City of Rockingham

Restricted Access Vehicle (RAV) Network Plan

2025-2030

rockingham.wa.gov.au

city of Rockingham
where the coast comes to life

Definitions:

- **City**: Refers to the City of Rockingham
- **RAV**: Restricted Access Vehicle over 19.0m length. These are controlled vehicles and they must operate under a Main Roads permit or order when travelling on the road network.
- **HVS**: Heavy Vehicle Services is a department within Main Roads WA and responsible for providing safe, efficient and sustainable heavy vehicle access to WA's road network.
- **MRWA**: Refers to Main Roads Western Australia
- **AMMS:** Accredited Mass Management Scheme
- **PBS:** Performance Based Standards
- **WALGA:** Western Australian Local Government Association
- **NTRO**: National Transport Research Organisation

Roles and responsibilities:

The City is responsible for constructing and maintaining its road network to a standard suitable for use by all vehicles, including RAV vehicles, where approved or planned.

Main Roads Heavy Vehicle Services (HVS) is responsible for developing, administering and approving RAV access with appropriate conditions, taking into account safety, structural and vehicular suitability and the orderly and efficient use of roads, while meeting the needs of the transport industry. This includes the development and maintenance of the RAV Networks and concessional loading schemes that are available to transport operators.
HVS will consult with the City when assessing application for RAV access to seek comments.

Contents

Executive Summary:

The Restricted Access Vehicle (RAV) Network Plan for the City of Rockingham outlines a comprehensive, forward-thinking strategy for managing and enhancing the City's road network to support the safe and efficient movement of heavy freight vehicles. It addresses a range of critical factors, including safety, traffic flow, infrastructure upgrades, road maintenance, environmental considerations, and stakeholder engagement.

With industrial growth and increasing demand for freight access, the plan ensures that the City's road infrastructure can effectively accommodate heavier mass vehicles while minimizing impacts on the broader transport network. It provides a clear five-year plan (2025–2030) to guide infrastructure planning and decision-making, addressing key issues such as road improvements, crash data analysis, future subdivisions, and legislative/regulatory changes that may affect the RAV network. Actions identified within the plan include the completion of specific road treatments, public consultations, and the implementation of strategic maintenance for heavier mass vehicles.

In addition to reviewing current RAV routes, the plan covers the new road improvement projects, and future duplication projects and intersection upgrades. The plan also includes risk management strategies to mitigate potential challenges.

The document concludes with a detailed action plan that prioritizes key initiatives, along with a measurement framework to evaluate the success of the plan, ensuring alignment with the City's long-term infrastructure and safety goals. The RAV Network Plan serves as a transparent and structured approach for the City to manage and assess future requests for heavier mass vehicles, ensuring a sustainable and safe road network for all users.

Strategic Objective:

This document primarily focuses on the RAV Network Plan aims to establish a structured strategy for managing heavy vehicle access and mass limits within the City. It replaces the current case-by-case assessment with a transparent framework for evaluating requests from 2025 to 2030. The plan prioritises safety, infrastructure maintenance, environmental impact, congestion, and economic benefits while ensuring sustainable heavy vehicle integration.

This RAV Network Plan is aligned with the following aspirations from the City's Strategic Community Plan 2023-2033:

Aspiration: ***1. (Social) – A family-friendly, safe, and connected community.***

Outcome/Objective: Community health and wellbeing: The RAV Network Plan reinforces road safety by ensuring that RAV movements are regulated, reducing risks to road users while maintaining a strong sense of safety within the community.

Aspiration: ***3. (Built Environment) - A built environment carefully planned for today and tomorrow***

Outcome/Objective: Built infrastructure meets current and future community needs: The plan provides a structured approach for assessing the suitability of key roads for RAV categories 4, 5, and 7, ensuring infrastructure resilience and safety.

Plan for sustainable growth: By integrating Accredited Mass Management Scheme (AMMS) levels 1-3, the study supports freight efficiency while ensuring road sustainability and reducing long-term maintenance costs.

Accessible and connected: The plan enhances the accessibility and connectivity of the City's road network by outlining a clear approval process for heavy vehicle access, supporting efficient transport solutions and economic activity.

1.0 Background

1.1 Background of the Study

The City of Rockingham continues to be one of the fastest growing local government areas in Western Australia and consists of two existing and one proposed industrial zones as per the Strategic Zoning Plan of the City as shown in Figure 1. The main industrial area is located in the north, abutting Mandurah Road and the other in the middle of the City's territory abutting Port Kennedy Drive. There is another proposed industrial expansion to be established towards the east of the City boundary adjoining Mundijong Road. These

industrial areas are the main attractors for heavy vehicles or known as Restricted Access Vehicles (RAVs), which require special approval to operate on designated routes due to their size and mass. Vehicles up to 19.0 meters in length are classified as 'as of right' vehicles and are not considered as part of this document.

At present, the City's industrial and commercial precincts are mostly being served by Restricted Access Vehicle level 4 (RAV 4) road network and there are many requests to operate higher RAV[1] vehicles (eg. RAV 5 or RAV 7) on various roads within the City's network. Furthermore, there are also requests to increase the allowable maximum mass limit under the Accredited Mass Management Scheme[2] (AMMS). Operation of higher level of RAV or allowing extended limits for mass limit has inherited advantages and disadvantages associated from both users and the road owners (the City) perspectives.

In summary, approval of higher RAV on the City's network would enable the freight movers to use large trucks (further load if allowable mass level is increased), reducing the number of truck trips used to transport a given load. In other words, larger trucks would reduce the number of trips, ultimately result in saving operators transport costs. However, on the other hand, the major negatives would include compromise in road safety due to large trucks (long vehicles) being deployed on City's network. Also, large trucks require increased service levels on the road network such as more road space and elevated sight distances for safely stopping or turning at intersections. Damage to the pavement, which leads to higher maintenance costs, caused by the higher RAVs is not considered as a significant issue unless if there is any increase in the maximum mass limit. It should be noted explicitly the increase in allowable mass limit imposes increased damage to road pavements, which has to be absorbed by the road owner (the City) unless there is a mechanism to charge the road user to cover the relevant costs (user charges).

The Western Australian Local Government Association (WALGA), in collaboration with the National Transport Research Organisation (NTRO), has recently developed an assessment tool and accompanying guidelines to calculate the incremental costs associated with additional freight movement on roads. This methodology considers factors such as payload, vehicle type, and road classification. As this process is still being finalised, the City has not

[1] More details about RAV vehicles are provided in Table 3
[2] More details about AMMS levels are provided in Table 4

incorporated this cost calculation into the current RAV Network Plan. However, the City intends to consider its application in the next revision of the Plan or as deemed necessary.

The City is continually engaged in expanding the road network through the introduction of new road links and the upgrading of existing ones to meet current and future demands for heavy vehicle movement. However, road and intersection widening projects to accommodate large heavy vehicles are often constrained by several factors. These include limited available road reserves, the presence of existing underground or overhead services and the associated high cost of relocation, as well as the proximity of significant vegetation, such as large trees, near existing roads. Infrastructure upgrades of this nature are assessed based on a cost-benefit analysis, and projects with a low benefit-to-cost ratio are often difficult to justify and may not proceed unless strategic importance is demonstrated.

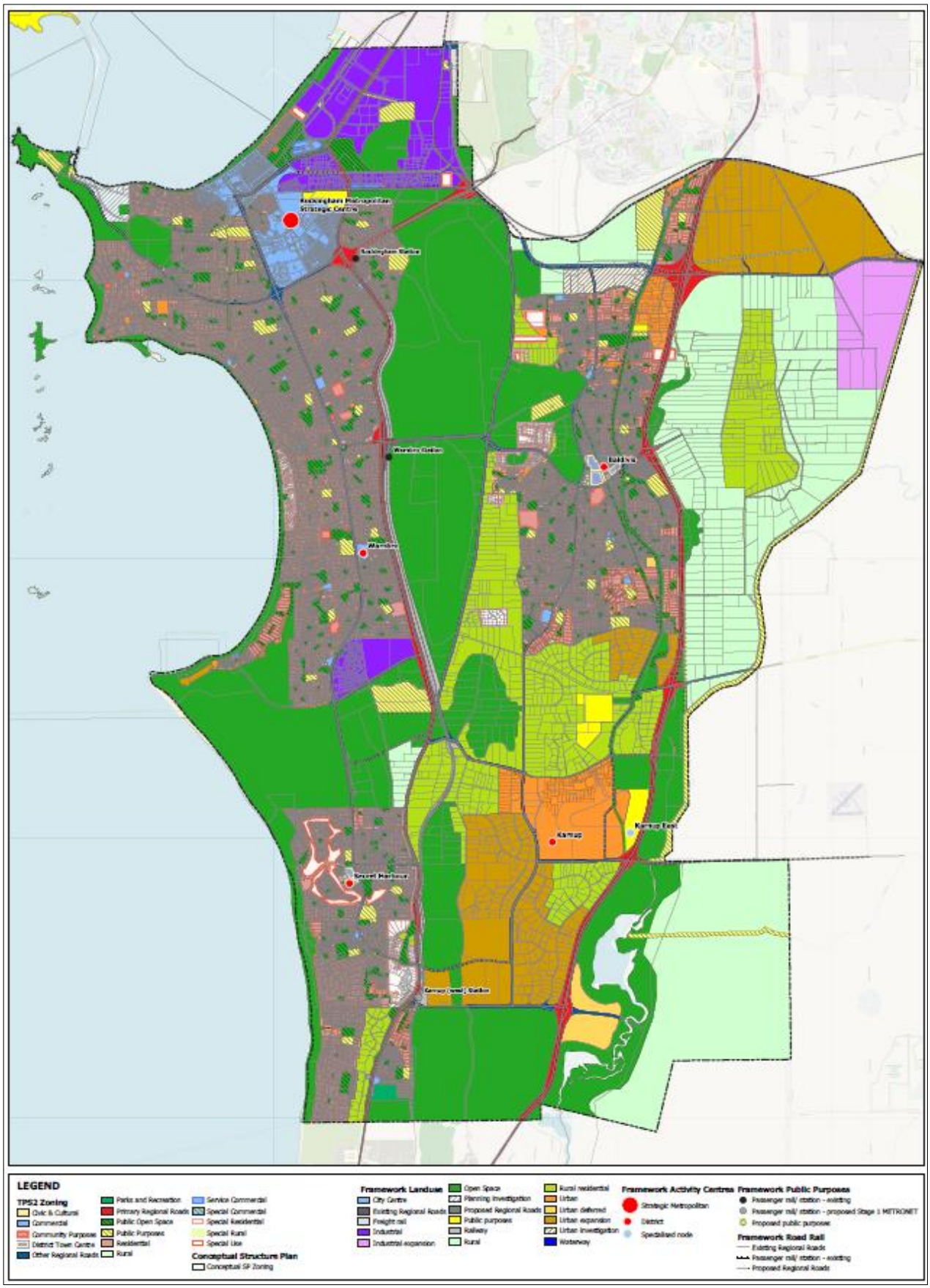


Figure 1: City of Rockingham Zoning Plan

1.2 Existing RAV Network

The City is currently served by two major state roads, namely the Kwinana Freeway and Melville Mandurah Highway (Ennis Avenue and Patterson Road), both running north south directions. The major RAV roads within City's road network (this excludes state roads) falls under RAV 4 network (other than the Kwinana Freeway and a short section of Mandurah Road) and mainly consist of Mandurah Road, Kulija Road, Mundijong Road, Port Kennedy Drive, Millar Road, Dixon Road, Day Road, Stakehill Road, Sixty Eight Road, Kerosene Lane and some sections of Baldivis Road as shown in Figure 2.

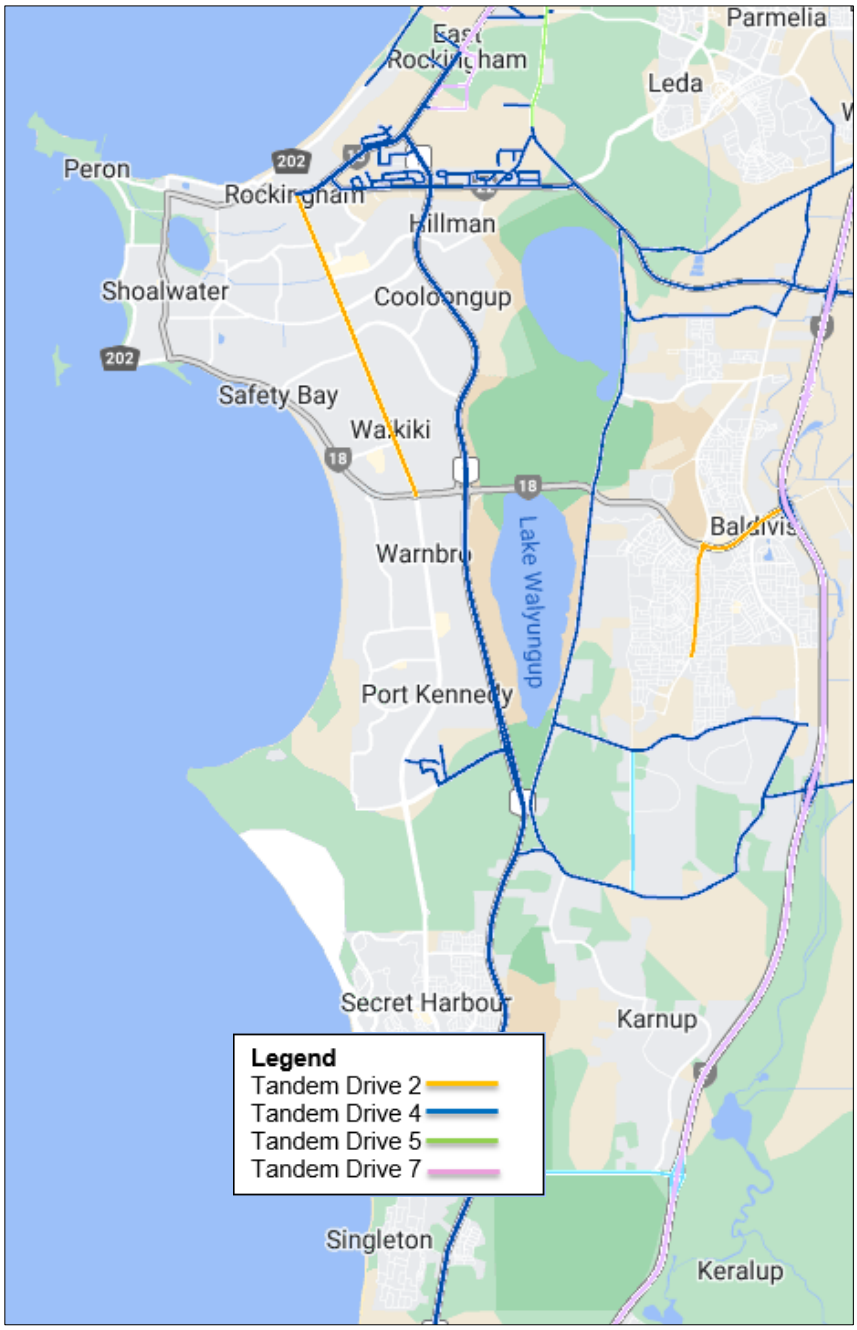


Figure 2: Current Heavy Vehicle (RAV) Route Map (2025)

2.0 Purpose and Scope

The purpose of this study is to develop a comprehensive heavy vehicle network plan for the City considering the costs, benefits, safety, maintenance, carbon emissions, noise levels, and congestion associated with usage of different types of heavy vehicles and various mass limits, from multi-stakeholder perspective. This study will focus specifically on the type of heavy vehicles (RAVs) and their characteristics, such as size, weight, trailer configuration and access needs. It will not address or consider the contents of the vehicles.

This study will enable the City to consider any future requests to use higher-level RAV vehicles on City's roads or to increase in allowable mass limit in a consistent manner over the next five years from 2025-2030. This departs from the current practice of assessing such requests reactively, case by case. Furthermore, this study will be a public document available to all road users which outlines the City's position in terms of RAV access and allowable mass limit within the City's road network enabling more transparent and clear approach to heavy vehicle access approval process.

Therefore, this study is to assess the suitability of City's key roads in terms of;

- Restricted Access Vehicle usage under different RAV categories (4, 5 and 7)
- Allowable mass limit increase in accordance with Accredited Mass Management Scheme (AMMS) levels 1-3.

The following roads has been identified as the key roads in the City's network supporting the movement of heavy freight and the scope of the study is limited to assessing these roads only. More information pertaining to the selected roads are presented in Table 1 under section 3.1.

- ✓ Mandurah Road
- ✓ Kulija Road
- ✓ Mundijong Road
- ✓ Port Kennedy Drive
- ✓ Dixon Road
- ✓ Karnup Road
- ✓ Paganoni Road
- ✓ Millar Road
- ✓ Baldivis Road
- ✓ Patterson Road
- ✓ Day Road
- ✓ Alumina Road
- ✓ Office Road
- ✓ Kerosene Lane
- ✓ Sixty Eight Road
- ✓ Stakehill Road
- ✓ St Albans Road
- ✓ Telephone Lane
- ✓ Industrial area road sections

3.0 Assessment of RAV Network

3.1 Existing Network Attributes and Assessment Method

The evaluation follows the Standard Restricted Access Vehicle Route Assessment Guidelines by Main Roads WA, covering key traffic engineering aspects, including:

a) Traffic data and accident statistics
b) Structures (load capacity, overhead clearance and available width)
c) Road Widths, Geometry and Grades
d) Turning at Intersections
e) Railway Level Crossings
f) Off-road Parking

Table 1: Roads in City's Heavy Vehicle Network

Road Name	Road Section	Road Class	Posted Speed Limit (Kmph)	Operating Speed (Kmph)	AWDT	HV (%)	Avg. Lane Width (m)	Approx. Shoulder Width (m)	Current RAV Level
Mandurah Rd	Dixon Rd- Wellard Rd	Regional Distributor	80	80.8	13,012	19.6	3.1- 3.4	0.5	RAV4-RAV5
Kulija Rd	Baldivis Rd- Kwinana Fwy	Regional Distributor	70	81.2	16,286	18.7	3.1- 3.5	2	RAV4
Kulija Rd	Mandurah Rd South-Millar Rd	Regional Distributor	80	84.1	14,208	16.1	3.2- 3.3	1.9- 2	RAV4
Mundijong Rd	Kwinana Fwy- St Albans Rd	Regional Distributor	80	89.5	8,087	12.6	3.3- 3.5	0	RAV4
Mundijong Rd	Telephone Ln-Duckpond Rd	Regional Distributor	100	101.2	8,473	13.5	3.3- 3.5	0.7	RAV4
St Albans Rd	Mundijong Rd-Telephone Ln	Access Rd	80	77	2,600	11.7	4.3	0	RAV 4
Telephone Ln	East of Baldivis Rd	Access Rd	80	70.4	2,300	601	4.3	0	RAV 4
Telephone Ln	Mundijong Rd-Haines Rd	Access Rd	80	74.3	151	8.9	3.2	0	RAV 4
Port Kennedy Dr	Ennis Ave- Blackburn Dr	Distributor B	80	88	12,477	13.1	3.3- 3.5	1.3- 1.5	RAV4
Dixon Rd	Ennis Ave- Mandurah Rd	Distributor B	70	72	25,988	7.8	3.3	1.4- 1.6	RAV4 With conditions
Dixon Rd	Ennis Ave- Louise St	Distributor A	60	59	12,871	11.6	3.3- 3.6	2	RAV4 With conditions
Karnup Rd	Kwinana Fwy- Baldivis Rd	Regional Distributor	70	81.7	7,139	10.9	3.2- 3.3	2.9- 3.5	RAV4 With conditions
Karnup Rd	Kwinana Fwy- Young Rd	Regional Distributor	100	95	4,421	11.8	3.4- 4	0	RAV4 With conditions
Paganoni Rd	Mandurah Rd- Kwinana Freeway	Regional Distributor	70	82.8	10,133	8.2	3.3- 3.7	2.3- 2.5	RAV3 With conditions
Eighty Road	Sixty Eight Rd- Stakehill Rd	Local Distributor	80	65.2	4,000	8.8	4.2	0	RAV 3
Millar Rd	Kulija Rd – Baldivis Rd	Regional Distributor	80	80.5	2,846	18.4	3.9	0	RAV4

Road Name	Road Section	Road Class	Posted Speed Limit (Kmph)	Operating Speed (Kmph)	AWDT	HV (%)	Avg. Lane Width (m)	Approx. Shoulder Width (m)	Current RAV Level
Baldivis Rd	Sixty Eight Rd to Stakehill Rd	Regional Distributor	80	71.8	5,700	5.5	3.8	0	RAV4
Baldivis Rd	Kerosene Ln-Telephone Ln	Regional Distributor	80	68.6	8,600	7.3	4.2	0	RAV4
Patterson Rd	Read St to Ennis Ave	Distributor A	80	71.3	23,000	9.4	3.5	1.8	RAV4
Day Rd	Dixon Rd- Mandurah Rd	Distributor A	60	70.6	4,086	16.4	3.2- 5	0	RAV4
Alumina Rd	Patterson Rd- Alloy Ave	Access Rd	50	36	967	18.6	9.8- 10	0	RAV7
Office Rd	Patterson Rd- Mandurah Rd	Local Distributor	70	73.1	4,172	7.2	3.8	0	RAV4
Kerosene Ln	Mandurah Rd- Baldivis Rd	Access Rd	80	62.5	3,688	7.6	3.5-5	0	RAV4
Sixty Eight Rd	Mandurah Rd to Baldivis Rd	Local Distributor	70	76.3	4,616	6.2	4.2	0	RAV 4
Stakehill Rd	Mandurah Rd to Baldivis RD	Regional Distributor	70	78.3	6,790	8.1	3.5-3.9	0	RAV 4

3.2 Crash Data Analysis

To assess the safety implications of RAV operations within the City's road network, crash data was collected from Main Roads WA Crash Data for the period January 2020 to December 2024. This dataset includes reported crashes along the identified roads within the City's jurisdiction.

Crash analysis offers valuable insights into trends associated with heavy vehicle operations, helping to identify key safety concerns and guide future decision-making related to RAV access and route planning. Heavy vehicle movements can contribute to increased congestion and reduced sight distances, both of which may elevate the risk of crashes.

Table 2 below summarises the identified roads and their corresponding total number of crashes for the five years period from 2020 to 2024.

Table 2: Total crash data for identified roads (2020-2024)

Road Name	Road Section	Road Class	Total Crashes-2020-2024
Mandurah Rd	Dixon Rd- Wellard Rd	Regional Distributor	85
Kulija Rd	Baldivis Rd- Kwinana Fwy	Regional Distributor	80
Kulija Rd	Mandurah Rd South- Millar Rd	Regional Distributor	19
Mundijong Rd	Kwinana Fwy- St Albans Rd	Regional Distributor	38
Mundijong Rd	Telephone Ln- Duckpond Rd	Regional Distributor	8
St Albans Rd	Mundijong Rd-Telephone Ln	Access Rd	21
Telephone Ln	East of Baldivis Rd	Access Rd	8
Telephone Ln	Mundijong Rd-Haines Rd	Access Rd	1
Port Kennedy Dr	Ennis Ave- Blackburn Dr	Distributor B	22
Dixon Rd	Ennis Ave- Mandurah Rd	Distributor B	241
Dixon Rd	Ennis Ave- Louise St	Distributor A	
Karnup Rd	Kwinana Fwy- Baldivis Rd	Regional Distributor	15
Karnup Rd	Kwinana Fwy- Young Rd	Regional Distributor	12
Paganoni Rd	Mandurah Rd- Kwinana Freeway	Regional Distributor	58
Eighty Road	Sixty Eight Rd- Stakehill Rd	Local Distributor	10
Millar Rd	Kulija Rd – Baldivis Rd	Regional Distributor	6
Baldivis Rd	Sixty Eight Rd to Stakehill Rd	Regional	11

Road Name	Road Section	Road Class	Total Crashes-2020-2024
		Distributor	
Baldivis Rd	Kerosene Ln-Telephone Ln	Regional Distributor	98
Patterson Rd	Read St to Ennis Ave	Distributor A	179
Day Rd	Dixon Rd- Mandurah Rd	Distributor A	12
Alumina Rd	Patterson Rd- Alloy Ave	Access Rd	2
Office Rd	Patterson Rd- Mandurah Rd	Local Distributor	35
Kerosene Ln	Mandurah Rd- Baldivis Rd	Access Rd	28
Sixty Eight Rd	Mandurah Rd to Baldivis Rd	Local Distributor	25
Stakehill Rd	Mandurah Rd to Baldivis RD	Regional Distributor	33

3.3 Pavement Condition Assessment

Pavement condition assessment shall determine the structural strength of each road, leading to assess the damage caused by increase in maximum allowable mass limit (under various AMMS levels) and resulting periodic and routine maintenance requirements.

The Western Australian Local Government Association (WALGA), in collaboration with the National Transport Research Organisation (NTRO), has recently developed an assessment tool and accompanying guidelines to calculate the incremental cost of additional freight movements on roads. This approach takes into account factors such as payload, vehicle type, and road classification.

At this stage, a payload-based road user charging system has not been incorporated into this RAV Network Plan. However, the City may consider implementing such a model in the future, particularly in relation to the Accredited Mass Management Scheme (AMMS), as a means of recovering the costs associated with road damage caused by vehicles carrying higher payloads.

Table 3 and 4 depicts the information pertaining to Restricted Access Vehicle categories and AMMS levels as stipulated by Main Roads Western Australia MRWA).

Table 3: RAV Categories (Tandem Drive Prime Mover, Trailer Combinations)

RAV Category	RAV Description		Max. Length	Max. Mass	Approved Network
Category 1	1A - Prime Mover, Semi-trailer & Pig Trailer or Dolly 1B – Prime Mover & Semi-trailer 1C – Short B-Double	1A / 1C	20m	50t	N1
		1B	19m	48.5t	
Category 2	2A - Prime Mover, Semi-trailer & Pig Trailer or Dolly 2B – Prime Mover & Semi-trailer 2C – B-double 2D – Short B-Triple 2E – Car Carrier	2A	27.5m	66.5t	N2
		2B	20m	48.5t	
		2C	27.5m	68.5t	
		2D	27.5m	88.5t	
		2E	25m	48.5t	
Category 3	3A – A-double		27.5m	85t	N3
Category 4	4A – A-double		27.5m	88.5t	N4
Category 5	5A – A-Double 5B – A-Double towing a Dolly 5C – B-Double towing a Dolly 5D – B-Triple	5A/5D	36.5m	85t	N5
		5B	27.5m + Dolly	85 t + Dolly	
		5C	27.5m + Dolly	68.5t + Dolly	
Category 6	6A – A-double 6B – B-Triple 6C – A-Double towing a Dolly	6A / 6B	36.5 m	88.5 t	N6
		6C	27.5 m + Dolly	88.5 t + Dolly	
Category 7	7A – AB-Triple 7B – BA-Triple		36.5 m	108.5 t	N7
Category 8	Refer to Tandem Drive Truck, Trailer Combinations				
Category 9	9A – A-Triple 9B – A-Double towing a Dolly 9C – BA-Triple 9D – AB-Triple	9A	53.5 m	121.5 t	N9
		9B	36.5 m + Dolly	85 t + Dolly	
		9C / 9D	45 m	108.5 t	
Category 10	10A – A-Triple 10B – Double B-Double 10C – ABB-Quad 10D – BAA-Quad 10E – AAB-Quad 10F – A-Double towing a Dolly	10A/ 10B/ 10C	53.5 m	128.5 t	N10
		10D/ 10E	53.5 m	148.5 t	
		10F	36.5 m + Dolly	88.5 t + Dolly	

Source: Tandem Drive Prime Mover Combinations, Restricted Access Vehicle (RAV) Categories, MainRoads, November 2024.

Table 4 provides an overview of RAV categories, their maximum allowable length, and mass limits under the AMMS. Unlike the previous table, which outlines the general RAV

classification and approved networks, this table incorporates different AMMS levels (Level 1, Level 2, and Level 3), which allow progressively higher mass limits for each RAV category.

Each AMMS level corresponds to an increased mass allowance based on specific conditions such as vehicle configuration, route assessment, and compliance with Main Roads WA requirements.

This table helps determine the appropriate RAV classification and mass limits based on the approved AMMS level for road network planning and heavy vehicle access

Table 4: Details of the AMMS Levels assessment

RAV Category	RAV Description		Max. Length	Max. Mass & Approval Network		
				Level 1	Level 2	Level 3
Category 1	1A – Prime Mover & Semi Trailer		19 m	50t	-	-
				N1.1	-	-
Category 2	2A – Prime Mover & Semi Trailer 2B - Prime Mover, Semi-Trailer & Pig Trailer or Dolly 2C – B-double	2A	20m	50.5 t	51.5 t	53 t
		2B	27.5 m	68.5 t	69.5 t	71 t
		2C	27.5 m	72 t	74 t	76.5 t
		All	-	N2.1	N2.2	N2.3
Category 3	3A – A-double		27.5 m	89 t	91 t	94 t
				N3.1	N3.2	N3.3
Category 4	4A – A-double		27.5 m	93.5 t	96.5 t	100 t
				N4.1	N4.2	N4.3
Category 5	5A – B-Double towing a Dolly 5B – A-Double 5C – A-Double towing a Dolly 5D – B-Triple	5A	27.5m-Dolly	72 t +Dolly	74 t +Dolly	76.5 t + Dolly
		5B/5D	36.5 m	89 t	91 t	94 t
		5C	27.5 m + Dolly	89 t + Dolly	91 t + Dolly	94 t + Dolly
		All	-	N5.1	N5.2	N5.3
Category 6	6A – A-double 6B – B-Triple 6C – A-Double towing a Dolly	6A/6B	36.5 m	93.5 t	96.5 t	100 t
		6C	27.5 m + Dolly	93.5 t +Dolly	96.5 t +Dolly	100 t +Dolly
		All	-	N6.1	N6.2	N6.3
Category 7	7A – AB-Triple 7B – BA-Triple		36.5m	115 t	119 t	123.5 t
				N7.1	N7.2	N7.3
Category 8	There are no Category 8 RAV for AMMS					
Category 9	9A – A-Triple 9B – A-Double towing a Dolly 9C – AB-Triple 9D – BA-Triple	9A	53.5 m	127.5t	130.5t	135 t
		9B	36.5m + Dolly	89 t +Dolly	91 t + Dolly	94 t +Dolly
		9C/9D	45 m	115 t	119 t	123.5 t
		All	-	N9.1	N9.2	N9.3
Category 10	10A – A-Triple 10B – A-Double towing a Dolly	10A /10C /10D	53.5 m	136.5 t	141.5 t	147 t

	10C – Double B-Double 10D – ABB-Quad 10E – AAB-Quad	10B	36.5+ Dolly	93.5 t +Dolly	96.5 t + Dolly	100 t + Dolly
		10E	53.5 m	158 t	164 t	170.5 t
		All	-	N10.1	N10.2	N10.3

Source: Accredited Mass Management Scheme (AMMS), Tandem Drive Prime Mover, Trailer Combinations, Restricted Access Vehicle (RAV) Categories, MainRoads, May 2022.

3.4 Recent and Planned Road Improvements

The following Road improvement projects within the existing RAV network have been either completed recently or are in the planning stage. These upgrades aim to enhance road safety, traffic flow, and heavy vehicle accessibility. The key projects include:

Recently Completed Projects

1. Mandurah Road (Dixon Road to Office Road)

   Sealed shoulders and painted median as part of a State Black Spot safety improvement initiative.

2. Mandurah Road (Fifty Road to Safety Bay Road)

   Raised median, sealed shoulders, and street lighting as part of a State Black Spot project.

3. Mundijong Road Realignment and Safety Upgrades between Telephone Lane and Duckpond Road in 2024/25 and 2025/26.

   Realignment and installation of street lighting and crash barriers under a State Black Spot project.

   Upgrade includes:

   Installation of street lighting to Category V standards.

   Crash barriers on both sides of the road.

   Raised median with median crash barrier for improved safety.

Planned and Ongoing Projects

4. Baldivis Road / Kulija Road Intersection 2026/27

   Planned to be upgraded to traffic signals over the coming years.

5. Mundijong Road Rehabilitation

   Road resurfacing from St Albans Road to 280m west of the Freeway, funded by MRRG Rehabilitation funding in 2025/26.

6. Kulija Road and Baldivis Road Duplication

A detailed design to be undertaken for constructing four-lane dual carriageway in 2026/27 and 2027/28 for the following sections. Construction timeframe is unknown at this stage.

Kulija Road between Mandurah Road and Kwinana Freeway.

Baldivis Road between Kulija Road and Kerosene Lane.

7. Parkin / Safety Bay / Point Peron / Hymus Intersection Upgrade to a roundabout
   Design in progress for intersection improvements.

These improvements play a crucial role in enhancing road safety, reducing congestion, and supporting heavy vehicle movements within the City's RAV network.

Way Forward

The RAV Network Plan provides a structured approach to managing heavy vehicle movements within the City, but ongoing developments, infrastructure growth, and policy changes will continue to shape the network in the coming years. To ensure long-term sustainability and efficiency, the following key actions must be considered:

- Evolving freight and road usage demands
    - Increasing industrial and commercial developments, particularly in East Rockingham and surrounding areas, may lead to a rise in heavy vehicle movements.
    - Future subdivisions and land-use changes may impact freight corridors, requiring periodic reviews of approved RAV routes.
- Infrastructure and road network enhancements
    - As part of the long-term vision, road widening, intersection upgrades, and improved pavement standards will be critical to accommodate higher mass limit vehicles safely.
- Climate and environmental considerations
    - The increased frequency of extreme rainfall events could lead to more road deterioration, requiring enhanced drainage design and more resilient road materials in future upgrades.

    - Noise and carbon emissions from heavy vehicles will need to be addressed through route optimization and potential adoption of lower-emission freight vehicles in the long term.
- Regulatory and legislative changes
    - Anticipated changes to Main Roads WA RAV route assessment guidelines or AMMS policies may necessitate adjustments to this plan.
    - Future state and federal transport policies, including heavy vehicle safety and emissions standards, will influence network approvals and conditions.
- Ongoing review and stakeholder engagement
    - This plan should be regularly reviewed (every five years) to ensure it aligns with emerging freight trends, road safety requirements, and industry needs.
    - Continued engagement with industry stakeholders, including transport operators, Main Roads WA, and local businesses, will be essential to proactively address network challenges.

By proactively addressing these factors, the City's RAV Network Plan will remain adaptable and supportive of efficient, safe, and sustainable heavy vehicle movement well into the future.

Following the analysis the City considers that below will remain the RAV network in the City for the duration of this plan. Following the construction of the listed road upgrade projects the RAV network plan will be reviewed in 2031.

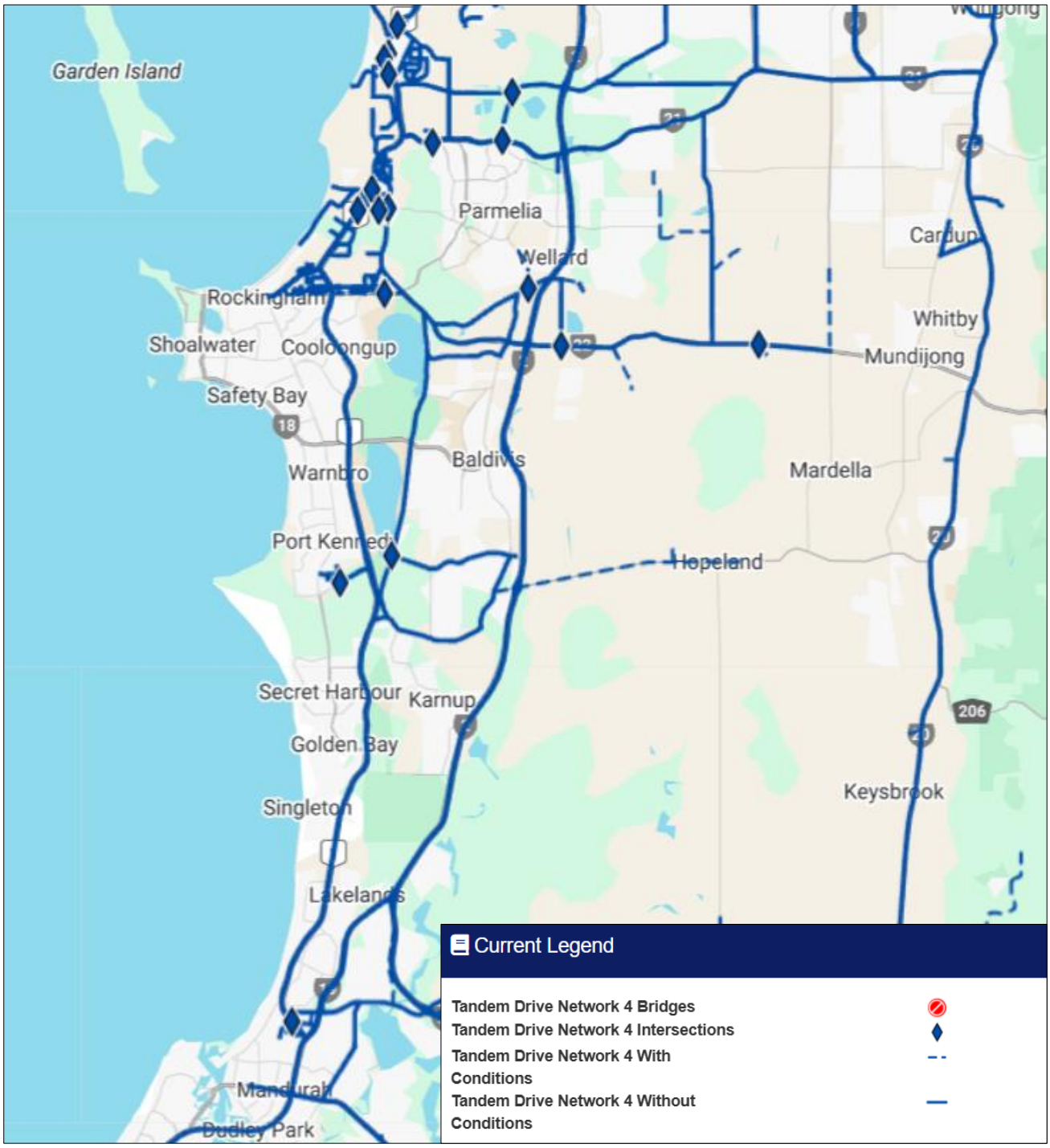


Figure 3: Approved RAV Network for 2025-2030

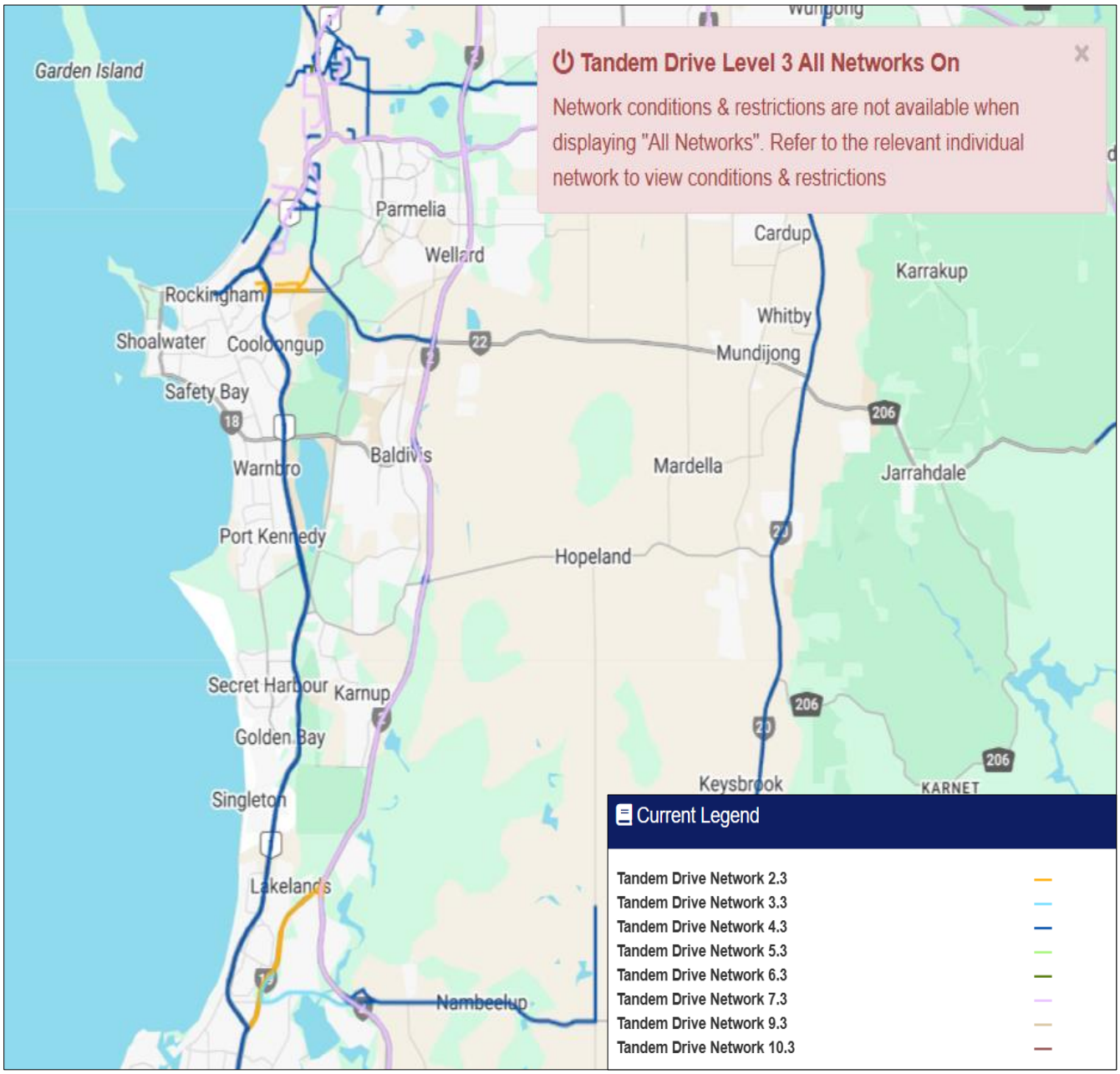


Figure 4: Approved RAV Network under AMM Scheme for 2025-2030

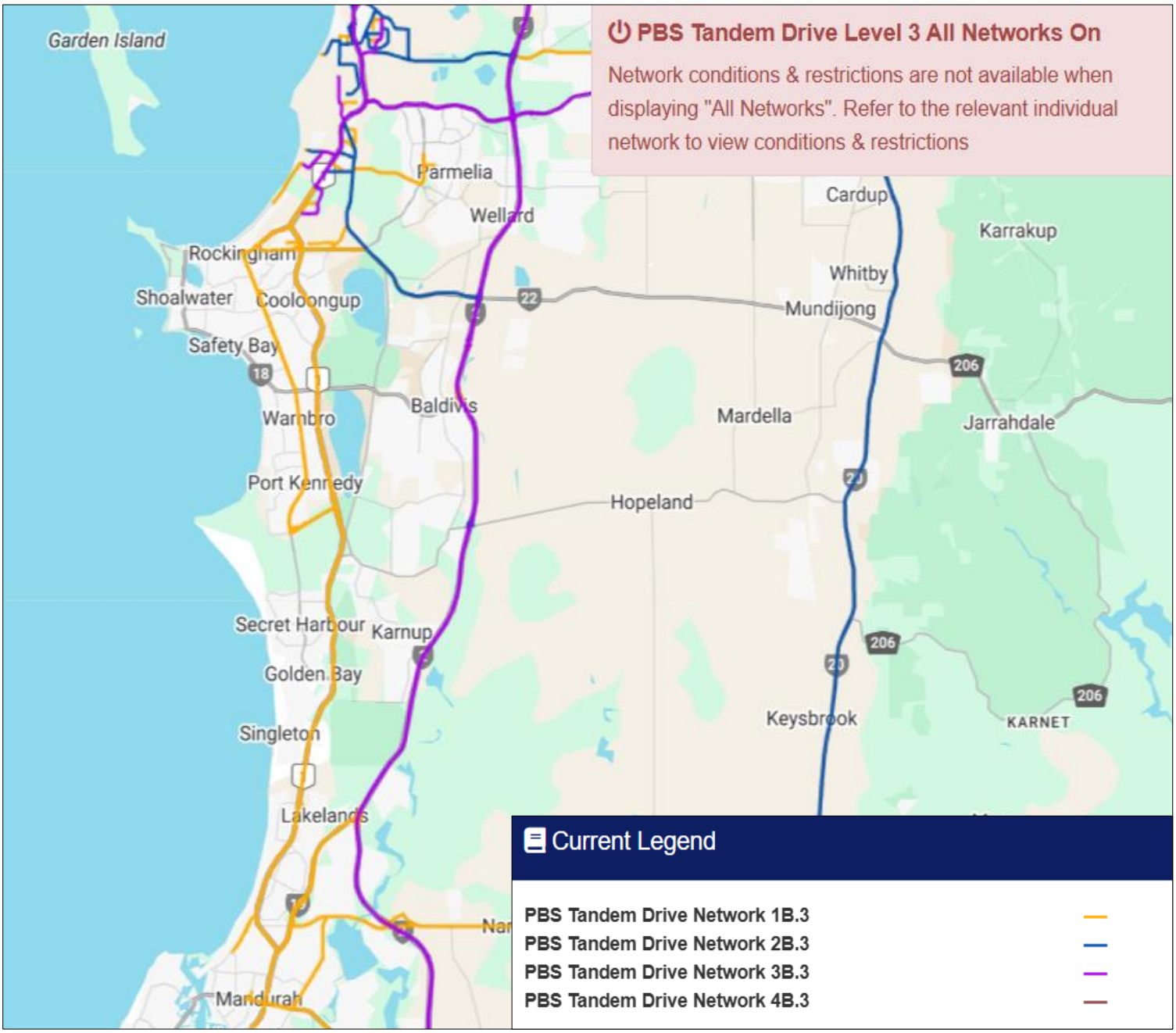


Figure 5: Approved RAV Network under PBS Scheme for 2025-2030

Measuring Success:

To ensure the effectiveness of the RAV Network Plan, a structured approach will be used to evaluate progress and outcomes. Key performance indicators will be tracked through data collection, annual reviews, and reporting to the Council.

What will be measured	RAV network plan and data collection (traffic data, crash data, new applications)
When it will be measured	Annually
How it will be reported to Council	Bulletin
What will be measured	Implementation of Actions
When it will be measured	By end of 2029

Risk Management:

Effective risk management is essential for the successful implementation of the RAV Network Plan. The following key risks have been identified, along with mitigation measures to minimize their impact:

Risk	Incomplete or unreliable data affecting decision-making		
Overall risk level	Minor	Impact Area	Network Planning
Action required	Implement a phased data collection approach, prioritizing high-impact routes first.		

Risk	Delays in road improvement projects due to funding constraints		
Overall risk level	Moderate	Impact Area	Project Delivery
Action required	Seek alternative funding sources and engage with relevant authorities for co-funding opportunities.		

Risk	Increased wear and tear on local roads due to higher mass limits		
Overall risk level	Minor	Impact Area	Asset Management
Action required	Implement a proactive maintenance strategy and monitor pavement performance regularly.		

Risk	Resistance from residents regarding road infrastructure changes		
Overall risk level	Minor	Impact Area	Community Engagement
Action required	Conduct public consultation if there are any changes to address concerns and improve transparency.		

Risk	Potential regulatory changes impacting RAV classifications		
Overall risk level	Minor	Impact Area	Compliance & Policy
Action required	Maintain ongoing communication with Main Roads WA to stay updated and adjust plans accordingly.		

Actions:

The following tables capture all actions identified in the Background, Way Forward, and Risk Management sections of the RAV Network Plan. These actions are categorized into actions with specific timeframes, responsible teams, and cost estimates. The table balance the vision, budget, and available resources to ensure practical and effective implementation.

Action	Timeframe	Team Responsible	Cost Estimate
Data collection on key freight corridors	Ongoing	Traffic Services Team	Officer Time
Track crash data and recommend necessary road treatments on key routes based on findings.	Ongoing	Traffic Services Team	Officer Time
Undertake condition assessment of RAV routes	Ongoing	Strategic Asset Management Team	Officer Time
Implement road maintenance strategy for higher mass vehicles and regular monitoring and updates	2026–2030	Civil Maintenance Team	Officer Time
Regular review of the RAV network to evaluate changes and adjust routes	Annually	Traffic Services Team	Officer Time
Monitor heavy vehicle performance on upgraded routes by continuous data tracking	Ongoing	Civil Maintenance Team	Officer Time
Consultation with stakeholders for policy updates, ensure alignment with regulatory changes	Ongoing	Traffic Services Team	Officer Time
Evaluation of environmental impacts (e.g., emissions, noise), review impacts and adjust actions accordingly	Ongoing	Environmental Team	Officer Time

Stakeholder Engagement:

The following table captures all internal and external stakeholders who have been involved in the development of the RAV Network Plan:

Stakeholder	Role/Contribution
Main Roads WA	Oversaw the regulatory framework for RAV access and provided approval for key routes.
Land Development and Infrastructure	Provided data on upcoming land developments and their impact on freight routes.
Strategic Planning Services	Coordinated the integration of RAV network planning into broader City planning.
Strategic Asset Management	Offered insights into asset management and long-term infrastructure sustainability.
Design Services	Provided input on road design and engineering specifications.
Infrastructure and Project Delivery Team	Contributed expertise on roads upgrades cost estimates
Civil Maintenance Team	Contributed expertise on road maintenance requirements.

References

1. Tandem Drive Prime Mover Trailer Combinations- Restricted Access Vehicle (RAV) Categories, *MainRoads, Western Australia, November 2024.* tandem-drive-prime-mover-trailer-combinations-restricted-access-vehicle-categories.pdf

2. Accredited Mass Management Scheme (AMMS) -Tandem Drive Prime Mover, Trailer-combinations, Restricted Access Vehicle (RAV) Categories, *Heavy Vehicle Services, MainRoads, Western Australia, May 2022.* accredited-mass-management-scheme-amms-tandem-drive-prime-mover-trailer-combinations-restricted-access-vehicle-categories.pdf

Appendix: Correspondence on RAV 7 in East Rockingham

The following email correspondence, titled "RAV 7 in East Rockingham – Update on Meeting Outcome of 15 July 2024," is included to provide a record of discussions and key outcomes from the meeting. This provides stakeholder input, considerations, and decisions relevant to the Heavy Vehicle Plan.

Email 1:

From:	City of Rockingham representative
To:	DevelopmentWA representatives, Chalk Property representative, Rockingham Kwinana Chamber of Commerce (RKCC) representative
Date:	16 July 2024
Subject:	RAV 7 in East Rockingham – Meeting outcome summary of 15 July 2024

Thank you for your time yesterday for discussing RAV 7 potential for the industrial precinct bounded by Chesterfield Rd/Mandurah Rd/Day Rd/Lodge Dr. Please find below the summary of our discussion. If I have missed anything, please feel free to reply to this email.
For the sake of clarity I am differentiating us as City of Rockingham (CoR) and other participants as industrial area representatives (IAR).

1. IAR explained the strategic context of the meeting particularly in respect to new development such as AUKUS and Westport. CoR advised that the City's Heavy Network Plan study in 2024/25 will consider whole City road network and long term plans for existing and future industrial developments.
2. CoR provided context of the heavy vehicle road network within the City and both parties agreed that Kulija Road between Kwinana Freeway and Dixon Road is not being considered for RAV 7 at this stage due to high traffic volume and existing safety concerns on a number of key intersections.
3. The discussion focused on the section of Mandurah Rd between Wellard Rd and Dixon Rd. CoR explained the Main Roads WA (MRWA) RAV network map to show where RAV 7 is currently permitted. It was noted that RAV 7 is not permitted on most roads within the City of Rockingham, Kwinana and Cockburn Roads. The key RAV 7 routes within the precinct are through Thomas Road and Patterson Road, both of which are State Government (MRWA) controlled roads. It was noted that other major arterial roads that supports industrial areas in the vicinity such as Anketell Rd, Wattleup Rd, Russell Rd are not supported for RAV 7 vehicles. A number of industrial areas within City of Cockburn, Fremantle and Canning vale industrial area are not serviced by RAV 7. RAV 4 is the most common Heavy vehicle network within the metropolitan area.
4. CoR advised that all possible upgrades to Mandurah Rd in the subject section has been undertaken in the last five years; however, there is a section between Office Rd and Day Rd where the City could not upgrade the road due to the presence of both high and medium pressure gas lines. ATCO undertook a study in 2022/23 which advised that relocation of the pipes will be required to progress the proposed road upgrade. The relocation of the pipelines are expected to be highly cost prohibitive.
5. In addition to the gas pipeline issues the City has two key concerns about the proposed RAV 7 vehicles. In absence of dual carriageway offering overtaking lane the City is concerned about road safety due to longer vehicles using the road. Additionally, the thickness of road pavement is inconsistent throughout the length. The section of Mandurah

Road north of Wellard Rd is within the boundary of City of Kwinana that allows RAV 7 vehicles. The difference in the road quality is visible between the different sections in Kwinana and Rockingham. It was also noted that Mandurah Rd within City of Kwinana boundary operates at 70Km/hr whereas most of the subject section operates at 80Km/hr.

6. CoR sought feedback from City of Kwinana and they have advised about the negative impact the RAV 7 have had on their road network.
7. Considering the above and noting that RAV 7 is already permitted on Patterson Rd and Alumina Rd the group discussed about the potential for a connecting road between Alumina Rd and Chesterfield Rd. CoR advised that no road reserve is currently gazetted in that alignment.
8. IAR shown keen interest in exploring the potential connection as the possible best outcome for access to the industrial area. CoR advised that it will consult its planning team and advise about the way forward on this matter **in a separate email**. It was discussed that the full structure plan may require a review as part of this process. **It is considered the high priority action out of this meeting at this stage.**
9. The long term strategic context of the freight network was discussed to confirm that MRWA have a plan to take responsibility of the freight route between the subject industrial area and planned Tonkin Highway extension. However, timeframe of such transition is unknown at this stage. CoR confirmed that CoR and Shire of Serpentine-Jarrahdale met with the Transport Minister regarding the long term freight network development and responsibility. **A separate email will be sent confirming who attended the meeting and the outcome.**

Email 2:

From:	Development WA representative
To:	City of Rockingham representatives, Chalk Property representative, Rockingham Kwinana Chamber of Commerce (RKCC) representative
Date:	13 August 2024
Subject:	RAV 7 in East Rockingham – Meeting outcome summary of 15 July 2025

Has the City been able to progress Items 8 and 9 from the below notes?

8. IAR shown keen interest in exploring the potential connection as the possible best outcome for access to the industrial area. CoR advised that it will consult its planning team and advise about the way forward on this matter **in a separate email**. It was discussed that the full structure plan may require a review as part of this process. **It is considered the high priority action out of this meeting at this stage.**
9. The long term strategic context of the freight network was discussed to confirm that MRWA have a plan to take responsibility of the freight route between the subject industrial area and planned Tonkin Highway extension. However, timeframe of such transition is unknown at this stage. CoR confirmed that CoR and Shire of Serpentine-Jarrahdale met with the Transport Minister regarding the long term freight network development and responsibility. **A separate email will be sent confirming who attended the meeting and the outcome.**

Email 3:

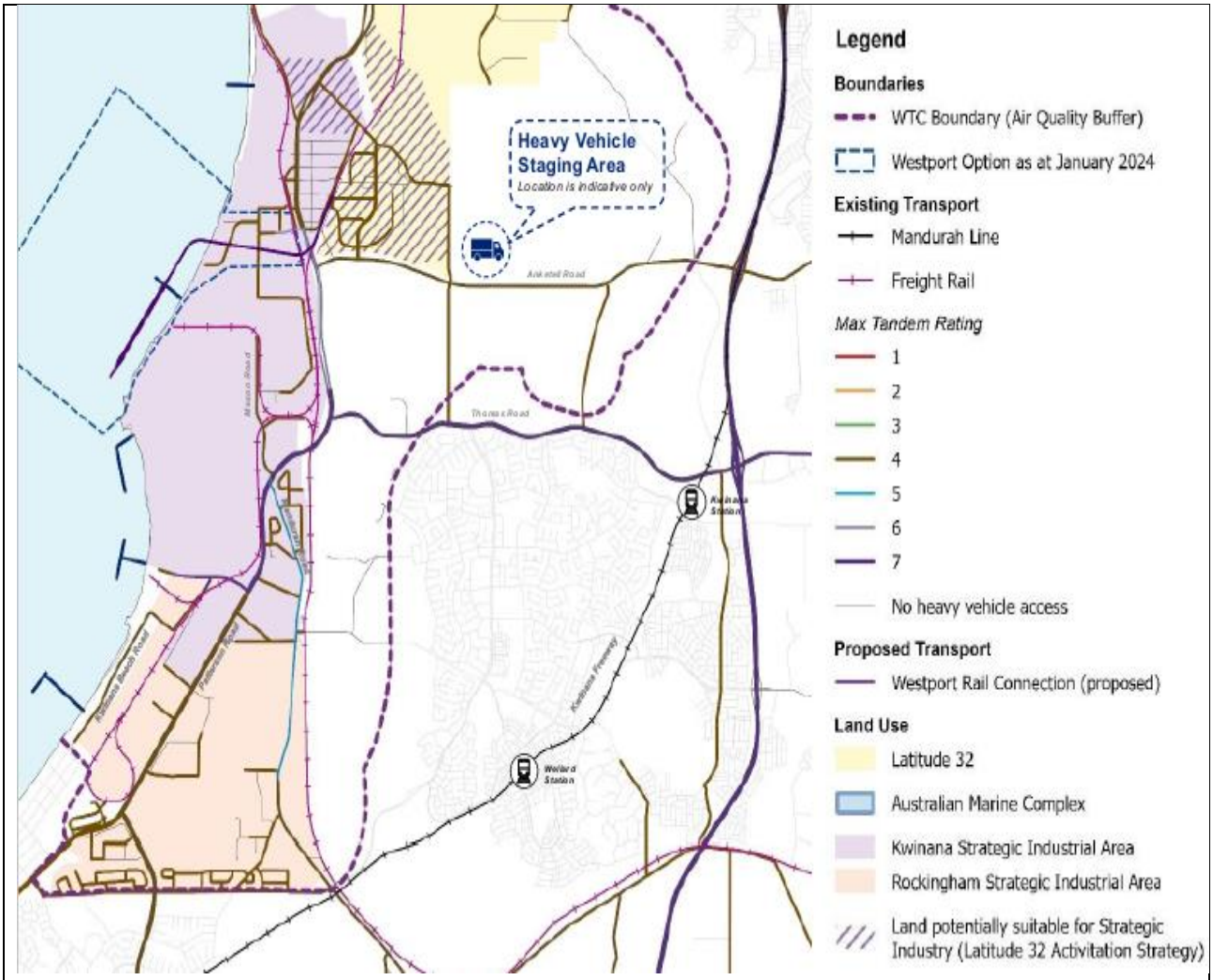
From:	City of Rockingham representative
To:	DevelopmentWA representatives, Chalk Property representative, Rockingham Kwinana Chamber of Commerce (RKCC) representative
Date:	21 August 2024
Subject:	RAV 7 in East Rockingham – Update on meeting outcome of 15 July 2024

Apologies for the time taken to respond and thank you for your patience. We had a number of internal discussions with a number of teams within the City to determine how we can best support you for item 8. While I have got a response for item 8 below, I am still waiting for some official information on item 9. I will provide that as soon as I receive it.

Item 8

Development WA is the major landowner of the State Government industrial land within the Rockingham Industrial Zone, and have prepared an updated quasi Structure Plan for the locality. The Plan shows a connection between Patterson Road to Mandurah Road along Alloy Avenue. It is noted that this access traverses land identified for the H2Perth proposal by Woodside, which is subject to a State Agreement, and resolution of this matter will determine whether the intended connection can be built. A connection south of the East Rockingham WWTP may be challenging due to the location of environmental offsets.

As a RAV7 network connection is a matter of State significance, this should be explored by Main Roads WA, Development WA and the Department of Jobs, Science, Tourism and Innovation (JSTI). It is noted that the Western Trade Coast Infrastructure Strategy (released yesterday) does not show a RAV 7 in the RIZ but it does recognise that beyond the defined corridors, there is also broader support for measures which improve freight efficiency within the State Infrastructure Strategy. As such, consideration of heavy vehicle routes it would be more directly determined and pursued through key State agencies and is beyond the remit of local planning.



While this is not considered to be a matter controlled by the City, a heavy vehicle connection between Patterson Road to Mandurah Road is supported.

Development WA will need to initiate the process to consider the provision of a road connection between Mandurah and Patterson Road that is cognisant of the known constraints. The City will be supportive of such a review. Please keep us informed about your actions. Once you advise us about your actions and proposed economic benefits of your proposal, the City is prepared to develop an advocacy recommendation for Council in support of your proposal (a Council report to support a connecting road).