



DISTRICT COUNCIL OF TUMBY BAY



Tumby Bay Jetty Options Investigations

District Council of Tumby Bay



Background and Assumed Knowledge

- Understanding of Lease Arrangements and Timeframes
- WGA WASCAM Assessment and Reports 2020
 - WGA Storm Damage Report 2022
 - DIT Business Case 2022
- Infrastructure Consulting Workshop 2023

Summary of Indicated Costs (2020-2022 investigations)

Option	Description	Initial Expenditure	10 year Maintenance	20 Year Maintenance	TOTAL over 50 years
Reactive Maintenance	Minimum initial repairs to re-open jetty for 10 years before programmed major maintenance	\$3.95M	\$5.72M	\$6.35M	\$20.6M
Short Term Sustain	Larger repair to re-open jetty for 20 years before programmed major maintenance	\$7.45M	\$0	\$6.23M	\$19.8M
Replacement	Steel/Concrete Jetty	\$16.1M			\$21.9M
Replacement	Concrete Jetty	\$15.3M			\$17.1M

Costs as at 2022

Infrastructure Consulting Brief

Updated WASCAM Assessment

- To Bent 36
- Approx 220m

Options and Cost Estimates

- To Bent 36
- Three options
 - Reactive maintenance
 - Optimised maintenance spend for 15 year period
 - Replacement with predominantly concrete structure
- Engineering 'Order of Costs' estimates informed by recent works

JETTY HEAT MAP																								WASCAM Inspection					
Bent Ref: Pile, Crosshead, Corbel, Fish Plate, Crossbrace, Water																								Assessed by				Infrastructure	
Bay Ref: Girder, Decking, Handrail, Kerb, Landing, Deck Sublayer																													
Bent or Bay No.	Pile					Crosshead		Corbel					Girder					Crossbrace	Crosswalling	Decking	Handrailing		Kerb		Ladder	Lightpole			
	A	B	C	D	E	F	L	S	A	B	C	D	E	F	A	B	C	D	E	F	Group	Group	Group	A	B	A	B	Group	Group
0																													2
1	4	4					5	6	4	5	4				5	6	5				X	X	4	4	4	4	4		
2	4	4					6	5	6	6	4				6	6	6				X	X	5	4	4	4	4		
3	4	4					4	4	6	5	6				5	6	5				X	X	4	4	4	4	4		
4	5	4					4	4	5	5	4				6	6	6				X	X	5	4	4	4	4		
5	4	4					4	4	5	4	5				6	6	5				X	X	5	4	4	4	4		4
6	5	4					4	4	4	5	6				5	4	4				X	X	5	4	4	5	4		
7	4	4					4	4	6	4	6				4	4	4				X	X	5	4	4	4	4		
8	4	5					4	4	4	4	4				4	4	4				X	X	4	4	4	4	4		
9	4	5					4	4	4	4	4				4	4	4				X	X	5	4	4	4	4		
10	4	4					4	4	4	6	6				5	4	4				X	X	5	4	4	4	4		
11	6	6					4	4	7	6	6				6	6	4				7	X	5	4	4	4	4		6
12	6	5					6	6	X	X	X				6	6	6				X	X	4	4	4	4	4		
13	4	4					4	4	6	5	6				4	4	5				X	X	4	4	4	4	4		
14	4	4					4	4	4	5	4				6	4	6				X	X	5	4	4	4	4		
15	5	4					4	4	5	5	5				6	6	6				7	X	4	4	4	4	4		
16	4	5					4	4	6	4	6				5	6	6				X	X	4	4	4	4	4		
17	6	4					4	4	4	4	6				5	4	6				7	X	5	4	4	4	4		4
18	7	5	4				7	7	4	4	5	5			4	4	6				X	X	5	4	4	4	4		
19	4	4					4	4	4	5	4	5			4	4	4	5			X	X	5	4	4	4	4		
20	5	5	4				4	4	4	4	5				4	4	4	4			7	X	5	5	4	4	4		
21	7	4					5	4	4	4	5	5			4	4	4	4			X	X	5	4	X	4	4		
22	4	4	4				4	4	6	5	5	5			4	6	4	5			X	X	5	4	X	4	4		
23	4	4	4				4	4	4	5	5				4	5	6	4			7	X	5	4	X	4	4		
24	4	5	5				4	4	5	5	6				5	4	6				X	X	5	4	4	4	4		4
25	4	7					4	4	6	6	6				6	4	6	7			7	X	5	4	4	4	4		4
26	5	4					4	4	4	4	5				5	5	6				7	X	5	4	X	4	4		
27	4	4					4	4	4	4	5				5	6	5				7	X	5	4	X	4	4		
28	4	4					4	4	6	5	5				5	6	6				7	X	5	4	X	4	4		
29	4	5					4	4	4	4	5				6	6	4				7	X	4	4	X	4	4		
30	4	7					4	4	4	4	4				6	6	5				X	X	4	4	X	4	4		4
31	4	4					5	4	4	4	6				4	5	6				7	X	5	4	X	4	4		
32	4	4					4	4	4	4	4				5	6	6				7	X	4	4	X	4	4		
33	5	4					4	4	4	4	6				4	5	6				7	X	4	4	X	4	4		
34	5	5					4	4	4	4	4				5	6	4	4			7	X	4	4	X	4	4		
35	4	4					4	4	4	5	4				6	6	4				7	X	4	4	X	4	4		
36	4	4					4	4	4	4	4				6	4	5				7	X	4	4	X	4	4		

END OF HEAT MAP

General Observations

- Jetty in fair to poor condition
 - Condition is typical for a structure of its age and type

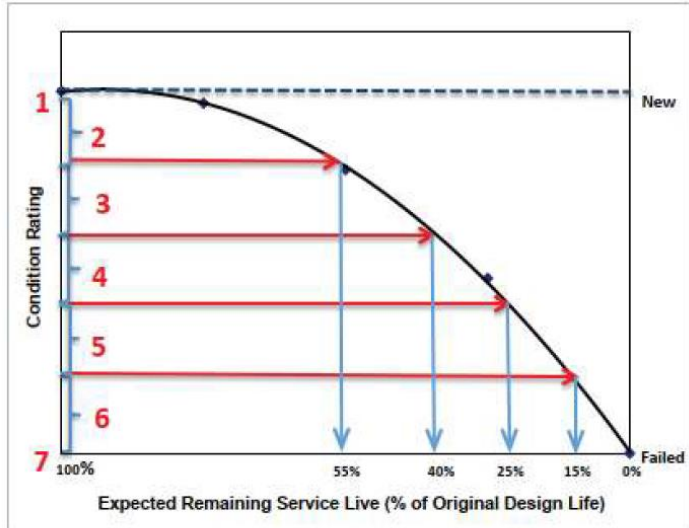


Figure 9: Indicative Design Life Curve (WSCAM 2022)

WASCAM Assessment

Condition Rating	Indicative Remaining Life
1	30 years (typical for timber)
2	16.5 - 30 years
3	12 – 16.5 years
4	7.5 – 12 years
5	4.5 – 7.5 years
6	0 – 4.5 years
7	Failed

Component Condition Summary

Component	Total No.	Condition Rating						
		1	2	3	4	5	6	7
Concrete Piles	20				15	1	1	3
					75%	5%	5%	15%
Steel Piles	38				29	8		1
					76%	21%		2%
Timber Piles	20				8	9	3	
					40%	45%	15%	

Component	Total No.	Condition Rating						
		1	2	3	4	5	6	7
Timber Crosshead	72				62	4	4	2
					86%	6%	6%	2%
Concrete Crosshead	1						1	
							100%	

Component	Total No.	Condition Rating						
		1	2	3	4	5	6	7
Girder	114				43	25	45	1
					37.7%	21.9%	39.4%	1%

Component	Total No.	Condition Rating						
		1	2	3	4	5	6	7
Corbel	109	0	0	0	52	32	24	1
		0%	0%	0%	48%	29%	22%	1%

Comments

- Concrete piles rated Condition 4 based on visual inspection, but assumed to be Condition 6 for cost estimate based on observed performance and several recent failures
 - Steel piles generally in good condition
- Crossheads generally fair condition, but two failed and four critical condition.
 - High proportion of girders in poor condition

Component Condition Summary

Component	Total No. (of bays)	Condition Rating						
		1	2	3	4	5	6	7
Decking	36	0	0	0	14	22	0	0
		0%	0%	0%	39%	61%	0%	0%

Component	Total No.	Condition Rating						
		1	2	3	4	5	6	7
Kerb	72	0	0	0	71	1	0	0
		0%	0%	0%	99%	1%	0%	0%

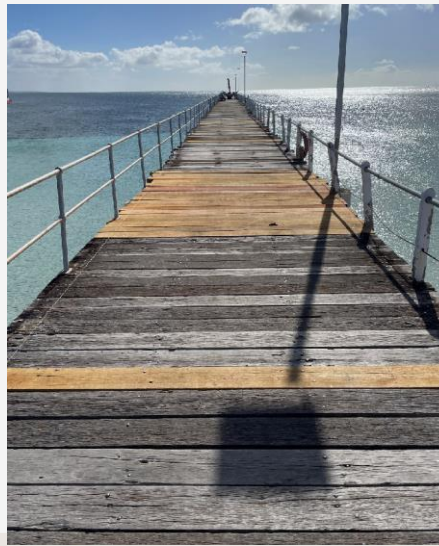
Comments

- Deck generally fair condition, but localised replacements required
 - Kerbing generally fair condition
- Handrails and lighting generally fair condition with some corrosion requiring attention
- Some handrail misalignment due to jetty movement

Option 1 – Minimum Initial Spend

Scope

- Replacement of all condition 6 & 7 structural elements
 - 50% decking replacement allowance
- 20% increase in structural components allowed
- Targeted clean and paint only handrail, lighting columns



Assumptions and Exclusions

- 35% contingency allowance
- Excludes any works beyond Bent 36
 - Excludes any required demolition beyond Bent 36

Risks

- Potential timber supply limitations for future remediation
- Major maintenance requirement at 10 year intervals
 - High scope creep risk

Cost Estimate

- Initial Works \$2.84M
 - Includes escalation to 2025
- 10 year maintenance \$2.42M

Option 2 – Optimum Expenditure

Scope

- Replacement of all condition 5, 6 & 7 structural elements, plus Condition 4 timber piles
 - 100% decking and kerbing replacement allowance
- Targeted clean and paint only handrail, lighting columns

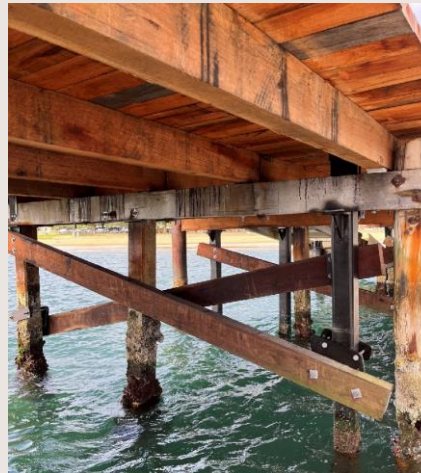


Assumptions and Exclusions

- 35% contingency allowance
- Excludes any works beyond Bent 36
 - Excludes any required demolition beyond Bent 36

Cost Estimate

- \$4.28M
- Escalated to 2025



Risks

- Potential timber supply limitations for future remediation
- Defers risks associated with 10 year maintenance intervention
- Moderate scope creep risk

Option 3 – Replace

Scope

- Replacement with 220m long predominantly concrete jetty
 - 3.6m wide
 - HDPE sleeved steel piles
- Precast concrete crossheads, girders and deck



Assumptions and Exclusions

- 100 year design life
- 30% contingency allowance
 - Includes demolition and disposal of existing

Risks

- Estimate based on 15% design concept
- Additional approval requirements

Cost Estimate

- Initial spend \$10.742M
- 25 year maintenance \$1.117M



Summary of IC Estimates – remediate to Bent 36

Option	Description	Initial Expenditure	10 year Maintenance	TOTAL over 15 years
Reactive Maintenance	Minimum initial repairs to re-open jetty for 10 years before programmed major maintenance	\$2.84M	\$2.42M	\$5.26M
Short Term Sustain	Larger repair to re-open jetty for 20 years before programmed major maintenance	\$4.28M	\$0	\$4.28M
Replacement	Concrete Jetty	\$10.742M		\$10.742

Costs escalated to 2025



Financing

For discussion

- Rates income
- Loan borrowings - LGFA
- External funding – State & Federal
 - Interaction with LTFP

Preferred Option and Next Steps

For Discussion

