



# **ROAD HIERARCHY FRAMEWORK FOR THE SHIRE OF YORK**

**A framework for road management and maintenance**

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## Introduction

The Shire of York is a rural area in Western Australia that covers an area of 2,133 square kilometres and has a population of ~3,459 according to 2021 census report published on Australian Bureau of Statistics. . The Shire has a network of 820 kilometres of roads, of which 320 kilometres are sealed and 500 kilometres are unsealed. The roads serve various purposes, such as providing access to properties, connecting outlying rural areas, supporting agricultural and tourism activities, and facilitating emergency services.

The current road network faces several challenges, such as aging infrastructure, increasing traffic volumes and loads, changing environmental conditions, limited funding, and competing priorities. These challenges affect the safety, efficiency, and sustainability of the road network and require a strategic approach to road management and maintenance.

The purpose of this document is to provide a road hierarchy framework for the Shire of York that will help to classify the roads according to their function, importance, and usage, and to allocate resources and service standards accordingly. The framework will also provide a basis for planning, operating, and maintaining the road network in a consistent and transparent manner. The road hierarchy will assist in managing community expectations, communicating priorities and justifying the priorities.

## Objectives

The intent of the road hierarchy is to provide minimum standards for construction and maintenance of roads within the Shire and to prioritise accordingly. The standards of maintenance and construction will represent the adopted Levels of Service (LOS) for each road within the Shire.

Specifically, the road hierarchy will provide the following:

- a guidance to staff in preparing annual budgets and allocating resources to road maintenance; and
- to define minimum standards for maintenance activities that balance the cost of ownership and construction against community expectations.

### Area of Application

All roads under the control or maintained by the Shire.

## Road Hierarchy Classifications

Main Roads Western Australia (MRWA) has established a road hierarchy to classify roads into several categories. According to the MRWA classification, roads managed by the Shire of York are limited to just three categories: Regional distributor, Local distributor, and Access Road. However, the majority of the Shire's roads are grouped under the broad category of Access roads.

While MRWA classifications provides a basic framework, it does not provide enough criteria to differentiate between the large number of roads in the Access Road category. This road hierarchy has categorised access roads into a further 8 categories based on their formation, intended use, capacity and overall significance. In total the Shire of York has identified 10 types of road hierarchy classifications, and each road class is based on function within the road network and level of connectivity it provides.

Road hierarchy classifications are essentially guidelines that sort roads into different categories. The purpose of organising roads in this way is to establish minimum standards for both construction and

maintenance for each category. These standards are represented by what is known as the Levels of Service (LOS) for each road. LOS will be discussed in detail further below. In simpler terms, it's a way to ensure that different types of roads receive the appropriate level of attention and care they need, based on justified requirements.

Shire of York Road Hierarchy Classifications are:

1. Regional Distributor Road
2. Local Distributor Road
3. Access Road Urban-Sealed
4. Access Road Rural Sealed
5. Access Road Rural Unsealed-A
6. Access Road Rural Unsealed-B
7. Access Road Rural Unsealed-C
8. Access Road Urban Unsealed
9. Access Road Rural Tracks-A
10. Access Road Rural Tracks-B

The road classifications and their description are provided below:

Table 1: Road Classifications

Road Structure	Classification Name	Classification Code	Classification Description
SEALED	Regional Distributor Road Priority-1	<b>RD</b>	These roads link significant destinations and are designed for efficient movement of people and goods within and beyond the local area. The standard of construction and maintenance for this category has the largest impact on overall road network efficiency. Sections of roads within this category are generally RAV rated to Tandem-drive 4.
	Local Distributor Road Priority-1	<b>LD</b>	Local distributor roads are the higher volume local roads within the rural areas. Generally, these roads provide the main link within the area to a regional distributor road or primary distributor road.
	Access Road Urban Sealed Priority-2	<b>ARUS</b>	Includes all the sealed roads within the York townsite.
	Access Road Rural Sealed Priority-3	<b>ARRS</b>	Includes all the sealed roads outside the York townsite. Includes sealed roads in other outlying townsites

UNSEALED	Access Road Rural Unsealed-A Priority-1	<b>ARRU-A</b>	Formed gravel roads that provide significant connection within a locality.
	Access Road Rural Unsealed-B Priority-2	<b>ARRU-B</b>	Formed gravel roads providing service to a number of properties and provides access to the expanded road network.
	Access Road Rural Unsealed-C Priority-3	<b>ARRU-C</b>	Formed gravel roads providing access to very low number of properties (less than 2)  Non-RAV rated access roads.
	Access Road Urban Unsealed  Priority-4	<b>ARUU</b>	Includes all the unsealed roads within the York townsite. Often are short extensions to sealed roads.
Unformed Roads	Access Road Rural Unformed -A Priority-1	<b>ARR-A</b>	Partly formed, partly unformed tracks that provide access to low number of properties.
	Access Road Rural Unformed-B Priority-2	<b>ARR-B</b>	Generally unformed tracks that have been used over time to provide access to one house/property. Includes forestry tracks.

A comprehensive list of all Shire roads categorised into the designated 10 classes is found in the Road Hierarchy Classification Table.

## Levels of Service

### What is Level of Service (LOS)?

Level of Service (LOS) encompasses the quality and condition of a built road, as well as the frequency of maintenance required to sustain its performance. Level of service (LOS) sets a minimum requirement on how often maintenance should happen on a specified category of road.

The Road Hierarchy Classification recognises that roads vary in their importance and function. Therefore, the level of service (LOS) for construction and maintenance is not a one-size-fits-all approach. Instead, it's customised to each of the ten classes of roads.

For instance, distributor roads have different standards compared to regional roads or access roads. The criteria for assessing LOS could include factors such as number of road users, roadway design and connectivity.

### Why is LOS required?

The Shire's ability to upgrade and maintain roads changes each year. Most funding for major projects

comes from grants, limiting where the money can be used. For instance, Regional Road Group funds are specifically for roads in the Regional Distributor category and cannot be used elsewhere.

As the same resources are used for both preventative and reactive maintenance, and the overall need outweighs the available resources, the Shire cannot address all needs promptly. A prioritisation process must be considered where each road hierarchy classification has a documented standard for maintenance.

Roads with higher levels of service requirements such as distributor or regional roads may need more frequent or intensive maintenance, while roads classified as tracks and trails may require less attention. Defined Level of Service ensures that there is transparency regarding road standards and a framework for annual works programs. This clarity helps everyone understand what level of service to expect from the roads within the Shire and it holds the Local Government accountable for meeting those standards.

### How will LOS be used?

The indicative level of service for each road category is outlined in the Tables below. The defined road class and associated level of service will serve as a guideline for prioritising resources to maximise efficiency and effectiveness.

Annually, a maintenance program is developed to allocate resources for road maintenance throughout the road network. Budget constraints means it is not achievable to address all maintenance needs on every road. When preparing the maintenance program, a list of maintenance activities will be identified for selected roads.

While guided by the Levels of Service, the maintenance program will also be influenced by various external factors. School bus routes will always have increased Levels of Service despite often being in a lower Road Category. External funding allocations, weather events, and regular road condition assessments may result in adjustments to the level of Service. These factors contribute to the dynamic nature of the maintenance program, enabling it to adapt to changing circumstances and priorities.

Road classification and their indicative LOS is provided in table below

Table 2: Levels of Service

Road Structure	Classification Name	Classification Code	Indicative Level of Service (LOS)
SEALED	Regional Distributor Priority-1	<b>RD</b>	<ul style="list-style-type: none"> <li>• Reseal once in 10 to 15 years.</li> <li>• Undertake Shoulder Grading of roads once in 2 years.</li> <li>• This category of road receives highest level of service amongst sealed roads.</li> <li>• Both these classifications of roads are considered an equal priority in terms of Level of Service.</li> <li>• Where warranted RAV category 4 rated roads may be upgraded to a wider paved carriage way of at least 10m carriageway and 8m seal width.</li> <li>• Urban roads in this category will be sealed with Asphalt rather</li> </ul>
	Local Distributor Priority-1	<b>LD</b>	

			than bitumen sealing where economical to do so.
	Access Road Urban Sealed Priority-2	<b>ARUS</b>	<ul style="list-style-type: none"> <li>• Reseal once in 15 to 20 years.</li> <li>• Undertake maintenance (Kerb, edge, shoulder, drainage and maintenance) as required.</li> <li>• Roads in this category should be provided with an Asphalt seal where under 1km in length and practical to do so.</li> </ul>
	Access Road Rural Sealed Priority-3	<b>ARRS</b>	<ul style="list-style-type: none"> <li>• Reseal once in 20 to 25 years.</li> <li>• Undertake Shoulder Grading of roads once in 5 years.</li> </ul>
UNSEALED	Access Road Rural Unsealed- A Priority-1	<b>ARRU-A</b>	<ul style="list-style-type: none"> <li>• Undertake summer and winter grade annually.</li> <li>• Additional grading as required.</li> <li>• This category of road should receive greater level of service than Unsealed B and C.</li> <li>• Roads in this category may be considered for sealing if traffic count data indicates a significant number of road users.</li> </ul>
	Access Road Rural Unsealed- B Priority-2	<b>ARRU-B</b>	<ul style="list-style-type: none"> <li>• Undertake grading at least once in 2 years. That is undertake grading for 50% of the roads in a single year.</li> <li>• This category of road should receive greater level of service than Unsealed C.</li> </ul>
	Access Road Rural Unsealed- C Priority-3	<b>ARRU-C</b>	<ul style="list-style-type: none"> <li>• Undertake Grading at least once in 3 years, that is only 25% of the roads in this category will be graded in a year.</li> </ul>
	Access Road Urban Unsealed Priority-4	<b>ARUU</b>	<ul style="list-style-type: none"> <li>• There are no planned grading or maintenance activities for these roads.</li> <li>• Only 5 km in total</li> </ul>

Unformed Roads	Access Road Rural Unformed -A Priority-1	<b>ARR-A</b>	<ul style="list-style-type: none"> <li>No scheduled grading for this category of road</li> <li>If there is a need for reactive maintenance, Access Rural Tracks-A will be given priority over Access Rural Tracks-B</li> </ul>
	Access Road Rural Unformed-B Priority-2	<b>ARR-B</b>	<ul style="list-style-type: none"> <li>No scheduled grading for this category of road</li> <li>These roads will be considered for rationalising and where not required closed as a public road.</li> </ul>
SCHOOL BUS ROUTES			<ul style="list-style-type: none"> <li>School bus routes are included in many of the sealed and unsealed roads categories listed above.</li> <li>School bus routes will receive special consideration and will have increased Levels of Service in accordance with the relevant Priority 1 category.</li> <li>As these routes change annually, they are not designated as a separate category but are still acknowledged within each relevant category.</li> </ul>

### **Additional notes on LOS**

- School bus routes will be prioritised to highest priority for grading and other maintenance activities within their respective categories.
- An adjustment in level of service for grading unsealed roads will provide an opportunity for additional planned maintenance activities and the Shire to focus efforts on improving our higher priority roads.
- Additional maintenance tasks, such as vegetation pruning, weed spraying, culvert inspection and cleaning, routine bridge maintenance, and clearing table drains, will be performed as determined in the Annual works program. Priorities for these tasks will be reflective of the priorities within the road hierarchy.
- The road hierarchy table will be referred to for prioritisation of all future works.
- The road hierarchy will serve as the foundation for prioritising major capital works, including the resealing of sealed roads and the gravel resheeting of unsealed roads.
- Resealing, resheeting and reconstruction on roads will be prioritised by roads which acquire external funding contributions such as through Regional Road group or other funding sources.

## Maintenance Activities

A range of key maintenance activities will be included in the annual works program. Key maintenance items include:



**Reseal:** Resealing involves applying a new layer of bituminous material (such as asphalt or bitumen) over the existing surface of a sealed road. This helps to restore the road's waterproofing and skid resistance properties, as well as to protect the underlying pavement from damage caused by weather, traffic, and aging. Resealing is typically done to extend the lifespan of the road and improve driving conditions. This will be delivered by external contractors.

**Shoulder Grading:** Shoulder grading involves leveling and shaping the shoulders of sealed roads. The shoulders are the areas beside the roadway, typically composed of gravel or compacted soil, which provide additional space for vehicles to manoeuvre and serve as a buffer between the road and adjacent terrain. Grading the shoulders helps maintain their integrity, drainage capacity, and safety for drivers, and pedestrians. It also restores form and function to table drains. Shoulder Grading work will be conducted in house.

**Maintenance Grading:** Unsealed roads are maintained by periodic maintenance grading undertaken throughout the year. Maintenance Grading work will be conducted in house.

*Winter maintenance grading* is undertaken to provide a good running surface and to form cross-falls in the road (pulling gravel to the middle of the road), so that water can run off and does not pool. Water pooling on roads cause potholes when vehicles drive through them. Moisture is a critical component in maintenance grading, which is best done just after light rainfall, however, the weather cannot be controlled.

*Summer maintenance grading* is often done to remove corrugations and improve the running surface by pushing gravel off the middle section of the road.

**Gravel Resheeting:** Unsealed roads lose gravel over time and require the placement of additional gravel. This process is gravel resheeting and involves placing an additional >100mm of compacted gravel on top of the existing road. Gravel Resheeting work will be conducted in house.

**Vegetation Pruning:** Vegetation Pruning involves selective trimming or cutting back of plants, trees, shrubs, and other vegetation within the transport corridor. All work must be conducted in accordance with the Environmental Protection (Clearing of Native Vegetation) Regulations 2004. The purpose of this activity is primarily to enhance safety and maintain visibility for drivers and pedestrians. Vegetation pruning will be partially conducted in-house and partially delivered by contractors.

**Drain cleaning:** This maintenance activity involves inspection of culverts and removal of existing debris, sediment, and other obstruction from culverts installed beneath the roadways. This will prevent flooding by allowing water to flow freely from one side to the other and helps preventing localised flooding and damage to the road surface. Additionally, this helps early identification of cracks and deterioration on culverts and plan for its repair accordingly. The Shire will manage drainage cleaning with its own workforce, involving contractors for specialised tasks.

**Weed Spraying:** This maintenance activity involves spraying of weed control chemicals along roadsides to manage the growth of unwanted vegetation. This process helps to prevent weeds and other plants from encroaching on roads, sidewalks, and other infrastructure, which can impede visibility, create safety hazards, and damage road surfaces. Weed spraying will be conducted annually on all the roads as a part of maintenance programs to ensure the safety and functionality of transportation corridors.

## Evaluation and Review

The Road Hierarchy including road classifications and the levels of service will be reviewed annually based on incoming data such as outcomes from the traffic counter program, community requests and feedback and the resources available in the annual works program.

Formal evaluation and review will be conducted in conjunction with the review of the Asset Management Plans.

## Road Hierarchy Classification Table

The '*Road Hierarchy Classification Table*' illustrates all Shire of York roads under the designated classifications.

## Conclusion

The Road Hierarchy provides a clear and transparent view of how the Shire of York intends to manage the whole road network. It allocates resources and actions to where they can deliver a cost-effective result that meets community needs.

The Levels of Service allocated in this Framework are the minimum standards the Shire will strive for. By creating annual workplans that are informed by the Road Hierarchy the Shire will aim to achieve safety and efficiency improvements and a sustainable road network.