

Shire of Morawa

Road Maintenance and Renewal Plan 2025-2035

Adopted 21 November 2024



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Document Control

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Executive Summary

The development of the 2025-2035 Road Maintenance and Renewal Plan represents a significant milestone for the Shire in articulating how its current and future resources are being used to manage its existing road assets.

Whilst community members have a strong desire for the Shire to implement road improvements and widening initiatives to accommodate larger vehicles, the core requirement for the Shire and this plan is to maintain its existing assets to an adequate standard based on what is reasonable and practicable given the Shire's resources and the capacity for the community to contribute towards the Shire's own source income to fund expenditure.

This plan provides a clear program of works for rural road grading, rural road re-sheeting, rural road resealing, and townsite resealing, with a further goal to develop clear plans for auxiliary road items such as drainage, signage, and safety features over the next 10 years.

The Shire has developed a road grading program that aims to undertake 1,788km of maintenance grading per annum. This program focusses on RAV and school bus routes to provide a base standard that delivers a safe running surface. The Shire administration will report the amount of km's graded each year as part of the Shire's annual report to ensure the community has visibility over compliance with the agreed program.

The gravel re-sheeting program seeks to cover 94km of road over the next 10 years. With nuances such as gravel haulage distances, vegetation growth, and subgrade degradation affecting the Shire's ability to complete set distances each year. The re-sheeting program will be reviewed on an annual basis with the corporate business plan as the Shire falls ahead or behind on the scheduled works. The plan reflects an intention to re-sheet approximately 11.5% of the unsealed road network over the next 10 years.

The resealing of roads is a key renewal activity that ensures the road does not deteriorate beyond renewal and require reconstruction. The Shire of Morawa is responsible for approximately 155km of sealed roads, with 90% of these sealed km's being outside of the Morawa townsite. Best practice would suggest sealed roads would be resealed every 10-15 years, however due to Morawa's lower traffic numbers and low rainfall, the proposed plan has been based on a 20-30 year reseal timeframe, as Shire roads are expected to last longer than best practice modelling suggests. The Shire will continue to monitor road conditions and review plans on an annual basis.

The rural road resealing program presented aims renew the running surface of 66km of the network, which is approximately 50% of the overall sealed rural road network.

The townsite resealing program aims to complete almost 8.5km of resealing over the next 10 years, which equates to about 50% of the townsite road network. Crack sealing has already been completed in 2024 to allow some of this work to commence, however some roads will require tree root ingress removal under road maintenance prior to their resealing year.

Holistically the resealing, maintenance grading, and gravel re-sheeting aspects of the plan are expected to be more than any grant income the Shire can source as such there will be a clear need for own source expenditure on roads. Appendix 1 shows the full cost and income breakdowns for each segment of this plan, as well as a summary of own source needs. With current own source allocations of around \$750,000 - the average annual increase needed to deliver this plan would be \$292,717 - which results in Shire own source allocation towards road renewal and maintenance of \$1,042,717.

With the Shire of Morawa Road Network being worth \$87m and depreciating at \$1.3m per annum,

sizeable maintenance and renewal expenditure on this asset can be expected, however the Shire must balance this with the need to continue to improve the network and also to maintain and renew its other assets. The Shire Road network represents 65% of its total asset base.

The estimates in this plan will inform the Corporate Business Plan and strategic planning documents and form the basis upon which the Annual Budget is developed, noting that the Annual Budget allocation and reseal delivery capacity will be based on a number of factors including current market conditions.

Introduction

The Shire of Morawa is about 396 kilometres north of Perth and 153 kilometres inland from Geraldton. The district covers 3,528 km² of agricultural and pastoral farmland, mining leases, Crown land and townsites, and is within the Yarra catchment area. The landscape varies from large flat plains to rolling hills and rugged breakaway country. Approximately 12.8 km² of land is salt-affected or salt lakes. Soil types are primarily York Gum soil (light/heavy), interspersed with Salmon Gum clay. The climate is hot and dry with the cooler winter months generating an abundance of wildflowers across the region.

The Shire manages an extensive network of community assets and infrastructure with Road Infrastructure accounting for a gross asset value of \$87m, which is 54% of the Shire's total gross asset values across all asset categories. The road network is approximately 971km long, with around 816km being unsealed gravel roads.

Main Roads WA is responsible for the care and maintenance of Wubin-Mullewa Road and Mingenew-Morawa Road, both sealed roads of State and local significance. All other roads in the district are under the care and maintenance of the Shire.

The Shire is cognizant of the need to upgrade and improve the road infrastructure network, however, due to the significant cost implications involved with road upgrades, the Shire is limited to aligning upgrade works to funding availability. This plan will not address road upgrade projects, and the Shire will address road upgrades during the annual Corporate Business Plan review process, and in line with State and Federal funding requirements.

The Shire of Morawa's Road Maintenance and Renewal Plan (The Plan), will be separated into distinct sections to provide a summary of maintenance and renewal activities that align to particular road types or attributes:

- Unsealed roads
- Sealed roads
 - Rural
 - Town Streets
- Drainage

This plan has been developed based on the Shire's experience in maintaining its road network, feedback from key stakeholders, visual condition assessment data collected in 2023, and with reference to industry publications including:

- ARRB Road Materials Best Practice Guide
- ARRB Sealed Roads Best Practice Guide
- ARRB Unsealed Roads Best Practice Guide

Funding Sources

The available funding sources for the Shire to fund road maintenance works are limited. In general, they comprise:

- Main Roads WA Direct Grant and Financial Assistance Grant Road Component
 - Untied funding that can be used on road maintenance or upgrades but does not need to align to any specific project but reduces the Shire's own source road contribution, which is assessed as part of the Roads to Recovery process.
- Regional Road Group (RRG)
 - Administered by Main Roads WA (MRWA), these grants are available to fund either capital road upgrade, renewal, or preservation work on roads within the Roads 2040 list.
 - The grant provides 2/3rd of the funds, and the Shire provides 1/3rd of the funds, up to a maximum project value of \$450,000.
- Roads to Recovery (R2R)
 - Administered via the Department of Infrastructure, Transport, Regional Development, Communication and the Arts
 - The program runs on a 5-year cycle with the new cycle commencing in the 2024/2025 financial year.
 - The Shire's funding allocation for 2024-2029 is \$3,186,502
 - The grant provides 100% of the funds and can fund a wide range of road upgrade or maintenance projects.
- Commodity Routes Fund
 - Commodity Routes are defined as routes where there is a significant high-priority transport task associated with the transport of a commodity such as grain, timber, agricultural lime, iron ore, etc. The funding is intended for roads that require upgrading or maintenance to accommodate the commodity transport function.
 - Only roads that are NOT eligible for RRG funding are eligible for this funding.
- Blackspot Funding
 - Funding specific to address hazards on road networks identified either because of previous crashes or through Road Safety Inspections
- Shire Own Funds
 - Sourced from Shire rates and other revenue.
 - Can be used towards a wide range of road upgrade, renewal, or maintenance projects.

Roads 2040

The following roads within the Shire are on the Midwest Roads 2040 List and are therefore eligible for RRG funding.

- Franco Rd
- Gutha West Rd
- Gutha East Road (Wubin-Mullewa Rd to Morawa Yalgoo Rd)
- Morawa South Rd
- Morawa Yalgoo Rd
- Nanekine Rd
- Pintharuka West Rd
- Three Springs Morawa Rd
- Tropiano Rd

RAV Routes

The Shire currently has various roads approved for Restricted Access Vehicles (RAV) up to RAV 7 (up to 36.5m in length).

The below roads currently have no RAV rating:

Roads
Barnes St
Broad Av (West of Dreghorn St)
Caldwell Rd
Catto Rd
Caulfield Rd
Club Rd
Croot St
Davis St
Dreghorn St (South of Prater St)
Gill St
Granville St
Grove St (LHS)
Grove St (RHS)
Harley St
Heitman Rd
Jukes Place (East of Sports Ground gate)
Kadji Rd
Kadji Mellenbye Rd
Knight Rd
Kowald Rd
Laneway A
Laneway B
Laneway C
Laneway D
Laneway E
Laneway F
Lodge St
Manning St
Muthingootha Rd
Orango Rd
Pintharuka East Rd

Powell St
Prater St
Richter Av
Ross Rd
Rothsay Rd
Ryan Rd
Sermon Rd
Sparks Rd
Streets Rd
Tilley St
Tubby St
Unknown Rd 158
Unknown Rd 160
Unknown Rd 162
Winfield St (South of White Av)
Yewers Av

All other roads are rated for vehicles ranging from RAV 1 to RAV 4, except the below roads that are rated RAV 5 to RAV 7

Only the following roads in the Shire:
Agar Rd
Boss Rd
Broad Av (100m from Wubin Mullewa Rd)
Burma Rd
Burton Rd
Calver Rd
Carlsruhe Rd
Franco Rd
Gaston Rd
Koolanooka South Rd
Malcolm Rd
Morawa South Rd
Morawa Yalgoo Rd
Nanekine Rd
Norton Rd
Offszanka Rd
Old Mullewa Rd
Old Three Springs Rd
Pintharuka West Rd

Three Springs Morawa Rd
Yammapool Rd
Yongarloo Rd

The Shire’s maintenance and renewal program gives consideration to the current RAV rating of each road and will be updated to reflect any RAV changes. Specifically, unsealed roads that are part of the RAV 5 or greater network receive at least 2 maintenance grades per year.

The ratings documented and provided within this plan should not be relied upon as they can be altered and updated by Main Roads Heavy Vehicle Services.

RAV ratings and associated conditions can be reviewed on the Main Roads Heavy Vehicle Services Network Map - <https://mrwebapps.mainroads.wa.gov.au/hvsnetworkmap>

Unsealed Roads

Unsealed road running conditions are heavily dependent on the environmental conditions (traffic, weather, geography, and weights) they are exposed to as well as their original construction material.

The Shire has approx. 816km of unsealed road comprising a combination of paved (gravel sheeted), formed (natural in-situ material without gravel sheeting) and unformed roads (natural in-situ material). Of this total unsealed network, the following roads or road segments totalling approx. 42.6km is not regularly maintained. This leaves a total of approx. 773km of unsealed roads to maintain.

Road Name	Start	End	Approx Length (km)
Hills Rd	Sermon Rd	End of Road	1.97
Kadji Mellenbye Rd	Yalgoo Shire Boundary	Kadji Rd	20.12
Kadji Rd	Kadji Lake Rd	Kadji Station Homestead	13.52
Laneway A	End of Seal	Broad Ave	0.15
Laneway B	Caulfield St	Broad Ave	0.20
Laneway C	White Ave	Slk 0.18	0.18
Laneway C	Slk 0.36	Caulfield St	0.14
Laneway D	White Ave	Prater St	0.18
Laneway E	Valentine St	Stokes Rd	0.74
Laneway F	Evans St	Stokes Rd	0.51
Lloyd St	Waddilove Ave	End of Road	0.16
Murray Rd	Slk 1.8	End of Road	4.35
Unknown Rd 158	Wubin Mullewa Rd	Koolanooka South Rd	0.35

Table 1: Unsealed roads either not maintained or not regularly maintained

The Shire's two main mechanisms for managing unsealed roads are through maintenance and renewal, through the use of maintenance grading and gravel re-sheeting.

Maintenance Grading

Scope

Unsealed road maintenance grading aims to maintain the surface but also the appropriate shape (cross-section) and drainage considerations. A grader can remove defects by cutting or ripping the road surface. The pavement material is then mixed and re-formed to the correct shape (cross fall or slope) - this allows water to drain more freely off the road.

The Shire does not have enough spare capacity to regularly inspect the unsealed road network, therefore the maintenance grading program needs to be principle based to allocate resources across 12 months. Should the principles in this plan be insufficient to maintain the network then the Shire must consider whether the assumed principles are sufficient. The general principles used in the development of the maintenance grading plan are as follows:

- No through roads that provide access for less than 5 properties receive 1 grade per year
- Roads part of a school bus route receive 3 grades per year. Currently, the roads within the school bus route are as follows:
 - Agar Rd
 - Boss Rd
 - Carslake Rd
 - Collins Rd
 - Dreghorn Rd
 - Evaside Rd
 - Fabling Rd
 - Gutha West Rd
 - Madden Rd
 - McDonald
 - McWhirter Rd
 - Mickie Rd
 - Milloy Rd
 - Morris Rd
 - Norton Rd
 - Olden Rd
 - Pintharuka West Rd
 - Sermon Rd
 - Stephens Rd
 - Williamson Rd
- Roads maintained as part of the Shire’s agreement with Karara Mining are graded 4 times per year with an optional fifth grade depending on the condition of the road. These works are charged to Karara Mining as private works and comprise the following roads:
 - Fallon Rd (Munckton Rd to Koolanooka Springs Rd)
 - Koolanooka Springs Rd
 - Mungada Rd
- Roads that are part of the RAV 5 - 7 network receive a minimum of 2 grades per year
- Roads that are not covered by the principles outlined above have had their grading frequency determined based on a combination of anecdotal information, feedback from key stakeholders and visual condition assessments.

The maintenance grading plan is summarised in the table below.

Roads receiving 1 grade per year			
Road Name	Start	End	Length (Km)
Barr Rd	Yammapool Rd	East Boundary	2.05
Bayliss Rd	Neates Rd	End of Road	3.06
Caldwell Rd	Pallotine Rd	Northern Shire Boundary	1.66
Catto Rd	Yammapool Rd	Yongarloo Rd	3.48
Cox Rd	Indar Rd	End of Road	2.16
Heitman Rd	Nanekine Rd	Streets Rd	7.84
Knight Rd	Koolanooka South Rd	Gaston Rd	2.16
Kowald Rd	Offszanka Rd	End of Road	5.09
Malcolm Rd (B)	Wubin Mullewa Rd	Malcolm Rd	0.87

McGlew St	Rubbish Tip Rd	Valentine St	0.19
Moore Rd	Fallon Rd	End of Road	1.75
Murray Rd	Munckton Rd	Slk 1.8	1.80
Newnham Rd	Gerber Rd	End of Road	5.31
Old Neagle St	Stokes Rd	Cemetary Gates	0.40
Powell St	Burton Rd	Start of Seal	0.03
Ross Rd	Wubin Mullewa Rd	Evaside Rd	3.49
Rubbish Tip Access Rd	Stokes Rd	Rubbish Tip	2.59
Ryan Rd	Moffet Rd	Boss Rd	4.83
Sparks Rd	Morawa Yalgoo Rd	End of Road	2.85
Taseff Rd	Fitzgerald Rd	Gutha East Rd	8.13
Unknown Rd 160	Gutha East Rd	Evaside Rd	0.38
Unknown Rd 162	Koolanooka Springs Rd	End of Road	1.45
Valentine St	McGlew Rd	Start of Seal	0.02
Waddilove Rd	End of Seal	End of Road	0.13
Wilton Rd	Nanekine Rd	Western Shire Boundary	3.10
Yewers Av	Start of Road	Start of Seal	0.02
Total Road KMs receiving 1 Grade Per Annum			64.84
Roads receiving 2 grades per year			
Road Name	Start	End	Length (Km)
Arrinooka Rd	Wubin Mullewa Rd	Mullewa Shire Boundary	13.18
Barnes Rd	Robinson Rd	Gutha West Rd	4.61
Baxter Rd	Jones Lake Rd	Norton Rd	4.64
Bell Rd	End of Seal	Evaside Rd	19.02
Bickford Rd	Gutha East Rd	Sermon Rd	7.60
Bligh Rd	Neates Rd	Three Springs Shire Boundary	2.04
Bore Rd	Johnson Rd	Gutha East Rd	8.05
Broad Rd	White Rd	Pintharuka West Rd	4.36
Burma Rd	Morawa Mingenew Rd	White Rd	6.47
Burton Rd	End of Seal	Powell St	0.57
Calver Rd	Morawa South Rd	Perenjori Shire Boundary	10.70
Club Rd	End of Seal	End of Road	0.53
Coaker Rd	Boss Rd	White Rd	3.73
Croot Rd	North East Canna Rd	Northern Shire Boundary	5.74
Fallon Rd	Perenjori Shire boundary	Koolanooka Springs Rd	8.13
Fallon Rd	Slk 11.07	Krummel Rd	5.44
Fitzgerald Rd	Morawa Yalgoo Rd	Ludlow Rd	10.31
Gaston Rd	Calver Rd	Wubin Mullewa Rd	4.06

Gerber Rd	North East Canna Rd	End of Road	5.59
Healy Rd	Wooltana Rd	Mingenew Morawa Rd	4.16
Hoey Rd	Jones Lake Rd	Munckton Rd	4.65
Holder Rd	Toohey Rd	Gutha East Rd	5.22
James Rd	Mingenew Morawa Rd	Start of Seal	4.08
Jenkins Rd	Gerber Rd	Northern Shire Boundary	8.57
Johnson Rd	Bell Rd	Morawa Yalgoo Rd	11.43
Jones Lake Rd	Slk 9.08	Slk 10.27	1.19
Jones Lake Rd	Slk 10.68	Judge Rd	1.38
Judge Rd	Jones Lake Rd	Fallon Rd	5.27
Kadji Lake Rd	Morawa Yalgoo Rd	Kadji Rd	11.47
Koolanooka Dam Rd	Koolanooka South Rd	Jones Lake Rd	5.47
Koolanooka South Rd	Norton Rd	Southern Shire Boundary	7.16
Krummel Rd	Fallon Rd	Kadji Lake Rd	5.61
Letterbox Rd	White Rd	Pintharuka West Rd	3.65
Locharda Rd	Fallon Rd	Perenjori Shire Boundary	8.31
Ludlow Rd	Kadji Lake Rd	Gutha East Rd	11.71
Malcolm Rd	End of Seal	Southern Shire Boundary	5.01
Moffet Rd	Pintharuka West Rd	Morawa Mingeneu Rd	11.37
Muthingootha Rd	Gutha East Rd	Bell Rd	5.03
Neates Rd	End of Seal	Yongarloo Rd	13.50
North Rd	Bell Rd	Johnson Rd	5.01
Old Mullewa Rd	Bell Rd	Morawa Yalgoo Rd	3.03
Old Three Springs Rd	End of Seal	Three Springs Morawa Rd	14.00
Orango Rd	White Rd	Pintharuka West Rd	3.70
Pallotine Rd	North East Canna Rd	Western Shire Boundary	4.36
Pintharuka Dam Rd	Wubin Mullewa Rd	Bell Rd	5.12
Pintharuka East Rd	Wubin Mullewa Rd	Bell Rd	4.42
Pulbrook Rd	McDonald Rd	Gerber Rd	5.10
Robinson Rd	Indar Rd	Wubin Mullewa Rd	11.42
Rothsay Rd	Wubin Mullewa Rd	Morawa Yalgoo Rd	7.99
Rubbish Tip Rd	McGlew St	Jones Lake Rd	1.66
Stokes Rd	End of Seal	Rubbish Tip Access Rd	1.02
Streets Rd	Western Shire Boundary	Nanekine Rd	12.13
Swanson Rd	Williamson Rd	Toohey Rd	5.35
Tait Rd	Olden Rd	Fallon Rd	2.78
Tilley St	End of Seal	McGlew St	0.28

Toohey Rd	Holder Rd	Stephens Rd	8.23
Tubby Rd	Robinson Rd	Mickie Rd	3.03
Valentine Rd	Three Springs Morawa Rd	Three Springs Morawa Rd	8.13
Vandeleur Rd	Moffet Rd	Wubin Mullewa Rd	7.96
Ways Rd	Fabling Rd	Canna North East Rd	6.98
White Rd	Moffet Rd	Orango Rd	12.74
Williams Rd	Wubin Mullewa Rd	Moffet Rd	7.00
Winterbourne Rd	Mingenew Morawa Rd	Vandeluer Rd	4.13
Wooltana Rd	Old Three Springs Rd	Three Springs Morawa Rd	4.07
Wornes Rd	Wubin Mullewa Rd	Williams Rd	2.63
Yammapool Rd	Neates Rd	Mingenew Morawa Rd	9.30
Yandanoo Springs Rd	Gutha West Rd	Indar Rd	2.00
Yongarloo Rd	Mingenew Morawa Rd	Shire boundary	4.99
Total Road Distance Receiving 2 Grades Per Annum			427.57
Roads receiving 3 grades per year			
Road Name	Start	End	Length (Km)
Agar Rd	White Rd	Morawa Mingeneu Rd	6.81
Boss Rd	Ryan Rd	Agar Rd	4.17
Canna North East Rd	Fabling Rd	Jenkins Rd	19.12
Carlake Rd	Pintharuka West Rd	Pintharuka West Rd	6.97
Collins Rd	Carlake Rd	Gutha West Rd	7.79
Dreghorn Rd	End of Seal	Coaker Rd	3.62
Evaside Rd	End of Seal	Slk 8.7	8.43
Fabling Rd	Offszanka Rd	Williamson Rd	12.20
Franco Rd	Pintharuka West Rd	Morawa Mingeneu Rd	9.97
Gutha East Rd	Ludlow Rd	Wubin Mullewa Rd	22.22
Gutha West Rd	Wubin Mullewa Rd	Slk 10.84	10.84
Gutha West Rd	Slk 11.17	End of Road	4.33
Indar Rd	End of Seal	Gutha West Rd	14.86
Madden Rd	Morawa Yalgoo Rd	Holder Rd	8.96
McDonald Rd	Morris Rd	End of Road	8.00
McWhirter Rd	Madden Rd	End of Road	8.10
Mickie Rd	Wubin Mullewa Rd	End of Road	5.47
Milloy Rd	Gutha West Rd	Pintharuka West Rd	12.11
Morris Rd	Williamson Rd	McWhirter Rd	8.08
Norton Rd	Wubin Mullewa Rd	Olden Rd	7.91
Olden Rd	Norton Rd	Tait Rd	1.92
Pintharuka West Rd	End of Seal	Western Shire Boundary	29.09
Sermon Rd	Morawa Yalgoo Rd	Eastern Shire Boundary	7.20

Stephens Rd	Evaside Rd	Fablings Rd	10.42
Tropiano Rd	Gutha West Rd	Pintharuka West Rd	6.12
Williamson Rd	Fablings Rd	Morris Rd	11.23
Total Distance of Roads Receiving 3 Grades Per Annum			255.94
Roads receiving 4 grades per year			
Road Name	Start	End	Length (Km)
Fallon Rd	Koolanooka Springs Rd	Slk 10.99	2.86
Koolanooka Springs Rd	Start of Road	End of Road	9.46
Mungada Rd	Koolanooka South Rd	East Shire Boundary	12.74
Total Distance of Roads Receiving 4 Grades Per Annum			25.06

Table 2: Summary of unsealed maintenance grading schedule

Resourcing

Frequency of Grade per Annum	Distance (km)	Total (Distance times Frequency) (km)
Once	64.84	64.84
Twice	427.57	855.08
Three Times	255.94	767.82
Four Times	25.06	100.24
Total Maintenance Grading Program		1,787.98

Based on the principles above, the Shire's maintenance grading program totals approx. 1,788km per year.

Allowing for all employee entitlements (weekends, RDOs, annual leave, training and safety activities) and an estimate for scheduled and unscheduled downtime of the machines, each maintenance grader with operator is expected to be able to complete approx. 198 days of maintenance grading per year. Based on the Shire's historical records, each grader can typically complete an average of 5km of grading per day when allowing for maintaining both the road carriageway and roadside drainage elements. As such one maintenance grader should cover 990km per annum. To perform the maintenance grading program as proposed, the Shire needs to employ two maintenance grader drivers and ensure they run the machines for 179 days per annum.

If the two graders work for the predicted 198 days, then they can undertake maintenance on an extra 190km of road. This provides a contingency of approx. 10% surplus capacity which the Shire can use to complete additional maintenance of the network depending on need or provide extra capacity in the road renewal or upgrade teams.

This level of maintenance is based on an average level of usage commensurate with the road design and construction. Heavy traffic, excessive vehicle speeds, and extreme weather conditions all undermine the road condition and have not been accounted for. Any abnormal or excessive usage will utilize the contingency kms and may require the suspension of construction activities to undertake maintenance if the roads become uncharacteristically damaged.

Funding

Unsealed rural road maintenance grading needs to be funded from the Shire's own source funding as there are few, if any available grant funding opportunities.

Based on 2024-2025 costings, the cost of the Shire manning and operating a grader per day is approximately \$1,600. Thus, operating two graders for 179 days, which is the minimum to complete the proposed schedule of works, the Shire will incur a cost of around \$573,000 in 2024-2025, and this can be expected to increase by 4-10% per annum depending on the changes in salaries, fuel costs, parts, and grader replacement over the next decade. To accommodate the extra 19 days per grader contingency, the Shire would need to set a minimum budget of \$633,600 for the unsealed road maintenance grading in 2025/2026. If the 2025/2026 cost is extrapolated over the 10-year period with a annual inflation rate of 4% then the 2034/2035 budget allocation would need to be \$901,810.

Gravel Re-sheeting

Scope

The Shire also plans to undertake reforming and re-sheeting activities for various unsealed roads. Reforming and re-sheeting is required to renew the running surfacing of the unsealed road as gravel or insitu material wears away over time due to environmental conditions including weather and traffic. In order to undertake renewal works the Shire generally applies 100 millimetres of compacted crushed rock (gravel) to the road surface and compress that material into the road surface, then form the road and material to manage road drainage, creating a 10m wide surface (8m running surface and 1m of drainage/runoff each side).

Based on the principal of road safety the Shire will focus its gravel re-sheeting (renewal) works towards roads that are school bus routes, as well as those roads that require extra maintenance due to the road subgrade being formed out of natural (in-situ) material that is no longer holding form under current traffic conditions.

The re-sheeting of a road generally requires the movement of gravel material from a pit to a worksite, grading the material, and rolling, as such renewal activities will also be orientated around where the Shire can find a reliable gravel source to reduce unnecessary vehicle movements.

The roads identified for renewal over the next 10 years are:

- Collins Road - completion of works commenced prior to 2024.
- Arrinooka Road - Slk 1.06 to 14.2 - formed from in-situ material and has rocks protruding the running surface
- Norton Road - completion of works commenced prior to 2024.
- Malcolm Road - Slk 0.03 to 5.06 - formed from in-situ material and regular movements during harvest often result in severe corrugation and blow outs.
- Old Three Springs Road - Slk 5.90 to 14.13 - formed from in-situ material and provides a strategic link from Three Springs Road to Mingenew Morawa Road, most of the road has already received gravel resheeting just not this section.
- Canna North East Road - Slk 12.66 to 19.57 - formed from in-situ material and corrugates badly every year due to truck movements. The rest of the road has already been re-sheeted.
- Fabling Road - Slk 0.49 to 9.12 - formed from in-situ material, provides access to Canna CBH site and generally corrugates badly over harvest.
- Yammapool Road - Slk 0.00 to 9.30 - formed from in-situ material and is occasionally used as a school bus route.
- Moffet Road - Slk 0.00 to 3.50 - formed from in-situ material, provides a link to Mingenew Morawa Road during harvest and has soft spots during winter that pose a safety risk.
- Pintharuka West Road - Slk 2.48 to 25.14 - part of Roads 2040 but currently is lower on the list of priorities than Morawa Yalgoo Road, Nanekine Road, and Three Springs Road, thus sealing works on this road may not occur for 10+ years. As such it is recommended that the Shire undertake pre-sealing clearing, reforming, and re-sheeting over the 10 years of this plan and then review

upgrade requirements.

- Franco Road - Slk 0.00 to 9.97 - formed from in-situ material, provides access to Mingenew Morawa Road from Pintharuka West Road, part of Roads 2040, and well utilized route for Gutha/Pintharuka residents heading west to Mingenew or Geraldton.

Resourcing

The Shire's Road renewal and construction team will generally contain two truck drivers, one general plant operator, and one grader driver to operate the necessary machines to deliver a variety of projects including gravel re-sheeting works.

Allowing for all employee entitlements (weekends, RDOs, annual leave, training and safety activities) and an estimate for scheduled and unscheduled downtime of the machines, the road construction and renewal team should be available as a full four person team for approx. 180 days per annum, based on everyone being available for 198 days each but noting sick leave and annual leave being taken at different times etc. thus impacting the availability of the full team.

Given the team also completes road upgrades and improvements works, as well as drainage, aerodrome maintenance, and town street improvement works etc. it is proposed that only one half of their available time be allocated to gravel re-sheeting. Therefore providing 90 days of full team operations in this area.

The time taken to re-sheet a section of road is difficult to determine as it will be dependent on the location of the gravel pit and truck travel times, vegetation clearing needed, gravel quality available, as well as the existing condition of the subgrade and how much work is needed to renew its condition.

For the purposes of this plan the road allocations have been estimated based on the team being capable of completing 9-10km of re-sheeting works in the 100 days available. This isn't fixed, and based on the factors above may fluctuate but using this assumption the below timeframes have been allocated to the selected roads:

Road	SLKs	KM Target Per Annum										Total KM Re-sheeted per road	
		25/2 6	26/2 7	27/2 8	28/2 9	29/3 0	30/3 1	31/3 2	32/3 3	33/3 4	34/3 5		
Collins Road	0.00 to 2.00	2											2
Pintharuka West Road	2.48 to 25.14		5	5	3	3	3	4					23
Moffet Road	0.00 to 3.50											4	4
Fabling Road	0.42 to 9.12									5	4		9
Franco Road	0.00 to 9.97							5	5				10
Yammapol Road	0.00 to 9.30								4	4	1		9
Old Three Springs Road	5.90 to 14.13				3	3	3						9
Malcolm	0.03 to	4	1										5

Road	5.06											
Arrinooka Road	1.06 to 14.20		4	5	4							13
Canna North East Road	12.66 to 19.57					3	3	1				7
Norton Road	6.16 to 7.90	2										2
Olden Road	0.00 to 1.00	1										1
Total Re-sheeting per annum		9	10	10	10	9	9	10	9	9	9	94

Funding

Based on 2024-2025 costings operating a four-person road construction and renewal team including the associated plant items costs approximately \$6,000 per day. The Shire pays \$1.10 (incl. GST) per ton to local farmers for gravel used in re-sheeting projects, which equates to around \$1,800 per km. Thus, a 100 day 9-10km program is expected to cost \$558,000 per annum at 2024/2025 costs. If costs are extrapolated based on an annual 4% inflation rate, then by 2034/2035 this same program can be expected to cost \$795,000.

The Shire would normally utilize roads to recovery funding to complete gravel re-sheeting works. The 2024 to 2029 funding allocation is \$3,186,502, which if used evenly over a 5-year period will equate to \$637,300 per annum. Given the Shire utilized \$175,740 from the roads to recovery funds in 2024/2025 for drainage improvements on Winfield Street, this only leaves a remaining allocation of \$3,010,762, which equates to \$602,152 per annum. This is roughly expected to be the amounts required to offset this program until 2028/2029. After which point a new funding allocation will be provided by the Federal Government, in order to only fund gravel re-sheeting with road to recovery funds over that period the Shire would need the next funding allocation to represent an 11% increase to become \$3.5m. This seems reasonable but it is hard to predict what will occur so this plan will need to be reviewed in 4 years' time once Road to Recovery allocations is known.

Sealed Rural Road Maintenance

Scope

The Shire has approx. 121km of two-lane sealed roads and 17.9km of single-lane sealed roads outside of the Morawa townsite.

The general scope for maintaining the Shire's rural sealed roads comprises:

- Crack sealing and pavement repairs
- Resealing
- Unsealed shoulder maintenance (including two-lane and single-lane sealed roads)

Crack Sealing and Pavement Repairs

A crack sealing, pothole filling, and pavement repair programs are typically prepared immediately prior to progressing the work and is typically procured on a linear metre rate. The scope of the annual repairs will be determined by a number of factors including traffic, weather, hazards reported etc. The Shire will generally engage a contractor to perform these works on an annual basis depending on the scope and budget available.

Areas requiring regular repair, may have their priority for resealing elevated.

Resealing

The ARRB best practice manual for sealed roads will be used as the Shire's practical guide for planning reseals. In general, sealed roads require a reseal every 15 years, however this should be verified with visual inspections and assessments particularly for surface texture and seal brittleness, noting the Morawa climate and traffic usage isn't standard.

Unsealed Shoulder Maintenance

Typically, the frequency of unsealed shoulder maintenance is higher for single-lane sealed roads than two-lane sealed roads due to the impact of traffic on the narrow-sealed carriageways.

Shoulders are maintained to keep run off areas safe, maintain adequate drainage, retain compaction to minimize debris being dragged on to the road running surface, and manage vegetation ingress.

Note, given the length of Morawa Yalgoo Rd and Three Springs Morawa Rd, various sections will require crack sealing, pavement repairs and resealing at varying times.

Resourcing

Given the specialist nature of the scope required, the Shire will need to contract out the crack sealing and resealing work.

Depending on other commitments and priorities, the Shire will either complete the pavement repairs using the Shire's work crew or contract resources.

The Shire's work crew will complete the unsealed shoulder maintenance as part of maintenance grader operations. This will utilize some of the contingency days retained from unsealed road grading operations.

The Shire plans to reseal the below roads over the next 10 years:

Road Name	Approx Length (km)	Planned Reseal Year
Jones Lake Rd Stage 1	4.8	2025/2026
Jones Lake Rd Stage 2	4.8	2026/2027
Munckton Rd Stage 1	8.13	2026/2027
Canna North East Rd	0.45	2027/2028
Gutha East Rd	0.49	2027/2028
Morawa Yalgoo Rd (southern end)* Stage 1	5.5	2027/2028
Munckton Rd Stage 2	6	2027/2028
Offszanka Rd	3.06	2027/2028
Fabbling Rd	0.56	2028/2029
Gutha West Rd*	0.33	2028/2029
Morawa Yalgoo Rd (southern end)* Stage 2	5	2028/2029
Morawa Yalgoo Rd (southern end)* Stage 3	5	2029/2030
Morawa Yalgoo Rd (southern end)* Stage 4	5	2030/2031
James Rd	0.02	2031/2032
Morawa Yalgoo Rd (southern end)* Stage 5	4.5	2031/2032
Arrinooka Rd	1.01	2032/2033
Nanekine Rd* Stage 1	5	2032/2033
Nanekine Rd* Stage 2	4.5	2033/2034
Nanekine Rd* Stage 3	4.4	2034/2035

The above plan will result in just over 68.5km of road being resealed.

Funding

There are typically limited funding opportunities for sealed road maintenance and/or renewal activities such as crack sealing and resealing for roads that are not part of the Roads 2040 list.

For those roads on the Roads 2040 list (denoted by the * in the table above), regional road group project funding is currently capped at \$450,000 per project, thus the Shire plans to break these roads into numerous stages to maintain the eligible budget for funding. Given the competitive nature of the RRG funding and the need for reasonable traffic count data, the Shire will likely only pursue reseal funding for Morawa-Yalgoo, Morawa-Three Springs, and Nanekine Roads given they are longer and more well used than other routes and should be able to justify the funding allocation. The main issue will arise when the Shire pursues a road improvement, widening, and sealing project under RRG funding for another road on Roads 2040, these projects always score higher than resealing works and as such may reduce the Shire's capability to undertake resealing. This plan recommends the Shire focus on renewal activities over the next 10 years and forego improvement works. Alternatively, the Shire could advocate that the North Midlands RRG alter its funding model to allocate a fixed amount of funds to each eligible local government to use on eligible roads, then it could be evenly split between improvement and resealing.

For those roads not part of the Roads 2040 list, the Shire proposes to utilise own source revenue and/or funding from the R2R program.

The Shire’s current road agreement with Karara Mining Ltd. states that upon the termination of the Shire’s agreement with Sinosteel, which occurred several years ago, the ongoing maintenance and resealing responsibility for Munckton Road would pass on to Karara Mining Ltd. As such the inclusion of Munckton Road in the road resealing has been accounted for with the assumption that the cost of resealing this road will be borne by Karara Mining Ltd. barring any legal disputes.

The table below shows the total year on year predicted cost for the 10-year resealing plan based on calculating the estimated number of square metres per annum and multiplying it by a reseal rate that is factored up per annum based on a predicted inflation rate of 5%.

The base 2024/2025 rate used for the basis of calculations was \$10 per m², which is based on current market expectations and factoring in a buffer for preliminaries such as mobilization, demobilization, and accommodation that is generally charged on top of the standard rate.

The 10 year rural road resealing plan aims to maintain the running surface of 49.3% of the rural sealed road network (68.5km).

	25/26 \$000s	26/27 \$000s	27/28 \$000s	28/29 \$000s	29/30 \$000s	30/31 \$000s	31/32 \$000s	32/33 \$000s	33/34 \$000s	34/35 \$000s
Estimated Cost for Reseals	352	997	1,132	501	446	469	445	576	488	501

Sealed Town Streets

Scope

The roads within the Morawa townsite comprise mainly bitumen spray-sealed roads with a few segments of asphalt surfacing and some short, unsealed segments. The total length of the sealed streets within the Morawa townsite is approx. 16.9km.

In 2024, the Shire completed a pavement repair and crack sealing program throughout the townsite. This work will extend the life of the sealed pavement and surfacing by minimizing the risk of water ingress into the sealed pavement which often significantly accelerates deterioration of the road carriageway, particularly under traffic, and can lead to potholes and pavement failures.

Over the next 3-4 years the Shire will also look to alleviate some of the road cracking generated by tree root ingress, this will occur simultaneously to resealing of roads not impacted by roots.

The resealing program for the town streets and the timing for the reseals is presented in the table below.

Road	Length (km)	Planned Reseal Year
Broad Av	0.49	2025/2026
Grove St (both sides)	1	2026/2027
Dreghorn St	0.68	2027/2028
Richter Av (both sides)	1	2028/2029
White Av	0.8	2029/2030
Harley St	0.17	2029/2030
Granville St	0.68	2029/2030
Prater St	0.75	2030/2031
Gill St	0.68	2031/2032
Winfield St	0.6	2032/2033
Stokes Rd	0.83	2033/2034
Caulfield Rd	0.75	2034/2035

Resourcing

Given the specialist nature of the crack sealing and resealing work, the Shire will need to contract out these works.

Depending on other commitments and priorities, the Shire will either complete the pavement repairs, root remediation, and other basic improvements using the Shire's work crew or contract resources.

Funding

It is estimated that the Shire will spend up to \$100,000 on townsite road maintenance from 2025-2028

addressing tree root ingress and preparing for the commencement of the resealing program on other roads with further crack sealing, root management, and other activities such as drainage improvements.

Town streets are often difficult to fund work for as they are typically ineligible for traditional funding sources (e.g. RRG). As such it is assumed that the townsite resealing program will be funded from own source expenditure, unless the Shire chooses to allocate roads to recovery funding to this area in-lieu of another area of this program.

The proposed townsite road resealing plan aims to reseal 8.41km of the townsite road network over a 10year period ending 2034/2035. With the remaining 8km being scheduled for the 2035-2045 version of this plan. The table below shows the proposed expenditure up to the 2034/2035 financial year:

All figures in \$000s	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	33/34	34/35
Estimated Cost for reseal	36	77	55	83	147	70	67	62	90	86

Drainage

Scope

Drainage maintenance typically comprises maintenance of roadside drainage elements including culverts, table drains, side entry pits and offshoot drains usually by way of removal of silt, vegetation and other debris that may restrict the flow or limit the capacity of the drainage system. It also includes ad-hoc repairs to kerbing as required.

For the unsealed roads, the maintenance of the table drains, and offshoot drains will be included as part of the routine maintenance grading program.

The Shire has an extensive inventory of culverts many of which do not currently receive regular maintenance. It is proposed that the Shire will commence a program of culvert maintenance on a road-by-road basis. Given the number of culverts (estimated at approx. 520 culvert structures) and the age of some of these assets, the Shire aims to progress this work over the full 10 years of this plan completing approx. 52 culverts per year. The scope will involve:

- Visual inspection of the culvert structure to confirm asset integrity
- Removal of debris and vegetation from the inlet and outlet and within the structure as required
- Basic shaping of the inlet and outlet to ensure the culvert is operating efficiently

It is expected that as part of this scope, the visual inspections will identify some additional repair or maintenance work needed for some structures. This will be assessed on an as-required basis.

Kerbing will be maintained and repaired on an as-required basis.

Resourcing

The Shire will progress most of the drainage work using the Shire's work crew. If specialist repairs are required (e.g. to concrete structures or similar), the Shire will likely contract out these works on an as-required basis.

Funding

General drainage maintenance work will be funded via the Shire's town street and rural road maintenance budgets. Should a culvert structure need to be replaced the Shire will need to budget for this expenditure at the time the visual inspection identifies the structure failing.

Ongoing Condition Data and Monitoring

The Shire recently completed a visual road condition assessment survey of its entire road network in 2023 using RACAS®, the Road Asset Condition Assessment System.

RACAS® is a specialised visual road assessment tool that collects high-definition imagery of the Shire's road network along with other key attributes such as road width and roughness and provides the Shire with a comprehensive visual record of the road network as at the date of the inspection. The data can be used for a variety of purposes including works planning, DRFAWA pre-disaster evidence and road condition assessments. The data is presented via an online Virtual Hub site which the Shire and its stakeholders can view via in a web browser.

As part of the Shire's ongoing commitment to maintain the Shire's road network to the appropriate standard, the Shire intends on updating the collected RACAS® data every 4 years.

The Shire will maintain interim data and monitoring using visual imagery taken by the Shire team when completing maintenance, renewal, or upgrade activities across the road network.

Appendix 1 – Program Costs and Income

	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031	2031/2032	2032/2033	2033/2034	2034/2035
Expenditure										
Sum of cost of Townsite Reseals	\$ 36,015	\$ 77,175	\$ 55,103	\$ 83,384	\$ 147,411	\$ 70,355	\$ 66,978	\$ 62,053	\$ 90,132	\$ 85,517
Sum of gravel re-sheeting	\$ 558,000	\$ 580,320	\$ 603,533	\$ 627,674	\$ 652,781	\$ 678,892	\$ 706,048	\$ 734,290	\$ 763,662	\$ 794,208
Sum of road maintenance	\$ 633,600	\$658,944	\$ 685,302	\$ 712,714	\$ 741,222	\$ 770,871	\$ 801,706	\$ 833,774	\$ 867,125	\$ 901,810
Sum of Estimate Cost for rural reseal	\$ 352,800	\$ 997,873	\$1,132,736	\$ 501,153	\$ 446,699	\$ 469,033	\$ 445,207	\$ 576,799	\$488,668	\$ 501,700
Cost of 10 Year Plan	\$ 1,580,415	\$2,314,312	\$2,476,674	\$1,924,925	\$1,988,113	\$1,989,152	\$2,019,939	\$2,206,916	\$2,209,587	\$2,283,235
Income										
Contribution from RRG			\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000
Contribution from Karara Mining Ltd. toward Munckton Reseal	\$ -	\$ 627,433	\$ 486,203							
Morawa Yalgoo Road Reseal Mining			\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000			

Contribution										
Contribution from R2R	\$ 637,300	\$ 637,300	\$ 637,300	\$ 637,300	\$ 662,792	\$ 662,792	\$ 662,792	\$ 662,792	\$ 662,792	\$ 689,304
Total Income for Roads	\$ 637,300	\$1,264,733	\$1,523,503	\$1,037,300	\$1,062,792	\$1,062,792	\$1,062,792	\$ 962,792	\$ 962,792	\$ 989,304
Difference (Own Source Requirement)	\$ 943,115	\$1,049,579	\$ 953,171	\$ 887,625	\$ 925,321	\$ 926,360	\$ 957,147	\$1,244,124	\$1,246,795	\$1,293,931