this question will have a significant impact on the type of industries that will see the NIA as an attractive area in which to locate their businesses.

Notwithstanding the above, design guidelines provide an evidence-based framework against which to assess development applications that are not consistent with the development's stated objectives. This is particularly relevant where development is likely to occur over considerable time and needs change.

More prescriptive set of design guidelines will generally result in a higher quality and more consistent built form and public realm outcomes with regards to building placement and appearance, site planning, landscape, fencing and access.

The provision of a more appealing public realm and higher quality building form is more likely to be important to business seeking to attract talent to more sophisticated and advanced technology and manufacturing industries, as discussed earlier in Section 2.6.

5.2 Disadvantages of design guidelines

More prescriptive design guidelines and onerous on-site parking requirements will generally restrict the way a landowner wishes to develop their lot. This can result in lower yield and commercial return, as increased land area is often required to achieve the same building area and increased building cost compared to an industrial estate without more onerous controls.

Many professional property developers will voluntarily adopt many of the contemporary design practices within design guidelines to attract prospective tenants and owner occupiers. However, there are occasions when the objectives of the landowner and/or developer are not consistent with the overall vision reflected in the design guidelines. Highly prescriptive design guidelines that limit lot development options and/or demand a more expensive built form or protracted approval timelines may deter prospective investors or tenants from the NIA.

This observation is supported by Chad Henville from Burgess Rawson who believes the more guidelines and rules will place more long-term constraints on the NIA growth. Furthermore, the scale and quality of the public realm infrastructure will also have a bearing on the overall cost of land development and sale price of the lots.

5.3 Design guideline recommendations

In our view as architects, who often work with design guidelines, the Meridian Park Design Guidelines deliver a high-quality subdivision and built form outcome that is supportive of the City's Vision to attract new industries engaged in the application of new technologies and innovative practices. The extension of these guidelines to landholdings targeting a high-quality built form we feel is an appropriate and practical approach to bringing a level consistency and predictability across the NIA.

Burgess Rawson have emphasised when considering the merits of more prescriptive design guidelines (such as Meridian Park) applied across all or part of the NIA, it is important to consider the NIA's commercial value proposition within the broader industrial marketplace and the impact of any prescriptive framework on the estate's commercial attractiveness and viability.

It is therefore our recommendation that an alternative set of design guidelines be developed that can be applied to areas of the NIA that do not require such high quality (and more expensive) built form outcomes as specified by the Meridian Park Design Guidelines.

Section 6 below sets out the key principles and themes that should help drive the development of the alternative design guidelines and suggested a range of development control for the City's consideration, that improve on the base provisions of DPS 2 and ASP 17, but do not go as far as the Meridian Park Design Guidelines.

To progress this recommendation there is a need to clearly delineate the extent of the Meridian Park boundary to which the Tier 1 Meridian Park Design Guidelines apply and the area controlled by the alternative, less prescriptive Tier 2 Design Guidelines outlined in Section 6.

6. Built form principles

The NIA's built form design will influence its operation and long-term development. As discussed earlier, the composition and nature of strategic industrial areas changes over time with changes in market demand and land uses. The built form design controls must therefore be flexible to allow for the area to adapt and respond over time as land uses and activities change.

Lot site planning and built form controls have a fundamental impact on the commercial viability and ultimate saleability of an industrial lot. Planning controls must strike a balance between creating an attractive, sustainable built environment and ensuring a developable lot that is use appropriate. Furthermore, the City of Wanneroo's Vision to attract "smart urban technology industries" must be tempered so as not to exclude traditional industrial uses. In our view the development of a two-tier Design Guidelines framework is one way to ensure that the NIA can continue to cater for existing uses and attract high value activities and industries.

As discussed in Burgess Rawson's market commentary report "Smart Urban Technology" has little observable demand currently but could grow in response to the rapidly evolving E-commerce economy and other market forces. It is therefore our recommendation to implement a Tier 1 and Tier 2 set of Design Guidelines that acknowledge the variety of industries and uses contemplated for the NIA.

The following sections describe the key principles, discuss the pros and cons of various approaches, and outline the proposed Tier 2 Design Guideline controls. The Tier 2 controls are aimed at providing an environment that is commercially attractive to industries and business that are seeking a more flexible built form design framework than the more prescriptive Meridian Park controls.

Notwithstanding the above the built form design should incorporate the following key principles:

- Lot site planning controls that provide a functional and attractive built form
- The enhancement of streetscape amenity through landscaping and provision of clear and safe site entry points
- Convenient and safe access for pedestrians, cyclists and vehicles (cars and trucks)
- To provide visual engagement with the street such that the openings to the building mass address the street to provide an activated façade and a level of surveillance of the public realm
- A hierarchy of building form and visual interest such that the building form has a level of legibility to understand the where the front entrance is located for visitor to enter
- To facilitate passive environmentally sustainable design through building siting and orientation.

While these principles are universal, the level of controls maybe adjusted to reflect the targeted land uses (e.g. car wreakers vs advanced manufacturing). Generally, the higher the development intensity, the more important the adoption of design guidelines becomes to ensure consistency of built form and streetscape amenity.

6.1 Tier 1 Design Guidelines

To provide a simple and consistent regulatory approach, it is our recommendation that the Meridian Park Design Guidelines be applied to areas of the NIA that are at aimed at high value industries that are attracted to a high-quality built form and public realm. It is also our recommendation that the proposed service hub locations (refer Figure 6-1) be controlled by the 'Service Industrial' area requirements (refer section 4.2 and Appendix A2) of the Meridian Park Design Guidelines.

6.2 Service Hubs Design Guidelines

The application of the Tier 1 / Meridian Park Design Guidelines with respect to the built form, landscaping etc for the service hubs is our recommendation to ensure consistency across the NIA. It is our view that adequate planning controls would exist to allow the City to ensure a high quality built form outcome is developed during the development application stage.

Notwithstanding the above, should the City require additional certainty on the built form outcome, it could consider imposition of the requirement for Local Development Plans for each service hub location, similar to what Meridian Park has done relative to its landmark sites. As outlined in the key objectives for landmark sites, this will allow an additional level of built form control to ensure that the allocation of public and private open space is considered early in the design process and integrated into the overall design and functionality of the service hubs, having regard to the following considerations as extracted from S5 of the Meridian Park Design Guidelines:

- *To promote prominent architectural form on corner elements to provide a reference point in the built form and landscape.*
- *Encourage additional height elements where appropriate to keynote a point of difference with the balance of the estate and demark estate points of entry.*
- *Ensure articulated facades which provide aesthetic appeal and overlook to feature open spaces.*
- *Provide for variations to setback requirements where necessary to create prominent feature elements*[20]*.*

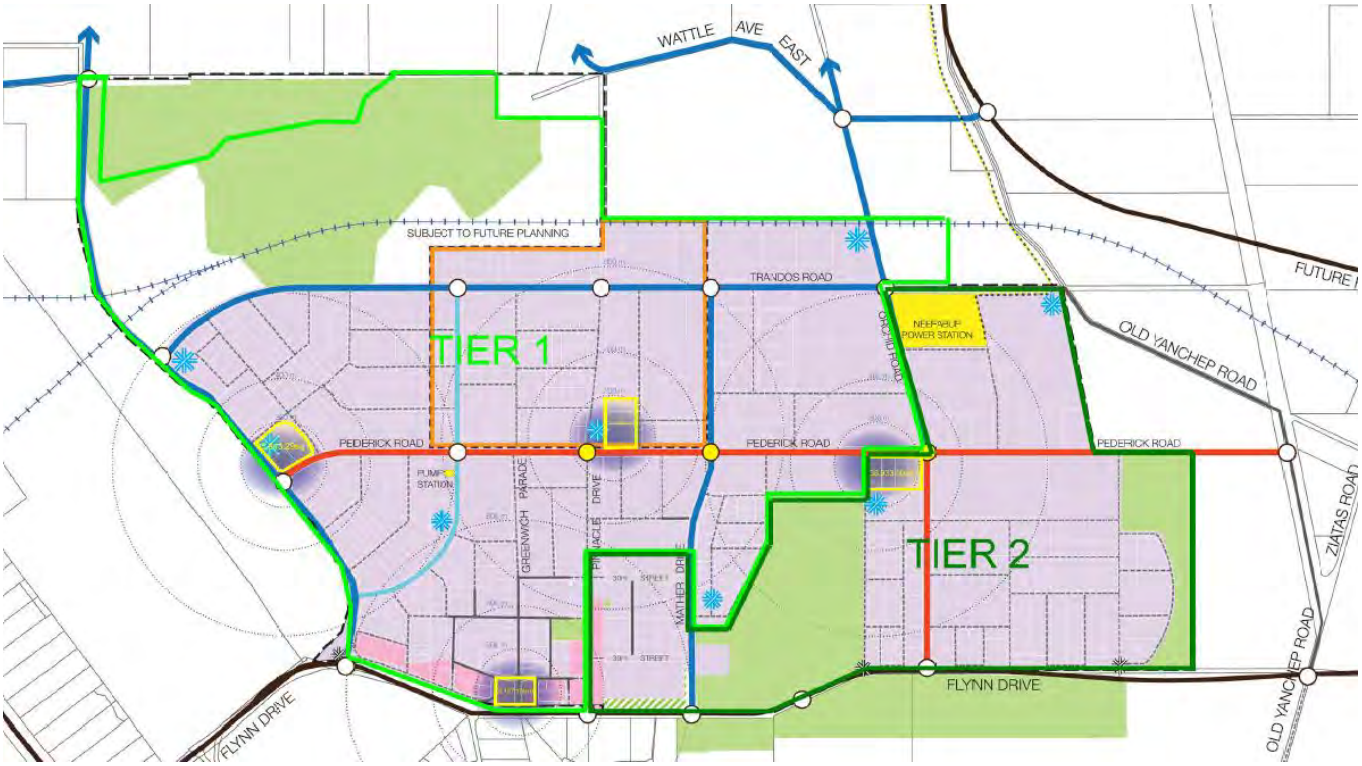


Figure 6-1 Tier 1, Tier 2 and Service hub locations within the NIA

6.3 Tier 2 Design Guidelines

The development of a Tier 2 set of Design Guidelines is intended to provide a baseline level of development control that goes beyond the basic provisions of ASP 17 and DPS 2 but are not as onerous and prescriptive as the requirements of the Meridian Park Design Guidelines.

The following sections describe the key built form principles, discuss the pros and cons of various approaches, and outline the proposed Tier 2 Design Guideline controls.

6.4 Building orientation

The primary building facade should be orientated to address the street and the entry located to provide legible and intuitive wayfinding from the public realm. This will maximise functionality as well as assist in creating effective and attractive streetscapes.

[20] Extract from Meridian Park design Guidelines

Suggested building orientation requirements:

- Ensure office/showroom areas are clearly visible from the street and visitor parking areas
- Provide customer service, retail and office areas closest to the street frontage to provide a clear point of contact for visitors to enhance the human scale of the streetscape
- Where practicable, orientate entries, administrative and breakout / lunchroom areas to take advantage of the northern aspect and/or micro-climate zone
- Outdoor storage areas that abut and are visible from the street should be screened
- External staff facilities to be integrated with landscape requirements to encourage staff amenities.

6.5 Building setbacks

Street setbacks in industrial areas across Perth typically range from 3 m to 6 m from the primary street frontage and 1.5 m to 3 m on the secondary street frontage. The guiding principle for building setbacks is based on the form, function and activation where office / showroom areas are encouraged to be located closest to the primary street frontage whilst factory and warehouse areas should be located to the back.

Table 6.1 provides a summary of proposed setback requirements for the existing NIA subdivisions and future subdivisions outside the Meridian Park area. It is noted that flexibility for street frontage setbacks maybe required in bushfire prone areas to address bushfire prevention requirements.

Table 6.1 Suggested Tier 2 setback requirements

Use/Function	Minimum street setback	Maximum street setback	Landscape component	Figure reference
Primary street frontage				
Office/Reception / Showroom	4.5 m	17.5 m	4.5 m	Figure 6-3
Factory / Warehouse	12.5 m	22.5 m	4.5 m	Figure 6-3
Note: Warehouse component on primary road must be setback a min. of 5 m behind office front facade				
Secondary street frontage (corner lots)				
Office/Reception / Showroom	3 m	n/a	3.0 m	Figure 6-4
Factory / Warehouse	3 m	18 m	3.0 m	Figure 6-4
Side / Rear boundary				
Setback	In accordance with provisions of the NCC/BCA			
Microclimate zone				
Microclimate zone (a min of 5 m x 3 m) must be located adjacent to the Office/Reception/Showroom.				

The suggested Tier 2 setbacks above are aimed at providing a more commercially attractive and less restrictive set of controls compared to Meridian Park by reducing the minimum Primary Street setback and permitting parking between the primary street and building. While the Primary Street setback is less than DPS 2 additional controls on the minimum and maximum setbacks have been suggested. To ensure that there is a level of consistency in the way the building's address the street. For example, the controls prevent the office or warehouse comments being location on the rear boundary. Should the City wish to retain the 6 m Primary Setback we would recommend adding a further 1.5 m to the other Primary Street setback controls.

Consideration of parking and truck movements has also informed the suggested setbacks to enable parking between the street and building envelope and appropriate circulation zones.

The addition of the microclimate zone also provides a 3 m buffer between the office/showroom building element and the side boundary, which provides daylight to the office/showroom, relief to the street scape and an outdoor area for staff.

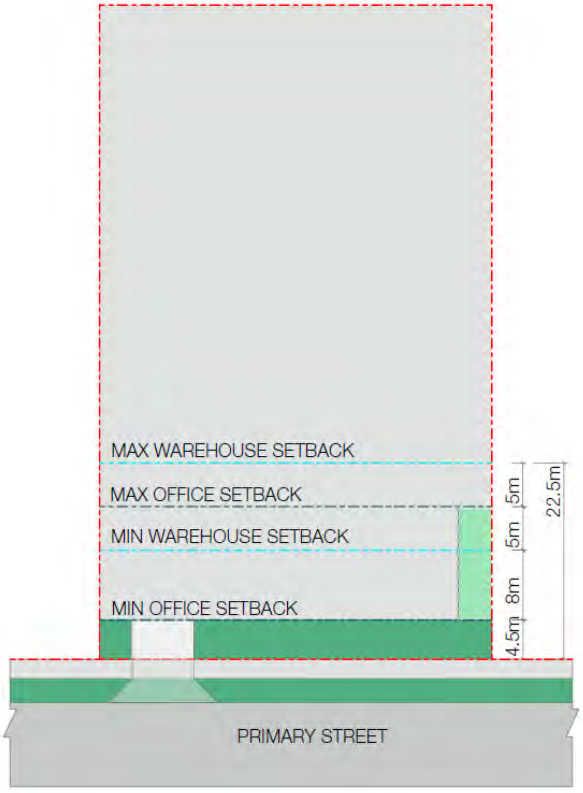


Figure 6-2 Typical lot setback requirements

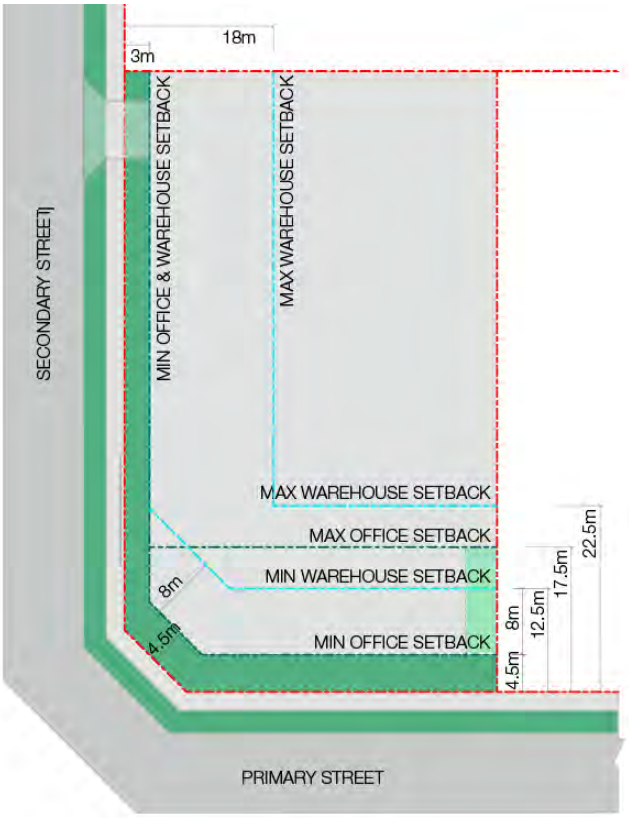


Figure 6-3 Corner lot setback requirements

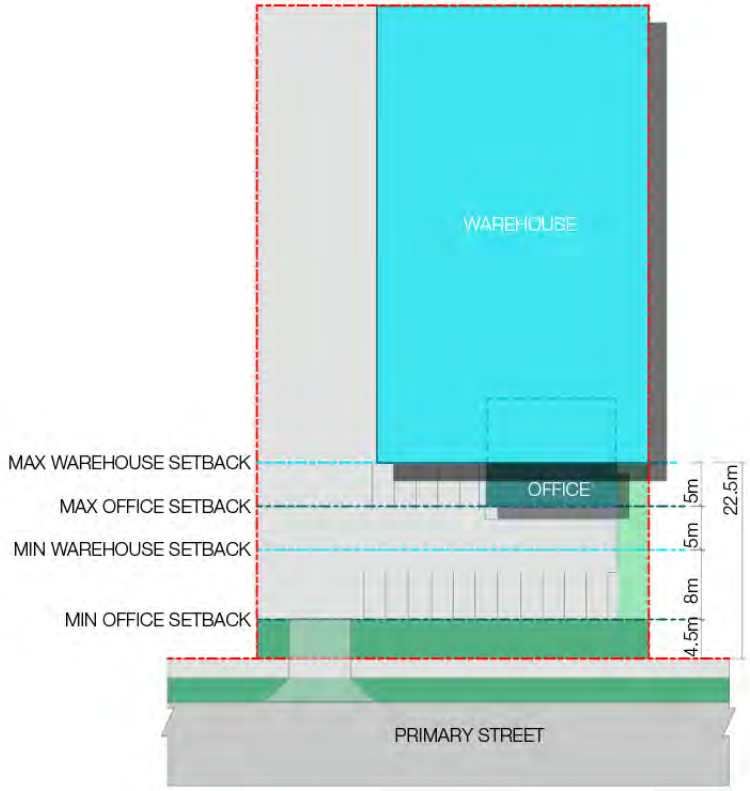


Figure 6-4 Example built form 1

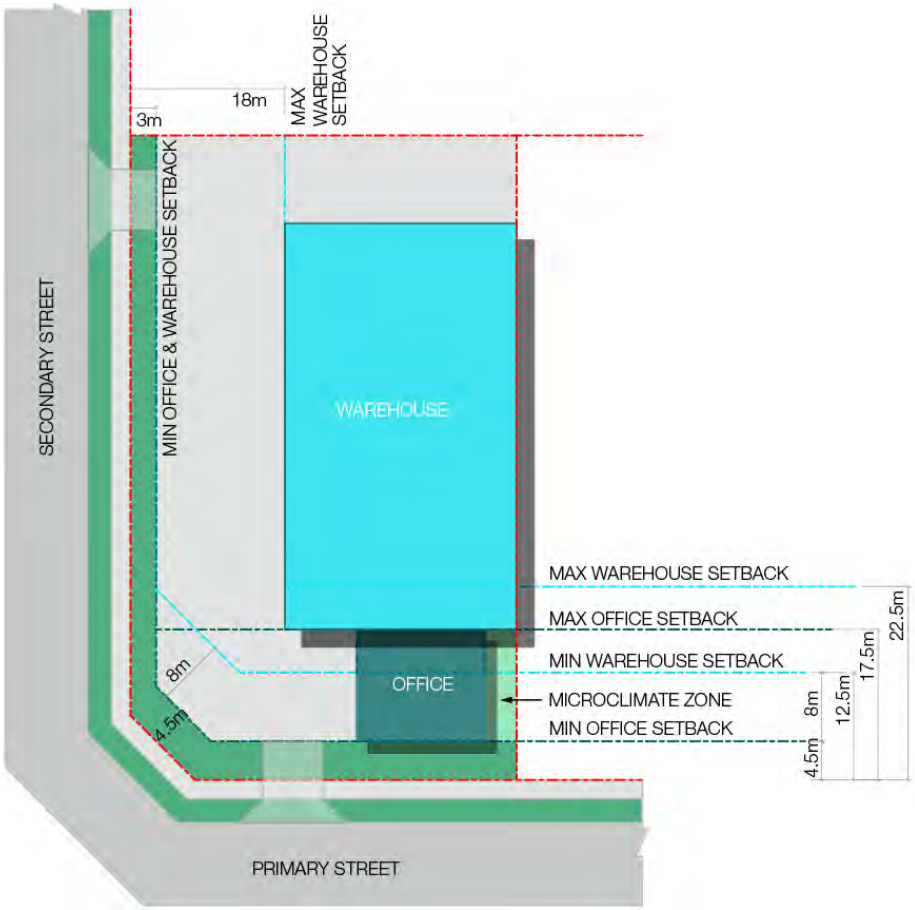


Figure 6-5 Example built form 2

Industrial built form located close to street frontages provides opportunities for the majority of parking, hardstand and storage areas to be screened from the street and achieves a desirable streetscape outcome (refer to Figure 6-6).

Figure 6-6 Example of building close to street screening service yard behind

6.6 Building coverage

Building coverage controls are often employed in industrial estates to ensure that valuable land is not used for low value storage activities that do not assist in creating attractive streetscapes nor promote economic growth in the industrial estate.

The following building coverage requirements are likely to attract higher value activities into the NIA over the longer term. Suggested minimum site coverage requirements:

- Sites up to 10,000 m^2 – Gross Floor Area (GFA) of 20% of lot area
- Sites 10,000 m^2 and above – GFA of 10% or 2,000 m^2 whichever is the greater.

However, in the short to medium term the application of these controls may prove a disincentive to some prospective industries and business and after direction from the City and further consultation with Burgess Rawson we now propose these controls be considered in the medium to long term.

6.7 Parking and loading facilities

Identifying appropriate parking controls is key to the long-term sustainability of the NIA and the commercial attractiveness of the area. GHD's Neerabup District Planning Traffic and Transport Study sets outs options for both on-site and off-site parking.

The provision of appropriate levels of employee and visitor/customer car parking is essential to complement public transport options. Due to the relatively isolated location combined with relatively low levels of current public transport servicing, vehicle access and parking will remain an important consideration in the short to medium term.

It is therefore important to establish a minimum level for parking per lot. Onsite parking can then be supplemented by on-street visitor/customer parking (refer Figure 6-7) and potentially centralised public parking.

Figure 6-7 Example of formalised embayment parking

6.7.1 Onsite parking – Industrial

The nature of industrial development means that the tenant may change over time, bringing different industrial uses, and employee and visitor numbers. Refer to the GHD Neerabup District Planning Car Parking Strategy for recommended car park ratios.

The location of parking and loading areas adjacent to the street has a significant impact on the visual amenity and attractiveness of an estate. Two typical design philosophies are detailed below.

1. Parking is not permitted between the street frontage and office/showroom (refer to Figure 6-8)
2. Parking and vehicle circulation is permitted between the street frontage and office/showroom, as described in the Proposed Setback provisions (refer to Figure 6-9).

Figure 6-8 Approach 1 – Parking and access located to side of offices

The Approach 1 results in a better visual outcome and more consistent streetscape. However, it reduces the flexibility in site master planning and land utilisation if parking and circulation areas cannot be located between the

street and the building. This Meridian Park Guidelines adopt this approach and do not permit parking between the street and the office/showroom.

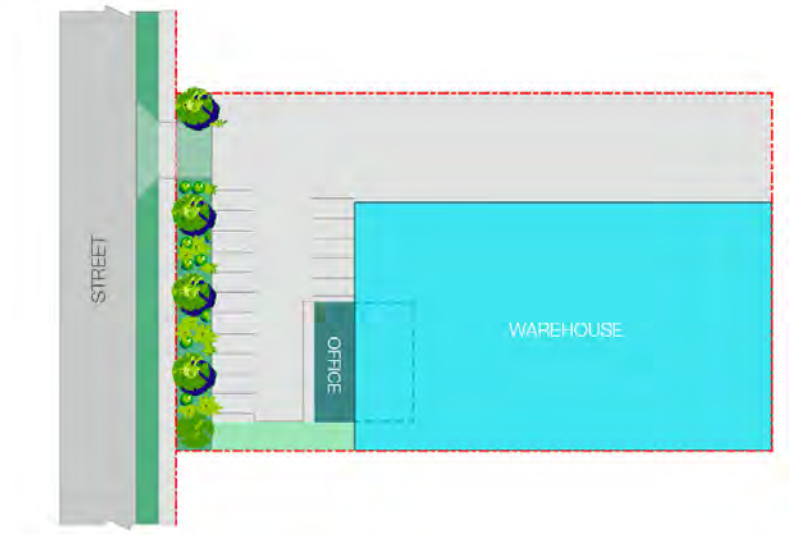


Figure 6-9 Approach 2 – Parking and access located between street and offices

The proposed Tier 2 setback and landscape controls have adopted Approach 2 to provide greater flexibility to landholders in building siting and landscape design.

Customer car parking and service areas should be separated to avoid conflict between the different types of vehicle movements.

6.7.2 Onsite parking – Service Hubs

To ensure consistency across the entire NIA the Tier 1 Meridian Park Guidelines have been recommended to be applied all service hubs locations. The site planning strategy combines elements of Approaches 1 and 2. Refer Figure 6-10.

Figure 6-10 Service industrial – site parking

6.7.3 Verge parking

Some local authorities permit verge parking. However, this approach is generally not recommended as it can reduce safety / sightlines and detract from the overall amenity and streetscape appearance as illustrated in Figure

6-11 and Figure 6-12). Figure 6-13 illustrates a landscape solution to deter informal verge parking, an approach used in many industrial estates such as the AMC.

Figure 6-11 Example of 90-degree verge parking directly off street to be prohibited

Figure 6-12 Example of informal verge parking to be prohibited

Figure 6-13 Landscape treatment that deters verge parking

6.7.4 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. On-street parking may be in the form of embayed parking or verge side, depending on the context. Subdivision or development applications which propose one or the other should be accompanied by a traffic assessment in this regard. Where traffic volumes exceed 6,000 vehicles per day, any on-street provision need to be carefully considered and located accordingly[21].

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.

[21] GHD Neerabup District Planning Car Parking Strategy

Figure 6-14 Example of on street embayed parking and street trees

6.7.5 Centralised public parking

While we acknowledge the City's direction not to promote centralised public parking it should be noted that Burgess Rawson recommend common user parking arrangements to allow for some high density uses without penalising the entire estate with more onerous car parking ratios.

> *"We recommend common estate overflow parking facilities as seen in Wangara and Malaga (street verge parking). Benefits are that a small minority of businesses can create a large overflow parking requirements and these car parking precincts solve this issue. As businesses outgrow facilities through economic uplift, staff levels can increase along with parking requirements. Taking cars off the street assists with functionality and ease of movement within the road network of the estate. Increasing individual car parking on every lot inhibits development and growth of the estate as it is anti-competitive to other industrial precincts[22]."*

The implementation of more onerous parking provisions will typically impact affordability, as increased parking requirements will require a larger lot size, resulting in increased land costs and higher capital costs.

6.8 Landscaped buffer zones

Providing landscaped buffer zones adjacent to the street frontage creates an attractive and appealing streetscape and public realm. The combination of trees and planting on private land adjacent to the street frontage and street trees on the verge (road reserve), provides the ideal level of sustainable amenity for higher quality industrial estates.

Figure 6-15 and Figure 6-16 illustrate the impact a combination of public and private landscaping, and lack thereof, can have on the visual amenity of the streetscape.

It has been identified that DPS 2 and Meridian Park Guidelines offer two extremes in terms of landscaped buffer zones widths. This report proposes controls that tie the landscape buffer zone to the building setback, thereby providing landowners with a number of options as to how they develop this space. These controls are as follows:

- Primary Street Frontage
  - 4.5 m wide landscape zone
- Secondary street frontage

[22] Appendix B - Burgess Rawson market commentary

- 3 m wide landscape zone

– Microclimate landscape zone[23]
  - Minimum 3 m wide x 5 m deep adjacent to a side boundary and Office/Showroom element.

– Street trees
  - Provide trees in landscape zone at 8-10 m intervals parallel to street frontages.

Figure 6-15 Example of minimal landscaped buffer

6.9 Fencing

The use of a consistent fencing standard along the street frontage plays an important role in creating a visually attractive streetscape. It can also assist in unifying developments at the interface with the street and public realm.

Fencing along the front boundary should generally be provided on the lot boundary or, in-line or behind the building line. Fencing standards should be specified as part of design guidelines to guide development. However, for discussion purposes we would recommend the following considerations form part of a design guideline:

Where front fencing is proposed it should:

– allow clear views between the building and public realm
– allow for safe sightlines at access points
– achieve a minimum 70% transparency
– be of garrison style (refer to Figure 6-16)
– the use of Colorbond fencing should be prohibited, unless it is as a dividing fence
– razor or barbed wire fencing should be avoided.

[23] a microclimate zone provides massing relief and opportunities for natural ventilation and outdoor space for occupants. It should address the primary street frontage and also provide opportunity for landscaping, access to natural light and cross ventilation to the building.

Figure 6-16 Example of garrison style fencing

6.10 Building design, form and materials

Building design outcomes should provide visual interest to the street by creating active building façades (predominantly glazed and preferably with visible access points or openings) and/ or other creative solutions that positively contribute to the streetscape (refer to Figure 6-17).

Secondary street façades should also provide visual interest to the street by varying materials and building form.

Figure 6-17 Two storey articulated building façade which appropriately address the street and public realm

6.11 Building height ratios

Highly curated built form environments will generally set some minimum bulk and height requirements to provide a level of streetscape consistency. In an industrial setting such as the NIA, the office/showroom component will typically be 1 – 2 storeys high and adjoining factory/warehouse element 7 -15 m high.

Where a high level of control is desired, there are two forms of controls typically considered, to govern the buildings form and ensure the warehouse does not dominate the streetscape:

- A ratio is set stipulating the minimum office/showroom building height at 40-50% of the maximum height of the warehouse building, or
- The office/showroom element must be 2 storeys to mitigate the visual impact of the warehouse building and provide greater visual interest to the primary street frontage.

Having regard to our discussion with Burgess Rawson, it is our considered opinion that the Meridian Park Design Guidelines provide an appropriate level of control for those areas desiring a high-quality streetscape. Furthermore, we do not recommend the imposition of a dedicated building height ratio for the remainder of the NIA with respect to the Tier 2 design guidelines.

However, our recommendation is for the Tier 2 setback controls specify a minimum setback in plan of 5 m between the office/showroom and warehouse/factory element to differentiate between the two elements. Refer Figure 6-18.

6.12 Sustainability - Microclimate zone

The Meridian Park Design Guidelines require the provision of a microclimate zone along one side boundary to provide massing relief and opportunities for natural ventilation and outdoor space for occupants.

The microclimate zone should address the primary street frontage and provide landscaping, natural light and cross ventilation to the office/showroom building. The area can also provide a passive recreation space for staff and enhance the development's visual amenity.

The inclusion of a dedicated Microclimate zone is worthy of further exploration when the final Design Guidelines are developed. Our initial suggestion is consideration of a microclimate zone 3 m wide that commences at the front face of the office/showroom and extends the length of the office. Noting the microclimate zone must have a minimum length of 5 m (associated with office/showroom component) typically adjacent the side boundary.

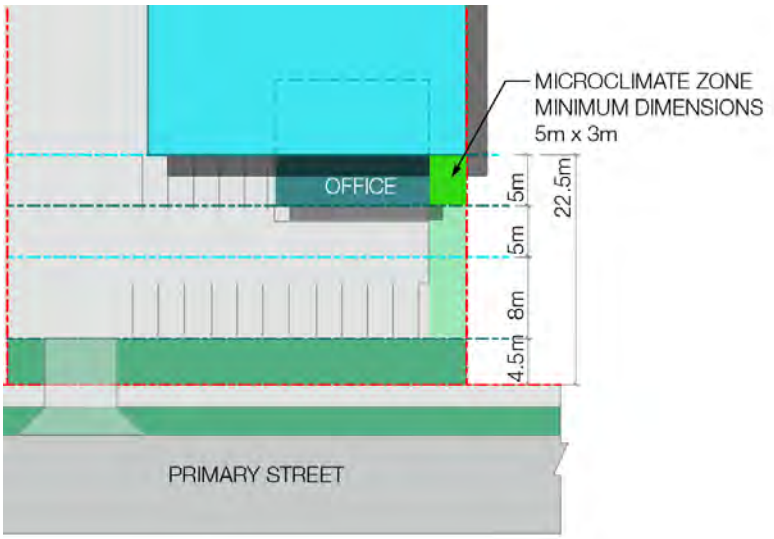


Figure 6-18 Microclimate zone (min 5 m dimension)

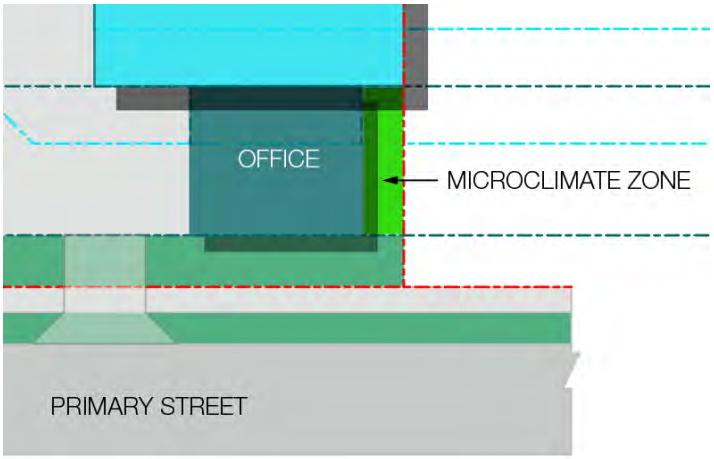


Figure 6-19 Microclimate zone must be length of office/showroom element

6.13 Sustainability initiatives - Natural lighting, ventilation and heating and cooling

Sustainability initiatives should be incorporated into all building design. Typically, these initiatives will optimise passive solar gain and improve overall building performance through energy efficient design and fit out. The orientation of buildings on the site should also be planned to promote natural lighting, ventilation, and heating and cooling.

Passive solar design decreases the reliance upon mechanical heating or cooling thereby reducing energy loads and operational costs. Detailed below are simple design factors that can significantly reduce every day running costs of buildings with little or no additional building cost:

- passive building design (incorporating sun shading (refer to Figure 6-20), clerestory[24] daylighting, natural ventilation, breezeways, etc.)
- set Water Efficiency Labelling Scheme (WELS) minimum ratings and implement Waterwise strategies
- set National Australian Built Environment Rating System (NABERS) minimum ratings.

Figure 6-20 Example of articulated building façade with sun shading devices

[24] Clerestory is a high section of wall that contains windows above eye level. The purpose is to admit light, fresh air, or both.

The initiatives generally outlined above are intended as a baseline guide for potential development in NIA and in line with market expectations. The implementation of more sophisticated Environmentally Sustainable Design initiatives is a question for the City and the landowners as they typically come with increased capital costs.

6.14 Summary of Built Form recommendations

To improve upon the existing provisions in ASP 17 and DPS 2, we have made the following recommendations as summarised under Table 6.2. These recommendations are intended to address deficiencies in areas not controlled by the Meridian Park Design Guidelines.

It is our view, given the diversity of industrial uses contemplated for the NIA, that two tiers of design controls are required. This approach will address the City's objectives for the NIA (below) which is to attract the latest / emerging industries whilst also protecting and not 'pushing out' many traditional existing uses that do not suit a higher standard of built form design due to the nature of the business and/or cost limitations.

- *A streetscape that is inviting and attractive*
- *Subdivision layout and lot size appropriate for an industrial area like Neerabup*
- *A built form that is attractive and attracts innovative, technology related industries.*

Table 6.2 Summary of Built Form recommendations

Heading	Commentary
Building orientation	Buildings and their entries should be orientated to address the street and provide legible and intuitive wayfinding from the public realm. This will maximise functionality as well as assist in creating effective and attractive streetscape.
Building setbacks	Table 6.1 provides a summary of proposed Tier 2 setback options based on use / function which are encouraged for the existing NIA subdivisions and future subdivisions, excluding the Meridian Park area and areas focused upon attracting advanced technology related industries.
Building coverage	Consider in the future implementation of building coverage controls to ensure that valuable land is not used for low amenity storage activities that do not assist in creating attractive streetscapes. We acknowledge the City does not favour this control.
Parking and loading facilities	The location of parking and loading areas adjacent to the street has a significant impact on the visual amenity and attractiveness of an estate. The recommendations in this report suggest a more flexible approach in comparison to Meridian Park Design Guidelines.
Landscaped buffer zones	Providing landscaped buffer zones adjacent to the street frontage creates an attractive and appealing streetscape and public realm. The combination of trees and planting on private land adjacent to the street frontage and street trees on the verge (road reserve), provides the ideal level of sustainable amenity for higher quality industrial estates. The controls proposed tie the landscape buffer zone to the building setback and provide options for landowners as to how they develop the interface between the street and the built form.
Fencing	The use of a consistent fencing standard along the street frontage plays an important role in creating a visually attractive streetscape. It can also assist in unifying developments at the interface with the street and public realm.
Building design, form and materials	Building design outcomes should provide visual interest to the street by creating active building façades (predominantly glazed and preferably with visible access points or

Heading	Commentary
	openings) and/ or other creative solutions that positively contribute to the streetscape for the warehouse component.
Building height ratio	Highly curated built form environments will generally set some minimum bulk and height requirements to provide a level of streetscape consistency. After discussion with Burgess Rawson, it is our opinion the Meridian Park Design Guidelines provide appropriate level of control for those areas desiring a high-quality streetscape and we do not recommend dedicated building height ratio for the remainder of the NIA.
Microclimate zone	The microclimate zone should address the primary street frontage and provide landscaping, natural light and cross ventilation to the building. The area could also provide a passive recreation space for staff and enhance the development's visual amenity.
Sustainability initiatives	Sustainability initiatives should be incorporated into all building design. Typically, these initiatives will optimise passive solar gain and improve overall building performance through energy efficient design and fit out. The orientation of buildings on the site should also be planned to promote natural lighting, ventilation, and heating and cooling.

7. Conclusion

This report for future development of the NIA focuses on the factors influencing subdivision and built form design for industrial development.

It considers existing NIA planning controls and discusses the application of NIA wide design guidelines and the merits of the implementation of a two-tier design guideline framework. It also examines the influence that subdivision layout and built form has on the ongoing viability of the NIA in the longer term.

Discussions in this report relating to the need for a Tier 2 design guideline are based on improving on the existing development framework under the local planning provisions for areas not covered by the current Meridian Park Design Guidelines. Through imposing a Tier 2 design guideline, it is more likely to achieve lot layouts and built form that positively contributes to the amenity and character of the area and, in turn, strengthen the ongoing commercial viability of a development and the NIA as a whole. This will ultimately create a desirable and sought-after industrial environment which appropriately responds to the current and future market demands.

The NIA offers a unique opportunity to support and encourage a broad range of existing and emerging industries. Factors contributing to this include its proximity to a fast-growing population base and labour pool, as well as enhanced connectivity to road and rail networks in Perth's northern corridor. The NIA is currently characterised by large-scale natural resource extraction, transport and heavy industry through to a range of light industrial / showroom uses and agricultural activities.

One of the key challenges to the future growth and viability of the NIA is balancing the needs of the established industrial uses whilst also responding to the needs and expectations of a new emerging smart urban technology industries. The recommended implementation of two tiers of design guidelines will therefore play a key role in balancing varying industry needs within the NIA.

As discussed in this report, there are several key principles that should be incorporated into the local planning framework in order to facilitate better subdivision and built form design within the NIA, they include the following:

- identifying an appropriate street network hierarchy, including connections to external networks
- providing a subdivision layout that caters for the various industrial uses envisaged over the life of the development and efficient staging of such development
- creating a positive interface between private and public realm
- providing adequate landscaping that contributes to the streetscape and microclimate of the development
- encouraging built form that responds to the operational requirements of the use, whilst positively contributing to the streetscape, surveillance, and microclimate of the development
- identifying an appropriate car parking ratio for industrial uses that maximises the site's developable area, without adversely impacting on the road network and amenity of adjoining properties
- providing appropriate levels of on-street parking to support the area's development as a strategic hub for a range of industrial uses
- identifying those elements of streetscape / road reserve which need to continue throughout the NIA to achieve a seamless integration of the various industrial uses and a cohesive design character
- tiered approach to Design Guidelines to reflect the NIA's diversity of industry and land use within the estate to accommodate a broad range of users including emerging smart urban technology industries

Ultimately, GHD recommend that as part of the future structure planning phase for the NIA, the local planning framework is structured so as to support a Tier 1 and Tier 2 design guideline which is developed in collaboration with key stakeholders for the NIA, including but not limited to the City, State agencies, prominent business operators and landowners.

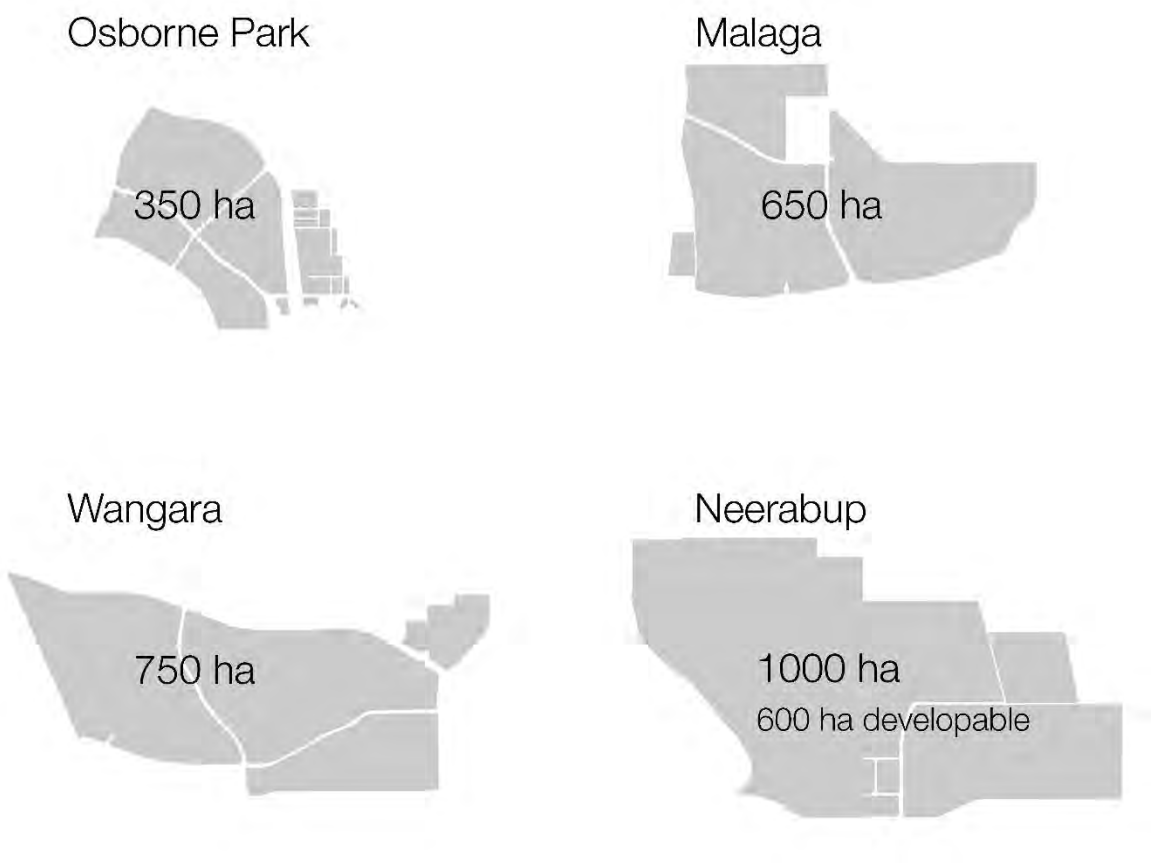
Appendix A

Built Form Report – Background Analysis

Scale and size

Anecdotally, the size of industrial areas tend to be larger the further they are located from the CBD. However, due to environmental constraints, the resultant developable areas are often comparable as the comparison between the Osborne Park, Malaga, Wangara and Neerabup industrial areas below demonstrates. Given that the provision of roads and service infrastructure comprise some of the most costly elements of industrial estates, issues relating to affordability are relatively consistent, notwithstanding the lower land prices in Neerabup.

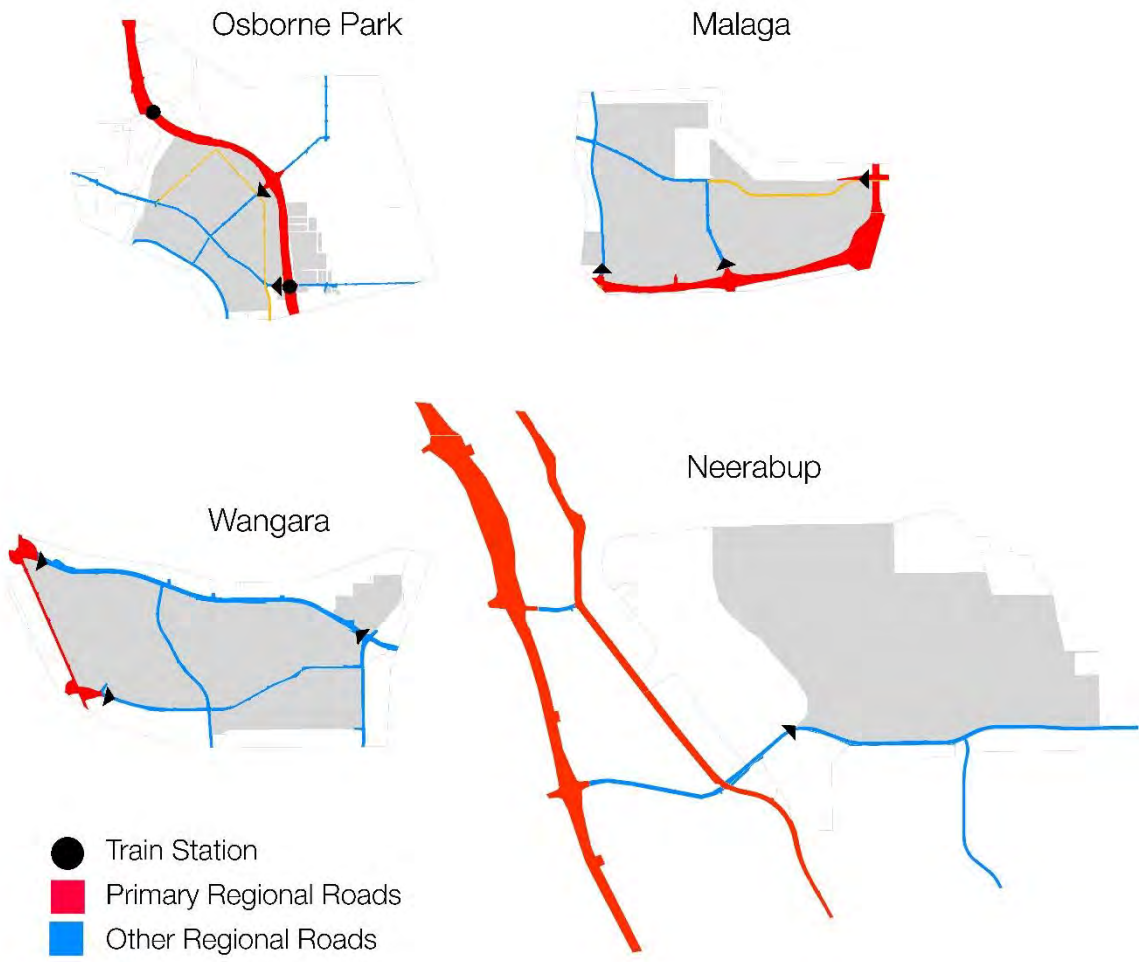
This is largely attributed to the corresponding increase in the costs of road and service infrastructure the further an industrial area is located from the broader regional road network and existing servicing fronts. Newer industrial areas, located on the fringe of existing development, often experience increased development costs for this reason as well as decreased connectivity to the urban areas that they service.



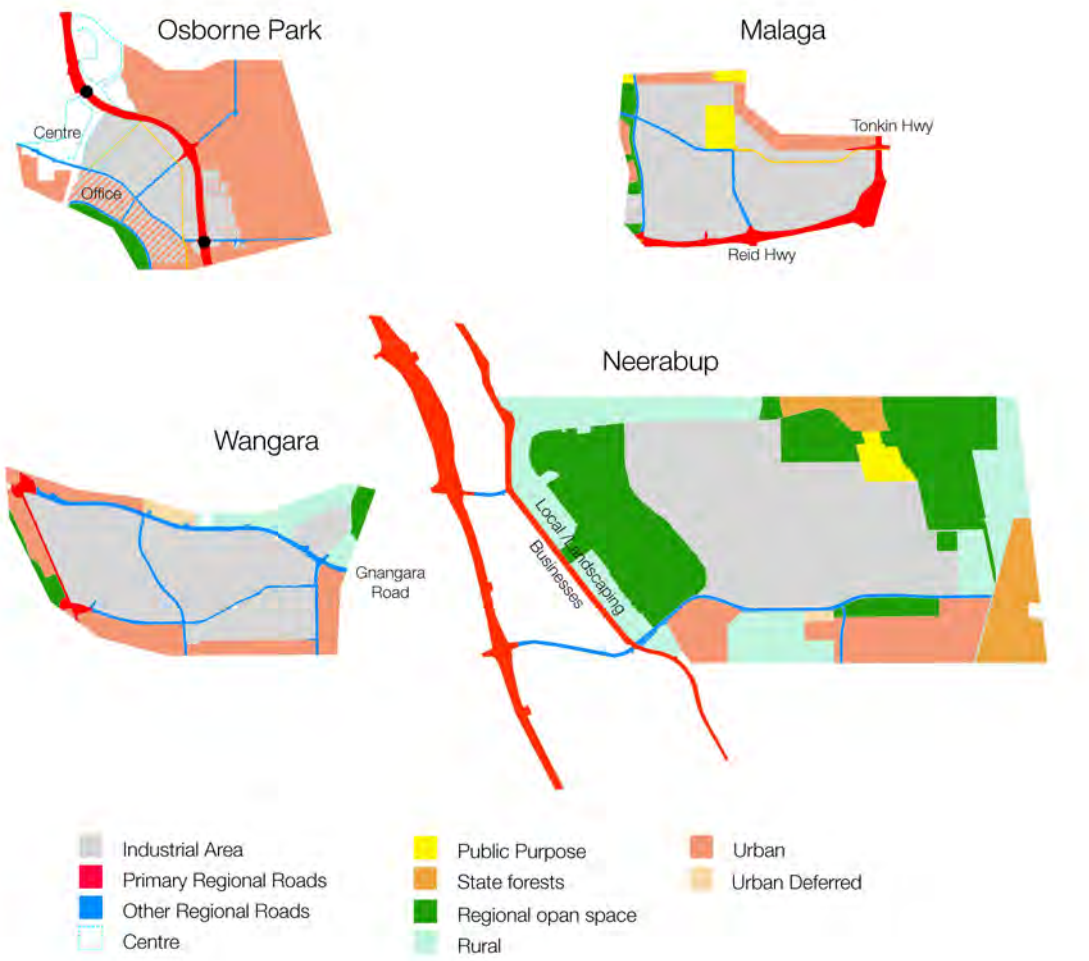
Accessibility and Connectivity

Compared to the Osborne Park industrial area, Neerabup has a low level of accessibility which `will have consequential impacts on the ability of Neerabup to attract investors and industries over the short to medium term.

While train stations are often recognized as catalysts for investment, this only occurs where public transport is highly efficient and there is sufficient activity to attract the required levels of patronage. Industrial estates, particularly those that are isolated and not contiguous with urban areas, often do not support the employment densities required to sustain efficient public transport systems. Furthermore, the size of industrial areas reduces walkability, making public transport a less attractive option for employees.



Exploring surrounding land uses, the Malaga, Wangara and Neerabup industrial areas are not as well integrated as the Osborne Park Industrial Area which adjoins an activity centre as well as urban areas. The Neerabup industrial area is the most isolated of these industrial areas, with large interfaces to regional open spaces/conservation areas as well as rural areas. Consequently, in order to attract investors there is a need to create positive value for investors.



Street network

In terms of attracting investment, internal road connectivity is as important as connectivity to the broader road network. The shape and structure of the internal road network, particularly the main spine of this road network, can add value to the legibility and the functionality of the industrial area. The following table is a summary of the traffic studies recommended street hierarchy.

Road Type	Max speed limit (km/h)	Indicative volume range (vpd)	Reserve width indicated in Structure Plan (m)	Indicative road reserve (m)	Recommended road reserve (m)
Industrial access road	50	<5,000	20	20	20 (1 x 10 m carriageway)
Industrial connector (minor)	60	5,000 - 8,000	20-25	25	25 (1 x 10 m carriageway)
Industrial connector (major)	60	>8,000	32-35	33.2 - 35	33.2 – 35 (2 x 8.5 m carriageways, 6 m median, 2 x 5.1 m verge minimum)
Industrial arterial (no service road)	70	>8,000	32 - 35	33.2 - 35	33.2 – 35 (2 x 8.5 m carriageways, 6 m median, 2 x 5.1 m verge minimum)
Industrial arterial (service roads)	70 km/h	>8,000	N/A	54.2	54.2 (2 x 8.5 m carriageways, 6 m median, 2 x 5.1 m verges minimum, 2 x 6 m service roads + 2 x 5 m verges)

The road network, including intersections, within the NIA should be designed to accommodate RAV 4 vehicles up to 27.5 metres in length. Similarly, crossovers should be designed to allow vehicles to exit and enter properties at the same time. This will be further addressed through the structure plan.

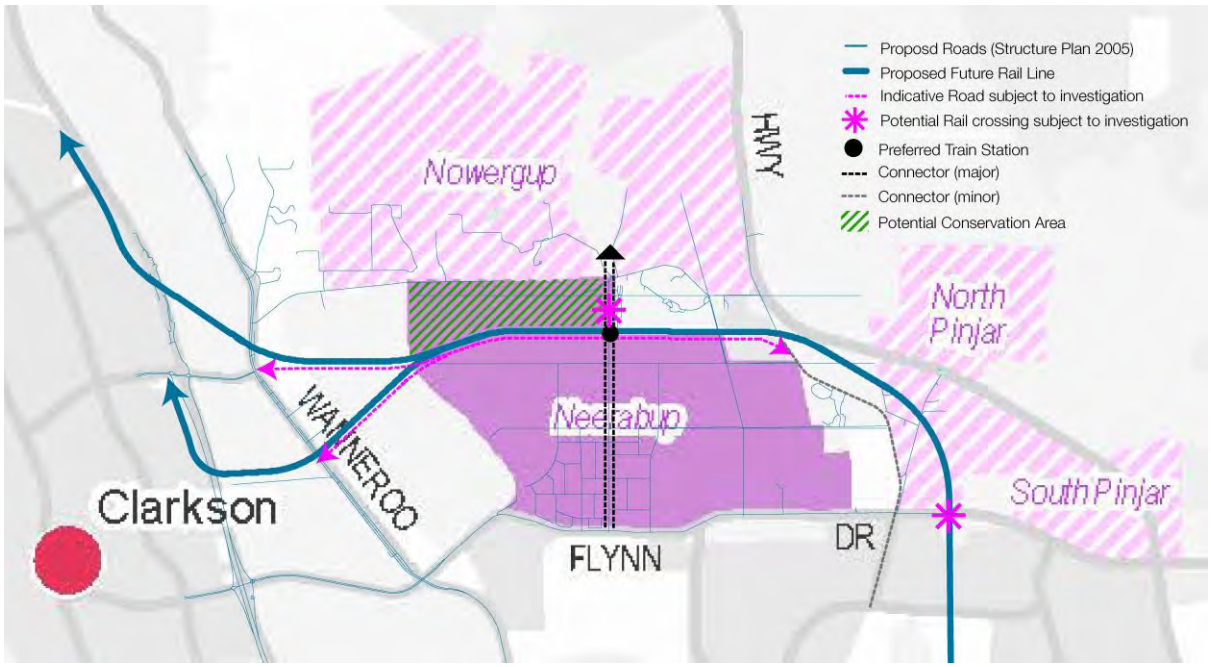
From urban design perspective, the following the road categories should be considered when developing the master plan and any subsequent design guidelines.

- Access Roads: servicing small lots and secondary/side industries likely to comprise mostly offices or small workshops.
- Minor Connectors: servicing a wide range of lot sizes critical for the ability to adapt to future industrial demand and trends. The number of the lots that are serviced from these roads should be maximised. The size and the shape of the lot are the main design criteria which should facilitate the efficient entry and entrance of vehicles. This criteria can then be a measuring tool to define and control the minimum lot size and design guidelines. The use of land tenure mechanisms such as leasehold should be encouraged on larger lots to provide greater flexibility for future demand and to avoid unco-ordinated fragmentation of land.
- Major Connectors: These roads are centrally accessible and function as a spine connecting and directing traffic flows within the estate. The alignment of major connectors should consider future industrial growth areas both within and adjacent to the NIA.

Future Rail

To attract strategic economic and employment land uses and maximise the use of existing infrastructure. Perth and Peel@3.5million has identified future growth of the Perth and Peel regions, including its economic development. The existing and proposed employment centres within the sub-region are shown in the plan below.

Perth and Peel@3.5million requires further investigation for the potential East Wanneroo Rail Link (or East-West Rail Link), to connect the Joondalup and Ellenbrook Rail Lines in the long term. A final alignment for this rail line will be determined following further assessment of alignment options.



The proposed rail alignment provides an opportunity to provide an additional east-west road connection, running parallel to the proposed rail line, into the NIA as shown on the above figure. The construction of a road parallel to the proposed rail line will consolidate impacts on surrounding environmentally sensitive areas, provide increased accessibility to the NIA, minimize the need for any rail crossings as well as provide separation between bushfire hazards and developable areas.

The proposed road is positioned to allow integration with the existing road infrastructure to the east maintaining existing landowner access to the NIA.

Lot layout and adaptability

The NIA is an estate that is likely to evolve over a long period time and it is necessary, therefore, that the NIA is able to accommodate a range of different lot sizes and industries, responsive to market demand.

The following diagrams highlights approximate clusters and locations of different lot sizes in three industrial areas. Due to the function of the major connectors, it is important that vehicular entry and exit points along such roads are minimized. Larger lots with larger frontages result in fewer access points than smaller lots with individual access. As illustrated below, there is a tendency for larger lots to located along major connectors. Where medium or smaller lots sizes are proposed, the use of a service road, to co-ordinate access across these lots and provide for the safe and efficient movement of traffic, should be considered.

The following arrangements of road types and lot sizes has been observed:

- Access Roads: These tend to accommodate smaller lots that are developed with industries with lower visitor requirements.
- Minor Connectors: the lot sizes adjacent to this type of road tend to vary from small to large. To maximize flexibility, it is recommended that this road type be assigned to the longest roads running east-west within the NIA. This may result in the creation of road reserves that are wider than their immediate demand and usage would dictate. In the short term these roads could be constructed on a fit for purpose basis but would retain the ability to be adapted in the longer term to include, if necessary, service roads to accommodate smaller industrial lots. This will, however, result in larger road verges in the intervening period and design considerations should address appropriate treatments and design outcomes which provide for the transitioning of the various industrial typologies within the NIA both in the immediate and longer term.

- Major Connectors: These roads typically are high volume roads that should have minimal access points in order to maintain the efficiency and safety of these road. Accordingly lots along this type needs to be either large or the use of service roads should be considered if market demand requires medium to small lots.

In terms of the general road network, the north- south connectors integrated with the east-west connectors, as proposed in NIA structure plan (2005), is supported. However, the predicted traffic volume suggests that most of these roads will function as major connectors in the longer term, which may require the consideration of increased road reserve widths if future flexibility of lot sizes and industrial typologies is to be maintained.

As discussed above this approach can be staged through the staging of construction requirements relative to the type of industry proposed at the time. That is, while the road reserve width should accommodate the ultimate development intensity, construction requirements in the short to medium term should be guided by the development proposed. This will require careful consideration during transitional phases to ensure that road functionality as well as design outcomes are integrated.

Land use and potential precincts

NIA is currently a traditional organic functioning and living industrial area. The masterplan is required to factor in the existing character and the current activities in NIA while considering further industrial development and the ability of the NIA to evolve over time.

At the same time, there is also a need to consider the various industrial typologies and the specific requirements of these typologies in terms of location, access and reliance on synergies with other industries. For example, car exhibitions or landscape industries better function within a strong cluster as well as great visual and physical access. Facilitating such clusters helps creating more legible and unique place to support business synergy and investment attraction.

Appendix B

Burgess Rawson Market Commentary

NOTES

GHD SUBDIVISION DESIGN AND BUILT FORM REPORT RECOMMENDATIONS
NEERABUP INDUSTRIAL AREA SUBDIVISION

- Comments accommodating a Smart Design estate precinct in the future it is speculation but could be a point of difference or untapped demand. Not likely now to stand alone but this is unknown keeping in mind the rapid pace of technology change in 5+ years time.
- Super efficient road design in and out of precinct. Would be imperative in smart design precinct.
- More guidelines and rules = more long term growth constraints in estate.
- Industrial occupiers like freedom of design to accommodate their specific requirements. It is the principle of what vacant land and its benefits bring to occupiers in the first place rather than existing building options. Design guidelines reduce demand.
- Availability and regular supply of a full suite of lot sizes to even out market demand and cater for current market business trends. 1,000sqm - 4ha
- Accommodate unsightly businesses in a separate precinct vehicle wrecking, extraction, construction, mining, sand blasting yards, maintenance etc.

We would recommend rather than the uses of different zoning precincts the use of a restrictive covenant to be simply used to isolate traditionally unsightly industries. Screening requirements can also be utilised. These covenants are common in Malaga and Wangara.

- All major industrial precincts have a big box showroom component; Wangara, Malaga, Balcatta, Canning Vale, Bibra Lake.
- By enabling Big Box Showroom uses the precinct can become a place of immediate scale with consumer traffic that then brings the smaller service businesses to the locality. Without these large format users within the estate the small commercial users are not likely to be drawn to the locality as it won't be viable. They are critical to the vibrancy and amenity of the area. Case in point Erindale Road Balcatta has struggled until larger showrooms footprints were erected. Also as a note small office use demand is trending down at present within industrial precincts.
- Commercial zoning to permit service amenities at entrance to major land release stages eg current industrial estate examples – corner of Excellence and Inspiration Drive, Wangara plus fast food and retail eg corner Alexander and Beach Road, Malaga.

- We recommend common estate overflow parking facilities as seen in Wangara and Malaga (street verge parking). Benefits are that a small minority of businesses can create a large overflow parking requirements and these car parking precincts solve this issue. As businesses outgrow facilities through economic uplift, staff levels can increase along with parking requirements. Taking cars off the street assists with functionality and ease of movement within the road network of the estate. Increasing individual car parking on every lot inhibits development and growth of the estate as it is anti competitive to other industrial precincts.
- Regular shaped lots no easements minimal gradient on land.

Current Perth Market Conditions in context to Neerabup

- Rising business confidence (sector based).

  Main prosperous sector drivers
  - Food Services and supply Sector
  - Mining and Resource and Maintenance Sector
  - Housing Construction Sector including Building, Maintenance & Landscaping

- Awareness of the Neerabup Industrial Area is good and the future viability restraints to industry seems to be reducing.
- Critical mass is the likely trigger point where there is certain scale of developed area that really accelerates confidence for others to relocate and invest in the suburb. Developers are now looking into mass development in Neerabup with the rapidly improving market conditions.
- Businesses have been in a long term holding pattern where expansion or work place efficiency has been on hold due to subdued economic conditions.
- As more demand and revenue that flows to businesses, business relocation completion is building along with general confidence in the market (cycle being acknowledged that we are at the bottom?).
- Other drivers of demand in today's market is the equity building taking place from the residential market and availability of very affordable credit versus major banks lending criteria (30-40% equity and manageability of loan repayments).

General overview over the Northern Industrial Market

Main Industrial Sector Demand Northern Suburbs

- Food Services (supply / manufacture / warehouse)
- Construction Supply for Housing (warehouse / manufacture / yard storage
- Mining & Resource Businesses (supply / maintenance / manufacture / yard storage)
- Recreation / Community Groups (place of worship / personal fitness / recreation activities)
- Automotive & Recreational Vehicles / Equipment (warehouse / sales / manufacture / maintenance)
- General Maintenance Providers (electrical / plumbing / landscaping / commercial & residential)

Current Market Sales Guide - Northern Suburbs (Indicative pricing Land - Per Square Metre plus GST)

Osborne Park	$750-$1,250/sqm	Majority of sales offer a functional storage space in addition to land value only purchase. Smaller lots in higher demand.
Balcatta	$600-$750/sqm	Recent sales indicate these levels for underlying land value. Fee transaction in the last 12 months with limited supply.
Bayswater / Bassendean	$400-$480/sqm	Demand is fairly steady with modest supply. Primarily demand is driven from businesses within the area.
Malaga	$400-$525/sqm	Sale rates and demand in the area on the rise from 2019/2020. Affordable priced land over 5,000sqm very limited. Supply now limited in general.
Wangara / Landsdale / Gnangara	$270-$380/sqm	Now limited supply for subdivision estate land. Positive image in the market place due to location price point and businesses moving to the location.
Neerabup	$150-$250/sqm	Improving sales rate and increasing market profile.

Current Market Trends & Buyer Requirements (as it relates to Neerabup)

The Northern Industrial Market is being primarily driven by the broad categories of the Mining & Resource Sector, Housing Construction & Maintenance Sector and to a lesser extent Food Services & Supply.

Market trends continue the shift North as prices of land closer to the city exclude some buyer categories but more particularly the availability of land and the appropriate zoning highlighted by the recent zoning changes in Osborne Park.

The shift of many occupiers from Malaga to Wangara for affordable land and to construct modern premises has continued over the last 10 years as Malaga has effectively had a cap and priced some sections of the broad Mining & Resource Sector buyers out of the market.

As Wangara has prospered from Malaga's higher prices and relative supply constraints it too is starting to near the end of its land abundance. Land demand has covered lots primarily from 1,000 - 10,000sqm with a more specialised demand of 1ha - 4ha.

In recent years we believe there has been an increase in demand of small lots (1,000-1,500sqm) and believe this sizing could present an opportunity to offer these sized lots for future stages in Neerabup.

Buyer requirements have trended towards increased employee amenity both for the built form and service providers within the vicinity of the Neerabup Estate.

Due to the increased requirement for building amenity the depreciation of buildings has accelerated in Wangara and particularly Malaga where these amenities weren't factored into the building designs at the time. Amenity includes shower facilities, balconies, lunch room facilities and break out areas, external outdoor areas and light bright office & warehouse facilities.

Opportunity for the Meridian Park estate is to give occupiers the opportunity to be a part of a new precinct where there is amenity focused building design based on today's employee's requirements and ambitions.

There is a certain maturity in the marketing for purchasing early in an estate and if long term benefits are visible people will be willing to commit as seen in the success of the Northlink Estate Gnangara.

Commentary Smart Urban Technology

Smart Urban Technology Industries could be an area of growing interest but will need a substantial lift in current demand from the sector. Although there is not sufficient demand now it is unknown what this demand could be in the years to come due to the rapidly evolving E-commerce economy.

Enabling a vision for this precinct in the estate and providing an opportunity is reasonable and most likely the market will determine if this is feasible or not in the distant future. I would anticipate the scale of this sector would need to also increase expediently in the next 5 years before a true assessment of viability can be made. Having a provision for the land with good transport and communication infrastructure that can be transferred to other industries as a plan B would be appropriate.

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