



mainroads
WESTERN AUSTRALIA

Administrative Classification Assessment Report

Curtin Avenue

(from City of Fremantle / Town of Mosman Park boundary to Grant
Street, Town of Cottesloe)

Document Control

This document has the following amendment history:

Version	Date	Author	Amendment
1	Dec 2017	Marie Halilovich	First Draft
2	Sept 2018	Joanne Cammack	Updates to traffic counts, scoring, Surrounding Area and Other Considerations (No change to conclusion)
.....3	October 2018	Joanne Cammack	Updates to mapping and content, residential access count, traffic count & score.
.....4	6 December 2018	Joanne Cammack	<i>Minor edits: (Remove 'Internal Use Only' on Cover page; update links to new DLPH website on pp 6, 11, 13, 20; Clarify reference to internal document p6)</i>

Approvals (See Attached Approvals page dated 18 October 2018)

Document Control

This document has the following amendment history:

Version	Date	Author	Amendment
1	Dec 2017	Marie Halilovich	First Draft
2	Sept 2018	Joanne Cammack	Updates to traffic counts, scoring, Surrounding Area and Other Considerations (No change to conclusion)
.....3	October 2018	Joanne Cammack	Updates to mapping and content, residential access count, traffic count & score.

Approvals

Recommended by:	Name	Marie Halilovich / Joanne Cammack		
	Position	NDO	Date	12/09/2018
	Name	Ron Tolliday		
	Position	RCM	Date	10/10/2018
Reviewed by:	Name	Paul Fourie		
	Position	NP&DM	Date	10/10/2018
	Name	Peter Sewell		
	Position	DMO	Date	12/10/2018
	Name	Lindsay Broadhurst		
	Position	DRP&D	Date	17/10/2018
Approved by:	Name	Doug Morgan		
	Position	EDPTS	Date	18/10/18
Recommended Action:	Proclamation of Curtin Avenue between West Coast Highway and Port Beach Road as a State Road.			

Table of Contents

1. Introduction	4
1.1. Surrounding Area	4
1.2. Key Information	4
2. Classification Assessment.....	5
2.1. Tier Two – Administrative Road Classification Assessment - Scoring the Criteria	6
2.1.1. Strategic Role – Alignment with State Planning Documentation	6
2.1.2. Network Role – RAV Network Routes.....	6
2.1.3. Network Role - Bus Routes / Rapid Transit	7
2.1.4. Network Role - Connectivity	7
2.1.5. Network Role - Property Access	8
2.1.6. Design Function - Route Capacity	9
2.1.7. Design Function – Road Classification	9
2.1.8. Traffic Volumes - AAWT.....	9
2.1.9. Traffic Volumes - Heavy vehicle numbers.....	10
2.2. Administrative Road Classification Assessment Score.....	10
3. Other Considerations	11
3.1. Strategic and Regional Development Factors.....	11
3.1.1. Perth and Peel at 3.5M - Employment Self-sufficiency, Infill Targets and Development Outlook	11
3.1.2. Main Roads Network Planning.....	11
3.1.3. Fremantle Port Inner Harbour and Westport Study.....	12
3.1.4. Metropolitan Region Scheme - Primary Regional Road reservation	12
3.1.5. Curtin Avenue Planning Study – West Coast Highway to Wellington Street	12
3.1.6. Town of Mosman Park development.....	13
3.1.7. Town of Cottesloe development.....	13
3.1.8. Cyclists	13
3.1.9. Pedestrian bridges and crossings:	14
3.1.10. Other constraints	14
3.2. Main Roads - Programmed Major Road Projects	14
3.2.1. Curtin Avenue at Tydeman Road and from Stirling Highway to West Coast Highway	14
3.2.2. High Street upgrade at Stirling Highway	14
3.3. Proximity of another suitable State Road with Similar Function and Service Area.....	11
3.4. Proximity of another suitable Local Government road	11
4. Conclusions and Recommendations	15
5. Appendices.....	15
5.1. Appendix 1 – Locality Map	16
5.2. Appendix 2 - Freight and Aviation Routes.....	17
5.3. Appendix 3 - MRS Reservation compared to Curtin Ave Alignment.....	18
5.4. Appendix 4 - Planning Study Area compared to proposed State Road	19
5.5. Appendix 5 – Urban Land Development Outlook and North Fremantle MasterPlan area	20
5.6. Appendix 6 – 2050 Station Precincts and PSP Network.....	21
5.7. Appendix 7 – Proposed Pedestrian Bridge and Heritage Pine Trees	22
5.8. Appendix 8 – Assessment Score Sheet.....	23
5.9. Appendix 9 – Traffic Count Score Sheet.....	24

1. Introduction

The Criteria used in this assessment resulted from a review by a Working Group with representation from Main Roads, WALGA and Local Government in 2018. The current criteria were designed to reflect a modern interpretation of the *Main Roads Act 1930* considering the current traffic environment and transport network requirements.

The section of **Curtin Avenue**, from the northern boundary of the City of Fremantle (at Mosman Park) to West Coast Highway in Cottesloe (at Grant Street), was submitted for reclassification as a State Road as identified in the above Future State Roads Project. (See map at [Appendix 1](#)).

1.1. Surrounding Area

Curtin Avenue is an important freight route connecting Fremantle Inner Harbour to the north via Port Beach Road, Curtin Avenue and West Coast Highway, to routes such as Reid Highway, Whitfords Avenue and Ocean Reef Road to the east. It is estimated 14% of container trucks access the Inner Harbour from the north. This route is classified as a RAV4 route and also provides for Oversize Overmass (OSOM) access (See D17#738961 for further information) and has been identified as a major freight route in State planning documentation since Directions 2031 and earlier. (See [Appendix 2](#))

The 4.2km section of Curtin Avenue (from Port Beach Road to Grant Street) is the only portion of the north-south coastal route between Fremantle Inner Harbour and Ocean Reef Road to remain as local road. This section of road is a District Distributor A administered by two Local Governments: Town of Mosman Park (0.62km) and Town of Cottesloe (3.54km).

To the north, Curtin Avenue joins West Coast Highway at Servetus Street, becoming Marmion Avenue (H029) at Karrinyup Road, then connecting to Reid Highway and Ocean Reef Road. Beyond Ocean Reef Road, Marmion Avenue extends northwards to Yanchep as a District Distributor A, identified as a future State Road.

To the south, Curtin Avenue becomes Port Beach Road, providing for through traffic to the Port of Fremantle and suburbs south of the Swan River via Tydeman Road (H034) and south along Stirling Highway. Curtin Avenue also provides residential access to local properties, Cottesloe Police Station, schools and train stations.

The Port of Fremantle Inner Harbour is located 1.6km south in the City of Fremantle. The inner harbour is the largest container port in Western Australia, processing in excess of 715,000 TEU in 2016/17. The port is responsible for berthing over 1000 vessels for a total gross import/export of over 35 million tonnes per annum. According to the Perth & Peel @ 3.5 Million and beyond plan, the port is predicted to continue expanding in the near future and is classified as a major intermodal freight facility by the State.

Source: <http://www.fremantleports.com.au/News/Publications/AnnualReport/Documents/2017%20Annual%20Report%20-%20Full%20Report%20-%20interactive%20PDF.pdf> - (p16)

Cottesloe and Mosman Park are well developed beachside residential suburbs with several retail and entertainment precincts. Curtin Avenue provides north – south access to these suburbs on the western side of the Fremantle passenger rail line. The area includes restaurants, bars and short term accommodation. Beaches are readily accessible through nearby parking on Curtin Avenue and Marine Parade or via the adjacent train line. This area includes numerous properties of historical significance, many of which are heritage listed. Cottesloe and Mosman Park are highly sought after due to their close proximity to beaches, schools, child friendly amenities and Perth City and Fremantle. The area attracts many cyclists, with STRAVA logging around 146,000 cycle trips along the cycle lanes on both sides of Curtin Avenue in 2013 alone*.

* **Source:** <https://thewest.com.au/news/back-roads-chosen-over-cycle-paths-ng-ya-386189>

Stirling Highway runs roughly parallel to this section of Curtin Avenue, separated by the Fremantle train line. As railway crossings are sparse, the functions and areas serviced by each road do not overlap significantly. In contrast to Curtin Avenue, Stirling Highway is not a freight route and is a high frequency bus route connecting Fremantle to the Perth CBD and to the QE11 activity centre.

1.2. Key Information

Route Name: Curtin Avenue

Name of roads forming route: Curtin Avenue (1160001, 1210072)

Local governments involved: Town of Mosman Park, Town of Cottesloe

Start of Route – Cross Street: Grant Street / West Coast Highway

End of Route – nearest Cross Street: Leighton Beach Boulevard, City of Fremantle

Length of Route (km): 4.2

Assessment requested by: Future State Roads Project

2. Classification Assessment

The criteria aim to deliver transparent and streamlined processes and procedures for the administrative road classification assessment, to determine whether a road should come under the care and control of State or Local Government.

A two tier approach is used to take into account the requirements of the *Main Roads Act 1930* as well as considering the functional requirements of the State Road Network. Tier One is a broad filter, outlining a modern interpretation of the *Main Roads Act 1930*. Passing the Tier One Criteria indicates that the route in question warrants a full assessment against all of the Criteria (Tier Two).

As part of the Future Roads Project, **Curtin Avenue** has passed the Tier One Assessment Criteria.

Tier Two is a more detailed assessment, using a point scoring criteria method to determine whether a road should become a state administered road.

Urban roads comprise those roads within the Perth and Peel metropolitan area and other urban areas as defined below .

The assessment criteria within this report have been aligned to the Western Australian Road Hierarchy. Roads that are administered by the State are Primary Distributors (PD) and are further categorised, when necessary, within the assessment as:

- National Land Transport Network (NLTN) - federally identified and funded routes
- Highways – as identified under Section 13(2) of the *Main Roads Act 1930*.
- Main Roads – as identified under Section 13(3) of the *Main Roads Act 1930*.

Other categories of roads within the Road Hierarchy are administered by local government:

- Distributor A
- Distributor B
- Regional Distributor
- Local Distributor
- Access Road

Refer to the *Guidelines for Determining and Assigning Responsibility for Roads in Western Australia – Part 2 – Administrative Classification Assessment Criteria* for the process and procedure for undertaking this assessment.

A "Built Up Area" for the purpose of classification assessment for road administration is defined as:

1. Within the Metropolitan Region Scheme / Peel Region Scheme boundaries – any area depicted as being within the latest depiction of the Australian Bureau of Statistics Urban Centres and Localities (Major Urban, Other Urban and Bounded Locality).
2. For other areas – any area depicted as being within the latest depiction of the Australian Bureau of Statistics Urban Centres and Localities (Major Urban, Other Urban and Bounded Locality). But only if within a regional city or town that meets the following definition: *"An area which reflects significant urban characteristics of residential, industrial, commercial and service centres, and with a resident population greater than 5 000 people."*

Curtin Avenue in the Town of Mosman Park and Town of Cottesloe fits the criteria of a "Built Up Area"

2.1. Tier Two – Administrative Road Classification Assessment - Scoring the Criteria

The full administrative road classification assessment provides a point based score system to evaluate whether the route under consideration meets the functional requirements of a road which should be under the care and jurisdiction of Main Roads.

The criteria are broken down focussing on:

- Strategic Role
- Network Role
- Design Function
- Traffic Volumes

Unless otherwise stated, all scores are awarded proportional to the length of the route.

2.1.1. Strategic Role – Alignment with State Planning Documentation

The score for strategic role is the sum of the proportion of the route under assessment as shown on each of the following documents.

The score is awarded based on the sum of the proportion of each document the route meets, up to a **maximum of 4.00**.

Category	Total length of route under assessment (km)	Document (and link)	Length of route that meets document criteria (km)	Proportion of route that meets criteria (<i>length meets criteria / total length</i>)
Planning		State Planning Policy 5.4: Road and Rail Transport Noise and Freight Considerations in Land Use Planning - https://www.dplh.wa.gov.au/getmedia/8c679303-79d6-4b46-a430-0ce391950fd8/SPP5-4Primary freight roads and rail routes Schedule1	4.2	1.0
		Perth & Peel@ 3.8M March 2018 Sub-Regional Structure Plan - Regional Roads (p57, Plan 8) https://www.dplh.wa.gov.au/getmedia/7ea08c05-32f1-43dc-8c9b-29184ef5292c/FUT_PP-Central Sub Region March2018 v2 part2	4.2	1.0
		Location of Strategic Significance (not a document)**	4.2	1.0
Statutory		Metropolitan Region Scheme/Peel Region Scheme - https://www.dplh.wa.gov.au/getmedia/77527a98-bae9-46a8-8daa-bbe444084a34/MRS-100000-map	4.2	1.0
Transport		Perth and Peel@3.5million – The Transport Network March 2018 – High-priority transit route only (p9 Figure 2) https://www.transport.wa.gov.au/mediaFiles/projects/PROJ P_Perth_Peel_3.5million_TransportNetwork.pdf	0.0	0.0
		LaneChangeMap – ROM 2031 Base Case Network. Link to GIS shape file: Lanechange Link Note: Request from Main Roads	4.2	1.0
		Perth and Peel@3.5million – The Transport Network March 2018 -(p 11,Figure 4) - P&P@3.5M Transport Network-Mar 2018	4.2	1.0
	4.2		25.2	6.00
Cumulative Sum of Proportions				6.00
Total Score (Maximum of 4.0 based on scoring method above)				4.00

**If the route connects to a *Location of Strategic Significance* such as an airport (high passenger or freight movements) OR public or commercial port (high freight or passenger movements) OR major intermodal freight facility OR other locations as identified by the road Classification as being of major or State significance, then this is deemed to meet the document criteria with a full score of 4.

The route under assessment has a strong strategic role within the State Road Freight Network and easily meets the maximum score of 4. Additionally, it is reserved in the MRS as a Primary Regional Road (PRR).

Score: 4.00

2.1.2. Network Role – RAV Network Routes

The movement of goods by heavy vehicles is vital to the economy. Main Roads issues permits for vehicles exceeding 19m in length or 42.5 tonnes gross mass. The permit bases system is called the Restricted Access

Vehicle (RAV) Network. B Doubles and articulated vehicles with one trailer are known as “long vehicles”. Vehicles longer than 30m are known as “road trains”.

If the RAV Network category is not constant over the entire length of the assessed route, a distance average shall be used.

i) Designated road train and long vehicle routes (refer RAV Network) are scored as follows:

RAV Network	Score	Total length of route (km)	Length of each RAV section (km)	Proportion of Route (RAV section / total length)	Score by Proportion of Route (Proportion*Score)
RAV 5/6/7	3.00		0.0	0.0	0.0
RAV 3/4	2.00		4.2	1.0	2.0
RAV 2	0.00		0.0	0.0	0.0
No RAV Network	0.00		0.0	0.0	0.0
Total			4.2	4.2	1.0

The route under assessment is classified as RAV Network Category 4 over its entire length.

Score: 2.00

2.1.3. Network Role - Bus Routes / Rapid Transit

The Public Transport Authority (PTA) determine major bus routes with the emphasis on bus mobility and serving important bus terminals. Weekday counts are to be used.

A high traffic bus route is defined as any section of a route which provides for 100 or more bus trips per day.
A medium traffic bus route is defined as any section of a route which provides for 50 to 100 bus trips per day.
A low traffic bus route is defined as any section of a route which provides for 1 to 50 bus trips per day.

The cut off point of 50 bus trips was selected as it reflects 5 bus trips per hour for 3 hours in AM peak and 3 hours in PM peak and 20 bus trips during the remaining 18 hours of the day.

Category	Score	Total length (km)	Length of PT section (km)	Proportion of route (PT section/total)	Score by Proportion of Route (Proportion*score)
100+ Buses per day	3.00		0.0	0.0	0.0
50 – 100 Buses per day	2.00		0.0	0.0	0.0
1 – 50 Buses per day	1.00		0.0	0.0	0.0
0 – 1 Buses per day	0.00		4.2	1.0	0.0
Total			4.2	4.2	1.0

As Curtin Avenue runs parallel to the Fremantle railway line and there are frequent bus services on Stirling Highway to the east of the railway, the PTA does not operate regular bus services on Curtin Avenue. (The exception is Rail Replacement buses which traverse Curtin Avenue between Claremont Street and Jarrad St, stopping at Finey Street near Cottesloe train station). Bus Route 102 also crosses Curtin Avenue at Jarrad Street.

Source: <https://www.transperth.wa.gov.au/Portals/0/Asset/Documents/Journey%20Planner/Network%20Maps/Map5.pdf>

Score: 0.00

2.1.4. Network Role - Connectivity

Maintaining network connectivity is a key part of the expanding State Road network. To this end, connecting existing State roads is given higher priority compared to connecting existing State Roads with lower order roads.

Category	Score
PD – PD	3.00
PD – DA/DB/RD, DA/DB/RD – DA/DB/RD	2.00
PD – LD/AR, DA/DB/RD/LD - LD	1.00

Curtin Avenue connects two existing Primary Distributors (West Coast Hwy – H036 and Port Beach Rd – H030)

Score: 3.00

2.1.5. Network Role - Property Access

Property access gives a strong indication as to the nature of the traffic flow on the route under assessment. More access points interrupt the flow of traffic as vehicles enter and exit. This leads to a reduction in traffic through-flow.

The three categories recorded are:

- Residential Access Points.
Access from an individual residential property or a cluster of residential properties.
- Commercial Access Points.
Access from an individual commercial property or a cluster of commercial properties serviced by single entrance to a common car park.
- Roadway intersections.
Access from a formal intersection with another road.

The total number of each category (residential, commercial and intersection) are counted and divided by the length of the route to give average per kilometre over the length of the route. [Note: for this process it is necessary to view route]

The following rules are applied when scoring this criterion:

Category	Score
No Access <ul style="list-style-type: none"> • Number of intersections = 0 • Number of commercial access points = 0 AND • Number of residential access points = 0 	3
Limited Access (1) <ul style="list-style-type: none"> • Sum of number of intersections and number of commercial access points ≤ 8 / kilometre AND • Number of residential driveways < 2 / kilometre 	2
Limited Access (2) <ul style="list-style-type: none"> • Sum of number of intersections and number of commercial access points < 10 / kilometre AND • Number of residential access points < 5 / kilometre 	1
Unlimited Access <ul style="list-style-type: none"> • All else 	0

Scoring Curtin Avenue:

Count of total access points along full length for each category	Total length (km)	Number of access points	Access points / kilometre	Sum Access points / kilometre	Score
Intersections		18	4.28	6.42	
Commercial Access		9	2.14		
Residential Driveways		38	9.05	9.05	
	4.2				0.00

The above shows a total of 6.42 intersections and commercial access points / kilometre. There are 9.05 residential access points / kilometre, concentrated in the section between Jarrad and Grant Streets where fewer service roads exist. Due to the high number of residential accesses at the northern end of the route, the overall score is 0.00. Note that future planning for the Curtin Avenue alignment provides for service roads to these residences.

Score: 0.00

2.1.6. Design Function - Route Capacity

Roads of a higher classification tend to have higher capacities. Capacity has been related to the number of trafficable lanes.

No of traffic lanes	Score	Total length of route (km)	Length of section (km)	Proportion of route (<i>Section / Total length</i>)	Score by Proportion of Route (length of section / total length) *
6 lanes	3.00		0	0	0
5 lanes	2.50		0	0	0
4 lanes	2.00		0	0	0
3 lanes	1.50		0	0	0
2 lanes	1.00		4.2	1.0	1.0
Total			4.2	4.2	1.0

The route under assessment is a two lane undivided carriageway for its entire length, except at the Jarrad and Eric Street signalised intersections.

Score: 1.00

2.1.7. Design Function – Road Classification

Road Hierarchy systems are used around the world to indicate the operating function of a road within a road network. Lower order roads act as feeder and collector roads, typically collecting neighbourhood and suburban traffic. Higher order roads tend to act as through roads, collecting traffic from lower order roads and facilitating high speed high volume traffic movements.

Higher order Local Government Roads are given priority over lower order Local Government roads and this is reflected in the scoring below.

Road Hierarchy	Score	Total Length (km)	Section length (km)	Proportion of total (<i>Section / total</i>)	Score by Proportion of Route
Distributor A	3.00		4.2	1.0	3.0
Distributor B	2.00		0.0	0.0	0.0
Regional Distributor*	0.00		0.0	0.0	0.0
Local Distributor	1.00		0.0	0.0	0.0
Access Road	0.00		0.0	0.0	0.0
Total Score			4.2	4.2	1.0

* Regional Distributors are defined to occur in non-built up areas and therefore subject to the rural (or non-built up) analysis.

The route under assessment is classified as a Distributor A under the Road Network Hierarchy.

Score: 3.00

2.1.8. Traffic Volumes - AAWT

As an indicator of the more heavily trafficked routes, an AAWT figure of 20 000vpd to 25 000vpd is used.

AAWT (PCU Adjusted)	Score	Total Length (km)	Section length (km)	Proportion of total (<i>Section / total</i>)	Score by Proportion of Route
25 000+ vpd	2.00		0.4	0.095	0.190
20 000 vpd - 25 000 vpd	1.50		2.0	0.476	0.714
15 000 vpd – 20 000 vpd	1.00		1.8	0.428	0.428
10 000 vpd – 15 000 vpd	0.50		0.0	0.000	0.000
0 vpd – 10 000 vpd	0.00		0.0	0.000	0.000
Total			4.2	4.2	1.00

Refer to PCU adjustment table at [Appendix 9](#)

Traffic Volumes AAWT per route section

Grant St to Eric St – 24280 AAWT – 1416 Heavy – PCU adjusted 26450 – Length 0.4km
 Eric St to Jarred St – 21661 AAWT – 1747 Heavy – PCU adjusted 24257 – Length 1.1km
 *Jarrad St – Marine Pde – 13647 AAWT – 975 Heavy – PCU adjusted 15015 – Length 1.8km
 *Marine Pde – Port Beach Rd – 18980 AAWT – 1350 Heavy – PCU adjusted 20839 – Length 0.9km

*Refer to Traffic Count table at [Appendix 9](#) for traffic counts and assumptions.

Score 1.332

2.1.9. Traffic Volumes - Heavy vehicle numbers

The more important routes used by commercial vehicle operators are reflected by heavy vehicle numbers. A “heavy vehicle” is defined as a vehicle over 4.5 tonnes gross mass. The traffic counting system adopted by MRWA uses an Austroads classification system and Class 3 vehicles (2 axle truck or bus equal to or over 4.5 tonnes gross vehicle mass) and above have been adopted as a “heavy vehicle” for the purpose of this criterion score.

Number of Heavy Vehicles	Score	Total Length (km)	Section length (km)	Proportion of total (Section / total)	Score by Proportion of Route
> 1 000 vpd	2.00		2.4	0.571	1.143
500 vpd - 1 000 vpd	1.50		1.8	0.429	0.643
50 vpd - 500 vpd	1.00		0.0	0.000	0.00
< 50 vpd	0.00		0.00	0.00	0.00
Total		4.2	4.2	1.00	1.786

Grant St to Eric St – 24280 AAWT – 1416 Heavy – PCU adjusted 26450 – Length 0.4km
 Eric St to Jarred St – 21661 AAWT – 1747 Heavy – PCU adjusted 24257 – Length 1.1km
 *Jarrad St – Marine Pde – 13647 AAWT – 975 Heavy – PCU adjusted 15015 – Length 1.8km
 *Marine Pde – Port Beach Rd – 18980 AAWT – 1350 Heavy – PCU adjusted 20839 – Length 0.9km

*Refer to Traffic Count table at [Appendix 9](#) for traffic counts and assumptions.

The route under assesment has significant heavy vehicle volumes, typically in excess of 1000vpd.

Score: 1.786

2.2. Administrative Road Classification Assessment Score

The spreadsheet at [Appendix 8](#) summarises the individual scores, applies the scale and weighting factors and calculates an overall score for the road. Curtin Avenue achieves a classification assessment **score of 50.30** which puts it in the **Primary Distributor** category.

3. Other Considerations

The purpose of this section is to provide an overview other considerations which may be relevant to the assessment of this route.

3.1. Proximity of another suitable State Road with Similar Function and Service Area

The closest State Road is Stirling Highway which runs roughly parallel to the section of Curtin Avenue under assessment, separated by the Fremantle railway line. In contrast to Curtin Avenue, Stirling Highway is not a freight route. Stirling Highway is a high frequency bus route and the primary commuter route connecting the City of Perth CBD, the QEII precinct and the University of Western Australia with the City of Fremantle and surrounding areas. Stirling Highway has substantial commercial and intersection access resulting in interrupted traffic flows thus not making it suitable as a freight route. Stirling Highway runs to the northeast to the CBD while Curtin Avenue is a north-south route. The functions and areas serviced by each road do not overlap significantly.

3.2. Proximity of another suitable Local Government road

No other Local Government road in the vicinity of Curtin Avenue has suitable north-south connectivity.

3.3. Strategic and Regional Development Factors

This sub-section contains description, analysis and assessment of the road against strategic and regional development assessment factors.

3.3.1. Perth and Peel at 3.5M - Employment Self-sufficiency, Infill Targets and Development Outlook

The Central sub-region has a very high employment self-sufficiency rate of around 140 per cent (as a measure of the quantity of jobs available in a given area as a proportion of that area's resident working population), and it is expected to remain the same as the city grows to 3.5 million people.

Station Precincts (TODs) are planned for the Swanbourne/Grant Strant, and Mosman Park / Victoria Street Station precincts along Curtin Avenue by 2050. (See [Appendix 6](#))

Infill housing targets post-2031 are 970 residences for Town of Cottesloe; 1,500 for Town of Mosman Park; and 7,030 for City Fremantle. Increased residential traffic for Cottesloe is likely to be negligible. Mosman Park is mostly situated to the east of Curtin Avenue closer to Stirling Highway. Based on the infill targets, the majority of increased residential traffic on Curtin Avenue will originate from Fremantle. The Urban Land Development Outlook for 2016/17 for North Fremantle, (just south of the subject route) indicates the following large developments:

- Short term development at Leighton Beach (314 units and 100 rooms - IN114) ; and
- Medium term (to 2026) at Matilda Bay - (500 residences - IN508)

The North Fremantle MasterPlan area (bounded by Walter Place, Tydeman Road, Port Beach Road and the Fremantle railway line) is zoned Industrial. A MRS Amendment (with attendant traffic study) was recently proposed to rezone the northern portion to Urban to accommodate residential, retail and commercial land uses This rezoning was not supported by Main Roads as it is inconsistent with the Central Sub-Region planning framework and the Economic and Employment Lands Strategy (EELS). (See [Appendix 5](#) and File 16/4751 for further information).

Sources:

https://www.dplh.wa.gov.au/getmedia/f19bb69d-e250-4674-9313-3ca70a7db7c3/FUT_PP-Central_Sub_Region_March2018_v2_part1-p37

https://www.dplh.wa.gov.au/getmedia/7ea08c05-32f1-43dc-8c9b-29184ef5292c/FUT_PP-Central_Sub_Region_March2018_v2_part2-p82

<https://www.dplh.wa.gov.au/information-and-services/land-supply-and-demography/demand,-supply,-future-development-and-infrastruct/perth-and-peel-urban-land-development-outlook>

3.3.2. Main Roads Network Planning

Curtin Avenue, West Coast Highway and Marmion Avenue is an important north-south regional route running along the coast, connecting Fremantle with the North-West sub-region. Recent planning provides for the connection of Stirling Highway with Curtin Avenue in North Fremantle, reinforcing the regional function of this route. Curtin Avenue becomes West Coast Highway at Servetus Street, and the route continues as Marmion Avenue north of Reid Highway. Curtin Avenue is for most of its length a 2-lane road and planning is required to enable upgrading to a 4-

lane divided regional road standard. West Coast Highway is constructed for most of its length to 4-lane divided standard, with a 2-lane section between Rochdale Road and Alfred Road. It is planned to 4-lane divided standard. Curtin Avenue and West Coast Highway are classified as a major freight route and form part of the northerly freight route from the Fremantle Inner Harbour to the northern suburbs. By 2050 Curtin Avenue will be extended over the Fremantle rail line to link with Stirling Highway at Queen Victoria Avenue, including grade separation at this intersection. Curtin Avenue will be upgraded to 4-lane divided standard for its full length to West Coast Highway. The remaining 2-lane section on West Coast Highway between Alfred and Rochdale Roads will be upgraded to 4-lane divided standard.

Source: Main Roads Network Plan (D17#94884, p16)

3.3.3. Fremantle Port Inner Harbour and Westport Study

As previously noted, the Inner Harbour is 1.6km south of the Town of Mosman Park / City of Fremantle boundary and is the largest container port in the Western Australia, processing in excess of 715,000 TEU in 2016/17. The port is responsible for berthing over 1000 vessels for a total gross import/export of over 35 million tonnes per annum. According to the Perth & Peel @ 3.5 Million and Beyond plan, the port is predicted to continue expanding in the near future and is classified as a major intermodal freight facility by the State.

Curtin Avenue is an important freight route from Fremantle Inner Harbour to the north via Port Beach Road, Curtin Avenue, West Coast Highway, connecting to Reid Highway, Whitfords Avenue and Ocean Reef Road. 14% of container trucks access the Inner Harbour from the north. This route is classified as a RAV4 route and also provides for Oversize Overmass (OSOM) access. (See D17#738961 for further information).

The northern freight route comprising of Port Beach Road, Curtin Avenue and West Coast Highway is the only oversize vehicle access route from the Port of Fremantle Inner Harbour. In the past, this route has been utilised to transport mining, construction, oil and gas vehicles and parts to sites in regional Western Australia. The Southern entrance to the Port of Fremantle Inner Harbour is constrained by the rail bridge over Tydeman Road thus making it unsuitable for oversize loads.

The *Westport: Port and Environs Strategy* (Westport) is a comprehensive research, data and feedback-gathering project to deliver the Westport Strategy. This will be an integrated plan to meet the freight and logistics needs for Perth and the South West for the next 50 to 100 years. The Westport Taskforce will engage with stakeholders and the community at all stages to:

- Plan for a modern port to meet Perth and surrounding regions' (including Bunbury) future growth for the next 50–100 years.
- Provide land-use and transport plans that support port operations and users, compatible land uses, community needs and economic growth.
- Assess the commercial implications and logistics opportunities of future port infrastructure.
- Identify expansion of industrial areas and technology parks to support economic development and future employment opportunities.
- Optimise compatibility of port and landside development with the environment.

Sources:

<http://www.fremantleports.com.au/News/Publications/AnnualReport/Documents/2017%20Annual%20Report%20-%20Full%20Report%20-%20Interactive%20PDF.pdf> - (p16)

Fremantle Port Inner Harbour Access Plan - First Draft (MRWA document)

https://www.transport.wa.gov.au/mediaFiles/projects/PROJ_FS_Westport_Overview.pdf

3.3.4. Metropolitan Region Scheme - Primary Regional Road reservation

A Primary Regional Road (PRR) reservation for Curtin Avenue has existed for many years in the Metropolitan Region Scheme (MRS). The majority of the current Curtin Avenue alignment the subject of this assessment sits outside (to the west of) the PRR reservation, partially in the Urban Zone and partially on land reserved for Parks and Recreation. The PRR reservation for Curtin Avenue is coincident with (abutting and partially within) the rail reserve, dating from the mid-1980s when the Perth-Fremantle rail was decommissioned and the land was planned to be used for upgrading Curtin Avenue. As the rail will now be retained in the long term, the future alignment of Curtin Avenue needs to be defined and protected. ([See Appendix 3](#))

3.3.5. Curtin Avenue Planning Study – West Coast Highway to Wellington Street

As far back as the 1990's Curtin Avenue has been the subject of various planning studies to determine ultimate planning for 4 lanes and to define the reservation in the MRS. A background report (**D17#332419**) written in 2017 outlines a number of planning objectives including Land Use Planning, Integrated Transport Planning, Freight, Road Connectivity, Rail Crossings, Safety, Active Transport and Social Amenity. The Study area largely corresponds with

the portion of Curtin Avenue the subject of the assessment, excluding the southern 600m in the Town of Mosman Park. (See Appendix 4).

Various scenarios have been proposed including rationalising adjacent rail crossings; grade separating the rail crossings and intersections including Wellington, Jarrad and Eric Streets; realigning Curtin Avenue east of the Western Power site, raising and/or sinking the rail line and Curtin Avenue, and trenching Curtin Avenue. Recent proposals have included a grade separated roundabout or quarter loop at Eric Street; subways/grade separations at Wellington and Jarrad Streets, and relocating the Victoria Street station. See **D17#332419** for more information.

A further study is currently underway to investigate some of the above options, subject to additional traffic modelling.

Given that the Eric Street timber bridge (around 100 years old) over the rail line will need to be replaced in the short term and given the proximity of the bridge to Curtin Avenue, Curtin Avenue is likely to need upgrading as well.

3.3.6. Town of Mosman Park development

The Town of Mosman Park is situated mostly east of Curtin Avenue, and only around 600m of Curtin Ave is within the Town boundary. Infill targets of 1,600 additional dwellings for Mosman Park have been addressed in Local Planning Scheme 3 which includes higher density in a development area to the north of Wellington Street. Wellington Street is a major connector through Mosman Park and currently does not connect to Curtin Avenue; however the above planning study proposes connection with Curtin Avenue just south of Marine Parade which would also require an underpass of the rail line.

There are a number of car parking facilities for beach access along the section of Curtin Avenue south of Marine Parade, including opposite the Beehive Montessori School and at Mosman-Leighton Dog Beach.

Source:

<https://www.dplh.wa.gov.au/mosman-park>

3.3.7. Town of Cottesloe development

Most of the route under assessment is located within the Town of Cottesloe. Development areas include the Cottesloe Foreshore Renewal MasterPlan area and the Wearne redevelopment on Gibney Street, as well as the former WA School for Deaf Children (at 53 Curtin Avenue) which has an access point onto Curtin Avenue.

There have been a number of aspirations for intensification of land use around the Cottesloe Train Station. In late 2008 an Enquiry-by-Design process was held and a report produced which included the following:

- *acknowledging the importance of connectivity between the Cottesloe town centre and Cottesloe Beach;*
- *a preliminary structure plan to guide potential development of railway lands adjacent to Cottesloe train station, known as development zone E;*
- *consideration and resolution of regional transport planning issues associated with the alignment of Curtin Avenue and the Fremantle train line*

Source: <https://www.dplh.wa.gov.au/publications/784.aspx>

3.3.8. Cyclists

As previously noted, Curtin Avenue is heavily used by cyclists. There are cycle lanes on both sides of Curtin Avenue, with the exception of intersections, which pose safety risks for cyclists, especially when mixing with heavy vehicles. In 2013 146,000 cycle trips along the cycle lanes on both sides of Curtin Avenue were logged in STRAVA.

This compares to 371 cycle trips per weekday in 2017/18 (around 135,000 per year) on the PSP north of Grant Street Station at Main Roads count site 51140. There have been a number of complaints regarding the gap in the PSP network from Perth to Fremantle, however according to DOT the incomplete sections of PSP between Claremont and North Fremantle are expected to be constructed by 2020. (See Appendix 6)

The McGowan Government recently announced the PSP extension from Grant Street to Victoria Street Station, to be delivered by Main Roads. Commencement is anticipated in December 2018 with completion by June 2019. A plan of the proposed PSP is located [here](#).

Sources:

<https://thewest.com.au/news/back-roads-chosen-over-cycle-paths-ng-ya-386189>

<https://trafficmap.mainroads.wa.gov.au/map>

https://www.transport.wa.gov.au/mediaFiles/active-transport/AT_P_PSPEXPansionProgramMap.pdf

<https://www.mediastatements.wa.gov.au/Pages/McGowan/2018/09/Wheels-in-motion-for-Fremantle-bike-path-construction.aspx>

3.3.9. Pedestrian bridges and crossings:

There are three train stations adjacent to the subject section of Curtin Avenue (Mosman Park, Victoria Street and Cottlesloe) but currently only one pedestrian bridge over Curtin Avenue, at Pearse Street, servicing the Cottlesloe Primary School (Structure 9033, height 6.17m, clearance 5.80m).

Source:

<https://www.mainroads.wa.gov.au/Documents/PDF%20-%20Bridge%20Heights%20For%20MRWA%20Website%20-%2031st%20August%202017.RCN-D17%5E23682382.PDF>

In 2016 Town of Cottlesloe proposed construction of a pedestrian bridge from Cottlesloe Station at Forrest Street to service the Cottlesloe Foreshore, with a proposed height of 4.0m, vertical clearance of 3.7m, and width constraints of between 5 and 6m. As this route is a RAV4 route and provides Oversize Overmass (OSOM) access, the proposal would have severely restricted freight movements to the north. An extract of the letter is at [Appendix 7](#). Following a series of meetings with the Town of Cottlesloe in 2016, it was agreed to instead install a pelican crossing at Forrest Street, now in place.

Current pedestrian crossings of the subject section of Curtin Avenue include:

- School crossing at the Beehive Montessori School in Mosman Park
- Pelican lights at Grant Street and Forrest Street in Cottlesloe
- Signalised intersections with pedestrian phases and Eric Street and Jarrad Street
- Additional (uncontrolled) crossings at Florence, Napier, Salvado and Victoria Streets

3.3.10. Other constraints

There are a number of Norfolk Pines along Curtin Avenue between Jarrad and Grant Street which have heritage and social value and will be an issue for future planning and development along Curtin Avenue. (See [Appendix 7](#)). In addition, due to height differentials a number of retaining walls and barriers about the cycle lanes and kerbs.

3.4. Main Roads - Programmed Major Road Projects

3.4.1. Curtin Avenue at Tydeman Road and from Stirling Highway to West Coast Highway

While not programmed or funded, current planning provides for the extension of Curtin Avenue south to Tydeman Road and the required reservation has been included in the Metropolitan Region Scheme (MRS). More recent planning has been undertaken to investigate an alternative extension of Curtin Avenue across the Fremantle passenger rail line to link with Stirling Highway at Queen Victoria Street. This preferred network solution will significantly reduce volumes on Port Beach Road and Tydeman Road, improving operations for port traffic. A reservation has not been included in the MRS for this alternative alignment, however PCA 113 has been supported by WAPC and has been gazetted, pending a MRS amendment.

Planning still needs to be undertaken to provide for the duplication of Curtin Avenue between Marine Parade and West Coast Highway to 4-lane divided standard, including grade separation of the various rail crossings.

Source: *Fremantle Port Inner Harbour Access Paper (D17#800848)*

3.4.2. High Street upgrade at Stirling Highway

The upgrade of High Street from Stirling Highway to Carrington Street is designed to improve safety, freight efficiency and the general flow of traffic for all road users travelling into and out of Fremantle to the south. Early construction works are anticipated to commence later in 2019.

Source: <https://project.mainroads.wa.gov.au/home/southmetropolitan/highstreet/Pages/default.aspx>

4. Conclusions and Recommendations

Summary of Analysis.

Consideration	Finding
Section 13 of the Main Roads Act 1930 – Modern Interpretation	<i>Deemed to meet the requirements of the Main Roads Act 1930 as outlined in the assessment, subject to funding availability.</i>
<ul style="list-style-type: none"> Tier 1 	<i>As part of the Future Roads Project, Curtin Avenue already meets the Tier 1 criteria.</i>
<ul style="list-style-type: none"> Tier 2 	<i>Meets Strategic, Network, Design Function and Traffic requirements as outlined in Tier 2.</i>
Other Considerations	<i>None</i>

The route under assessment meets the requirements for both Tier 1 and Tier 2 of the administrative road classification assessment.

Curtin Avenue achieves a classification assessment **score of 50.30** which puts it in the **Primary Distributor** category, suggesting it should be proclaimed as a State Road and come under the care and jurisdiction of Main Roads Western Australia.

RECOMMENDATION

The section of **Curtin Avenue**, from Port Beach Road (H030) at the boundary of the City of Fremantle and Town of Mosman Park, to West Coast Highway (H036) in Cottesloe at Grant Street, be reclassified as a State Administered Road, subject to a further RCAMP assessment and subject to the availability of funds as outlined in Section 13 (2) (a) of the Main Roads Act 1930.

5. Appendices

(see over)

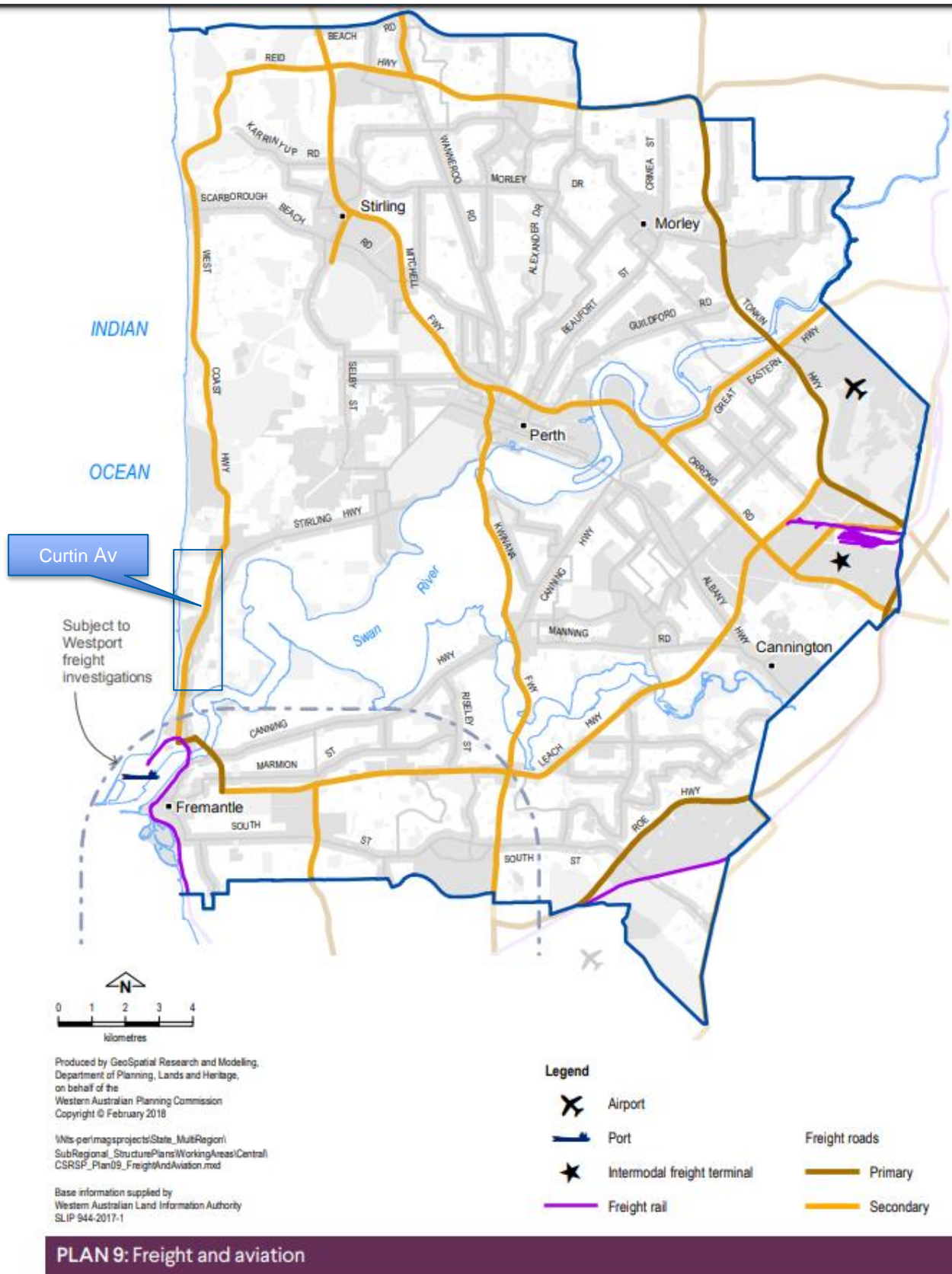
5.1. Appendix 1 – Locality Map



Section of Curtin Avenue subject to Assessment - highlighted in green

Note: Curtin Avenue adjoins sections of State Road locally known as Curtin Avenue both to the south (Port Beach Road H030) and to the north (West Coast Highway H036).

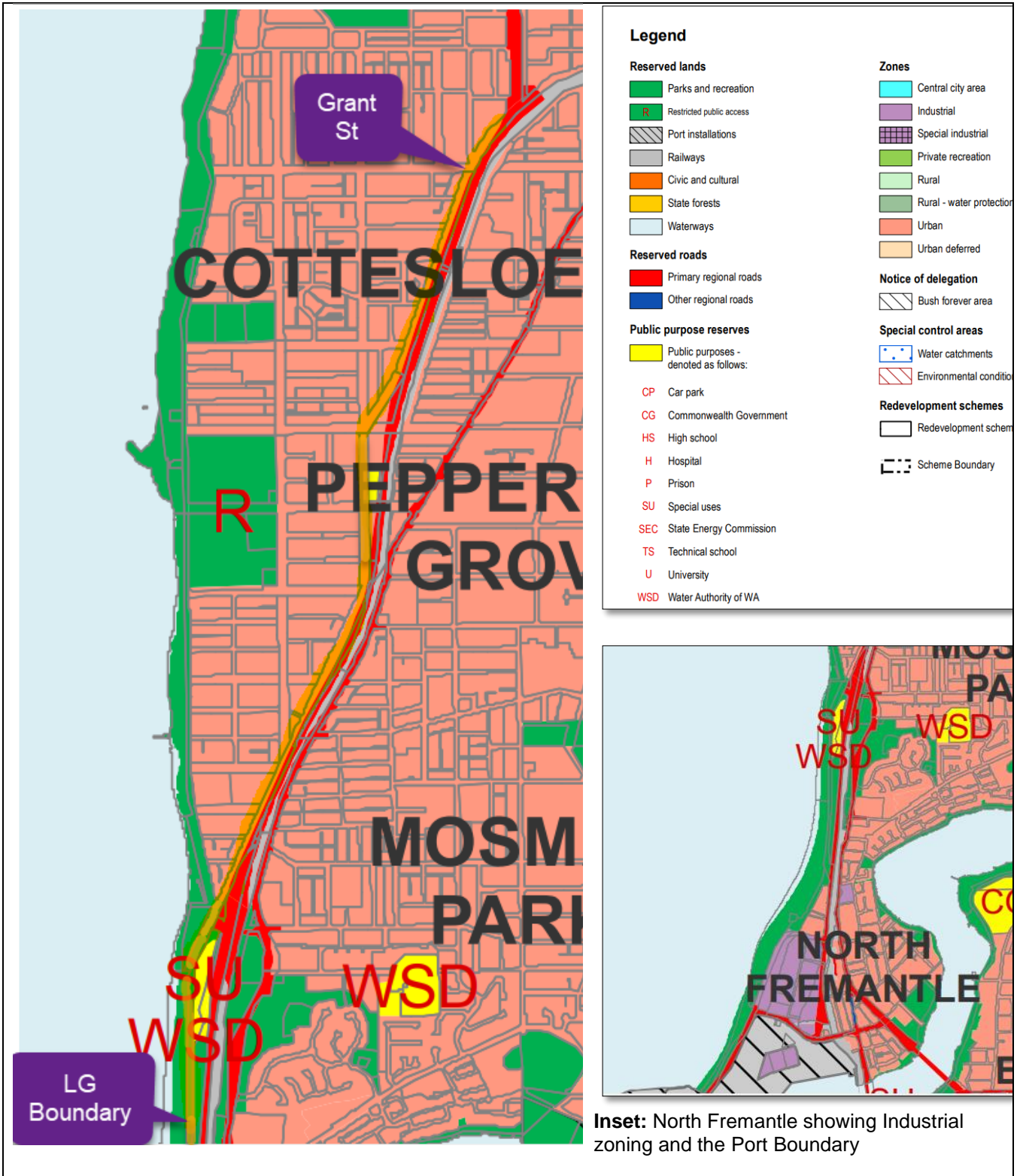
5.2. Appendix 2 - Freight and Aviation Routes



Source:

https://www.planning.wa.gov.au/dop_pub_pdf/Central_Sub_Region_March2018_v2_part1.pdf - p48

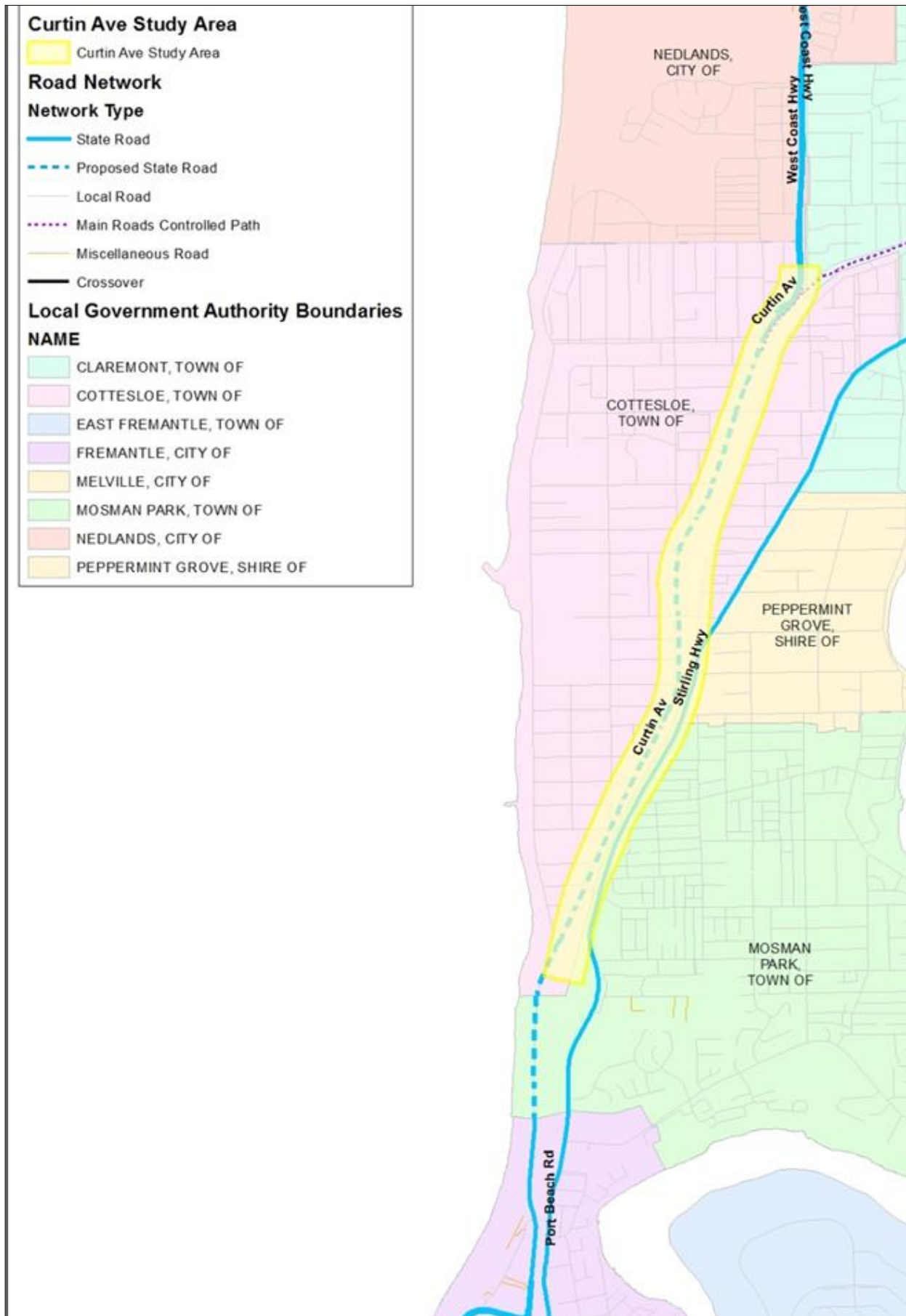
5.3. Appendix 3 - MRS Reservation compared to Curtin Ave Alignment



Current alignment of Curtin Avenue outside Primary Regional Road reserve in the MRS highlighted in yellow
 Subject section extends from the LG boundary at Fremantle / Mosman Park to Grant St.

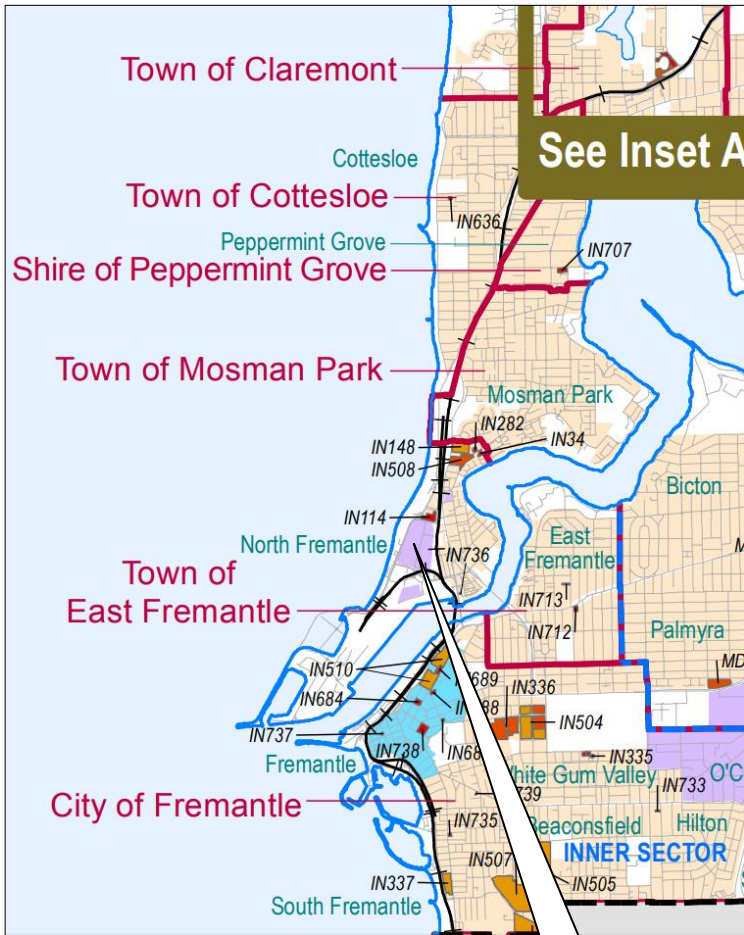
Note that the route alignment continues outside the PRR reserve both north and south of the subject section.

5.4. Appendix 4 - Planning Study Area compared to proposed State Road



Source: D17#332419 (P18)

5.5. Appendix 5 – Urban Land Development Outlook and North Fremantle MasterPlan area



Extract of Urban Land Development Outlook 2016/17:

- IN114 - Leighton beach - 314 units / 100 rooms - short term
- IN148 - One steel - 233 multi dwelling long term
- IN508 - 500 medium term to 2026 Matilda Bay residential

Source:

<https://www.dplh.wa.gov.au/information-and-services/land-supply-and-demography/demand,-supply,-future-development-and-infrastruct/perth-and-peel-urban-land-development-outlook>

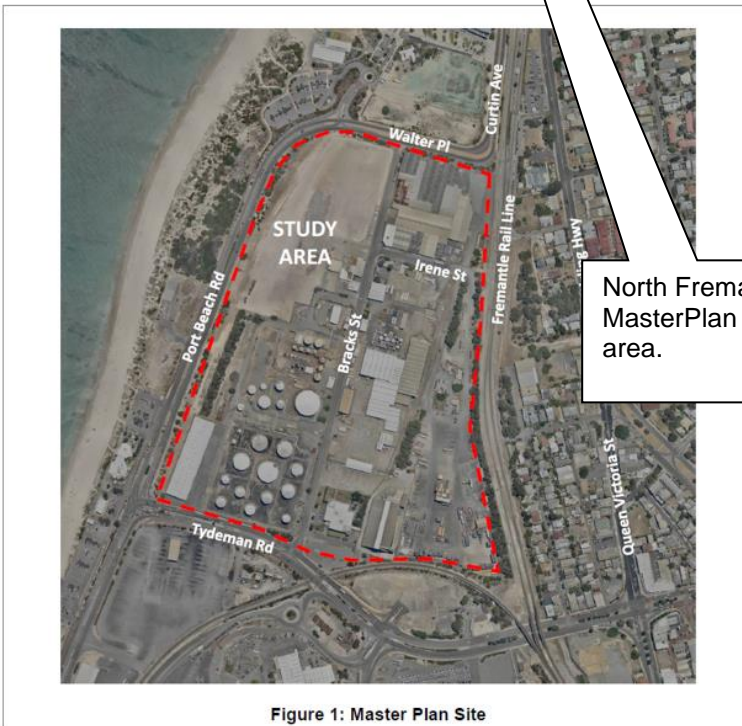


Figure 1: Master Plan Site

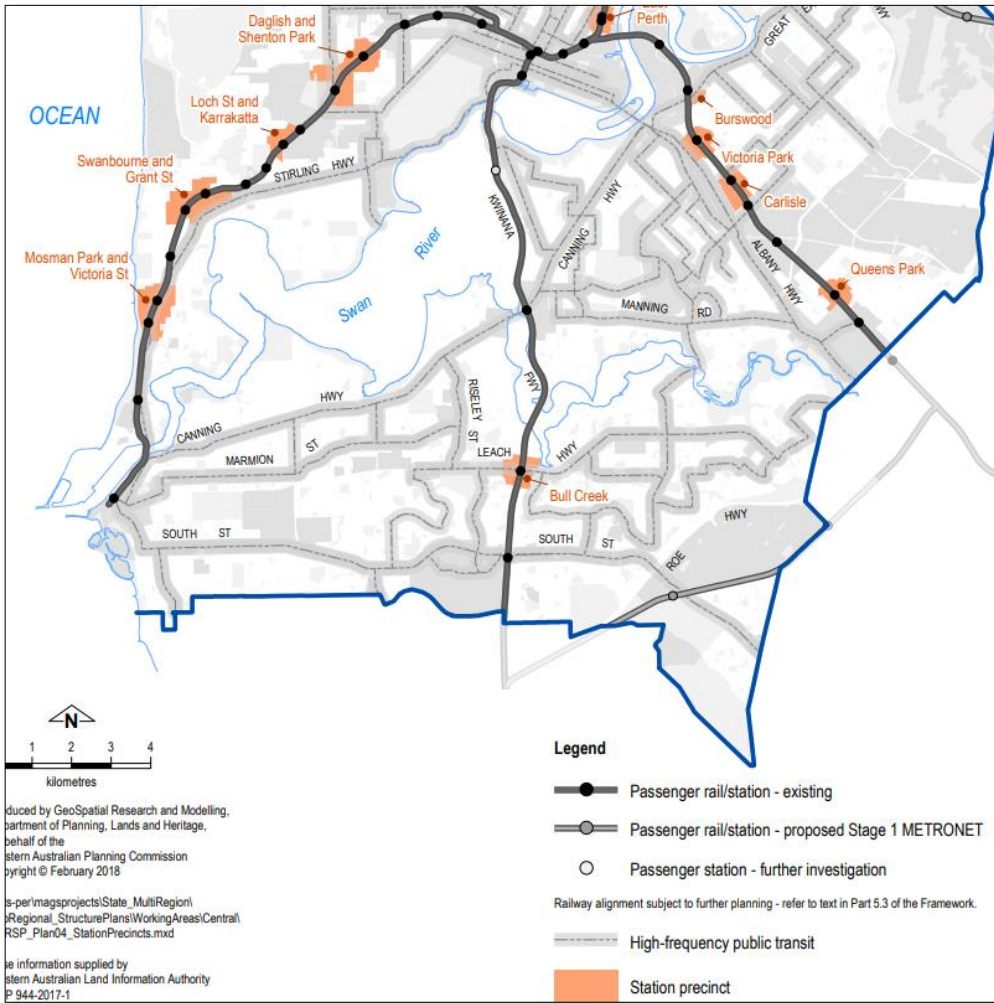
North Fremantle MasterPlan Study area.

(Extract from D16#423256 in File 16/4751)

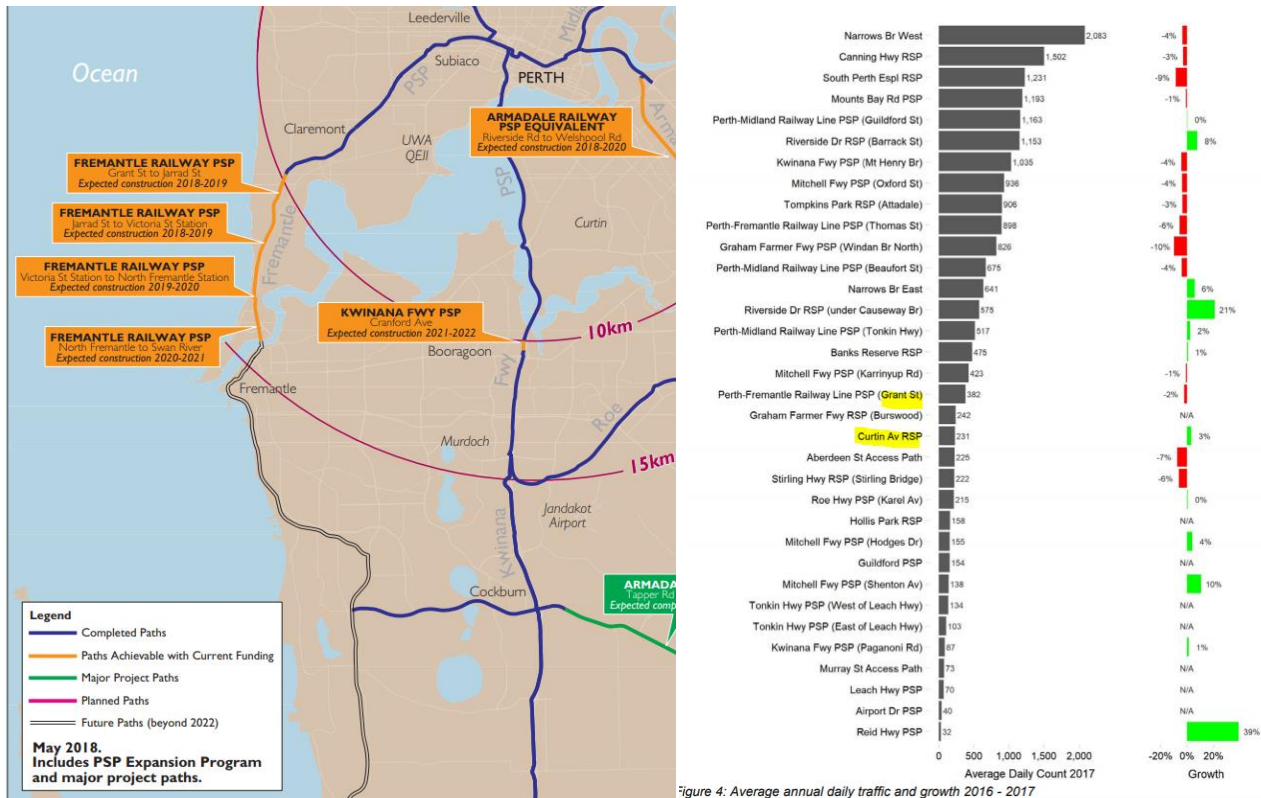
North Fremantle Master Plan

The Master Plan concept proposes residential and some retail / commercial land uses in the northern half of the Master Plan site, and retains the existing industrial uses in the southern half of the site.

5.6. Appendix 6 – 2050 Station Precincts and PSP Network

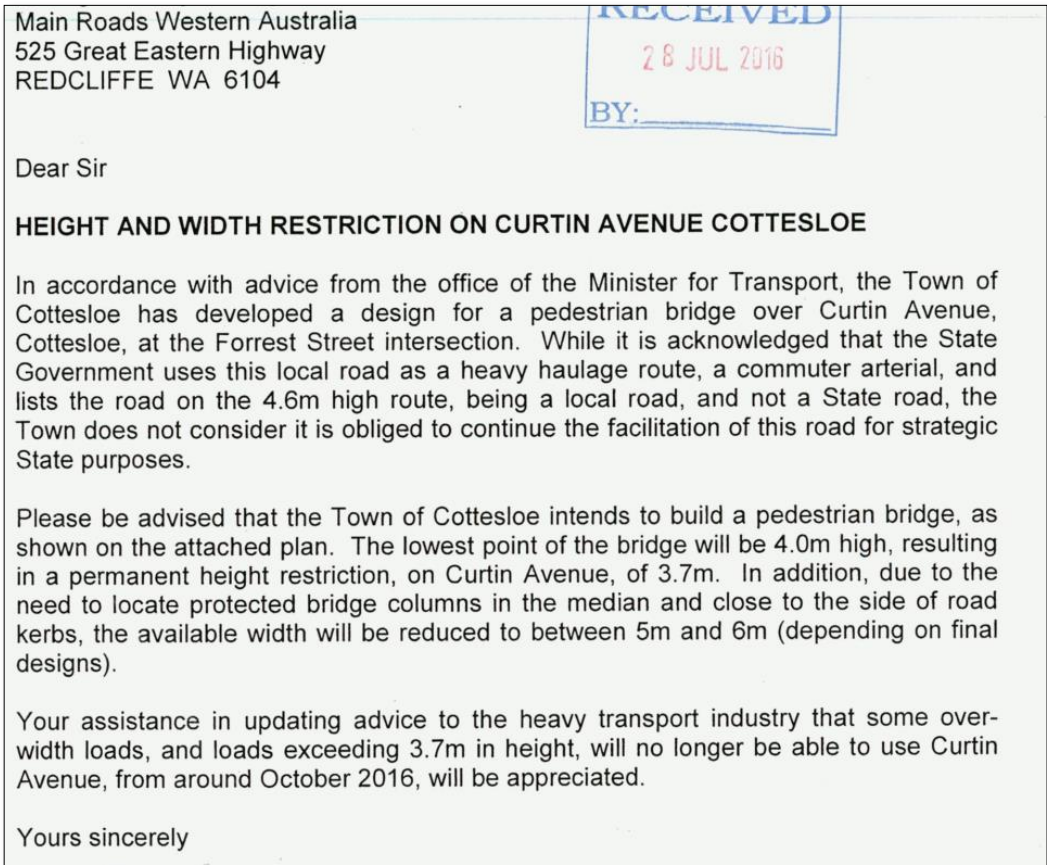


https://www.planning.wa.gov.au/dop_publications/Central_Sub_Regions/March2018_v2_part1.pdf - P37

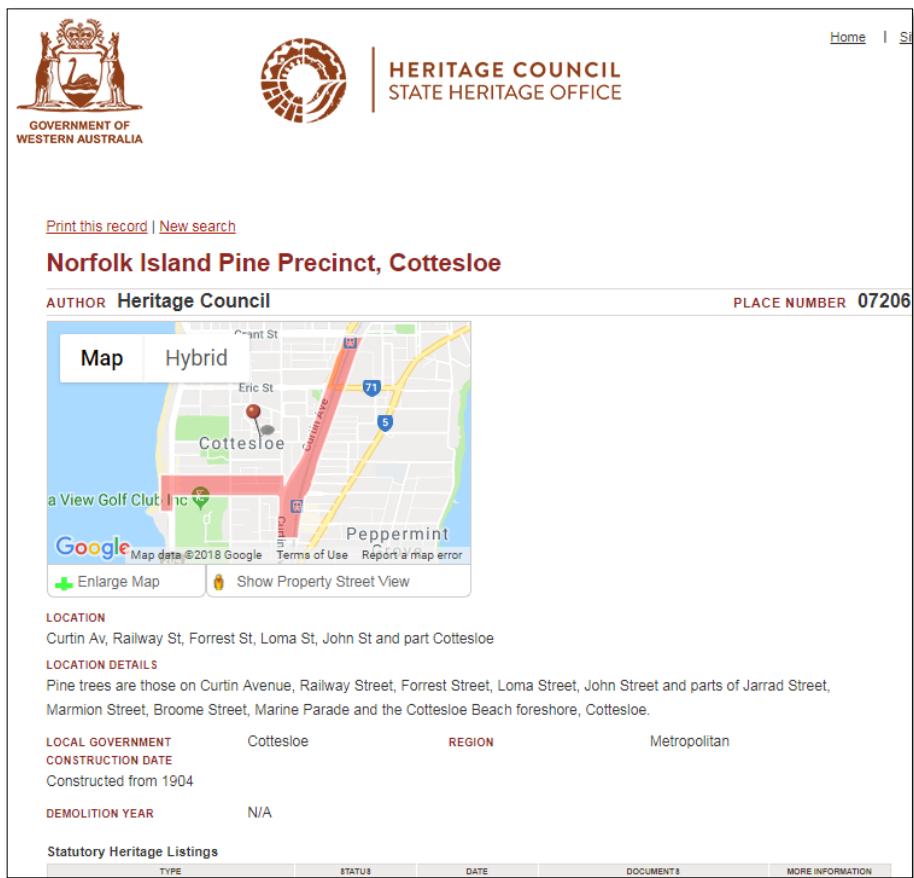


https://www.transport.wa.gov.au/mediaFiles/active-transport/AT_P_PSPExpansionProgramMap.pdf
https://www.transport.wa.gov.au/mediaFiles/active-transport/AT_CYC_P_Cycle_count_data_2017.pdf

5.7. Appendix 7 – Proposed Pedestrian Bridge and Heritage Pine Trees



Extract of Letter to Main Roads WA from Town of Cottesloe



Norfolk Island Pine Precinct between Jarrad and Grant Street on Curtin Avenue

Trees planted 1904, listed 1999, last update 1 Jan 2017.

Source: <http://inherit.stateheritage.wa.gov.au/Public/Inventory/Details/4d353806-7ab5-4276-b898-25988f0b7550>

5.8. Appendix 8 – Assessment Score Sheet

ROAD CLASSIFICATION ASSESSMENT SCORE SHEET

(URBAN - METROPOLITAN PEEL REGION)

ROAD NAME :	Curtin Avenue	Assessed Score	50.30
CURRENT HIERARCHY:	Distributor A	Route Length	4.20
INDICATED HIERARCHY :	Primary Distributor		

STRATEGIC ROLE	Number of Tier 1 Criteria met:	SCORE					Weighted Score	
	4 or more criteria	4.0	4.00					
	3 criteria	3.0	0.00					
	2 criteria	2.0	0.00					
	1	1.0	0.00					
	TOTALS		4.00	X	3.00	X		1.90

NETWORK ROLE	RAV Network Access	SCORE					Weighted Score	
	RAV Network 5/6/7	3.0	0.00					
	RAV Network 3/4	2.0	2.00					
	RAV Network 2	1.0	0.00					
	No RAV Network	0.0	0.00					
	Public Transport Route:		+					
	100+	3.0	0.00					
	50 - 100	2.0	0.00					
	1 - 50	1.0	0.00					
	0	0.0	0.00					
	Connectivity:		+					
	PD - PD,	3.0	3.00					
	PD – DA/DB/RD, DA/DB/RD - DA/DB/RD	2.0	0.00					
	LD/AR – LD/AR	1.0	0.00					
	Property access:		+					
	No access	3.0	0.00					
Limited access	2.0	0.00						
Unlimited access	1.0	0.00						
Unlimited Access	0.0	0.00						
TOTALS		5.00	X	1.0	X	1.50	=	7.50

DESIGN FUNCTION	Route Capacity:	SCORE					Weighted Score	
	6 Lanes	3.0	0.00					
	5 Lanes	2.5	0.00					
	4 Lanes	2.0	0.00					
	3 Lanes	1.5	0.00					
	2 Lanes	1.0	1.00					
	Road		+					
	Distributor A	3.0	3.00					
	Distributor B	2.0	0.00					
	Local Distributor	1.0	0.00					
	Access Road	0.0	0.00					
TOTALS		4.00	X	2.0	X	1.25	=	10.00

TRAFFIC VOLUMES	AAWT vpd:	SCORE					Weighted Score	
	25 000+	2.0	0.19					
	20000 < Traffic < 25000	1.5	0.39					
	15000 < Traffic < 20000	1.0	0.21					
	10000 < Traffic < 15000	0.5	0.22					
	<10 000	0.0	0.00					
	Heavy Vehicles Traffic:		+					
	Above 1000 vpd	2.0	1.14					
	500 - 1000 vpd	1.5	0.64					
	50 - 500 vpd	1.0	0.00					
	< 50 vpd	0.0	0.00					
TOTALS		2.80	X	3.00	X	1.00	=	8.39

TOTAL SCORE	TOTAL WEIGHTED SCORE						50.30
	CLASS THRESHOLDS						
	HIERARCHY	SCORE	SCOR	MARGINAL RANGE		INDICATED HIERARCHY	
	PRIMARY DIST.	>45.6	50.30			Primary Distributor	
Else	<=45.6		40.6 - 45.6				

5.9. Appendix 9 – Traffic Count Score Sheet

PCU (Passenger Car Units) Conversion Table

Austrroads Class	Max Length in W.A.	Passenger Car Unit
2 to 5	14.5m	2.0
6 to 9	20.0m	3.0
10	27.5m	4.0
11	36.5m	6.0
12	53.5m	8.0
Motor cycle	-	0.4
Pedal cycle	-	0.2

Note:– this conversion table is for traffic counts of mixed class vehicle types to approximate the counts to equivalent Passenger Car Units and may not be applicable to road design applications. **The procedure for PCU adjustment can be**

found in D16#375015.

Traffic counts can be located at <https://mrapps.mainroads.wa.gov.au/TrafficMap/>

Traffic Counts - Curtin Avenue

Location (distance from, and cross street)	AAWT (vpd)	% Heavy Vehicles (Austrroads class 3 and above)	Volume Heavy Vehicles (Austrroads class 3 and above)	PCU Adjusted AAWT (vpd)	Month/Year of Count	Site Number
1160001 SLK 3.21 – North of Eric St	24280	5.8%	1416	26450	June 2016 2015/16	7605
1160001 SLK 2.99 – S of Eric St	21661	8.1	1747	24247	Aug 2015 2015/16	50524
1160001 SLK 0.39 – N of Marine Pde	11102	7.2	793	12215	Oct 2012 2012/13	2481
<i>Note: as the above count is 6 years old, an annual growth rate of 3.5% has been assumed for 2018 volumes</i>	<i>13647</i>	<i>7.2</i>	<i>975</i>	<i>15015</i>	<i>Estimated 2018 volumes</i>	<i>As above</i>
1160001 SLK 0.28 – S of Marine Pde	16540	8.2	1350	18515	Aug 2014 2014/15	0164
<i>Note: as the above count is 4 years old, an annual growth rate of 3.5% has been assumed for 2018 volumes</i>	<i>18980</i>	<i>8.2</i>	<i>1549</i>	<i>20839</i>	<i>Estimated 2018 volumes</i>	<i>As above</i>
Maximum	24280			26450		

Current Traffic Characteristics

Note: Traffic count data should ideally be no older than two years prior to assessment year. As there was a wide variation in traffic count years for different sections of Curtin Avenue, count data from the two oldest sections of Curtin Avenue counts have been extrapolated to 2018.