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Department of Planning, Lands and Heritage

Mandogalup Westport Analysis

Briefing Note

November 2021



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1 EXECUTIVE SUMMARY

This briefing note is an update and an addendum to the 2020 Land Supply and Demand Analysis technical report; and in any areas of inconsistency, the more up to date information in this briefing note (addendum) applies.

This analysis has assessed the land uses at the WTC to be able to understand the effect of Westport on industrial uses as it develops. The analysis does not consider the potential constraints that may be posed by land tenure in the subject area and how it may impact transition of certain businesses. The main land uses at the WTC were broken down into Port Strategic, Strategic and Population Driven uses to identify their level of friction related to moving out of the WTC¹ (Figure 1).

Figure 1. Floorspace by Transitional Land-Use Definition

Transition Category	Floorspace m ² (% of total)	Land Area Ha (% of total)
Strategic	805,421 (54%)	1,626 (78%)
Port-strategic	220,007 (15%)	175 (8%)
Population-driven	244,611 (16%)	136 (7%)
N/A (vacant) ²	229,120 (15%)	151 (7%)
Total	1,499,159	2,087

Source: DPLH 2016, Pracsys 2021

The potential land demand generated by Westport was estimated using benchmark analysis of major Australian Ports. Three scenarios were developed and combined with the Business-as-Usual land demand scenarios from the IP47 Land Supply and Demand Analysis. Total demand was compared to future industrial land supply to estimate the potential gap in available industrial land at the WTC by 2041. The analysis identified a potential gap of 190 ha in the Medium growth scenario and approximately 612 ha in the High growth scenario (Figure 2).

Figure 2. Land Area Gap in 2041 (ha)

Metric	Low	Medium	High	Notes
Supply	3,054	3,054	3,054	See Section 3.2
Demand	2,443	3,244	3,666	See Section 5.1 and 5.2
Gap/Surplus	611	- 190	- 612	

Source: DPLH 2016, Port Australia Data 2019 Google Maps 2021, Pracsys 2021

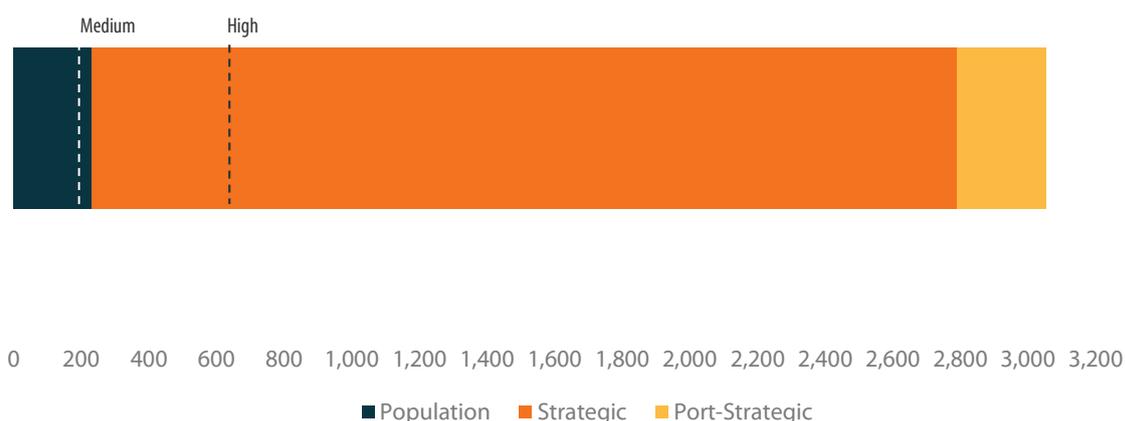
It was determined that in the Medium Growth scenario most Population-Driven uses would transition out of the WTC and in the High scenario, all Population Driven uses and some Strategic uses that would benefit

¹ Definitions of land uses are provided in Figure 7 on page 10

² Vacant is assumed to be a component of undeveloped land in the analysis (see Section 3.2). Undeveloped refers to lots that are zoned for development for the purposes of the specified primary land use category that are recorded as vacant in Landgate's property valuation database.

from proximity to the WTC would transition out of the WTC (Figure 3). The following graphic shows the area of land use by transitional category in 2041 and the gap size by scenario.

Figure 3. Gap in Land Area in 2041 by Scenario by total Future Land Demand



Source: DPLH 2016, Port Australia Data 2019 Google Maps 2021, Pracsys 2021

Implementation considerations were developed to support decision making around land planning for the Subject Area. Should Strategic uses want to be accommodated at the Subject Area, the planning framework will need to accommodate appropriate zones in the Subject Area, allowing for suitable lot sizes for desired uses and a suitable transition from Strategic uses to residential development from West to East. Planning for Strategic uses is seen as the most flexible option as the development of these uses is likely to occur over a longer timeframe and should demand not eventuate, it is likely that the land could be rezoned to accommodate more population orientated uses.

2 BACKGROUND

Pracsys undertook an investigation of land supply and demand in 2019, providing a draft report in early 2020 as a technical input to the preparation of an Improvement Scheme over the IP 47 area (the Subject Area). At approximately 300 ha, the Subject Area is located in the City of Kwinana and currently supports agricultural, residential and light industrial activities. The analysis estimates the supply and demand for potential land uses, identifying whether there is a likely gap or surplus for each activity type based on the current planning framework.

In August 2020, an independent Westport Taskforce recommended a future land-backed container port be built within the Kwinana Industrial Area. The port is to be connected by an uninterrupted freight corridor via Anketell Road and / or Rowley Road, and Tonkin Highway to the logistics precincts in the outer Perth Metropolitan Area.³ It could potentially be supported by an enhanced rail network and an intermodal terminal, although this has not been confirmed.

The WA Government accepted the recommendations and is now working to determine the preferred timing for transition of activities from Fremantle to Kwinana. This transition will have significant impact on the activity mix in Kwinana industrial areas and hinterland. A new hierarchy of land uses will emerge based on the location of infrastructure and proximity to the core port operations. In parts of the Western Trade Coast closest to the port, lower order uses (i.e. population driven) will likely make way for an even greater concentration of higher order uses (i.e. port related uses and strategic uses that are export orientated). The process will accelerate in tandem with the transition of activity from Fremantle to Kwinana.

The impact of this transition on the subject area will likely be profound. Lower order uses (i.e. small factory units, bulky retail, etc.) will need a place to relocate. The infrastructure in the area will need to suit the business models and modes of operation (i.e.: business-to-business, business-to-consumer, bulky retail), with different access arrangements, road network design, parking, and provision of services (power, water, sewer, etc).

This report has been developed to quantify the current proportion of lower and higher order uses in the Western Trade Coast area and quantify the amount of industry displacement that might occur due to the Westport plans. This is effectively a more detailed rework of the scenarios from the land supply gap analysis already conducted for the subject area and will be integrated into the Land Supply and Demand Report.

³ State Government 2020, 'Work underway on Perth's new freight corridor'. Available from: <https://www.mediastatements.wa.gov.au/Pages/McGowan/2020/08/Work-underway-on-Perths-new-modern-freight-corridor.aspx>

3 STUDY AREA

3.1 Spatial Area

The Land Supply and Demand Analysis identified a Study Area for the project that included the Local Government areas of Armadale, Cockburn, Kwinana, Rockingham and Serpentine Jarrahdale (Figure 4).

Figure 4. Study Area Spatial Area



Source:

The focus of this analysis is the industrial land that makes up the Western Trade Coast (Figure 5). This land includes the Rockingham Industrial Zone, Kwinana Industrial zone, Latitude 32, and the Australian Marine Complex (the boundary on the map below also includes the Subject Area; this area is not included in the analysis).

3.2 Future Industrial Land Supply

The analysis in this report uses industry analysis and benchmarking to develop land demand estimates that can be compared to planned and developable industrial land. The planned future supply of industrial land was estimated in the Land Supply and Demand Analysis through land identified for industrial expansion, land identified for industrial investigation and an estimate of undeveloped industrial land in the Study Area. Undeveloped industrial land reported in the Economic and Employment Land Monitor has also been included (EELM) (Figure 6).⁴

Figure 6. Industrial Land Supply Analysis

	Future Supply	Notes
Undeveloped and Future Industrial Land (Ha)	3,054	This is comprised of: <ul style="list-style-type: none"> • 892 ha of undeveloped industrial land as reported in EELM • 2,047 ha industrial expansion (includes Latitude 32) • 115 ha industrial investigation (total industrial investigation of 545 ha minus the subject area's 330 ha)

Source: Pracsys 2019, DPLH 2020

Land which is classified as unrated has been excluded from this analysis as it is not clear what proportion is remaining to be developed and there are elements that likely form part of the planned industrial expansion and investigation areas.⁵

⁴ Refers to lots that are zoned for development for the purposes of the specified primary land use category that are recorded as vacant in Landgate's property valuation database.

⁵ Unrated land refers to lots that are zoned for development for the purpose of the specified primary land use category for which no vacant land or premises valuation information has been captured in Landgate's property valuation database. This may include State or local government owned lots or premises exempt from rates, Crown allotments, common property within lots on survey, newly created lots on survey, land otherwise exempt from rates and some public roads which are zoned for the primary land use under the local planning scheme.

4 CURRENT LAND USES

The current land uses at the WTC were analysed and the main uses were categorised based on their strategic connection to the future Westport development and the industry uses it will support (Figure 7).

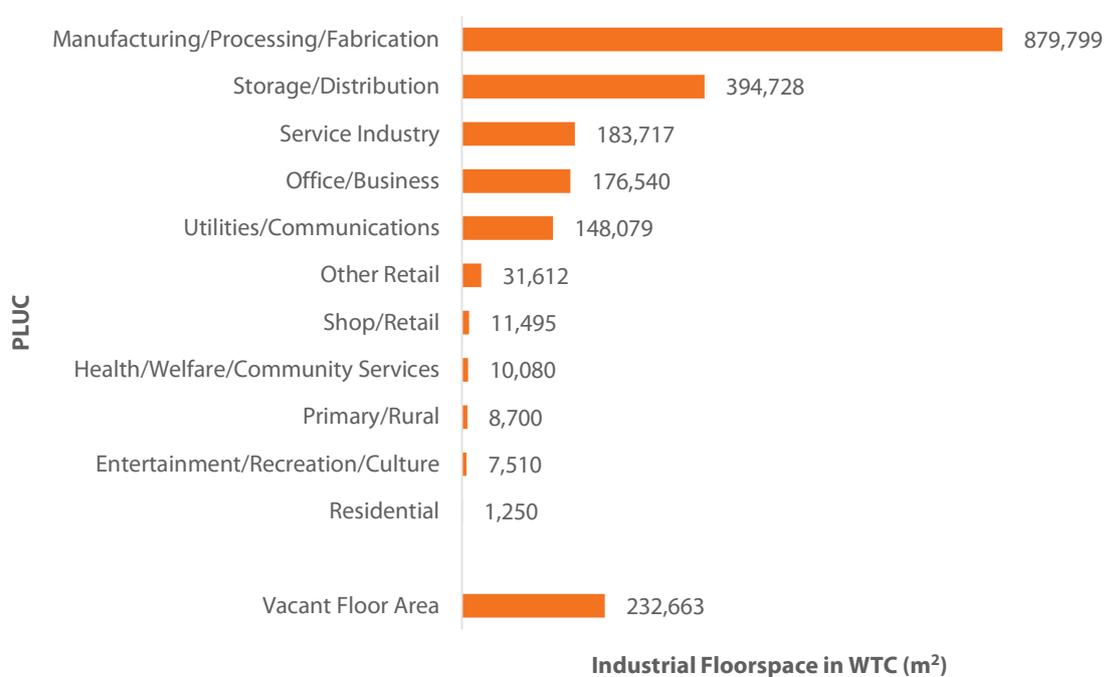
Figure 7. Transitional Land Use Category Definitions

Category	Description
POPULATION-DRIVEN	Population-driven uses that are not location-reliant and can readily be delivered anywhere. These uses are likely to be pushed out of the Western Trade Coast area when Westport is developed.
STRATEGIC	Uses which are related to activities located at the Port and benefit from proximity to the port. These uses can be accommodated at Mandogalup.
PORT-STRATEGIC	Strategic uses which must be located at the Port as they require port infrastructure and relate directly to export activities.

Source: Pracsys 2021

The analysis identified detailed uses at the port using Department of Planning, Land and Heritage Land Use and Employment Survey data. The majority of floorspace at the WTC is estimated to be in the Manufacturing / Processing / Fabrication and Storage / Distribution when assessed by broad Planning and Land Use Categories (Figure 8).

Figure 8. WTC PLUC Floorspace Distribution

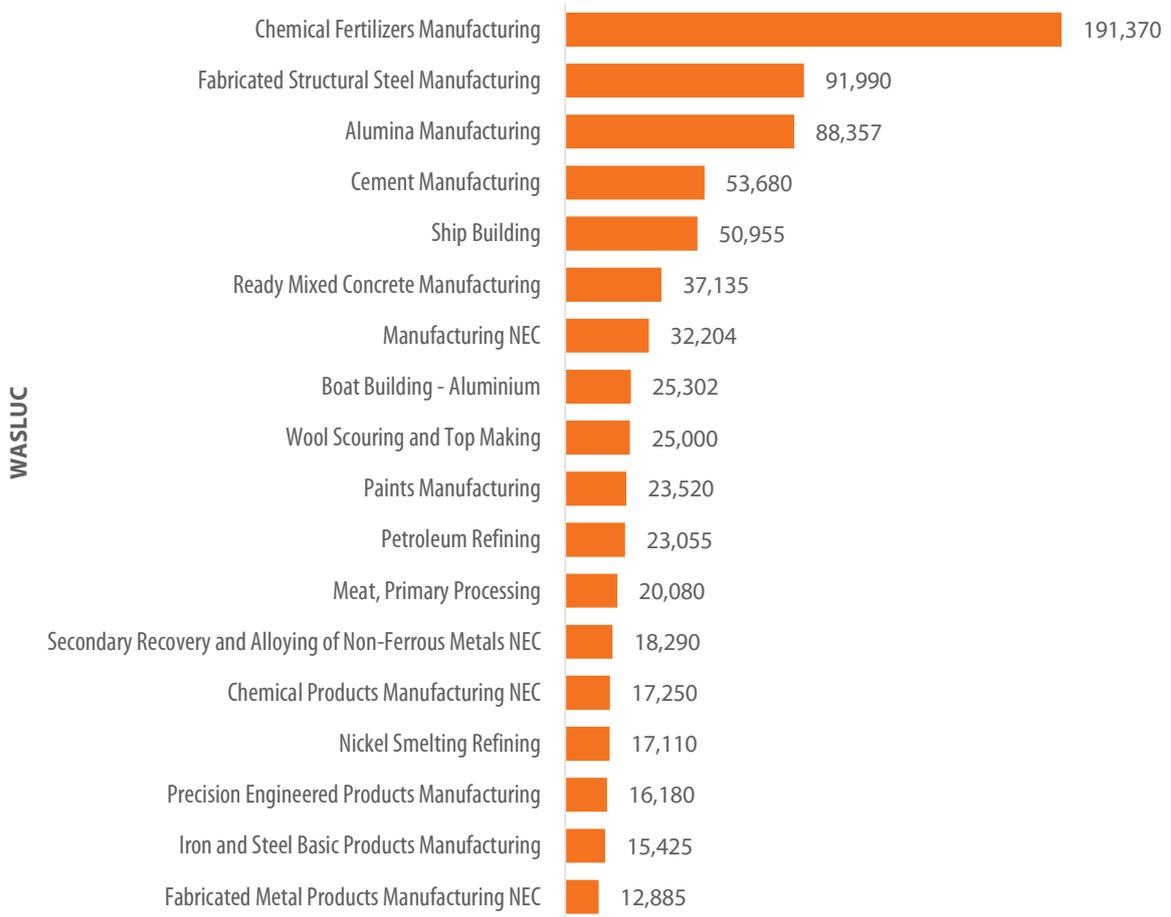


Source: DPLH 2016



In order to breakdown uses by the identified Transitional Land Use categories, LUES data was assessed at the detailed Western Australian Standard Land Use Categories (WASLUC) level (Figure 9).

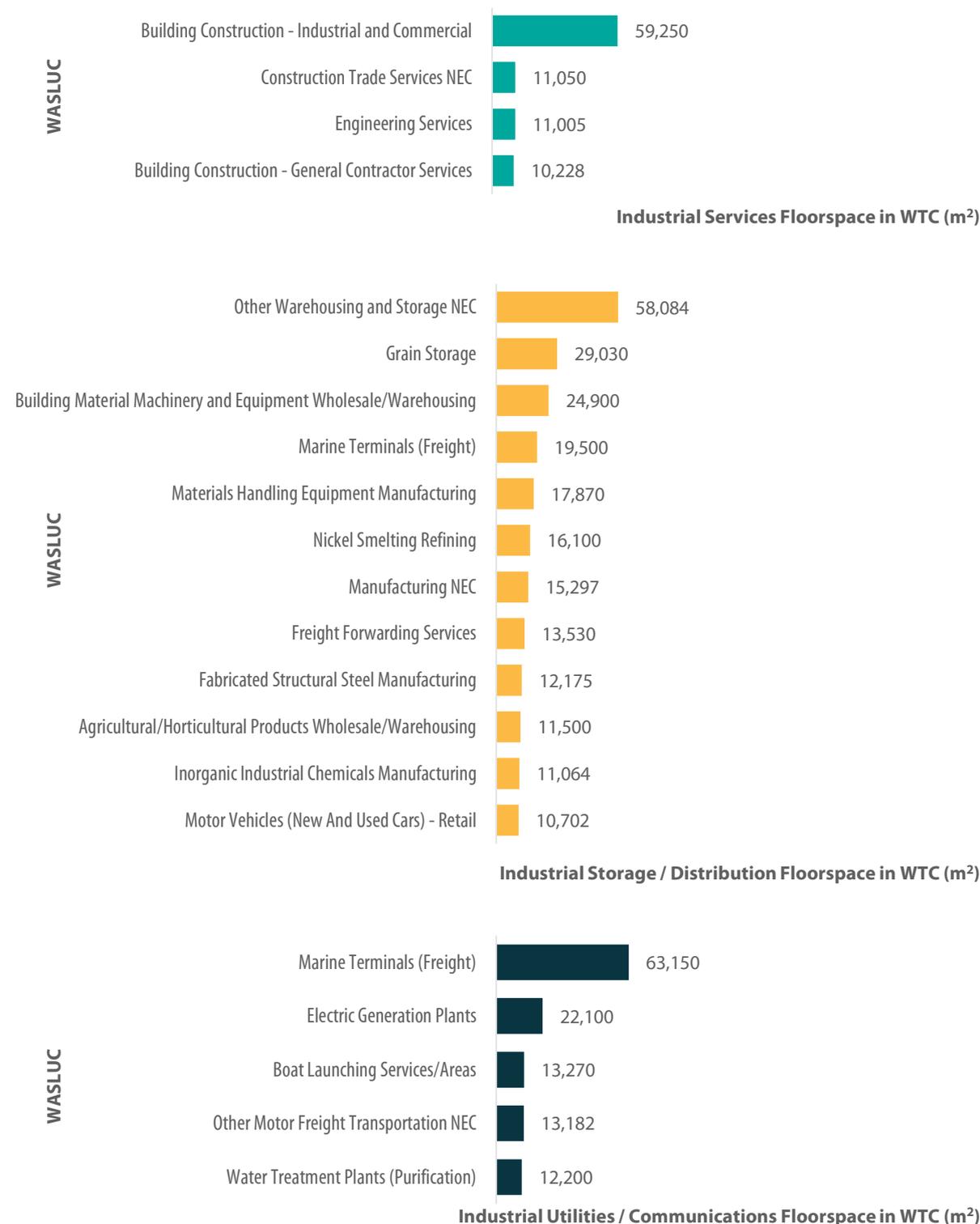
Figure 9. WASLUC Uses by PLUC (the PLUC is Identified bottom right)



Industrial Manufacturing / Processing / Fabrication Floorspace in WTC (m²)



Industrial Office / Business Floorspace in WTC (m²)



Source: DPLH 2016

A concordance was developed to align WASLUC categories with the Transitional Land-Use definitions (see Appendix 1: WASLUC to Transitional Use Concordance for Main Uses). Applying this concordance, it was possible to estimate the floorspace and land area distribution by Transitional Land-Use definition (Figure 10).

Figure 10. Floorspace by Transitional Land-Use Definition

Transition Category	Floorspace m ² (% of total)	Land Area Ha (% of total)
Strategic	805,421 (54%)	1,626 (78%)
Port-strategic	220,007 (15%)	175 (8%)
Population-driven	244,611 (16%)	136 (7%)
N/A (vacant) ⁶	229,120 (15%)	151 (7%)
Total	1,499,159	2,087

Source: DPLH 2016, Pracsys 2021

The first floorspace uses likely to leave the WTC as Westport develops are those classified as Population-Driven. This departure will result due to increased land demand from Port Strategic and Strategic uses that will likely increase the price of land and cost of rent in the WTC. The analysis highlights the significant current level of strategic uses that are not necessarily port related but that will likely look to locate within proximity to Westport as it develops due to the high levels of access provided by road, rail and ship.

The breakdown of land by transitional categories will inform the gap analysis by providing an understanding of the land requirements that may need to be considered at the Subject Area and timing considerations for different uses. The analysis does not consider the potential constraints that may be posed by land tenure in the Subject Area and how it may impact transition of certain businesses.

⁶ Vacant is assumed to be a component of undeveloped land. Undeveloped refers to lots that are zoned for development for the purposes of the specified primary land use category that are recorded as vacant in Landgate's property valuation database.

5 FUTURE LAND DEMAND

Future land demand has been assessed based on estimated Business as Usual demand for industrial land at the WTC and demand for port-related industrial land associated with the Westport development:

- The WTC demand (without Westport) was estimated in the Draft Land Supply and Demand Analysis with three different scenarios (low, medium and high). This has been compared with the recently released DPLH Urban Land Development Outlook 2020/21 to ensure consistency
- The Westport development has been benchmarked to National ports based on container imports and exports using Port Australia Data

These elements have been combined to develop a total demand estimate to understand whether there is a surplus or deficit of industrial land at the WTC with the development of port uses associated with Westport. Should there be a deficit, it is likely that the Subject Area will experience demand from industrial uses that transition out of the WTC.

5.1 Business as Usual Demand

The ULDO provides industrial land demand estimates for the following land uses:

- General Industrial
- Light Industrial
- Mixed Business
- Commercial Business Park
- Technological Park
- Warehousing and Distribution
- Transport and Logistics
- Service Commercial

Future industrial land demand was identified for the following areas within the WTC (Figure 11)

Figure 11. ULDO Land Demand Estimates for WTC

	Warehousing and Logistics (ha)	Strategic Industrial (ha)	General Industrial (ha)
Latitude 32	1,226	0	93
East Rockingham Industrial Area	0	372	4
Total	1,226	372	97

Source: DPLH 2020

There is a total projected demand of 1,695 ha for the WTC for the period 10+ years, which does not appear to include potential development of the Australian Marine Complex. The long term (10 years plus) ULDO forecast estimates demand of 2,188 Ha in the Study Area, not accounting for the Westport development.

The previous analysis (Draft Land Supply and Demand Analysis 2020) estimated the demand for industrial land within the Study Area until 2041 under three different growth scenarios (Figure 12).⁷ These projections represent the Business as Usual (BAU) demand estimates.

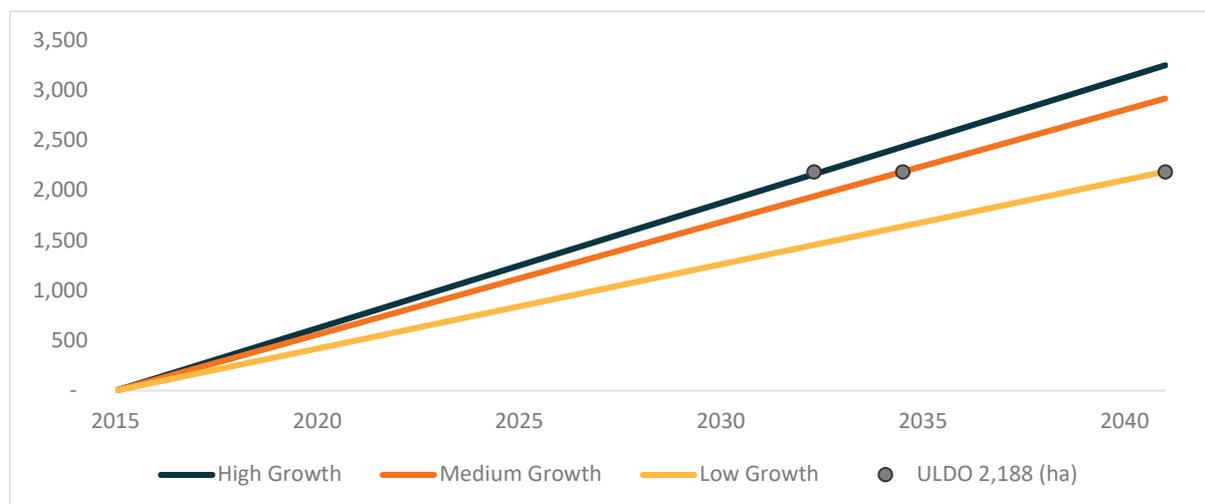
Figure 12. Draft Land Supply and Demand Analysis 2020 – BAU Demand Estimates

Scenario	Land Demand (ha)
Low Growth	2,189
Medium Growth	2,919
High Growth	3,252

Source: Pracsys 2020

These estimates have been compared with the long term ULDO forecast (ten years plus) to determine their goodness-of-fit. The ULDO projection would occur between 2032 and 2041 depending on the scenario applied from the Draft Land Supply and Demand Analysis (Figure 13).

Figure 13. Comparison of Land Supply and Demand Analysis Forecasts and ULDO 10 year plus Demand Estimate for Study Area



Source: Pracsys 2020, ULDO 20/21

Note: The points indicate where on the demand curve the different scenarios achieve the ULDO estimate of 2,188 ha

In the Low Growth scenario, the ULDO demand level is achieved after 20 years and in the medium scenario it is achieved in approximately 15 years (from 2020). This is considered acceptable, and the scenarios have been used to inform the gap analysis at the year 2041.

⁷ The methodology for estimating demand is provided in the Draft Land Supply and Demand Analysis Report, Section 5.1, Industrial Land.

There are a number of indicators that show short – medium term demand for land could be growing in the WTC (Figure 14).

Figure 14. Identified Short-Medium Term Demand

Identified Future Demand	Source
The Flinders Development (Latitude 32 Development Area 2) is 90% sold and has already started to be developed	https://developmentwa.com.au/projects/industrial-and-commercial/flinders-precinct/overview
Australian Marine Complex projects being funded by the State Government including a new wharf and ship building facility. Land required unknown	https://www.mediastatements.wa.gov.au/Pages/McGowan/2021/01/Contract-awarded-for-87-point-6-million-dollar-defence-infrastructure-projects.aspx
Kwinana Strategic Industrial area has approximately 87 ha of undeveloped industrial land for which there are already proponents looking to develop	https://developmentwa.com.au/documents/369-kwin1-2019-11-29-kwinana-sia-site-plan-devw0038/viewdocument/369 Map numbers 33 and 32
Rockingham Strategic Industrial Area has approximately 56 ha of undeveloped industrial land for which there are already proponents looking to develop	https://developmentwa.com.au/documents/1350-rockingham-sia-map/viewdocument/1350 Map numbers 5, 8, 9, 10, 13, and 14

5.2 Westport Benchmark Analysis

The benchmark analysis considered ports across Australia. The following method was applied to select potential benchmarks for Westport:

- Purpose of port (i.e. similar mix of export and imports)
- Location (i.e. Metropolitan area)
- Mix of export goods
- Relevant population (i.e. population served)

Based on the above criteria a set of benchmarks was identified from which land estimates could be based, including:

- Melbourne Port
- Botany Port (Sydney)
- Brisbane Port
- Fremantle Port

Deloitte developed trade volume projections for Westport in Twenty-foot Equivalent Units (TEUs).

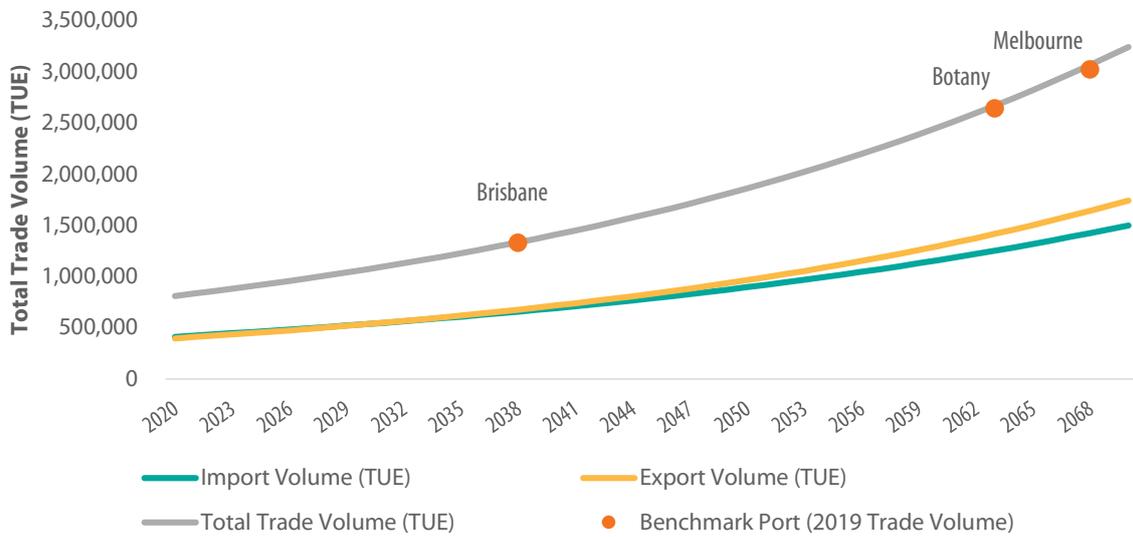
Benchmark port volumes have been identified to demonstrate at which year the Westport development will achieve similar volume as the benchmarks⁸ (Figure 15).⁹

⁸ Volume reference year of 2019

⁹ Fremantle supported 788,000 TEU trade volume in 2019, just under the Deloitte Westport estimate for 2020 of 810,000 TEU. This is why Fremantle is not shown in Figure 15



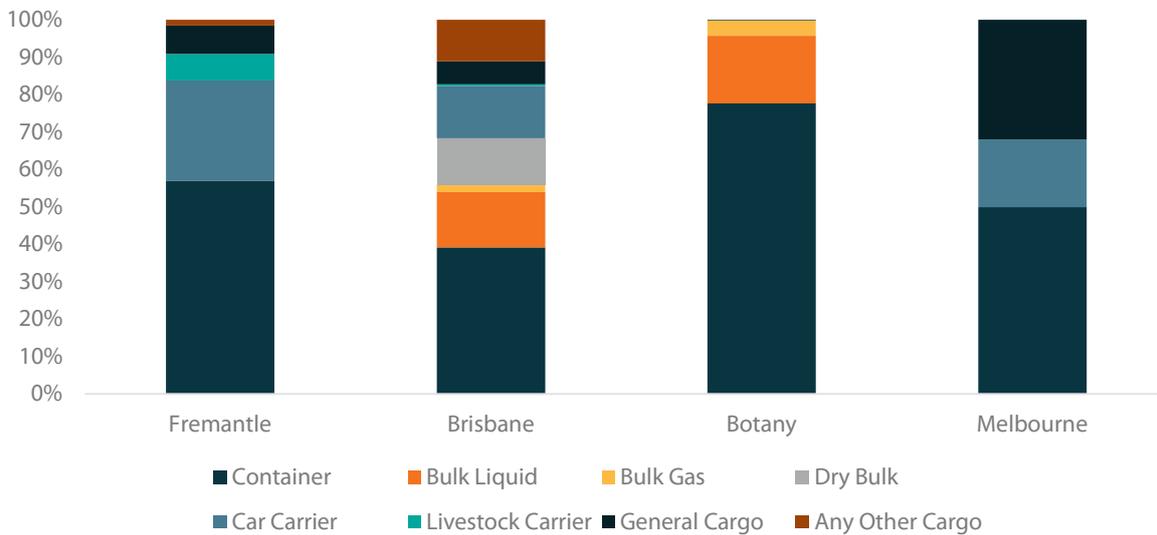
Figure 15. Westport Trade Projection Compared to Benchmarks



Source: Port Australia Data 18/19, Deloitte 2019

The data for Fremantle Port includes goods that are shipped from Kwinana. The mix of goods was compared between potential benchmarks to identify those that would be appropriate for developing an estimate for additional land that will be required at the WTC due to the container movements that will be supported by Westport (Figure 16).¹⁰

Figure 16. Trade by Classification by Port



Source: Port Australia Data 18/19

¹⁰ It is assumed that the BAU scenario would include demand for additional land uses associated with the exports that currently leave from the WTC including Bulky Liquid, Bulky Gas and Dry Bulk.

Further analysis on the mix of uses identified that Bulk Gas, Bulk Liquid and Dry Bulk are all shipped from Kwinana. Excluding these, the current Fremantle Port is small and is directly related to TUE estimates; it is used as a benchmark for additional land requirements.

Both Brisbane and Botany Ports include high concentrations of Bulk Liquid, Bulk Gas or Dry Bulk. Melbourne Port had lesser levels of Bulk Liquid and Dry Bulk with no Bulk Gas. Based on an aerial analysis of the Ports, it was easier to determine land associated with Bulk Liquids and Dry Bulk uses at Melbourne Port and it was therefore chosen to as a second benchmark for land estimates. The land area used for developing benchmark ratios is provided in Section 8.2 (Figure 31).

The area used to estimate land associated with Ports was split into two categories:

- Port Uses
- Port Ancillary Uses

This categorisation has been used to provide low, medium and high estimates to feed into the Land Supply and Demand Analysis.

Developing Land Benchmark Ratios

Defining discrete spatial boundaries poses a challenge due to the strategic benefits a port offers to specific industries. Although defining the actual port land area i.e. the land where freight is stored and ships can dock, is relatively straight forward, defining the secondary boundary where ancillary industry¹¹ locates is more subjective. However, understanding of the secondary boundary for each port is needed to provide an accurate estimate for land demand.

Each benchmark port was analysed through satellite imagery and ABS employment information to estimate the extent of these ancillary uses. Once a boundary was determined, an estimate of the total land area was developed (Figure 17).

Figure 17. Benchmark Port Land Estimates

Port	Port Land Area (Ha)	Total Land Area including Ancillary Uses (Ha)
Melbourne	500	708
Fremantle	177	213

Source: Google Maps 2021

Note: port land areas are approximate and have been estimated through desktop analysis.

The import / export trade volume for Fremantle and Melbourne in TEUs was compared to the identified land area categories. This provided an average TEU per ha of port related industrial land to enable quantification of land requirements for Westport (Figure 18).

¹¹ Ancillary uses include but are not limited to postal and warehousing companies, importers and exporters, and distribution centres for large retailers

Figure 18. Benchmark Land to TEU Ratio

PORT	Total Trade Volume (TEU) per Gross Hectare – Port Uses	Total Trade Volume (TEU) per Gross Hectare – Ancillary and Port Uses
Melbourne	6,042	3,500
Fremantle	4,453	3,701
Simple Average of Benchmarks	5,248	3,600
Weighted Average of Benchmarks	5,713	3,541

Source: Port Australia 2020, Google Maps 2021

The benchmark ratios have been applied in the following scenarios:

- **Low Growth:** only Port Uses develop in addition to the Low scenario BAU uses, the weighted average Port Uses ratio for Melbourne and Fremantle is applied
- **Medium Growth:** Port Uses and some ancillary uses develop in addition to the Medium scenario BAU uses, the Fremantle Port Uses benchmark ratio is applied (the Fremantle, Port Uses defined area includes some ancillary uses making it appropriate for a medium scenario)
- **High Growth:** Port and Port Ancillary Uses develop in addition to the BAU, the weighted average Port and Port Ancillary use ratio for Melbourne and Fremantle is applied

The ratios have been applied to the Deloitte Trade Volume (Figure 15) estimates to develop land demand projections based on Westport activities. These Westport demand estimates are additional to current uses at the WTC and have been combined with the identified BAU demand to estimate total future demand for industrial land (Figure 19).

Figure 19. Westport Additional Land Requirement Estimate 2041 (ha)

Scenario	Westport Demand	BAU Demand	Total Demand
Low Growth	254	2,189	2,443
Medium Growth	325	2,919	3,244
High Growth	414	3,252	3,666

Source: Port Australia 2020, Google Maps 2021, Deloitte 2019

These projections do not incorporate land associated with an intermodal terminal; should an intermodal terminal be developed at Latitude 32 it would be additional demand to that which is identified here.



5.3 Industrial Land Gap Analysis

The land area gap was developed by comparing the supply of future industrial land with estimated total land demand in 2041, for each scenario (Figure 20). The analysis does not consider the potential constraints that may be posed by land tenure in the subject area and how it may impact transition of certain businesses. The overall supply for land is expected to be fixed at 3,054 ha, whilst the demand is expected to vary from 2,443 ha to 3,666 ha. This results in a gap, where demand exceeds supply, of between 190 ha and 610 ha.

Figure 20. Land Area Gap in 2041 (ha)

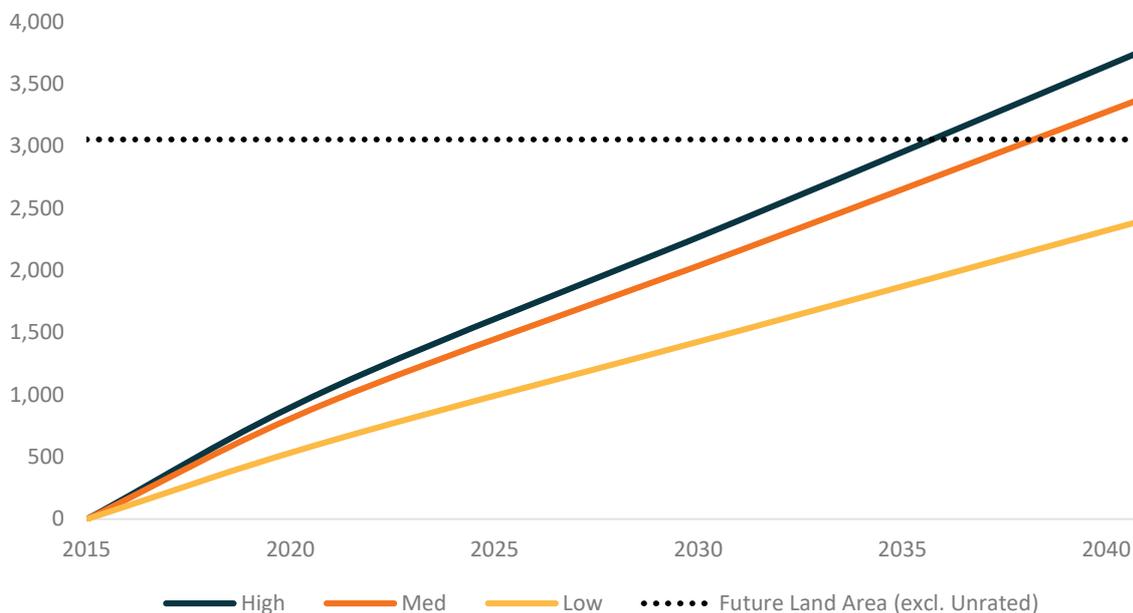
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Supply	3,054	3,054	3,054	See Section 3.2
Demand	2,443	3,244	3,666	See Section 5.1 and 5.2
Gap/Surplus	611	- 190	- 612	

Source: DPLH 2016, Port Australia Data 2019 Google Maps 2021, Pracsys 2021

Note: the similarity between High and Low Gap/Surplus has been reviewed and is purely incidental

Comparing the supply and demand profiles for the area results in demand matching supply in approximately 2036 for the high scenario and 2039 for the medium scenario (Figure 21). The low scenario does not reach the future land area supply within the period of study.

Figure 21. Scenario Demand Forecasts



Source: DPLH 2016, Port Australia Data 2019 Google Maps 2021, Pracsys 2021

In both Medium and High growth scenarios there is greater demand compared to future industrial supply within the study period, with the gap likely to increase beyond 2041. While the projected demand matches supply at approximately 2036 or later, the current uses at the WTC would feel pressure to transition out of the WTC well before this time point. This is particularly true for Population Driven uses that will experience

pressure to transition sooner due to the higher value port-strategic uses that will need land in close proximity to Westport. The total demand for the Transitional Land Use definitions has been estimated at 2041 (Figure 22).

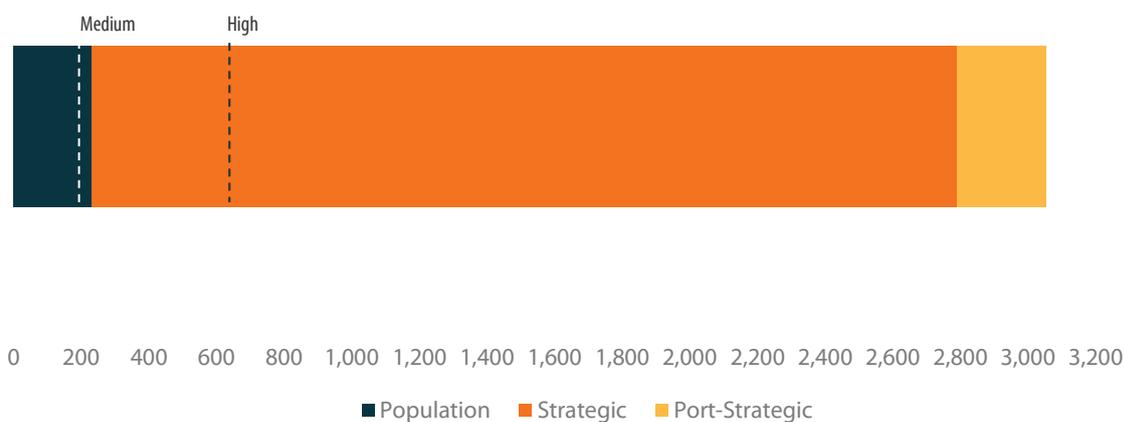
Figure 22. Total Land Demand by Transitional Use 2041

Transitional Use	Area (ha)
Port Strategic	230
Strategic	2,562
Population Driven	263

Sources: DPLH 2016, Pracsys 2021

Figure 23 illustrates this effect for the high and medium scenarios. In the medium scenario almost all Population Driven uses would need to transition out of the WTC and transition first to allow more strategic uses to locate at the WTC. In the high scenario, the entirety of Population Driven uses would transition and some Strategic uses that would be suited to a location near to Westport would need to transition. The high scenario is expected to cause 14.9% of the land demanded by Strategic uses to require a location outside of the WTC.

Figure 23. Gap in Land Area in 2041 by Scenario by total Future Land Demand



Source: DPLH 2016, Port Australia Data 2019 Google Maps 2021, Pracsys 2021

The location of Mandogalup between the two identified freight route connections to Westport means it would likely be attractive and suitable to both types of uses. The land scenarios could allow for a mix of these uses through appropriate lots sizes. It is likely that transition areas will be required between more strategic uses and the residential areas to the east of the Subject Area, meaning these uses should likely be restricted to the western section of the Subject Area (see Section 6, Implementation).

Potential Transition Timing

The main uses at the WTC have been assessed based on their likely transition timing to provide an understanding of which types of uses may depart the WTC first. There are many strategic uses that are likely to stay within the WTC as the identified potential gap in the High scenario would only force some Strategic uses to leave if it eventuated. Those uses that have the least friction to changing location are likely to do so (i.e. a motor freight transport company will be able to move its fleet, a nickel smelter cannot easily develop a new plant) (Figure 24).

Figure 24. High-level Timing Considerations for Transition of Main Uses at WTC

Strategic Use	Order of Transition (1 being soonest, 5 being latest)
Chemical Fertilizers Manufacturing	No Transition Likely
Fabricated Structural Steel Manufacturing	5
Alumina Manufacturing	No Transition Likely
Cement Manufacturing	5
Ready Mixed Concrete Manufacturing	5
Manufacturing NEC	3
Grain Storage	No Transition Likely
Wool Scouring and Top Making	3
Petroleum Refining	No Transition Likely
Secondary Recovery and Alloying of Non-Ferrous Metals NEC	No Transition Likely
Materials Handling Equipment Manufacturing	3
Chemical Products Manufacturing NEC	No Transition Likely
Nickel Smelting Refining	No Transition Likely
Precision Engineered Products Manufacturing	4
Iron and Steel Basic Products Manufacturing	5
Other Motor Freight Transportation NEC	3
Fabricated Metal Products Manufacturing NEC	5
Inorganic Industrial Chemicals Manufacturing	No Transition Likely
Engineering Services	4
Iron and Steel Basic Products Manufacturing	5
Population Driven Use	Order of Transition (1 being soonest, 5 being latest)
Building Construction - Industrial and Commercial	2
Other Warehousing and Storage NEC	2
Building Material Machinery and Equipment Wholesale/Warehousing	2
Paints Manufacturing	1
Meat, Primary Processing	1
Manufacturing NEC (Under Storage/Distribution PLUC)	2
Agricultural/Horticultural Products Wholesale/Warehousing	1
Construction Trade Services NEC	1
Motor Vehicles (New And Used Cars) - Retail	1



Strategic Use	Order of Transition (1 being soonest, 5 being latest)
Building Construction - General Contractor Services	1

Source: DLPH 2016, Pracsys 2021

It is likely that construction services, agricultural product wholesaling vehicle retailing, and non-port related manufacturing uses would transition out of the WTC in the short term. While there is land available at Latitude 32 in the short-medium term, this land will likely be required for more Strategic uses in the long-term and should be planned accordingly. With the significant investment that will occur through the Westport development, the high growth scenario could eventuate, in which case demand for industrial zoned land from Strategic uses will develop in the medium to long term that would benefit from being able to locate at the Subject Area.

It is unclear how land tenure will affect the transition of land uses to the Subject Area. Identifying suitable uses for different land holdings within the Subject Area and communicating with land holders may facilitate the transition.

6 IMPLEMENTATION

This section discusses the catalyst project drivers, both planned and under consideration, associated with the WTC, Westport and the area surrounding the Subject Area. It provides an understanding of the land considerations for accommodating the uses that could transition from the WTC into the Subject Area and discusses how land considerations will generate market signals for transitioning uses. It also discusses the demand for residential development and associated commercial uses and how one or both of these will need to be integrated with the transitioning uses.

6.1 Catalyst Projects

Catalyst projects in the area will generate demand for land from a variety of uses. Most of these projects will support higher levels of access, opportunities for supply chain efficiencies and incentives for new investment. Different catalyst projects will attract different land uses based on their nature. For instance, major road projects will likely attract light industrial uses to capitalise on proximity to passing freight and passenger vehicles. New manufacturing companies will likely lead to the development of supporting equipment and parts industries. Commercial development and public transport infrastructure will drive demand for residential land.

There are already a number of planned catalyst projects that have been identified and are at different levels of development. These have been summarised below with an understanding of the potential land demand that will be generated.

Road Upgrades

Anketell Road and Rowley Road have been identified as potential primary freight access routes linking the State's Freight Network to Westport.¹² The upgrades could provide dual carriageways from Kwinana Freeway to Westport along the southern and northern borders of the Study Area. The roads would provide access for freight vehicles up to 36.5 metres long, supporting significant road freight capacity. Land adjacent to major freight routes that is proximate to major port infrastructure is likely to attract businesses associated with uses servicing freight industries and highway commercial uses. For example, the following business could be expected to want to locate along an upgraded Anketell road:

- Truck orientated petrol station
- Hiring stores
- Tyre wholesale/retailers
- Mechanics
- Equipment distributors

¹² Fremantle Ports 2020, 'WA Government endorses future container port at Kwinana' Available from: <https://www.fremantleports.com.au/news/westport-recommends-future-container-port-at-kwinana>

Examples of similar development can be seen along Welshpool Rd (Between Albany Hwy and Roe Hwy) and along Dundas Rd leading to Tonkin Hwy. These uses would be seen as more compatible uses along a major freight route than residential or high traffic generating commercial or retail, particularly with regards to road safety and the potential for conflict between light and heavy vehicles. The level of compatibility will likely depend on the intersection types developed through the Anketell and Rowley Rd upgrades and smaller connecting roads in the Subject Area.

Related Land Uses:

- **Strategic** uses may develop due to high levels of access provided by major freight routes and nearby infrastructure
- **Population Driven** light industrial uses and highway commercial uses are likely to develop due to access to more strategic industries and passing freight vehicles

Intermodal Terminal and Supporting Rail Infrastructure

A major intermodal terminal (IMT) has been discussed at the latitude 32 industrial area to support Westport. It would require up to 205ha¹³ and could accommodate infrastructure such as a freight/container handling facility with uses including a container park, offices, warehouses and a distribution centre. The IMT would need to be supported through major upgrades to the rail network including track-doubling the line near the Forrestfield Intermodal Terminal, the Cockburn – Kwinana line, and the connection between the Kwinana Triangle and Kwinana marshalling yard. A new line from the proposed Anketell Triangle to the port would also need to be constructed.¹⁴¹⁵ Intermodal terminals are significant projects that support major freight movements and drive land demand from specific industry uses. Kewdale and Welshpool East Industrial areas have been used to provide an understanding of the potential mix of uses that could developed around an IMT, should one eventuate at the WTC (Figure 25).

Figure 25. IMT Benchmark Ancillary Industry Breakdown

PLUC	Floorspace %
Primary / Rural	0%
Manufacturing / Processing / Fabrication	18%
Storage / Distribution	45%
Service Industry	10%
Shop / Retail	1%
Other Retail	2%

¹³ Department of Planning 2020, 'Development Area 6A Structure Plan'. Available from: <https://www.dplh.wa.gov.au/getmedia/fa5f20ed-1f4d-4136-87f9-ce23f5022a73/SPL-Cockburn-Latitude-32-Development-Area-6A-Structure-Plan-WAPC-ref-SPN-2227>

¹⁴ State Government 2020, 'Westport Stage 2 Report'. Available from: https://www.transport.wa.gov.au/mediaFiles/marine/PROJ_P_Westport_Future_Port_Recommendations_Stage_2_Report_May_2020.pdf

¹⁵ IRJ 2020. 'Rail outline as major component of new Perth port'. Available from: <https://www.railjournal.com/freight/rail-outlined-as-major-component-of-new-perth-port/>

PLUC	Floorspace %
Office / Business	15%
Health / Welfare / Community Services	< 0%
Entertainment / Recreational & Cultural	< 0%
Residential	0%
Utilities / Communications	8%

Source: Department of Planning 2015

The large majority of development could be expected in Storage and Distribution facilities with significant elements of Manufacturing, Office space (likely as an incidental component of other uses) and Service Industry uses.

Related Land Uses:

- **Strategic** uses would be required for logistics, transport, storage and warehousing uses; manufacturing and service uses may develop in proximity due to supply chain efficiencies.

Strategic Manufacturing Hub

The State Government announced an economic development framework to support a Global Advanced Industries Hub in the WTC.¹⁶ It will support significant investment that is being made into:

- Renewable Hydrogen
- Battery Industry – minerals, materials, technologies and expertise
- Defence industry infrastructure projects at the Australian Marine Complex (see AMC Development)
- LNG opportunities

The development of these uses would capitalise on the already established resource export capacity of the WTC and will support additional downstream manufacturing opportunities. This is seen as a project that if it eventuates will support the High grow scenario from a BAU perspective.

Related Land Uses:

- **Port Strategic** uses will be required to support the export of new resources.
- **Strategic** uses will be required in the form of manufacturing, equipment and professional services.

¹⁶ Mark McGowan 2021. Available from: <https://www.markmcgowan.com.au/2021/03/03/wa-labor-to-establish-global-high-tech-manufacturing-hub-south-of-perth/>

AMC Development

The State Government has made a significant investment into the AMC through \$87.6 million in funding to develop a new vessel transfer path, a new shipbuilding facility, a major wharf extension and upgrade, and three road intersection upgrades.¹⁷ These developments will increase the capacity of the AMC and allow it to support future defence vessels that have specific size requirements. In addition, the State Government is targeting an increase in defence force funding that may require additional development of capacity at AMC. The State government is also lobbying the Federal government to increase defence spending in WA from \$3 billion to \$6 billion per annum by 2030.¹⁸ This funding would likely support increased development of the Nationally significant AMC industrial area. This type of development is likely to attract advanced manufacturing industries, specialised professional services and specialised support industries.

Related Land Uses:

- **Port Strategic** uses will be required to support additional capacity for ship related industry.
- **Strategic** uses will be required to support advanced manufacturing, professional service and other servicing needs.

Residential, Commercial and Transport Developments

There are a significant number of projects that will act as drivers for residential development at the Subject Area. These include:

- Employment generating projects. These will generate demand for residential land to a certain extent (i.e. population would want to live within a certain distance to employment but not directly adjacent to industrial uses)
- Residential development to the north and east of the Subject Area
- The potential for a future train station near the Subject Area that improves access to surrounding employment areas.
- Future commercial uses such as the planned shopping centre at the eastern intersection of Anketell Road and Kwinana Fwy and the smaller local centre planned in the residential development to the east of the Subject Area

These projects support demand for residential development. The attractiveness of the Subject Area for residential development is likely to decrease from East to West across the Subject Area approaching the Alcoa property and industrial areas.

Related Land Uses:

- **Population Driven** Commercial uses would develop to attract expenditure from residents. These uses would not be transitioning from WTC but would be new to the area.

¹⁷ State Government 2021. Available from: <https://www.mediastatements.wa.gov.au/Pages/McGowan/2021/01/Contract-awarded-for-87-point-6-million-dollar-defence-infrastructure-projects.aspx>

¹⁸ Ibid

6.2 Locational Considerations

The uses transitioning from the WTC that could be supported at the Subject Area will have specific requirements to be able to locate in the Subject Area. The following table provides a high-level understanding of the lot, access and conflict considerations that need to be assessed to plan suitable locations for different land uses within the Subject Area (Figure 26). It also considers the requirements for residential development and associated commercial uses. Lot size estimates are presented in Appendix 3, the estimates have been developed using high level benchmarking and require private market testing before being applied to the land.

Figure 26. Land, Access and Conflict Considerations

Land Uses	Land and Access Requirements	Conflict considerations
Strategic	<ul style="list-style-type: none"> • Medium - large lots • Access for heavy vehicles • Ability to integrate office space • May require buffer 	<ul style="list-style-type: none"> • Conflict with residential development (i.e. noise, noxious industry, etc.) • Conflict with Population Driven Commercial uses (i.e. supermarket)
Population Driven (Light Industrial)	<ul style="list-style-type: none"> • Medium lot sizes • Frontage to major freight routes • Frontage to local roads 	<ul style="list-style-type: none"> • Potential conflict with residential development. Can be managed with suitable transition to residential (i.e. public open space separation)
Population Driven (Commercial)	<ul style="list-style-type: none"> • Small – medium lots • Normal road access • Proximate to residential area 	<ul style="list-style-type: none"> • Potential conflict adjacent next to heavy industrial uses due to high small vehicle traffic and potentially pedestrian traffic • Potential conflict along major freight route due to high small vehicle traffic and potentially pedestrian traffic
Residential	<ul style="list-style-type: none"> • Small lot sizes • Open space requirements • Walkability considerations (i.e. footpaths, bike paths, etc.) 	<ul style="list-style-type: none"> • Conflict with Strategic uses (i.e. noxious industry, etc.) • Potential conflict with major freight routes unless suitable interface (i.e. noise blocking, appropriate access, etc.)

Source: Pracsys 2021

The following table provides a high-level summary of the appropriate locations for transitioning uses, residential development and commercial uses based on the above considerations that can inform land scenario planning (Figure 27).

Figure 27. Appropriate Locations for Land Uses

Desired Land Use	Appropriate location within the Subject Area
Strategic	<ul style="list-style-type: none"> Western end of Subject Area with need for separation and potentially buffers to residential developments Adjacent to either of the primary freight routes Not suitable in the eastern section of the Subject Area along residential development
Population Driven (Transitioning Light Industrial)	<ul style="list-style-type: none"> Western end of Subject Area Central use between Strategic uses and Population-Driven Commercial uses or residential development Adjacent to either of the primary freight routes Eastern section of the Subject Area with appropriate transition to residential development (i.e. public open space separation)
Population Driven (Commercial – not a use transitioning from WTC)	<ul style="list-style-type: none"> Eastern section of the Subject Area Central use between Population Driven light industrial and residential development Less suitable to Western end of Subject Area due to proximity to industrial uses Not suitable along major freight routes
Residential	<ul style="list-style-type: none"> Eastern section of Subject Area Not suitable for Western end of Subject Area Adjacent to Population Driven uses Not suitable adjacent to major freight routes

6.3 Market Signals

The choices that are made with regards to the development of land at the Subject Area will send signals to the market that guide the uses that locate in the Subject Area. Land development decisions need to be consistent with the needs of desired uses, with an understanding of the industries that might transition from the WTC, their land requirements and potential conflicts they may have with other uses.

Depending on the desired outcome the following points summarise the high-level market signals that should be considered for the Subject Area and the timing of development they will support (Figure 28)

Figure 28. Market Signal Matrix - Position in Subject Area by Lot Size

Position / Lot Size	Small	Medium	Large
Along Major Freight Route	Not appropriate as it would likely attract Population Driven commercial uses or residential development with slow up take due to proximity to major freight route or develops and creates conflict with major freight route	Signal to Population Driven light industrial uses transitioning from WTC as demand arises	Signal to Strategic and Population Driven light industrial uses transitioning from WTC as demand arises

Position / Lot Size	Small	Medium	Large
West	Not appropriate as it would likely attract Population Driven commercial uses or residential development with slow up take due to major Freight route	Signal to Population Driven light industrial uses transitioning from WTC as demand arises. Not appropriate if attempting to accommodate Strategic uses with greater land requirements at the Subject Area	Signal Strategic and Population Driven light industrial uses transitioning from WTC as demand arises
Central	Signal to Population Driven commercial uses or residential development. Short to medium term, not appropriate for residential if Strategic uses are to be accommodated to the West	Signal to Population Driven light industrial uses transitioning from WTC as demand arises	Signal to Strategic and Population Driven light industrial uses transitioning from WTC as demand arises. Not appropriate for some Strategic uses
East	Signal to Population Driven commercial uses or residential development, will develop as other residential areas are completed	Not appropriate without appropriate separation from Residential Development. Population Driven light industrial uses transitioning from WTC as demand arises	Not appropriate as it would likely attract Strategic and Population Driven light industrial uses transitioning from WTC as demand arises

Source Pracsys 2021

A land planning example with consideration of industry requirements has been developed through the following hypothetical scenario:

- The high growth scenario is seen as most likely and both Population Driven and Strategic uses will transition from the WTC
- Strategic uses will require more than the 300 ha available at WTC however not all of the land is suitable to those uses
- A mix of uses is planned, providing as large an area as is possible for Strategic uses without creating conflict with surrounding residential development
- Population Driven uses are planned as a central use in the Subject Area moving from light industrial to commercial West to East
- Residential development is used to link commercial land uses with the residential development to the East of the Subject Area

Based on this scenario the following land planning considerations, resulting market signals and likely development timing have been summarised (Figure 29)

Figure 29. Hypothetical Land Use Mix Scenario

Land Use	Planning Consideration	Market Signal
Strategic	<ul style="list-style-type: none"> Land appropriate to strategic uses is identified to the western side of the Subject Area and for some areas along major freight routes Lots in these areas are identified as medium to large Road access is planned for heavy vehicles Appropriate buffers are in place for desired uses 	<p>There is a clear signal to the market that Strategic land uses should locate in the Subject Area. This land will develop in the long-term as Strategic use are transitioned from WTC.</p> <p>Medium-long term development timeframe</p>
Population Driven	<ul style="list-style-type: none"> These uses are identified as the separating uses between Strategic and Residential A mix of lot sizes similar to what would be developed in a business park is planned with light industrial to the West and commercial to the East Suitable road interfaces are developed to allow heavy vehicles but provide a safe environment for light vehicle traffic 	<p>Population Driven industries would be the first to transition out of the WTC. A business park type layout would attract these uses particularly with the nearby residential areas.</p> <p>Medium term development timeframe</p>
Residential Development	<ul style="list-style-type: none"> Residential area identified for development along the eastern side of the Subject Area Buffers or suitable transitional area between residential development and major freight routes Public open space as link between Population Driven uses and residential development or appropriate commercial uses adjacent (i.e. activity centre) 	<p>Providing a defined residential zone that interfaces with the adjacent residential development to the East, is suitably separated from Strategic industrial and major freight routes will allow dwelling uptake to continue as surrounding areas are completed</p> <p>Short – medium term development timeframe</p>

Source: Pracsys 2021

The potential need for additional land to support Strategic uses related to WTC and Westport is a key consideration. Planning for a high scenario where Strategic uses can be accommodated at the Subject Area will ensure sufficient land is available for future industrial uses. It is also a more flexible option as it would be possible to amend the zoning, should the demand for industrial land not eventuate, to allow for other more population orientated and residential uses due to the long development timeframe. However, if the land is planned for commercial or residential uses it is likely to develop in a shorter timeframe and it would likely be difficult and potentially impossible to change the planning to accommodate future demand for industrial land at the Subject Area.

Site Development Considerations

The different uses that could locate at the Subject Area will likely require different levels of site servicing and lot subdivision. High-level considerations have been developed based on our understanding of the general

needs for different land uses, these are not appropriate to inform site development decisions, appropriate market testing is required (Figure 30)

Figure 30. Site Development Considerations

Land Use	Site Development Considerations
Strategic	<ul style="list-style-type: none"> • Require flexible lot configurations • Require power however sometimes power requirements are additional to those of the grid capacity. In this case they may use their own power generation requiring access to gas or the use of diesel generators • Require water however these uses can often have to process water instead of using sewer systems or allowing for runoff • Parking requirements would be proponent specific <p>Likely appropriate to allow for flexibility with regards to lots and services (i.e. service to a convenient location then allow proponents to access if required).</p>
Population Driven	<ul style="list-style-type: none"> • Require different lot sizes but lots can be configured in a standardised layout (i.e. business park format, shopping centre) • Require access to power grid • Require access to water mains • Planning parking ratios would be relevant to these uses • Pedestrian and cyclist considerations would be required for commercial population driven uses <p>Likely appropriate to subdivide a variety of lot sizes and provide services to lots.</p>
Residential Development	<ul style="list-style-type: none"> • Require standard residential lots • Require access to power grid • Require access to water mains • Pedestrian and cyclist considerations required for <p>Likely appropriate to subdivide lots and provide services to lots.</p>

7 CONCLUSION

This analysis has assessed the land uses at the WTC to be able to understand the effect of Westport on industrial uses as it develops. The main land uses at the WTC were broken down into Port Strategic, Strategic and Population Driven uses to identify their level of friction related to moving out of the WTC.

The potential land demand generated by Westport was estimated using benchmark analysis of major Australian Ports. Three scenarios were developed and combined with the Business-as-Usual land demand scenarios from the IP47 Land Supply and Demand Analysis. Total demand was compared to future industrial land supply to estimate the potential gap in available industrial land at the WTC by 2041.

The analysis identified a potential gap of 190 ha in the Medium growth scenario and approximately 612 ha in the High growth scenario. It was determined that in the Medium Growth scenario most Population-Driven uses would transition out of the WTC and in the High scenario, all Population Driven uses and some Strategic uses that would benefit from proximity to the WTC would transition out of the WTC. It is unclear how land tenure will affect the transition of land uses to the Subject Area. Identifying suitable uses for different land holdings within the Subject Area and communicating with land holders may facilitate the transition.

Implementation considerations were developed to support decision making around land planning for the Subject Site. Should Strategic uses want to be accommodated at the Subject Area, planning needs to send clear signals by appropriately zoning the Subject Area, providing suitable lot sizes for desired uses and ensuring a suitable transition from Strategic uses to residential development from West to East. Planning for Strategic uses is seen as the most flexible option as the development of these uses is likely to occur over a longer timeframe and should demand not eventuate, it is likely that the land could be rezoned to accommodate more population orientated uses.

8 APPENDICES

8.1 Appendix 1: WASLUC to Transitional Concordance

WASLUC DESCRIPTION Proper	Transition Category
Marine Terminals (Freight)	PORT-STRATEGIC
Ship Building	PORT-STRATEGIC
Boat Building - Aluminium	PORT-STRATEGIC
Electric Generation Plants	PORT-STRATEGIC
Marine Terminals (Freight)	PORT-STRATEGIC
Freight Forwarding Services	PORT-STRATEGIC
Boat Launching Services/Areas	PORT-STRATEGIC
Water Treatment Plants (Purification)	PORT-STRATEGIC
Chemical Fertilizers Manufacturing	STRATEGIC
Fabricated Structural Steel Manufacturing	STRATEGIC
Alumina Manufacturing	STRATEGIC
Cement Manufacturing	STRATEGIC
Ready Mixed Concrete Manufacturing	STRATEGIC
Engineering Services	STRATEGIC
Manufacturing NEC	STRATEGIC
Grain Storage	STRATEGIC
Wool Scouring and Top Making	STRATEGIC
Petroleum Refining	STRATEGIC
Secondary Recovery and Alloying of Non-Ferrous Metals NEC	STRATEGIC
Materials Handling Equipment Manufacturing	STRATEGIC
Chemical Products Manufacturing NEC	STRATEGIC
Nickel Smelting Refining	STRATEGIC
Precision Engineered Products Manufacturing	STRATEGIC
Nickel Smelting Refining	STRATEGIC
Iron and Steel Basic Products Manufacturing	STRATEGIC
Other Motor Freight Transportation NEC	STRATEGIC
Fabricated Metal Products Manufacturing NEC	STRATEGIC
Fabricated Structural Steel Manufacturing	STRATEGIC
Inorganic Industrial Chemicals Manufacturing	STRATEGIC
Engineering Services	STRATEGIC
Fabricated Structural Steel Manufacturing	STRATEGIC

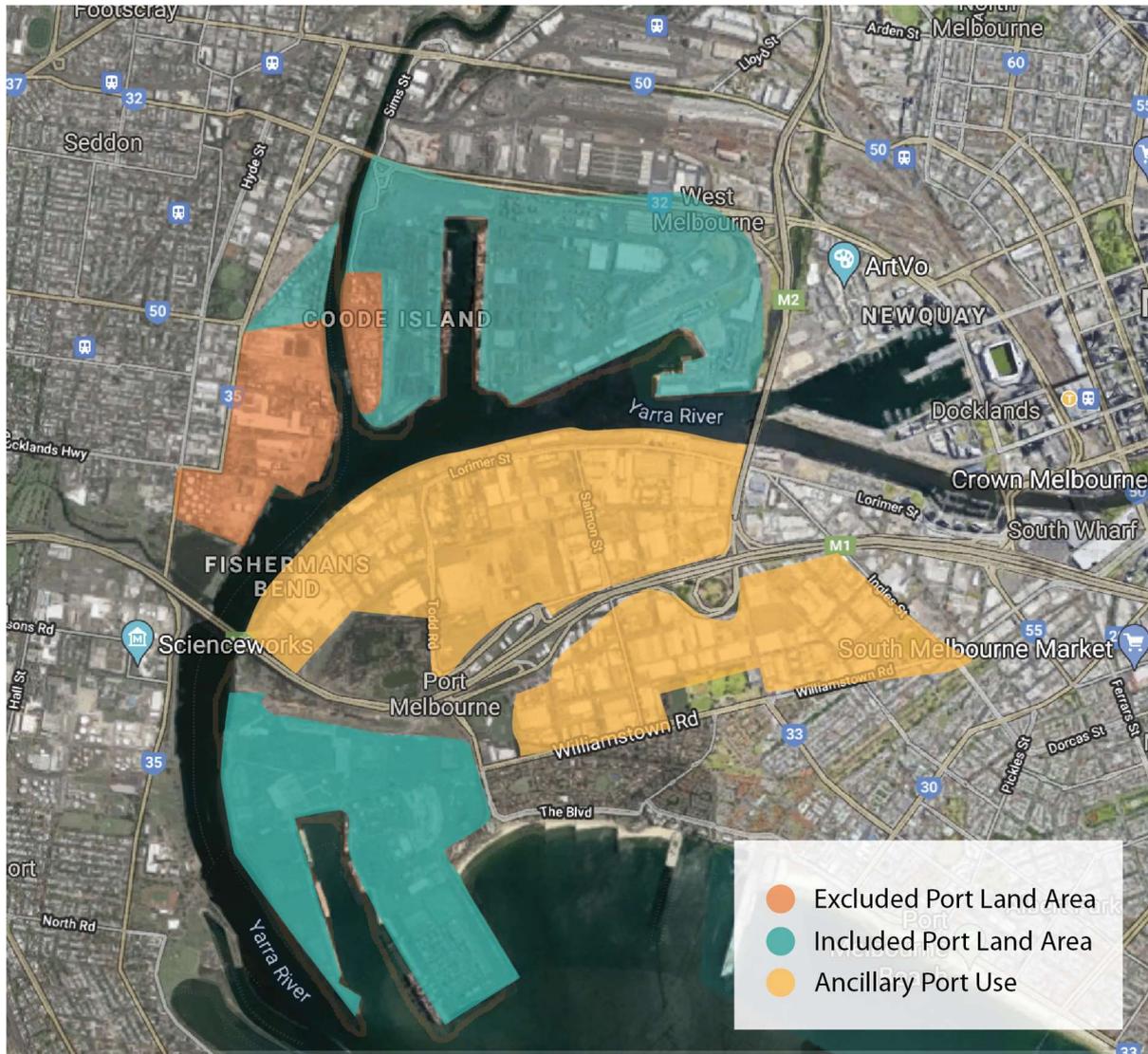


WASLUC DESCRIPTION Proper	Transition Category
Iron and Steel Basic Products Manufacturing	STRATEGIC
Building Construction - Industrial and Commercial	POPULATION-DRIVEN
Other Warehousing and Storage NEC	POPULATION-DRIVEN
Building Material Machinery and Equipment Wholesale/Warehousing	POPULATION-DRIVEN
Paints Manufacturing	POPULATION-DRIVEN
Meat, Primary Processing	POPULATION-DRIVEN
Manufacturing NEC	POPULATION-DRIVEN
Agricultural/Horticultural Products Wholesale/Warehousing	POPULATION-DRIVEN
Construction Trade Services NEC	POPULATION-DRIVEN
Motor Vehicles (New And Used Cars) - Retail	POPULATION-DRIVEN
Building Construction - General Contractor Services	POPULATION-DRIVEN

8.2 Appendix 2: Benchmark Port Boundaries

Port of Melbourne

Figure 31. Port of Melbourne with Excluded Dry and Liquid Bulk Areas (Ancillary Uses Included)



Source: Pracsys 2021, Google Maps 2021

Fremantle Port

Figure 32. Fremantle Port with Ancillary Uses Included



Source: Pracsys 2021, Google Maps 2021

8.3 Appendix 3: Lot Size Assumptions

Lot sizes have been developed through benchmarking to similar land areas within the south west of Perth. The estimates have been developed using high level benchmarking and are not suitable to inform land subdivision decisions. It is strongly recommended that private market testing is required before land subdivision decisions can be made.

Figure 33. Lot Size Estimates

Land Uses	Estimated Ranges (m ²)	Lot	Notes
Industrial land uses (strategic and population driven)	4,300 – 133,000		This range includes smaller uses such as car wreckers to large uses such as warehouses. Although strategic industrial uses would generally be the larger industrial uses, some population driven industrial uses can require significant space, for example Pickles auctions has a site in excess of 100,000m ² . There may be uses that fall outside of this range both smaller and larger.
Population Driven (Bulky Goods)	1,000 – 15,000		The range is based on a range from small individual operator such as an electronics retailer to a large bulky goods operator such as a Bunnings.
Population Driven (Shop Retail)	1,664 – 9,196		The range represents local to large neighbourhood centres that include uses such as supermarkets, takeaway food services and department stores, among others.
Residential		450	Medium - Low density estimate

Source: DPLH 2020