



ASSET INVESTIGATION REPORT



TURNER STREET JETTY (JETTY No. 0620), AUGUSTA

1	Engineering Review	D. Schlueter	J. Arena	P. Dawson	
0	Asset Investigation Report	D. Schlueter	R. Kelly	M. Gannon	27/06/23
Rev	Description	Author	Checked	Approved	Date

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1.0 EXECUTIVE SUMMARY

The Shire of Augusta-Margaret River (Shire) engaged Enviro Infrastructure Pty Ltd (Enviro) to undertake a detailed study of all Shire managed marine structures located within the Shire's LGA area of operations, to guide the Shire's asset renewal program.

The asset study has three distinct deliverables, as detailed below:

Stage 1. Asset Inspections

- Detailed inspections are to be carried out on all marine structures to identify the current condition of the structures. Inspections are to include both visual inspections and any material testing required to determine an accurate condition of all structural elements

Stage 2. Remediation works scoping and costing

- Based on the inspections conducted, a detailed 10-year remediation strategy is to be proposed for each marine asset
- Detailed costing of works required is to be provided for each asset to inform future budgets
- If any design work is required to remediate structures, this is to be clearly stated and costed.

Stage 3. Renewal Program

- A ten-year renewal program for all marine structures is to be developed based on the condition of the structures and the level of use

2.0 DEFINITIONS

Enviro	Enviro Infrastructure Pty Ltd
SoAMR	Shire of Augusta- Margaret River
UT	Ultrasonic Thickness

3.0 ASSET INVESTIGATION

3.1 Asset Description and Investigation Methodology

The Turner Street Jetty (Jetty No. 0620) is located on the banks of the Hardy Inlet, opposite the junction of Turner Street and Albany Terrace in the locality of Augusta (GPS Coordinates- 34.32430809580225, 115.16768564380284).

The Turner Street Jetty comprises a timber substructure with concrete-potted timber piles with a jarrah timber deck and superstructure elements. The jetty's primary function is public amenity and fishing, with vessel berthing on occasion. Pier Lines 1 (landside) is buried and were not accessible for inspection.

The jetty measures 30.1m from the abutment tie-in to the outermost extent of the jetty deck in the north-south alignment and 7.5m on the return in the north-south alignment. Please see below for dimensioned aerial photo:



A detailed investigation was undertaken on 16/06/2023 with the following investigation team:

NAME	ROLE	COMMENTS
<i>David Schlueter</i>	<i>Project Team</i>	<i>N/A</i>
<i>Corey Linthorne</i>	<i>Project Team</i>	<i>N/A</i>
<i>Joe Arena</i>	<i>Consulting Engineer</i>	<i>Site Inspection</i>
<i>Catlin Rutter</i>	<i>Diver Supervisor</i>	<i>N/A</i>
<i>Jake Preece</i>	<i>Diver</i>	<i>N/A</i>
<i>Ethan Sullivan</i>	<i>Diver</i>	<i>N/A</i>

A subsequent engineering site visit was held 27/06/23. The following testing equipment was utilised in the execution of this investigation:

EQUIPMENT TYPE	MAKE AND MODEL	NOTES
<i>Camera</i>	<i>GoPro Hero 11</i>	<i>N/A</i>
<i>Ultrasonic Thickness Tester</i>	<i>Cygnus Dive MK3</i>	<i>Fitted with Cygnus S2C Probe 2.225 MHz</i>
<i>Pneumatic Drill</i>	<i>Chicago 3/8 inch chuck keyed.</i>	<i>8mm drill bit.</i>

3.2 Asset Investigation Findings

ELEMENT	MATERIAL DESCRIPTION	COMMENTS
Pier 2; Piles 1 & 2	#1 Pile- 150mm jarrah potted with 450mm O/D concrete #2 Pile- 150mm jarrah potted with 450mm O/D concrete	• Timber pile rotted. • Concrete pot cracked and spalled. • Refer Appendix 1 for images.
Pier 3; Piles 1 & 2	#1 Pile- 150mm jarrah potted with 450mm O/D concrete #2 Pile- 150mm jarrah potted with 450mm O/D concrete	• Timber pile rotted. • Concrete pot cracked and spalled. • Refer Appendix 1 for images.
Pier 4; Piles 1 & 2	#1 Pile- 150mm jarrah potted with 450mm O/D concrete #2 Pile- 150mm jarrah potted with 450mm O/D concrete	• Timber pile rotted. • Concrete pot cracked and spalled. • Refer Appendix 1 for images.
Pier 5; Pile 1 & 2	#1 Pile- 150mm jarrah potted with 450mm O/D concrete #2 Pile- 150mm jarrah potted with 450mm O/D concrete	• Timber pile rotted. • Concrete pot cracked and spalled. • Refer Appendix 1 for images.
Pier 6; Pile 1 & 2	#1 Pile- 150mm jarrah potted with 450mm O/D concrete #2 Pile- 150mm jarrah potted with 450mm O/D concrete	• Timber pile rotted. • Concrete pot cracked and spalled. • Refer Appendix 1 for images.

Pier 7; Pile 1 & 2	#1 Pile- 150mm jarrah potted with 450mm O/D concrete #2 Pile- 150mm jarrah potted with 450mm O/D concrete	• Timber pile rotted. • Concrete pot cracked and spalled. • Refer Appendix 1 for images.
Pier 8; Pile 1 & 2	#1 Pile- 150mm jarrah potted with 450mm O/D concrete #2 Pile- 150mm jarrah potted with 450mm O/D concrete	• Timber pile rotted. • Concrete pot cracked and spalled. • Refer Appendix 1 for images.
Pier 9; Piles 1,2,3,4, 5 & 6	#1 Pile- 150mm jarrah potted with 450mm O/D concrete #2 Pile- 150mm jarrah potted with 450mm O/D concrete	• Timber piles rotted. • Concrete pot cracked and spalled. • Refer Appendix 1 for images.
Pier 10; Piles 1,2,3,4,5 & 6	#1 Pile 150mm jarrah potted with 450mm O/D concrete #2 Pile 150mm jarrah potted with 450mm O/D concrete #3 Pile 150mm jarrah potted with 450mm O/D concrete #4 Pile 150mm jarrah potted with 450mm O/D concrete #5 Pile 150mm jarrah potted with 450mm O/D concrete #6 Pile 150mm jarrah potted with 450mm O/D concrete	• Timber piles rotted. • Concrete pots cracked and spalled. • Refer Appendix 1 for images.
Headstocks	130x200x1720mm typical. • Two headstocks back-to-back on pile heads each pier line.	• Headstick timbers are in average condition. All fixings are heavily corroded. • Refer Images Appendix 1
Substructure Fixings	M20 Structural Assemblies typical	• All fixings heavily corroded.
Timber Stringers	190x80mm jarrah typical • No fixings present in many locations.	• Splitting and rot visible in stringers throughout; typical condition is average.

		Refer Images Appendix 1
Timber Kerb	95x95mm chamfered jarrah typical M16x400 through-bolt every 1850mm	- Timber generally in good condition; all fixings heavily corroded. - Refer Images Appendix 1
Timber Deck Planks	190x50x1720mm jarrah typical Fixed with countersunk 14G Bugle screws; 6 per board.	- Average-Good condition throughout. - Refer Images Appendix 1

Reference images are supplied in Appendix 1.

3.3 Engineering Review Comments

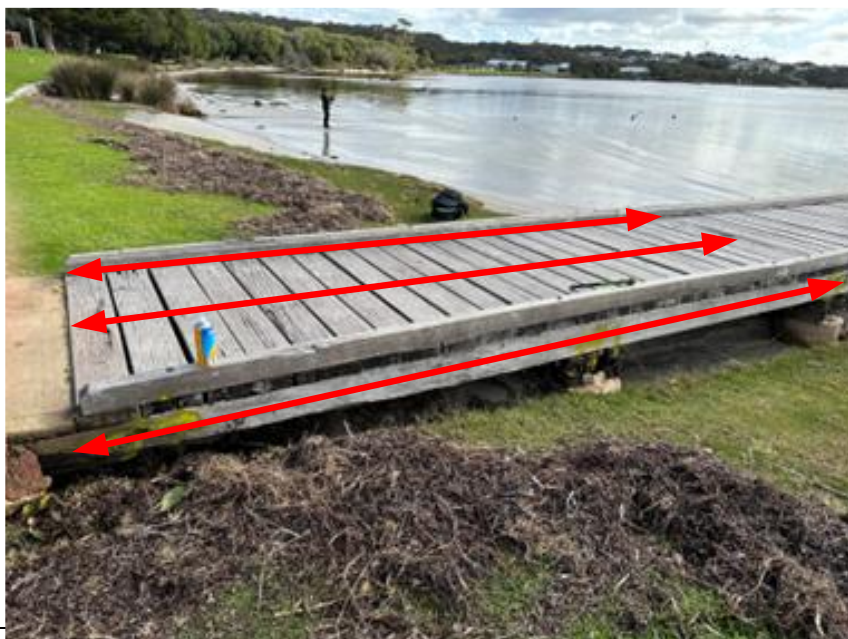
Engineer Comments 11/07/2023

Joe Arena CPEng conducted a site inspection on the 27/06/2023 with photos taken and findings reflected in the following comments.

Severe and chronic degradation is evident throughout the Turner St. Jetty substructure, namely – piles, headstocks and stringers. The remaining service life for the Jetty is anticipated to be less than 2-years.

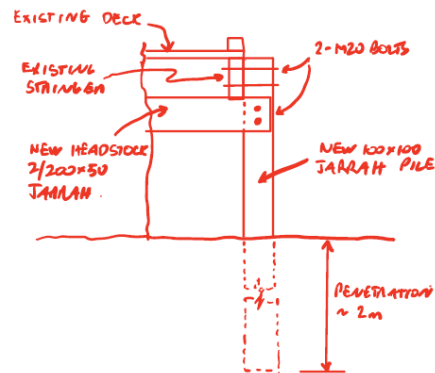
To extend the service life beyond 2-years the following remedial works are recommended:

- 1). Replace the severely rotted stringers (3 off) located at the shore end of the jetty – see photo below. These stringers are partly in contact with the soil and the reason their severely rotted.

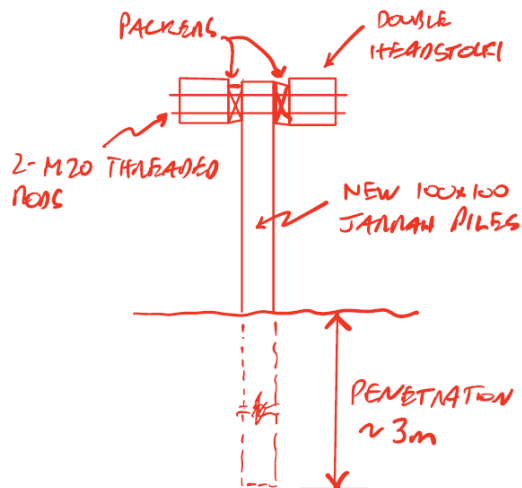


2). Provide additional new pile supports midspan between the existing piles.

- From the shore to the Jetty head a total of 18 new piles (9 each side) are required – see sketch below.



- At the Jetty head end a total of 12 new piles (6 each side) are required – see photo & sketch below.



- 30 total number of new piles.
- The above sketches are indicative conceptual for the purpose of cost estimating only.

3). Replace all heavily corroded steel fixings with equivalent stainless steel marine grade 316L.

It is anticipated that with the remedial works recommended above the Jetty service life can be extended for further 5 years. However, it may be more cost effective, after 2-years, to demolish and completely replace the jetty with a 25-year design life.

ADDENDUM 13/03/2025



Joe Arena CPEng conducted a follow up site inspection on the 13/03/2025 of the Turner Street Jetty with photos taken and findings reflected in the following comments:

- 4) Since the previous inspection dated 27/06/2023, approximately 21 months ago, further degradation is evident throughout the Turner St. Jetty structure, namely – piles/concrete pots, headstocks, bearers and decking. Examples of the extent of degradation are presented below



P1 Concrete Pot – extensive cracking & breakup



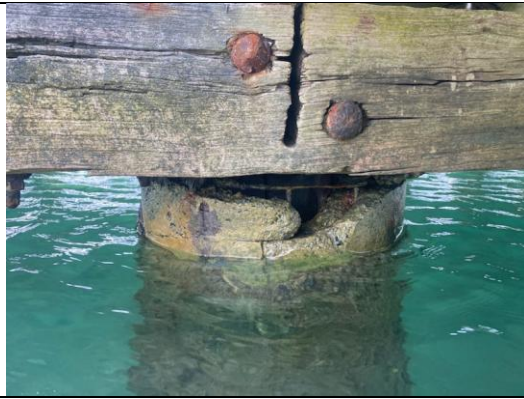
P2 Concrete Pot – extensive cracking & breakup



P3 Concrete Pot – extensive cracking & breakup



P4 Concrete Pot – extensive cracking & breakup



P5 Concrete Pot – extensive cracking & breakup with exposed steel reinforcement



P6 Concrete Pot – extensive cracking & breakup



P7 Timber Pile – 30 to 40% loss in section due to rot



P8 Timber Pile – 30 to 40% loss in section due to rot



P9 Headstock – severely rotted



P10 Headstock – severely rotted



P11 Headstock – severe longitudinal split



P12 Headstock – ends severely split



P11 Edge Bearer & Decking Ends – severely rotted



P12 Central Bearer – upper 30-50mm severely rotted



P13 Decking Planks – ends severely rotted



P14 Decking Planks – ends severely rotted



P15 Decking Planks – severely rotted



P16 Decking Planks – severely rotted

5. Conclusion and Recommendation

Remedial works that were previously recommended 21 months ago in order to extend the design life of the Jetty have not been carried out. Further severe and chronic degradation has now reached the level where there is no longer confidence in the continued structural integrity of the jetty. In conclusion, the jetty has reached the end of its service design life and in its current condition unsafe for continued use. It is recommended that the Jetty is immediately closed off for public use and demolished.

3.4 Asset Maintenance Recommendations and Cost Estimates

ELEMENT	5 YEAR MAINTENANCE SUMMARY	ESTIMATED COST	10 YEAR MAINTENANCE SUMMARY	ESTIMATED COST