

Goat Island, Sydney Harbour

Shipyard Crane - Repair or Removal Estimate Options

Issue 2

21 October 2024

Level 8
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Chatswood NSW 2067



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DOCUMENT ISSUE SHEET

Issue No	Document	Issue Date	Prepared By	Reviewed By
1	Order of Cost Estimate	21/10/2024	AOR/JCH	AOR

1.0 EXECUTIVE SUMMARY

1.1 Brief

Wilde and Woollard (WW) have been commissioned by NSW National Parks and Wildlife Service to undertake Three Cost Options for Shipyard Crane at Goat Island Sydney.

1. Shipyard Crane Repair Option
2. Crane Removal Option
3. Dismantle Jib and Retain Crane Tower

1.2 Estimate Summary

Option 1 Shipyard Crane Repair (including 25 year maintenance requirements):

The Estimate totals \$7,072,277.16 Excl GST which includes:

Structural inspection and analysis, crane maintenance engineer inspection and safe remove of loose elements, Hazardous material removal and encapsulation requirements, Abrasive blast cleaning steel structure to remove all lead paint, scaffold, abrasive cleaning, NDT weld inspection, replacing structural members where required, replacing corroded handrails, walkways, platforms and floors by welding in new tube and plate, re-plating heavily corroded slew ring external walkway (considerably corroded to the southern side, where water ponds), which acts as a horizontal ring beam, stiffening the slew ring, replace corroded motor, winch room and control cabin roofs and with new welded steel tube beams and plate (nominally 6mm thick plate), patching motor and winch room walls, Whip abrasive blasting to remove flash corrosion, protective coating and all barge, haulage, craneage, materials handling and labour requirements.

WW note exclusion of costs related to future maintenance:

Re-engage crane maintenance engineer to re-service slew mechanism on a biannual or annual basis.

Repeat NDT weld inspection and ultrasonic testing of rivets and bolts every 10 years and repair/replace/augment as required. Re-protective coat all repairs.

Repeat stages (a) to (o) at 25 years or at shorter interval if required

Option 2 Shipyard Crane Removal Option:

The Estimate totals \$1,936,967.60 Excl GST which includes:

Structural inspection and analysis, crane maintenance engineer inspection and safe remove of loose elements, Hazardous material removal and encapsulation requirements, scaffold and all barge, haulage, craneage, materials handling and labour requirements for deconstruction and disposal.

Option 3 Partial retention the crane (tower only) and dismantlement of the jib and backspan.

The Estimate totals \$3,408,246.80 Excl GST which includes:

Structural inspection and analysis, crane maintenance engineer inspection and safe remove of loose elements, Hazardous material removal and encapsulation requirements, scaffold and all barge, haulage, craneage, materials handling and labour requirements for deconstruction and disposal, Abrasive blast cleaning steel structure to remove all lead paint, scaffold, abrasive cleaning, NDT weld inspection, replacing structural members where required, replacing corroded handrails, walkways, platforms and floors by welding in new tube and plate, re-plating heavily corroded slew ring external walkway (considerably corroded to the southern side, where water ponds), which acts as a horizontal ring beam (nominally 6mm thick plate), Whip abrasive blasting to remove flash corrosion, protective coating and all barge, haulage, craneage, materials handling and labour requirements.

WW note exclusion of costs related to future maintenance:

Repeat NDT weld inspection and ultrasonic testing of rivets and bolts every 10 years and repair/replace/augment as required. Re-protective coat all repairs.

Repeat stages (a) to (o) at 25 years or at shorter interval if required

2.0 BASIS OF ESTIMATES

2.1 Overview

The Estimates have been based upon the following:

Consult Marine Memo dated 8th November 2022 -scope to repair/maintain existing crane.

TTW Engineers Goat Island, Sydney Harbour Shipyard Crane - Repair or Removal Options dated 10th November 2022

TTW Engineers Goat Island, Sydney Harbour Shipyard Crane – Tower Crane Risk Assessment dated 19th October 2022

TTW Engineers Goat Island, Sydney Harbour Shipyard Crane – Tower Crane Demolition Specification dated 19th October 2022

TTW Engineers Me-Mel (Goat Island) 1925 Electric Tower Crane – Assessment and Consideration of Structural Issues Rev 2 dated 3rd October 2024

Site Visit to Goat Island

2.2 Inclusions

The estimates are based upon the following inclusions:

1. Engineering Requirements
2. Barge/Transport Requirements
3. Demolition works
4. Refurbishments Works
5. Craneage, Scaffold and other Materials Handling requirements
6. Contractors Preliminaries
7. Construction Contingencies

2.3 Exclusions

The estimates exclude the following items:

1. Future Maintenance
2. Cost escalation beyond January 2023
3. Authorities Fees
4. Professional Fees
5. Out of hours work
6. Goods and services tax (GST)

APPENDIX A –ESTIMATE

ORDER OF COST ESTIMATE

Goat Island Tower Crane



OPTION 1 - CRANE REPAIR

18-Oct-24

	DESCRIPTION	UNIT	QTY	RATE	TOTAL
1	Works That Would be Required to Retain and Manage the Crane Safely				
2	Allow for Witness Point Inspections	Item	1	\$ 21,562.50	\$ 21,562.50
3	Allow for Hold Point Notices	Item	1	\$ 4,025.00	\$ 4,025.00
4	Allow for Authorities evidence of compliance	Item	1	\$ 4,025.00	\$ 4,025.00
5	Allow for demolition work plan	Item	1	\$ 11,500.00	\$ 11,500.00
6	Allow for keeping records	Item	1	\$ 5,750.00	\$ 5,750.00
7	Allow for quality assurance	Item	1	\$ 4,025.00	\$ 4,025.00
8	Allow for non conformance reports	Item	1	\$ 4,025.00	\$ 4,025.00
9	Allow for dilapidation report - The photographic and written record made before demolition work of the condition of the existing building, adjacent buildings, and other relevant structures or facilities.	Item	1	\$ 11,500.00	\$ 11,500.00
10	Engineering assessment				
11	Allow for Engineering Assessment - thorough structural inspection and analysis	Item	1	\$ 36,800.00	\$ 36,800.00
12	PRELIMINARY WORKS				
13	Archival Recording				
14	Allow for archival recording (if applicable) and preparation of a Salvage and high-value heritage items to be carried out prior to Re-Use plan to identify commencement of dismantlement works.	Item	1	\$ 20,000.00	\$ 20,000.00
15	Hoarding				
16	Secure footprint of crane and establish buffer zone (e.g. fencing, hoarding)	Item	1	\$ 35,000.00	\$ 35,000.00
12	Temporary Bracing for Crane				
13	Temporary bracing cables of wire rope 21m x 36mm dia attached to operator's cabin (top of tower under slew)	No	4	\$ 4,025.00	\$ 16,100.00
14	15t rock /ground anchors	No	4	\$ 4,025.00	\$ 16,100.00
15	Allow to remove ground anchors and make good to match existing	No	4	\$ 1,150.00	\$ 4,600.00
16	Mobilisation via slipway yard				
17	Delivery an return of mobile crane, EWP, Scaffold and working platform steel from yard	Item	1	\$ 40,250.00	\$ 40,250.00
18	Barge (Tambaii II selfpropelled Roll-On-Roll-Off) operated by Polaris Marine Barge to mobilise equipment to site including Mobile Crane, Scaffolding, Elevated Working Platform etc				
19	Delivery and return cost for Mobile Crane/EWP Costs/Scaffold an Working Platform excluding hire	Loads	5	\$ 10,925.00	\$ 54,625.00
20	Tug Hire costs	Hrs	40	\$ 805.00	\$ 32,200.00
21	Perimeter scaffold and catch decks to be installed				
21	Working Platform below boom				
22	Design supply, install and dismantle working platform to safely access all parts of the Crane:	m2	260	\$ 805.00	\$ 209,300.00
23	Scaffold - Supply, Install, dismantle scaffold to safely access all parts of the Crane:				
24	Tower	m2	744.6	\$ 138.00	\$ 102,754.80
25	Boom and Jib	m2	684.42	\$ 138.00	\$ 94,449.96
26	Access stairs	Item	1	\$ 25,000.00	\$ 25,000.00
26	Crane Operation Inspection				
27	Allow to engage crane maintenance engineer to inspect and service slew bearing and slew ring, to ensure crane can weathervane	Item	1	\$ 11,500.00	\$ 11,500.00
28	Allow Crane maintenance engineer also to remove cables, hook, and anything that could fall from the crane (or install catch-nets where items cannot be removed)	Item	1	\$ 11,500.00	\$ 11,500.00
29	Loose window frames and glass have already been removed and the central motor room roof (which is very corroded and doily-thin) has been tied down with ropes. A catch net has been installed beneath the control cabin.	Note			
30	Scaffold Encapsulation				
31	As structure is within National Park assume full encapsulation of structure will be required to abrasive clean.				

32	As structure is within National Park assume full encapsulation of structure will be required to abrasive clean.						
33	Allow to encapsulate areas to allow lead paint and asbestos removal.	m2	1249.44	\$	46.00	\$	57,474.24
34	Encapsulate flaking coatings (paint over) Undertake wet scraping or wet hand sanding to remove lead paint where required or undertake dry sanding with HEPA-filter vacuum and dust shroud.	m2	1249.44	\$	30.00	\$	37,483.20
35	Remove asbestos containing material (ACM) and Lead Paint by specialist contractor.						
36	Air monitor for free asbestos fibres, if required.	Item	1	\$	10,000.00	\$	10,000.00
36	Remove and dispose of hazardous materials per register at Appendix B.	Item	1	\$	57,500.00	\$	57,500.00
37	Externals						
38	High content lead grey paint to external steel frames and walls to rooms	Item	1			INCL	
39	Control room						
40	High content lead green paint to roof and door	Item	1			INCL	
41	Asbestos putty to window	Item	1			INCL	
42	High content lead grey paint to walls	Item	1			INCL	
43	Presumed asbestos paper internal to fuses	Item	1			INCL	
44	Centre motor room						
45	Medium content lead green paint to motor	Item	1			INCL	
46	Medium content lead yellow paint to motor	Item	1			INCL	
47	Asbestos putty to window	Item	1			INCL	
48	High content lead grey paint to walls and roof	Item	1			INCL	
49	Presumed asbestos resin brake linings internal to motor	Item	1			INCL	
50	Rear motor room						
51	Presumed asbestos resin electrical mounting board in cabinet on wall	Item	1			INCL	
52	Medium content lead green paint to motor	Item	1			INCL	
53	Medium content lead yellow paint to motor	Item	1			INCL	
54	High content lead red paint to electrical pipes	Item	1			INCL	
55	High content lead grey paint to walls and roof	Item	1			INCL	
56	Asbestos putty to windows	Item	1			INCL	
57	Presumed asbestos paper internal to fuses	Item	1			INCL	
58	Presumed asbestos resin brake linings internal to motor	Item	1			INCL	
59	Dismantle Hammehead Crane in stages & Load on Barge The sequencing proposed is based on the use of a 60T mobile crane (LTM 1060						
60	Liebherr Crane), suitable for delivery via water on a Tambii II barge. Crane equipment and stability on barge for delivery to site are to be confirmed by the Contractor in liaison with the Barge operator.						
61	EWP investigation is recommended prior to dismantlement, to confirm locations of original connections, and to identify any failed members that may cause unexpected responses during the lifting process. The undertaking of this investigation prior to dismantling of the crane is likely to present cost savings if dismantling can be undertaken with a single lifting crane as per the likely original erection procedure	Item	1	\$	18,400.00	\$	18,400.00
62	Stages 1 to 8						
63	STAGE 1 - WINCH ROOM AND WINCH	Item	1	\$	14,375.00	\$	14,375.00
64	STAGE 2 - FRONT END OF BOOM	Item	1	\$	14,375.00	\$	14,375.00
65	STAGE 3 - BACKSPAN	Item	1	\$	14,375.00	\$	14,375.00
66	STAGE 4 - REMAINDER OF BOOM	Item	1	\$	14,375.00	\$	14,375.00
67	STAGE 5 - UPPER TOWER ABOVE SLEW RING (INCLUDING MOTOR ROOM)- TOWER OVER MOTOR ROOM (3 sections)	Item	1	\$	14,375.00	\$	14,375.00
68	STAGE 6 - INNER TOWER	Item	1	\$	14,375.00	\$	14,375.00
69	STAGE 7 - OUTER TOWER ABOVE SLEW BEARING PLATFORM LEVEL	Item	1	\$	14,375.00	\$	14,375.00
70	STAGE 8 - TOWER ABOVE SLEW BEARING PLATFORM LEVEL	Item	1	\$	14,375.00	\$	14,375.00
71	Crane Hire and EWP costs	Days	15	\$	9,200.00	\$	138,000.00
72	Transport to Shipyard for refurbishment						
73	Dumb Barge costs	Days	8	\$	2,760.00	\$	22,080.00
74	Tug Hire Costs	Hrs	64	\$	805.00	\$	51,520.00

75	Labour and Craneage Unloading Hammehead Crane at Shipyard for refurbishment						
76	Stages 1 to 8						
77	STAGE 1 - WINCH ROOM AND WINCH	Item	1	\$	5,175.00	\$	5,175.00
78	STAGE 2 - FRONT END OF BOOM	Item	1	\$	5,175.00	\$	5,175.00
79	STAGE 3 - BACKSPAN	Item	1	\$	5,175.00	\$	5,175.00
80	STAGE 4 - REMAINDER OF BOOM	Item	1	\$	5,175.00	\$	5,175.00
81	STAGE 5 - UPPER TOWER ABOVE SLEW RING (INCLUDING MOTOR ROOM)- TOWER OVER MOTOR ROOM (3 sections)	Item	1	\$	5,175.00	\$	5,175.00
82	STAGE 6 - INNER TOWER	Item	1	\$	5,175.00	\$	5,175.00
83	STAGE 7 - OUTER TOWER ABOVE SLEW BEARING PLATFORM LEVEL	Item	1	\$	5,175.00	\$	5,175.00
84	STAGE 8 - TOWER ABOVE SLEW BEARING PLATFORM LEVEL	Item	1	\$	5,175.00	\$	5,175.00
85	Shipyard Workshop Refurbishment Works						
86	(m) Whip abrasive blasting to remove flash corrosion, and priming within 2 hours						
87	– Workshop Abrasive blast cleaning steel structure to remove all lead paint, back to bright metal						
88	– complete grit blasting of all the elements						
89	– carry out a full analysis based on worst case section loss assumptions after						
90	– replace all elements where corrosion has resulted in a section loss greater than allowable, as demonstrated by the structural analysis						
91	Allow for encapsulation tent costs at yard and disposal	Item	1	\$	69,000.00	\$	69,000.00
92	Workshop Abrasive blast cleaning steel structure to remove all lead paint, back to bright metal. (54t)	m2	1254	\$	86.25	\$	108,157.50
93	NDT weld inspection (base plates and boom and suspension rod splices) and ultrasonic testing of rivets and bolts	Item	1	\$	11,500.00	\$	11,500.00
94	Replacing structural members where required (cutting and splicing) and repairing/augmenting connections where required (plating/welding/bolting)	t	12.8	\$	40,250.00	\$	515,200.00
95	Refurbishment Yard Storage costs	months	8	\$	11,500.00	\$	92,000.00
96	Handrails and catwalks/floors are in an advanced state of corrosion						
97	(i) Replace corroded handrails by welding in new tube and plate including paint finish	m	144.04	\$	517.50	\$	74,540.70
98	(i) Replace corroded walkways by welding in new tube and plate	m2	96.8	\$	1,380.00	\$	133,584.00
99	(i) Replace corroded walkways, platforms and floors by welding in new tube and plate	m2	49	\$	1,380.00	\$	67,620.00
100	Slew bearing Level						
101	(j) Re-plate heavily corroded slew ring external walkway (considerably corroded to the southern side, where water ponds), which acts as a horizontal ring beam, stiffening the slew ring.	m2	16.956	\$	1,725.00	\$	29,249.10
102	(k) Replace corroded motor, winch room and control cabin roofs and with new welded steel tube beams and plate (nominally 6mm thick plate) including painting						
103	Winch Room	m2	18.92	\$	977.50	\$	18,494.30
104	Motor Room	m2	11.96	\$	977.50	\$	11,690.90
105	Control Cabin	m2	2.25	\$	977.50	\$	2,199.38
106	(l) Patch motor and winch room walls needing patching with steel plate (nominally 6mm thick)						
107	Winch Room	m2	60.9	\$	690.00	\$	42,021.00
108	Motor Room	m2	31.68	\$	690.00	\$	21,859.20
109	Control Cabin	m2	16.8	\$	690.00	\$	11,592.00
110	(m) Whip abrasive blasting to remove flash corrosion, and priming within 2 hours	t	64	\$	550.00	\$	35,200.00
111	Protective coat all steelwork for 25 year design life to repainting						
112	Re-apply a protective coating to the whole exposed surfaces of the crane and maintain it - 500 - 600 micron thick dual layer two pack solids epoxy coating and primer to structure	m2	1254	\$	138.00	\$	173,052.00
113	Load and Transport from Shipyard Back to Goat Island						
113	Loading on to barge	Item	1	\$	28,750.00	\$	28,750.00
114	Dumb Barge costs	Days	8	\$	2,760.00	\$	22,080.00
115	Tug Hire Costs	Hrs	64	\$	805.00	\$	51,520.00
116	Unload Hammerhaed Crane back on to Goat Island						

117	Stages 1 to 8		\$	6,468.75				
118	STAGE 1 - WINCH ROOM AND WINCH	Item	1	\$	6,468.75	\$	6,468.75	
119	STAGE 2 - FRONT END OF BOOM	Item	1	\$	6,468.75	\$	6,468.75	
120	STAGE 3 - BACKSPAN	Item	1	\$	6,468.75	\$	6,468.75	
121	STAGE 4 - REMAINDER OF BOOM	Item	1	\$	6,468.75	\$	6,468.75	
122	STAGE 5 - UPPER TOWER ABOVE SLEW RING (INCLUDING MOTOR ROOM)- TOWER OVER MOTOR ROOM (3 sections)	Item	1	\$	6,468.75	\$	6,468.75	
123	STAGE 6 - INNER TOWER	Item	1	\$	6,468.75	\$	6,468.75	
124	STAGE 7 - OUTER TOWER ABOVE SLEW BEARING PLATFORM LEVEL	Item	1	\$	6,468.75	\$	6,468.75	
125	STAGE 8 - TOWER ABOVE SLEW BEARING PLATFORM LEVEL	Item	1	\$	6,468.75	\$	6,468.75	
126	Re-assemble Hammerhead Crane							
127	Stages 1 to 8		\$	7,906.25				
128	STAGE 1 - WINCH ROOM AND WINCH	Item	1	\$	7,906.25	\$	7,906.25	
129	STAGE 2 - FRONT END OF BOOM	Item	1	\$	7,906.25	\$	7,906.25	
130	STAGE 3 - BACKSPAN	Item	1	\$	7,906.25	\$	7,906.25	
131	STAGE 4 - REMAINDER OF BOOM	Item	1	\$	7,906.25	\$	7,906.25	
132	STAGE 5 - UPPER TOWER ABOVE SLEW RING (INCLUDING MOTOR ROOM)- TOWER OVER MOTOR ROOM (3 sections)	Item	1	\$	7,906.25	\$	7,906.25	
133	STAGE 6 - INNER TOWER	Item	1	\$	7,906.25	\$	7,906.25	
134	STAGE 7 - OUTER TOWER ABOVE SLEW BEARING PLATFORM LEVEL	Item	1	\$	7,906.25	\$	7,906.25	
135	STAGE 8 - TOWER ABOVE SLEW BEARING PLATFORM LEVEL	Item	1	\$	7,906.25	\$	7,906.25	
136	Crane Hire and EWP costs	Days	15	\$	9,200.00	\$	138,000.00	
137	New Fibre cement cladding to Winch Room	Item	1	\$	9,200.00	\$	9,200.00	
138	Allow 0.3 t of Structural repairs including temporary supports	Item	1	\$	8,625.00	\$	8,625.00	
139	Allow 0.5 t of Structural repairs to handrails	Item	1				INCL	
140	Allow for permanent safety line or restore damaged handrails and ladders to allow harness/lanyard attachment.	Item	1				INCL	
141	Allow for fibre cement timber framed rain covers over pockets at base of crane legs	Item	1	\$	9,200.00	\$	9,200.00	
142	Allow to remove and relocate stoage shed	Item	1	\$	17,250.00	\$	17,250.00	
142	Allow for labour transport costs	Item	1	\$	18,400.00	\$	18,400.00	
143	Allow for electrical refurbishment	Item	1	\$	40,250.00	\$	40,250.00	
144	SUB TOTAL					\$	3,200,684.78	
145								
146	Prelims & Margin					\$	800,171.19	
147	Contingency					\$	800,171.19	
148	Escalation					EXCL		
149	Professional and Authorities Fees					EXCL		
150	SUB - TOTAL					\$	4,801,027.16	
151								
152	MAINTENANCE (25 Years)							
153	Crane maintenance engineer to re-service slew mechanism	Year	25	\$	17,250.00	\$	431,250.00	
154	Crane maintenance cleaning	Year	25	\$	23,000.00	\$	575,000.00	
155	Structural Inspection using EWP	Year	12.5	\$	34,500.00	\$	431,250.00	
156	Extra over for NDT weld inspection and ultrasonic testing of rivets and bolts every 10 years and repair/replace/augment as required.	Item	2.5	\$	34,500.00	\$	86,250.00	
157	Re-protective coat all repairs.	Item	1.5	\$	230,000.00	\$	345,000.00	
157	Protective coating and maintenace required after 25 years	Item	1	\$	402,500.00	\$	402,500.00	
158								
159	TOTAL					\$	7,072,277.16	

ORDER OF COST ESTIMATE

Goat Island Tower Crane



OPTION 2 - CRANE DEMOLITION

18-Oct-24

	DESCRIPTION	UNIT	QTY	RATE	TOTAL
1	SCOPE				
2	Hammerhead Crane Demolition	Note			
3	CONSULTANTS				
4	Works That Would be Required to Retain and Manage the Crane Safely				
5	Allow for Witness Point Inspections	Item	1	\$ 21,562.50	\$ 21,562.50
6	Allow for Hold Point Notices	Item	1	\$ 4,025.00	\$ 4,025.00
7	Allow for Authorities evidence of compliance	Item	1	\$ 4,025.00	\$ 4,025.00
8	Allow for demolition work plan	Item	1	\$ 11,500.00	\$ 11,500.00
9	Allow for keeping records	Item	1	\$ 5,750.00	\$ 5,750.00
10	Allow for quality assurance	Item	1	\$ 4,025.00	\$ 4,025.00
11	Allow for non conformance reports	Item	1	\$ 4,025.00	\$ 4,025.00
12	Allow for dilapidation report - photographic and written record made before demolition work of the condition of the existing building, adjacent buildings, and other relevant structures or facilities.	Item	1	\$ 11,500.00	\$ 11,500.00
13	Engineering assessment				
14	Allow for Engineering Assessment - thorough structural inspection and analysis	Item	1	\$ 36,800.00	\$ 36,800.00
15	PRELIMINARY WORKS				
16	Archival Recording				
17	Allow for archival recording (if applicable) and preparation of a Salvage and high-value heritage items to be carried out prior to Re-Use plan to identify commencement of dismantlement works.	Item	1	20,000.00	\$ 20,000.00
18	Hoarding				
19	Secure footprint of crane and establish buffer zone (e.g. fencing, hoarding)	Item	1	35,000.00	\$ 35,000.00
20	Temporary Bracing for Crane				
21	Temporary bracing cables of wire rope 21m x 36mm dia attached to operator's cabin (top of tower under slew)	No	4	\$ 4,025.00	\$ 16,100.00
22	15t rock /ground anchors	No	4	\$ 4,025.00	\$ 16,100.00
23	Allow to remove ground anchors and make good to match existing	No	4	\$ 1,150.00	\$ 4,600.00
24	Mobilisation via slipway yard				
25	Delivery an return of mobile crane, EWP, Scaffold and working platform steel from yard	Item	1	\$ 40,250.00	\$ 40,250.00
26	Barge (Tambaii II self-propelled Roll-On-Roll-Off) operated by Polaris Marine Barge to mobilise equipment to site including Mobile Crane, Scaffolding, Elevated Working Platform etc				
27	Delivery and return cost for Mobile Crane/EWP Costs/Scaffold an Working Platform excluding hire	Loads	6	\$ 10,925.00	\$ 65,550.00
28	Tug Hire costs	Hrs	48	\$ 805.00	\$ 38,640.00
29	Perimeter scaffold and catch decks to be installed				
30	Working Platform below boom				
31	Design supply, install and dismantle working platform to safely access all parts of the Crane:	m2	260	\$ 805.00	\$ 209,300.00
33	Scaffold - Supply, Install, dismantle scaffold to safely access all parts of the Crane:				
34	Tower	m2	744.6	\$ 138.00	\$ 102,754.80
35	Boom and Jib - staged	m2	684.42	\$ 138.00	\$ 94,449.96
36	Access stairs	Item	1	\$ 25,000.00	\$ 25,000.00
37	Scaffold Encapsulation				
38	As structure is within National Park assume full encapsulation of structure will be required to abrasive clean.				
39	Allow to encapsulate areas to allow lead paint and asbestos removal.	m2	1249.4	\$ 46.00	\$ 57,474.24

40	Encapsulate flaking coatings (paint over) Undertake wet scraping or wet hand sanding to remove lead paint where required or undertake dry sanding with HEPA-filter vacuum and dust shroud.	m2	1249.4	\$	30.00	\$	37,483.20
40	Remove asbestos containing material (ACM) and Lead Paint by specialist contractor.						
41	Air monitor for free asbestos fibres, if required.	Item	1	\$	10,000.00	\$	10,000.00
42	Remove and dispose of hazardous materials per register at Appendix B.	Item	1	\$	57,500.00	\$	57,500.00
43	Externals						
44	High content lead grey paint to external steel frames and walls to rooms	Item	1			INCL	
45	Control room						
46	High content lead green paint to roof and door	Item	1			INCL	
47	Asbestos putty to window	Item	1			INCL	
48	High content lead grey paint to walls	Item	1			INCL	
49	Presumed asbestos paper internal to fuses	Item	1			INCL	
50	Centre motor room						
51	Medium content lead green paint to motor	Item	1			INCL	
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53	Asbestos putty to window	Item	1			INCL	
54	High content lead grey paint to walls and roof	Item	1			INCL	
55	Presumed asbestos resin brake linings internal to motor	Item	1			INCL	
56	Rear motor room						
57	Presumed asbestos resin electrical mounting board in cabinet on wall	Item	1			INCL	
58	Medium content lead green paint to motor	Item	1			INCL	
59	Medium content lead yellow paint to motor	Item	1			INCL	
60	High content lead red paint to electrical pipes	Item	1			INCL	
61	High content lead grey paint to walls and roof	Item	1			INCL	
62	Asbestos putty to windows	Item	1			INCL	
63	Presumed asbestos paper internal to fuses	Item	1			INCL	
64	Presumed asbestos resin brake linings internal to motor	Item	1			INCL	
65	Deconstruction Labour and Craneage at Hammerhead Crane location						
66	EWP investigation is recommended prior to dismantlement, to confirm locations of original connections, and to identify any failed members that may cause unexpected responses during the lifting process. The undertaking of this investigation prior to dismantling of the crane is likely to present cost savings if dismantling can be undertaken with a single lifting crane as per the likely original erection procedure	Item	1	\$	18,400.00	\$	18,400.00
67	Provide protection to nearby drainage such that contaminants are directed away from drains	Item	1	\$	5,000.00	\$	5,000.00
68	Crane Hire and EWP costs	Days	20	\$	9,200.00	\$	184,000.00
69	Localised coating removal to be undertaken at proposed cut locations, via chemical methods along cut lines	Days	10		3,000.00	\$	30,000.00
70	Stages 1 to 8						
71	Grind / oxy-cut dismantled members for progressive removal to nominated safe area on site and carry out final cutting on ground or off site, for removal and recycling of material.	t	64	\$	750.00	\$	48,000.00
72	Labour assist cutting and loading dismantled material on barge	Days	5	\$	4,000.00	\$	20,000.00
73	Transport						
74	Removed sections are to be loaded to barge for recycling of steel. Barges to be fitted with covers to minimise loss of contaminants during Transport.						
75	Dumb Barge costs	Days	5	\$	2,760.00	\$	13,800.00
76	Tug Hire Costs	Hrs	50	\$	805.00	\$	40,250.00
77	Allow for barges to be fitted with covers to minimise loss of contaminants during Transport.	Item	1	\$	5,000.00	\$	5,000.00
78	Dispose of all materials per NPWS and EPBC Act requirements.						

79	Unload and transport from barge to disposal location	t	64	690.00	\$	44,160.00
80	Deconstruction and disposal	Wk	1	2,875.00	\$	2,875.00
81	Deconstruction Yard Storage costs	Wk	1	\$ 2,500.00	\$	2,500.00

CONSERVATION

81 (i) The following items are to be retained from dismantled material, to be conserved for interpretation:

82 a. Crane hook and hook carriage

83 b. Operator cabin

84 c. Winches

Item 1 120,000.00 \$ 120,000.00

85 SUB TOTAL \$ 1,467,399.70

86 Prelims & Margin \$ 293,479.94

87 Contingency \$ 176,087.96

88 Escalation EXCL

89 Professional and Authorities Fees EXCL

90 TOTAL \$ 1,936,967.60

ORDER OF COST ESTIMATE

Goat Island Tower Crane



OPTION 3 - DISMANTLE JIB AND RETAIN CRANE TOWER

21-Oct-24

	DESCRIPTION	UNIT	QTY	RATE	TOTAL
1	SCOPE				
2	NPWS have identified potential for partial retention of the crane (tower only) and dismantlement of the jib and backspan.	Note			
3	CONSULTANTS				
4	As for full retention of the crane, we note that substantial resources, expertise, work and immediate and ongoing costs would be required for retention of the crane tower .				
5	Works That Would be Required to Retain and Manage the Crane Safely				
6	Allow for Witness Point Inspections	Item	1	\$ 21,562.50	\$ 21,562.50
7	Allow for Hold Point Notices	Item	1	\$ 4,025.00	\$ 4,025.00
8	Allow for Authorities evidence of compliance	Item	1	\$ 4,025.00	\$ 4,025.00
9	Allow for demolition work plan	Item	1	\$ 11,500.00	\$ 11,500.00
10	Allow for keeping records	Item	1	\$ 5,750.00	\$ 5,750.00
11	Allow for quality assurance	Item	1	\$ 4,025.00	\$ 4,025.00
12	Allow for non conformance reports	Item	1	\$ 4,025.00	\$ 4,025.00
13	Allow for dilapidation report - The photographic and written record made before demolition work of the condition of the existing building, adjacent buildings, and other relevant structures or facilities.	Item	1	\$ 11,500.00	\$ 11,500.00
14	Engineering assessment				
15	Allow for Engineering Assessment - thorough structural inspection and analysis	Item	1	\$ 36,800.00	\$ 36,800.00
16	PRELIMINARY WORKS				
17	Archival Recording				
18	Allow for archival recording (if applicable) and preparation of a Salvage and high-value heritage items to be carried out prior to Re-Use plan to identify commencement of dismantlement works.	Item	1	\$ 20,000.00	\$ 20,000.00
19	Hoarding				
20	Secure footprint of crane and establish buffer zone (e.g. fencing, hoarding)	Item	1	\$ 35,000.00	\$ 35,000.00
21	Temporary Bracing for Crane				
22	Temporary bracing cables of wire rope 21m x 36mm dia attached to operator's cabin (top of tower under slew)	No	4	\$ 4,025.00	\$ 16,100.00
23	15t rock /ground anchors	No	4	\$ 4,025.00	\$ 16,100.00
24	Allow to remove ground anchors and make good to match existing	No	4	\$ 1,150.00	\$ 4,600.00
25	Mobilisation via slipway yard				
26	Barge (Tambaii II selfpropelled Roll-On-Roll-Off) operated by Polaris Marine Barge to mobilise equipment to site including Mobile Crane, Scaffolding, Elevated Working Platform etc				
27	Delivery and return cost for Mobile Crane/EWP Costs/Scaffold an Working Platform excluding hire	Loads	5	\$ 10,925.00	\$ 54,625.00
28	Tug Hire costs	Hrs	40	\$ 805.00	\$ 32,200.00
29	Perimeter scaffold and catch decks to be installed				
30	Working Platform below boom				
31	Design supply, install and dismantle working platform to safely access all parts of the Crane:	m2	260	\$ 805.00	\$ 209,300.00
32	Scaffold -Supply, Install, dismantle scaffold to safely access all parts of the Crane:				
33	Tower	m2	744.6	\$ 138.00	\$ 102,754.80
34	Boom and Jib	m2	684.42	\$ 138.00	\$ 94,449.96
35	Access stairs	Item	1	\$ 25,000.00	\$ 25,000.00
36	Crane Operation Inspection				
37	Allow to engage crane maintenance engineer to inspect and service slew bearing and slew ring, to ensure crane can weathervane	Item	1	\$ 11,500.00	\$ 11,500.00
38	Allow Crane maintenance engineer also to remove cables, hook, and anything that could fall from the crane (or install catch-nets where items cannot be removed)	Item	1	\$ 11,500.00	\$ 11,500.00

39	Loose window frames and glass have already been removed and the central motor room roof (which is very corroded and doily-thin) has been tied down with ropes. A catch net has been installed beneath the control cabin.	Note					
40	Scaffold Encapsulation						
41	As structure is within National Park assume full encapsulation of structure will be required to abrasive clean.						
42	Allow to encapsulate areas to allow lead paint and asbestos removal.	m2	1249.44	\$	46.00	\$	57,474.24
43	Encapsulate flaking coatings (paint over) Undertake wet scraping or wet hand sanding to remove lead paint where required or undertake dry sanding with HEPA-filter vacuum and dust shroud.	m2	1249.44	\$	30.00	\$	37,483.20
44	Remove asbestos containing material (ACM) and Lead Paint by specialist contractor.						
45	Air monitor for free asbestos fibres, if required.	Item	1	\$	10,000.00	\$	10,000.00
46	Remove and dispose of hazardous materials per register at Appendix B.	Item	1	\$	57,500.00	\$	57,500.00
47	Externals						
48	High content lead grey paint to external steel frames and walls to rooms	Item	1			INCL	
49	Control room						
50	High content lead green paint to roof and door	Item	1			INCL	
51	Asbestos putty to window	Item	1			INCL	
52	High content lead grey paint to walls	Item	1			INCL	
53	Presumed asbestos paper internal to fuses	Item	1			INCL	
54	Centre motor room						
55	Medium content lead green paint to motor	Item	1			INCL	
56	Medium content lead yellow paint to motor	Item	1			INCL	
57	Asbestos putty to window	Item	1			INCL	
58	High content lead grey paint to walls and roof	Item	1			INCL	
59	Presumed asbestos resin brake linings internal to motor	Item	1			INCL	
60	Rear motor room						
61	Presumed asbestos resin electrical mounting board in cabinet on wall	Item	1			INCL	
62	Medium content lead green paint to motor	Item	1			INCL	
63	Medium content lead yellow paint to motor	Item	1			INCL	
64	High content lead red paint to electrical pipes	Item	1			INCL	
65	High content lead grey paint to walls and roof	Item	1			INCL	
66	Asbestos putty to windows	Item	1			INCL	
67	Presumed asbestos paper internal to fuses	Item	1			INCL	
68	Presumed asbestos resin brake linings internal to motor	Item	1			INCL	
69	STAGES 1-6 ONLY WORKS						
70	Deconstruction Labour and Craneage at Hammerhead Crane location						
71	EWP investigation is recommended prior to dismantlement, to confirm locations of original connections, and to identify any failed members that may cause unexpected responses during the lifting process. The undertaking of this investigation prior to dismantling of the crane is likely to present cost savings if dismantling can be undertaken with a single lifting crane as per the likely original erection procedure	Item	1	\$	18,400.00	\$	18,400.00
72	Provide protection to nearby drainage such that contaminants are directed away from drains	Item	1	\$	5,000.00	\$	5,000.00
73	Crane Hire and EWP costs	Days	8	\$	9,200.00	\$	73,600.00
74	Localised coating removal to be undertaken at proposed cut locations, via chemical methods along cut lines	Item	6		3,000.00	\$	18,000.00
75	Grind / oxy-cut dismantled members for progressive removal to nominated safe area on site and carry out final cutting on ground or off site, for removal and recycling of material.						
76	STAGE 1 - WINCH ROOM AND WINCH REMOVAL	Item	1	\$	13,500.00	\$	13,500.00
77	STAGE 2 - FRONT END OF BOOM REMOVAL	Item	1	\$	13,500.00	\$	13,500.00
78	STAGE 3 - BACKSPAN REMOVAL	Item	1	\$	13,500.00	\$	13,500.00
79	STAGE 4 - REMAINDER OF BOOM REMOVAL	Item	1	\$	13,500.00	\$	13,500.00

80	STAGE 5 - UPPER TOWER ABOVE SLEW RING (INCLUDING MOTOR ROOM)- TOWER OVER MOTOR ROOM (3 sections)	Item	3	\$	13,500.00	\$	40,500.00
81	Crane Hire and EWP costs	Days	8	\$	9,200.00	\$	73,600.00
82	Transport						
83	Removed sections are to be loaded to barge for recycling of steel. Barges to be fitted with covers to minimise loss of contaminants during Transport.						
84	Dumb Barge costs	Days	4	\$	2,760.00	\$	11,040.00
85	Tug Hire Costs	Hrs	32	\$	805.00	\$	25,760.00
86	Crane Hire and EWP costs	Days	4	\$	9,200.00	\$	36,800.00
87	Allow for barges to be fitted with covers to minimise loss of contaminants during Transport.	Item	1	\$	5,000.00	\$	5,000.00
88	Dispose of all materials per NPWS and EPBC Act requirements.						
89	Unload and transport from barge to disposal location	t	52		690.00	\$	35,880.00
90	Deconstruction and disposal	Wk	2		2,875.00	\$	5,750.00
91	(i) The following items are to be retained from dismantled material, to be conserved for interpretation:						
92	a. Crane hook and hook carriage						
93	b. Operator cabin						
94	c. Winches	Item	1		120,000.00	\$	120,000.00
95	Deconstruction Yard Storage costs	Wk	2	\$	2,500.00	\$	5,000.00
96	STAGE 6 INSITU REFURBISHMENT WORKS -						
97	Allow for working platforms and re-encapsulation to allow refurbishment work	Item	1	\$	140,000.00	\$	140,000.00
98	NDT weld inspection (base plates and boom and suspension rod splices) and ultrasonic testing of rivets and bolts	Item	1	\$	2,300.00	\$	2,300.00
	Structure in poor condition;						
	- Rivets corroded to the point of the head being totally removed						
	- Areas of the main structure corroded over 50% of the material thickness						
	- Buckling of main tower members(localised only)						
	- Corrosion of electrical conduits						
99	- Bolt heads/nuts on slew rollers corroded						
	- Extensive corrosion on racking winch mount						
	- Signs of contact between crane and slew ring						
	- Signs of excessive wear in the keyway of the main slewing gear mechanism						
	- Glass broken and difficult to see through in the operator's cabin.						
	- Extensive Flaking Paint						
100	Allowance to replace structural members where required (cutting and splicing) and repairing/augmenting connections where required (plating/welding/bolting)	t	3.64	\$	50,000.00	\$	182,000.00
101	Re-plate heavily corroded slew ring external walkway (considerably corroded to the southern side, where water ponds), which acts as a horizontal ring beam, stiffening the slew ring.	m2	17	\$	4,000.00	\$	67,824.00
102	Whip abrasive blasting to remove flash corrosion, and priming within 2 hours	m2	394	\$	90.00	\$	35,490.00
103	Protective coat all steelwork for 25 year design life to apply protective coating to the whole exposed surfaces of retained crane tower 500 - 600 micron thick dual layer two pack solids epoxy coating and primer to structure	m2	394	\$	150.00	\$	59,150.00
104	Allow for fibre cement timber framed rain covers over pockets at base of crane legs	Item	1	\$	8,000.00	\$	8,000.00
105	Install anchor points for rope access maintenance	Item	1	\$	15,000.00	\$	15,000.00
106	Allow to remove and relocate stoage shed	Item	1	\$	17,250.00	\$	17,250.00
107	Allow for labour transport costs	Item	1	\$	5,000.00	\$	5,000.00
108	SUB TOTAL					\$	1,959,143.70
109	Prelims & Margin					\$	489,785.93
110	Contingency					\$	489,785.93
111	Escalation					EXCL	
112	Professional and Authorities Fees					EXCL	
113	SUB - TOTAL					\$	2,938,715.55
114							
115	MAINTENANCE (25 Years)						
116	Crane maintenance engineer to re-service slew mechanism not required	Note					

117	Crane maintenance cleaning	Year	25	\$	4,312.50	\$	107,812.50
118	Structural Inspection using EWP	Year	12.5	\$	6,468.75	\$	80,859.38
119	Extra over for NDT weld inspection and ultrasonic testing of rivets and bolts every 10 years and repair/replace/augment as required.	Item	2.5	\$	6,468.75	\$	16,171.88
120	Re-protective coat all repairs.	Item	1.5	\$	43,125.00	\$	64,687.50
121	Protective coating and maintenace required after 25 years	Item	1	\$	200,000.00	\$	200,000.00
122	TOTAL					\$	3,408,246.80