



# **Upper Yorke Road: Kulpara to Maitland**

Corridor Review





## Acknowledgement of Country

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We acknowledge and respect Aboriginal peoples as the state's first peoples and nations, and recognise them as traditional owners and occupants of land and waters in South Australia.

Further, we acknowledge that the spiritual, social, cultural and economic practices of Aboriginal peoples come from their traditional lands and waters, that they maintain their cultural and heritage beliefs, languages and laws which are of ongoing importance, and that they have made and continue to make a unique and irreplaceable contribution to the state.





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## Executive Summary

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This report provides an assessment of the Upper Yorke Road corridor on the Yorke Peninsula, focusing on the 48km section between Kulpara and Maitland. The objective was to evaluate recent upgrades between Arthurton and Maitland and determine the impact on AusRAP star rating of the corridor, whilst comparing to the current condition of the road between Kulpara and Arhurton. The analysis considers crash history, current road conditions, and potential improvements.

Despite low traffic volumes, RAA has received numerous concerns from the community regarding the section of Upper Yorke Road between Arhurton and Kulpara, highlighting issues such as the narrow width, rough surface, and close calls with oncoming traffic.

The AusRAP star rating between Kulpara and Arhurton is generally low, with over 90% of this section rated one-star. Recent upgrades between Arhurton and Maitland, which included shoulder sealing and pavement reconstruction, have improved the safety level for this section of road to mostly three stars.

The narrow road width, poor road alignment, and exposed roadside hazards contribute to challenging driving conditions and increased crash risks. The recent maintenance measures, such as surface profiling and shoulder grading should improve stormwater runoff and may assist drivers regaining control in road departure incidents.

The report emphasizes that crash history alone does not indicate road safety, and the AusRAP star ratings underscore the overall low level of safety the road currently provides. It recommends further improvements, including widening, shoulder sealing, and edge lines, as previously suggested in RAA's 2019 Yorke Peninsula Regional Road Assessment.

Based on the cost of the Arhurton to Maitland upgrade, RAA estimates that approximately \$16 million will be required to upgrade the Arhurton to Kulpara section to a similar standard as the Arhurton to Maitland section.

The findings of this report contribute to RAA's advocacy efforts to increase the AusRAP star rating of the state's regional road network in line with South Australia's Road Safety Strategy to 2031.

## Introduction

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Upper Yorke Road is a state maintained road corridor spanning about 103km on the Yorke Peninsula. It connects Port Broughton and Maitland, passing through the townships of Bute, Kulpara and Arthurton. The corridor is a gazetted b-double and PBS level 2A route.

Upper Yorke Road does not provide the most direct route between Port Broughton and Maitland, and as such, complete journeys along the road are considered infrequent. For the purposes of this review, the corridor has been divided into two sections: Port Broughton to Kulpara via Bute, and Kulpara to Maitland via Arthurton. This report only considers the Kulpara to Maitland via Arthurton section.

The objective of this report is to review the 48km section between Kulpara and Maitland, and evaluate recent upgrades between Arthurton and Maitland, in terms of AusRAP star rating. It also aims to provide an indicative star rating of the section between Kulpara and Arthurton.

In 2021, a \$6m upgrade was completed between Maitland and Arthurton that included shoulder sealing and pavement reconstruction for approximately 13km.

Also in 2021, RAA's most recent '*Risky Roads*' survey<sup>1</sup> was undertaken, receiving more than 2,100 nominations across the state. The section of Upper Yorke Road between Arthurton and Kulpara received the third highest number of nominations for regional roads, indicating a strong level of concern from the community about the condition of this stretch of road despite the low traffic volumes. The top issues raised included:

- Potholes, cracks or rutting (83% of nominations)
- Crumbling road edges (77% of nominations)
- Rough, slippery or loose surface (57% of nominations)

This section of Upper Yorke Road also received the most nominations in Grain Producers SA's '*Worst Grain Road*' survey<sup>2</sup>, in September 2022.

The current daily traffic volumes between Kulpara and Arthurton are relatively low, with approximately 140 vehicles per day travelling this section. Among these vehicles, around 12% are commercial vehicles including b-doubles. While the default speed limit for this section of road is 100km/h, a speed limit restriction of 80km/h applies to both b-doubles and semi-trailers (PBS level 1A) according to RAVnet heavy vehicle routing.

Traffic volumes between Arthurton and Maitland are almost four times higher, with approximately 500 vehicles per day travelling this section, of which 9% are commercial vehicles including b-doubles. According to RAVnet heavy vehicle network maps accessed on 23 May 2023, the 80km/h speed restriction for heavy vehicles still applies for the upgraded section.

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<sup>1</sup> RAA, 2022, *Risky Roads: 2021 survey results – report February 2022*, <[www.raa.com.au/riskyroads](http://www.raa.com.au/riskyroads)>.

<sup>2</sup> Grain Producers SA, *South Australia's worst grain road – 2022 report*, <<https://grainproducerssa.com.au/wp-content/uploads/2022/12/Worst-Grain-Road-Report-2022.pdf>>.

## Crash history

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Analysis of casualty crash data for this section of Upper Yorke Road between 2017 and 2021 showed that two casualty crashes occurred. These both happened at the northern extremity of this section, at the intersection with Copper Coast Highway in Kulpara.

In addition, a further three property damage crashes were reported in this timeframe. These crashes are as follows:

- A right-angle crash at the intersection with Kainton Road (Kainton)
- A rear end crash just south of the intersection with Kainton Road (Kainton)
- A collision with an animal between Polkinghorne Road and Honner Road (Arthurton)

The likelihood of crashes can be influenced by various factors such as traffic volume, driver behaviour, and environmental conditions. It is important to recognise that the absence of crash history on a road does not necessarily indicate that the road is safe.

## AusRAP star rating

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AusRAP star ratings consider various factors such as road geometry, speeds, hazards, and design features to assess the safety performance of road infrastructure. In its current condition, RAA estimates that at least 90% of the Arthurton to Kulpara part of Upper Yorke Road is rated one-star. Only a small portion of the road length is rated higher than one star, with this rating predominantly observed on the northern end of this section between Kulpara and Melton, where roadside vegetation is relatively sparse.

To simplify this star rating analysis, it is assumed within the star rating model that there are no intersections or property access points along the road section. It is also assumed that the road condition is rated “good”, and skid resistance, sight distance and curve quality are rated “adequate”. These are all the highest ratings for these factors in the star rating model, meaning the true star rating would typically be expected to be lower than the estimated rating. However, when fixing the ratings for these factors, the star rating of this corridor becomes highly dependent on width, curvature, and proximity to roadside hazards.

Between Arthurton and Kulpara, there are about four distinct cross-sections. The table below outlines the AusRAP star rating of these cross-sections, on both curved and straight sections, as well as the projected ratings should they receive an upgrade like the recent Arthurton to Maitland upgrade. This upgrade delivered minimum road geometry of 3.3m lane widths, 1.0m sealed shoulders, and the incorporation of centre and edge line audio tactile line markings (ATLM).

Table 1: Typical star ratings for various cross sections along Upper Yorke Road between Arthurton and Kulpara

Cross section ID	Cross section description	Current star rating		Projected star rating	
		straight	curve	straight	curve
1	Narrow width, trees or stobie poles 1-5m away from both edges	1	1	2	1
2	Narrow width, trees or stobie poles 1-5m away on one side, 5-10m away on the other side	1	1	3	2
3	Narrow width, trees or stobie poles 1-5m away on one side, and 10m+ away (or none) on the other side	2	1	3	2
4	Narrow width, with no roadside hazards present	3	3	4	4

The most commonly occurring cross-sections are 1 and 2, with cross section 3 being fairly uncommon, and cross section 4 mostly only present along the short section between Melton and Kulpara where roadside vegetation is less common.

Examples of these four cross sections between Arthurton and Kulpara are pictured below in Table 2.




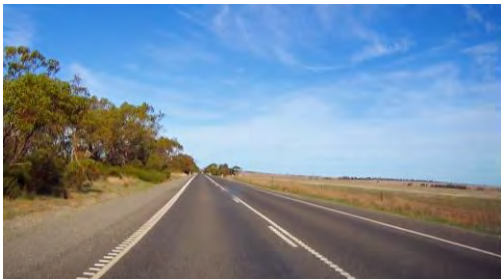

Table 2: Examples of typical cross sections on Upper Yorke Road between Arthurton and Kulpara

Cross section ID	Straight	Curve
1	 ★☆☆☆☆	 ★☆☆☆☆
2	 ★☆☆☆☆	 ★☆☆☆☆
3	 ★★☆☆☆	 ★☆☆☆☆
4	 ★★★☆☆	No examples exist



Table 3 below uses the upgraded section between Arthurton and Maitland as an example of how an upgrade road would appear between Arthurton and Kulpara.

Table 3: How upgraded sections would appear (using Arthurton to Maitland upgrade as an example)

Cross section ID	Straight	Curve
1	 <p>★★☆☆☆</p>	No examples exist
2	 <p>★★★★☆☆</p>	 <p>★★☆☆☆</p>
3	 <p>★★★★☆☆</p>	 <p>★★☆☆☆</p>
4	No examples exist	No examples exist

Based on the above tables and on-site observations, RAA considers that most of the 13km between Arthurton and Maitland is now rated three stars, as it is a mostly straight section of road that typically relates to cross section 2 or 3.

## RAA's previous recommendations

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Previous recommendations to improve safety on this section of Upper Yorke Road were included in RAA's *2019 Yorke Peninsula Regional Road Assessment*<sup>3</sup>. Recommendations relevant to the Arthurton to Kulpara section were as follows:

- Full reseal between Kulpara and Maitland including widening, shoulder seal and edge lines
- Increase lane widths to 3.3m
- Seal shoulders to a desirable minimum of 1.0m for sections without sealed shoulders

As a result of the Arthurton to Maitland upgrade, a significant portion of the corridor has seen recommended improvements adopted. These recommendations have now been implemented for more than one quarter of the running distance of the corridor, and due to higher traffic volumes between Arthurton and Maitland, have improved the level of safety for about 57% of vehicle kilometres travelled between Kulpara and Maitland.

## General Observations

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This section of Upper Yorke Road is characterised by narrow road width (as narrow as 5.5m), suboptimal alignment through curves, frequent crests, and a noticeable presence of roadside hazards along most of the road. These factors contribute to challenging driving conditions and increased likelihood of crashes occurring, and increased severity of crashes should they occur. The combination of narrow width, poor alignment, and exposed hazards highlights the need for improvements in terms of safety and design.

During our assessment, the unsealed shoulders were being levelled and graded. Grind markings on the pavement also indicated that surface profiling or corrective works have been undertaken recently improve crossfall. Low-cost maintenance measures, such as surface profiling and shoulder grading, enhance safety by reducing aquaplaning risk, improving vehicle control, and increasing the likelihood of drivers regaining control in road departure incidents.

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<sup>3</sup> RAA, 2019, Yorke Peninsula: Regional Road Assessment – April 2019, accessed at [www.raa.com.au/roadassessments](http://www.raa.com.au/roadassessments).



## Estimated Cost

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According to a media release on 5 March 2021<sup>4</sup> from the Member for Narungga, the 2021/22 upgrade between Artherton and Maitland cost \$6m and was funded by the state and federal governments. RAA's site investigations confirmed that these works spanned about 13km, which works out to a cost of approximately \$460,000 per kilometre. Given a similar road environment north of Artherton, it is reasonable to assume a similar cost to upgrade the 35km section, indicating that approximately \$16m in funding will be required to upgrade the Artherton to Kulpara section to an equivalent standard.

## Summary and recommendation

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In conclusion, based on the assessment and analysis conducted, RAA recommends upgrading the section of Upper Yorke Road between Kulpara and Maitland to achieve an AusRAP star rating of at least three stars. To accomplish this, road widening to obtain a cross section with 3.3m wide lanes and 1.0m wide sealed shoulders is required, along with the implementation of hazard protection and/or vegetation removal, particularly on curves.

These improvements are essential to enhance road safety and mitigate the challenges posed by the narrow road width, poor alignment, and roadside hazards present along the corridor. By implementing these upgrades, the road will provide a safer and more reliable transport corridor for all road users.

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<sup>4</sup> Fraser Ellis MP, 2021, *Long awaited start on a fix for Artherton to Maitland Road*, 05 Mar 2021, accessed at [https://www.fraserellis.com.au/long\\_awaited\\_start\\_on\\_a\\_fix\\_for\\_artherton\\_to\\_maitland\\_road](https://www.fraserellis.com.au/long_awaited_start_on_a_fix_for_artherton_to_maitland_road).

## Appendix A: Site investigation photos



Figure 1: A grader working on unsealed shoulders at the time of our 2023 corridor review



Figure 2: Grind marks indicative of recent surface profiling works





Figure 3: Typical geometry of Upper Yorke Road between Kulpara and Arthurton



Figure 4: Upgrades between Arthurton and Maitland were effective at increasing AusRAP star rating