28 July 2026
Job No: 1101614.1000

Bass Coast Shire Council
76 McBride Avenue
INVOICES TO: invoices@basscoast.vic.gov.au
Wonthaggi 3995

Attention: Deeraka Wijesekara

Dear Deeraka

Kilcunda Coastal Trail
Coastal erosion susceptibility assessment

1 Introduction

Bass Coast Shire Council (BCSC) engaged Tonkin & Taylor Pty Ltd (T+T) to undertake a site visit and review coastal erosion susceptibility of the rail trail in the vicinity of the Lionel Rose Carpark, Kilcunda. The existing rail trail is currently used as a walkway for pedestrians and cyclists, and is currently at risk of being subject to coastal erosion/instability. Figure 1.1 shows the study area.

This letter report sets out a summary of our site visit observations, an assessment of coastal erosion since out last site visit in November 2025, and provide commentary on likelihood of erosion/instability to the rail trail within the next 1-2 years.

1.1 Background

T+T[1] has previously been engaged to undertake a stability and risk assessment of the coastal slope along the rail trail, which also included a review of previous reports. This previous assessment recommended a setback zone of at least 3.5 m from the coastal slope crest to provide sufficient safety for short-term public access (6 months to 1 year).

We understand that the crest of the dune has eroded since our previous site visit in November 2025. Therefore, BSCS is considering re-routing the rail trail further landward, but would like to understand whether it would be safe for the public to keep using the existing route for the next 1-2 years while undertaking the re-routing works (i.e. including physical works and sorting permits etc.).

[1] T+T (2026). Nyora-Wonthaggi Rail Trail Erosion – Stability and Risk Assessment. December 2025.

Tonkin & Taylor Pty Ltd | Level 1, 111 Coventry Street, Southbank, Victoria 3006, Australia
P +61-3-9863 8686 E australia@tonkintaylor.com.au

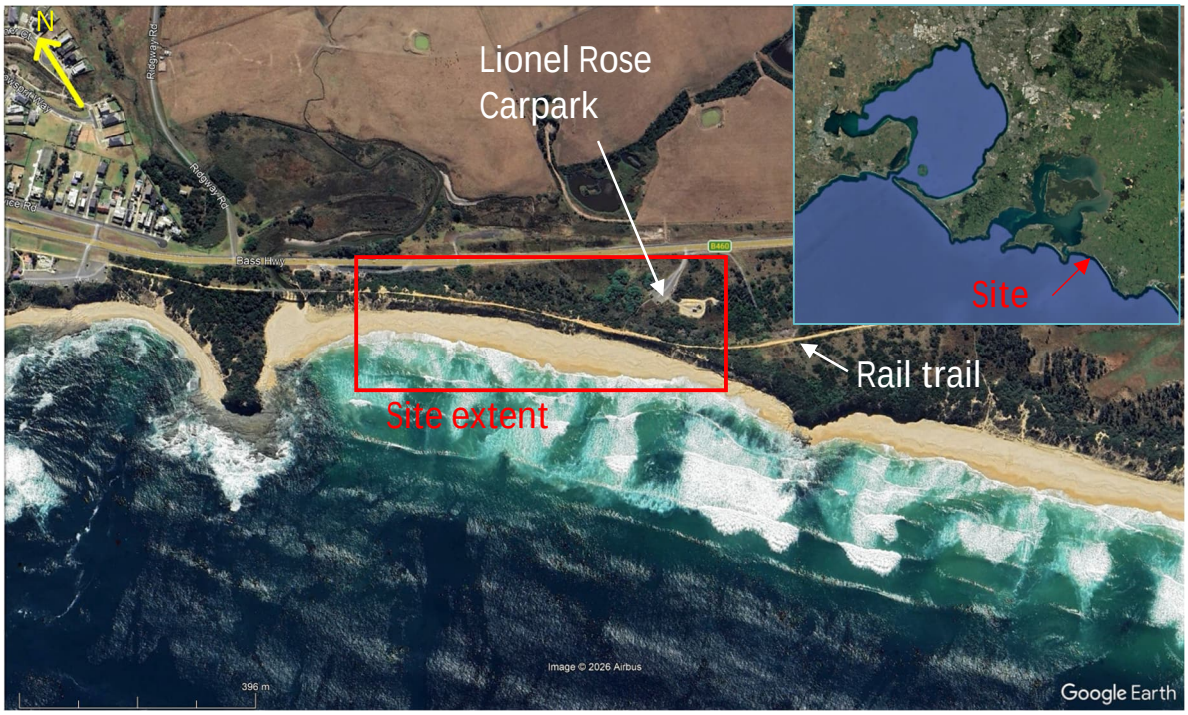


Figure 1.1: Site map including study area (red box) (aerial source: GoogleEarth)

2 Site visit observations

A site visit was undertaken by a senior coastal engineer on 2 July 2026. This included a walkover of the rail trail at the top of the dune and along the dune toe, and capture aerial imagery using our UAV (refer to some photographs in Appendix A). Key observations and notes for this walkover are:

- The shoreline is typically comprised of unconsolidated sandy material, with an estimated dune height of 5-10 m. The dunes are typically vegetated, except for along approx. 200 m where the dune has eroded and has formed a scarp (see Figure 2.1).
- A layer of rail trail fill material was observed at the top of the sand dune, which is currently slightly overhanging, with fill material and vegetation slumped onto the dune slope as a result of dune erosion (see Figure 2.2).
- The dune crest runs close to the rail trail (i.e., typically 2-3 m) along approx. 200 m. (i.e., where the erosion scarp has been observed).
- The rail trail is narrowest at approx. 70 m southeast of the stairs to the Lionel Rose carpark. The estimated width of the rail trail is 1 m along approx. 25 m. The dune crest is approx. 2 m from the seaward side of the rail trail.
- The dune slope in front of the narrowest rail trail section (see Figure 2.1 and Figure 2.2) is steeper than the adjacent dune slopes. No site measurements were taken, but the slope is estimated to be around 35° and appears to be slightly oversteepened.
- Fencing has been placed along the seaward side of the rail trail. We understand that the fence was placed 3.5 m from the dune crest in December 2025 following our previous assessment (i.e., T+T, 2025), however, the fencing has been moved further landward as a result of ongoing erosion (pers. comm. D. Wijesekara, 2-7-26).
- An old/failed seawall was observed along the northwest section of the study area, with remaining rocks across the dune slope and broken/cracked concrete/shotcrete along the dune toe (see Appendix A). Note that a condition inspection has not been undertaken, but based on visual observations the seawall is unlikely to provide effective coastal erosion protection at present.



Figure 2.1: UAV photograph of shoreline including rail trail along dune crest



Figure 2.2: UAV oblique photograph of the narrowest rail trail section

3 Coastal erosion

Landward movement (i.e., coastal erosion or regression) of the dune crest has been estimated by reviewing the change in horizontal position of the dune crest between November 2025 and July 2026. This has been assessed along the narrowest section of the rail trail as this section is likely to be affected by coastal erosion first based on expert judgement.

Figure 3.1 shows UAV photographs from November 2025 (left) and December 2026 (right). The digitised dune crest lines have been drawn on both photographs. This shows that the dune crest has eroded landward approx. 2 m within 7 months. This indicates that the dune crest erosion rate is approx. 3 m per year based on this comparison.

While the future coastal regression likely depends on the occurrence of storms eroding the due toe and natural accretion during calm periods, the dune crest could potentially reach the existing narrow rail trail within 6 months to 1 year.

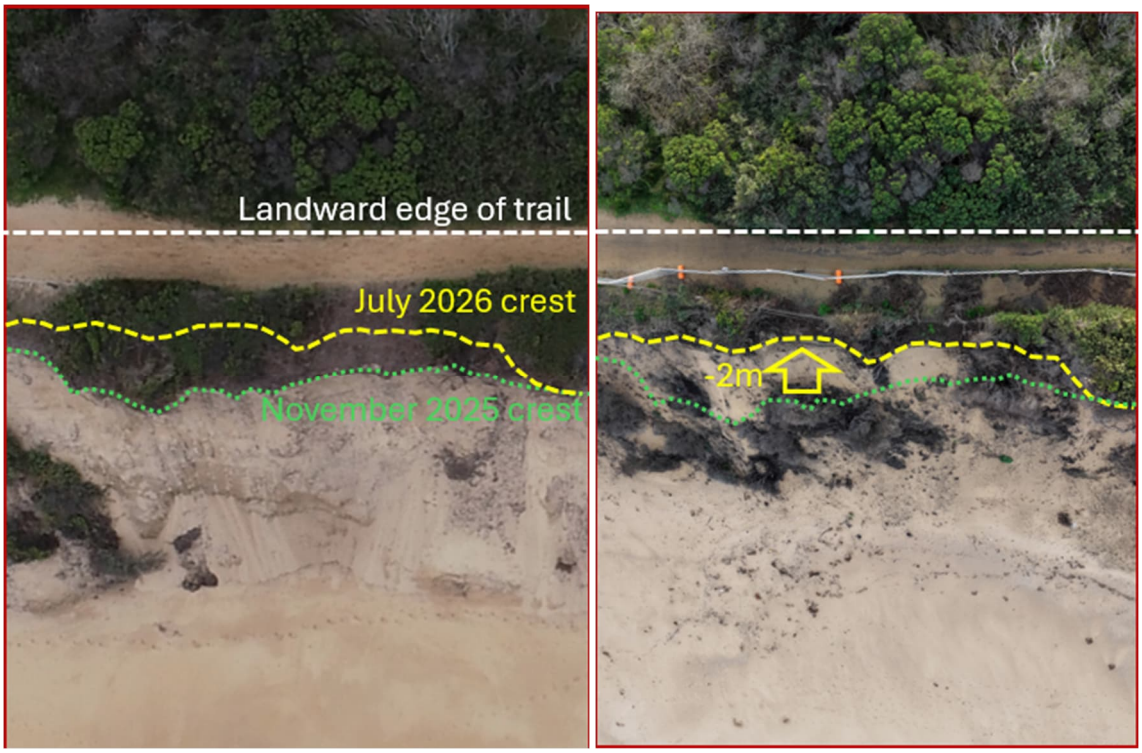


Figure 3.1: UAV photograph November 2025 (left) and UAV photograph July 2026 (right), including digitised dune crest lines and landward edge of trail.

4 Likelihood of coastal erosion/instability

We have assessed the likelihood of coastal erosion/instability adversely affecting a portion of the rail trail (i.e., at the narrowest section) within 1-2 years based on visual observations, assessment of coastal regression over a 7-month period and previous assessments. As the dune crest could erode 3 m over the next year based on comparison of the November 2025 and July 2026 photographs, and coastal erosion potential of up to 5 m during a 10% AEP (Annual Exceedance Probability) assessed by FSC (2024)[2], the likelihood of coastal erosion/instability adversely affecting the rail trail within 1-2 years is considered to be high. It is considered that erosion/instability would most likely occur during extreme storms (or shortly after), and that it is less likely that erosion/instability would occur during calm weather.

[2] FSC (2024). Kilcunda Coastal Protection Structures. Gippsland West Coastal Processes Studies. Prepared for DEECA.

5 Summary and recommendations

This assessment includes a review coastal erosion susceptibility of the rail trail in the vicinity of the Lionel Rose Carpark, Kilcunda. This has been based on site visit observations and comparison of aerial photographs taken in November 2025 and July 2026.

A site visit was undertaken by a senior coastal engineer, who observed that along approximately 200 m of the rail trail, the dune has formed an erosion scarp, with the dune crest 2-3 m from the rail trail edge. At the narrowest point, located roughly 70 m southeast of the carpark stairs, the dune crest is within 1-2 m from the rail trail, which has narrowed to 1 m wide over a 25 m length. Trail fill material is slightly overhanging and slumping onto the dune slope, and the dune face at this section is estimated at around 35°, which appears to be steeper than adjacent slopes. A fence was installed in December 2025 at 3.5 m from the dune crest, and has since been relocated landward due to ongoing erosion.

Comparing UAV imagery from November 2025 and July 2026, the dune crest has eroded approximately 2 m in seven months, equating to a rate of roughly 3 m/year. At this rate, dune crest could reach the narrowest trail section within 6–12 months. Factoring in a storm erosion potential of up to 5 m (i.e., 10% AEP as per FSC, 2024), the likelihood of coastal erosion adversely affecting the trail within 1–2 years is assessed as high.

Based on this assessment, we recommend closing the rail trail while relocating the trail further landward, which would involve getting permits and physical relocation of the path.

Alternatively, a monitoring scheme could be implemented, as erosion/instability would most likely occur during extreme storms (or shortly after) which means there is a lower likelihood of public using the rail trail while the erosion/instability event occurs.

The monitoring scheme would likely involve frequent site inspections (e.g., once a month), tracking forecasts of extreme weather and pro-actively closing the rail trail temporarily, and post-storm event site inspections with possibly permanently closing rail trail if affected by erosion/instability. We would recommend using a UAV to capture footage including ortho-imagery along the critical section for comparison purposes. Note that the risk of coastal erosion affecting the rail would remain high if the rail trail is kept open, with increasing risk as the dune crest erodes further landward.

6 Applicability

This report has been prepared for the exclusive use of our client Bass Coast Shire Council, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Pty Ltd

Report prepared by:	Authorised for Tonkin & Taylor Pty Ltd by:
	
.....	.....
Patrick Knook Senior Coastal Engineer	Dr Tom Shand Project Director

28-Jul-26
t:\south melbourne\projects\1101614\1101614.1000\workingmaterial\20260721.kilcundatrailerosion.r1.docx

Appendix A Site photographs



Photograph Appendix A.1: Site photograph showing oblique overview of shoreline



Photograph Appendix A.2: Site photograph showing oblique overview of shoreline



Photograph Appendix A.3: Site photograph showing dune slope near entrance to Lionel Rose Carpark



Photograph Appendix A.4: Site photograph of narrowest rail trail section



Photograph Appendix A.5: Site photograph from the top towards the narrow section of rail trail



Photograph Appendix A.6: Site photograph from beach at narrowest rail trail section



Photograph Appendix A.7: Site photograph from beach looking west



Photograph Appendix A.8: Site photograph of old/failed seawall northwest of study site