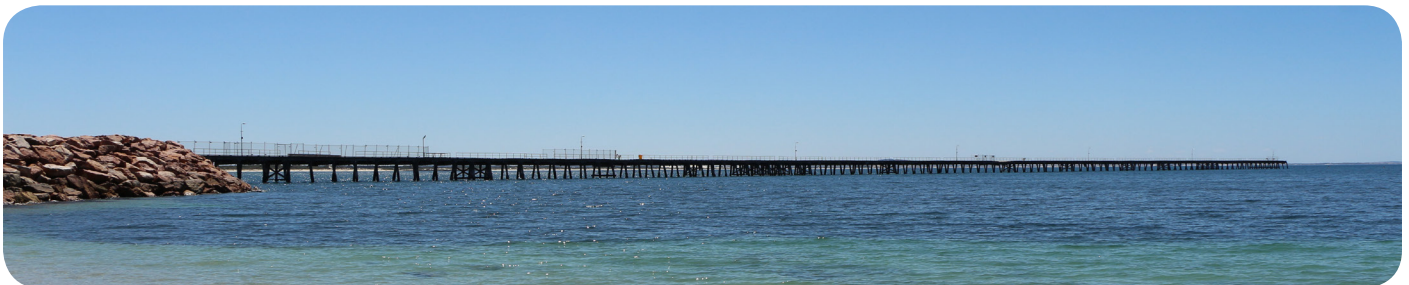


# The Esperance Tanker Jetty



## Executive Summary

The Shire of Esperance (SoE) is seeking approval from the Heritage Council Western Australia (HCWA) for the demolition of the Esperance Tanker Jetty (Jetty). In 2008 the Jetty was heritage listed and is included on the State Heritage Register, place number 00831. The Jetty has exceeded its useful life and is now beyond economic repair. Due to these reasons and the potential risk to the Esperance Community the SoE Council (Council) resolved to close the Jetty in December 2015. Immediate demolition of the Jetty is now required, as the Jetty continues to deteriorate daily and presents a hazard to the Southern Ports Authority Port of Esperance (SPA) operations and a significant financial risk to the SoE if uncontrolled failure occurred and underwater recovery of the structure was forced by regulatory authorities. In February 2016 Council resolved to begin the process to remove the Jetty, therefore SoE is now requesting approval for the demolition of the heritage listed Jetty as a matter of urgency.



## Background & History

Construction of the Jetty commenced in 1934 and was completed in 1935. The original Jetty comprised of 192 pier groups, but was reduced to 143 pier groups with an overall length of 656m and an average width of 4.5m, following a large storm in 1988. The Jetty is now 81 years old, with timber jetty structures typically being designed for a 50 year life span.

The Jetty was in commercial use until the 1970s, at which time, the SPA moved their operations to land-backed wharves. This decision was based on a number of considerations; partly that the nature and volume of shipping operations were changing, but predominantly because the Jetty was at the end of its useful and economic life.

Ownership of the Jetty rests with the Western Australian State Government.

In 1990, responsibility for the maintenance of the Jetty was passed to the SoE with an agreed one-off payment of \$150,000 into a trust fund to pay for the maintenance of the Jetty in perpetuity.

Since 1995, in excess of \$1,000,000 has been expended on maintenance by the SoE including in recent years, the following sums:

2013/2014 - \$176,477

2014/2015 - \$37,913

2015/2016 - \$57,315

In several resolutions since 2010, the Council has recognised that significant expenditure on maintenance operations was not a responsible use of ratepayer's funds. Further, in several resolutions, Council has recognised that the Jetty was at the end of its useful life, and supported its replacement as a matter of priority.



In 2013 the SoE received approval from HCWA Officers to remove the first 80 metres of the Jetty as part of the Esperance Waterfront Headland Project, as part of this project heritage interpretive works around the Jetty were installed.

### Reports and Inspections of the Tanker Jetty

Council originally engaged BG&E Consultants to undertake a detailed structural report of the Jetty in 2010 and 2011. The report provided a condition rating for individual elements of the jetty and indicated that the first 80m of the Jetty was in the worst condition, subsequently the Esperance Waterfront Headland Project involved the removal of this section.

Since this time, SoE Officers have been monitoring the Jetty on a monthly basis with visual inspections. Any major issues have been dealt with as they occurred, including the loss of a pier 136.5m from the start of the Jetty.

In 2013 BMT JFA Consultants undertook a visual assessment of the superstructure and substructure, prior to reconnecting the Jetty to the newly created headland. The result of the inspections was a position paper outlining work that needed to be undertaken on the Tanker Jetty and an overall assessment of the Jetty condition.

The report stated –

“The overall condition may be described as severe but sound in calm to moderate conditions. A storm event could cause the weak and damaged sections of the jetty to fail. The location of such failure would depend on particular characteristics of the storm. A lesser storm could also cause significant damage to weak points in the structure”

The weak points in the structure originally identified in the BG&E report and subsequently backed up by this condition report are –

- The piles
- The connection between piles and halfcaps
- The lack of effective bracing.

The report outlines essential repair works needed prior to re-opening the Jetty and within 12-24 months of the jetty being opened.

In November 2015 as part of the regular inspections required for the Jetty, BMT JFA Consultants again undertook a visual assessment of the superstructure and substructure. The results are outlined in the attached report 'Esperance Jetties Condition Assessments – Condition Inspection and Maintenance Strategy Report' (Appendix A).



Failure of Piers



Failure of Piers



Crushing and Failure of Corbels



Failure of Half Caps





This report identified many serious structural defects that required the immediate closure of the Jetty and included at a minimum, the following repairs over the next two years:

- 42 Piles
- 50 Half Caps
- 39 Corbels
- 5 Stringers
- Replace all bolts

As a result Council resolved in December 2015 to close the Jetty to the public.

Since the last report and its closure the Jetty has been deteriorating exponentially. The deck in the region of pile groups 92-96 in particular has sagged by 250mm. This sagging has been caused by the failure of pile 93 north, and the failure of halfcaps at piles 94 and 95 south. As a result, the deck has twisted longitudinally as well as sagging. It is considered that the structure is very mobile at present, and a partial collapse failure is expected at any time. Based on the level of this deterioration, demolition is now considered a priority.



Sag in deck planking at pile 95s



Sag in deck planking at pile 94s



Half-cap at pile 95s.



Sag in deck planking



## Demolition versus repair of the Tanker Jetty

The SoE has analysed the report findings and recommendations from BMT JFA, and the following four options have been investigated in detail:

- Option 1 – Retain the existing Tanker Jetty for the full length
- Option 2 – Retain the Tanker Jetty to pier 87 which would give a length of 248 meters
- Option 3 - Retain the full length and re-pile
- Option 4 – Permanently close the Tanker Jetty and plan to build a new a Jetty

Option 1– Retain the existing Tanker Jetty for the full length involves the undertaking critical maintenance identified over the over the next year for an estimated maximum life extension of 5 years.

Minimum works required:

- 42 Pile repairs
- 50 Half Cap repairs
- 39 Corbel repairs
- 5 Stringer repairs
- Replace all bolts

Option 2 – Retain the Tanker Jetty to pier 87 which would give a length of 248 meters involves the undertaking critical maintenance identified over the over the next year for an estimated maximum life extension of 5 years. Minimum works required:

- 27 Pile repairs
- 26 Half Cap repairs
- 17 Corbel repairs
- 2 Stringer repairs
- Replace all bolts

Option 3 – Retain the Tanker Jetty full length and re-pile and undertake critical maintenance, this option would give a life extension between 10-20 years. The works would require:

- 224 Re-piles
- 224 New Half Caps
- 39 Corbel repairs
- 5 Stringer repairs
- Replace all bolts

Option 4 – Permanently close and demolish the Jetty and plan to build a new a jetty at a cost of \$10,000,000 including demolition. The life expectancy of a new jetty would be 50 years.





Costs are based on recent underwater inspection of piles that were classified as condition 4 or worse during previous surveys. It must be expected that full inspection of all piles will result in repair option costs significantly increasing.

Capital	Option 1 Repair Whole Jetty	Option 2 Repair Landward Half Jetty	Option 3 Re-pile Whole Jetty	Option 4 Demolish and Replace
Immediate	\$490,000	\$306,000	\$74,000	
6 Month	\$713,800	\$349,200	\$8,804,877	\$570,000
12 Months	\$2,879,000	\$2,605,000	\$133,000	\$1,800,000
24 Months	\$2,778,000	\$1,423,000	\$2,060,000	\$7,630,000
Demolition at end of life	\$1,800,000	\$1,000,000	\$1,800,000	\$1,800,000
<b>TOTAL</b>	<b>\$8,660,800</b>	<b>\$5,683,200</b>	<b>\$12,871,877</b>	<b>\$11,800,000</b>
Life Expectancy (Years)	Max 5 Years	Max 5 Years	10-20 Years	50 Years
Life Expectancy Used	5	5	15	50
<b>Annualised Expenses</b>				
Economic Cost @ 4% pa	\$346,432	\$227,328	\$514,875	\$472,000
Depreciation	\$1,732,160	\$1,136,640	\$858,125	\$236,000
Inspections	\$200,000	\$120,000	\$100,000	\$20,000
Maintenance / Operation	\$100,000	\$100,000	\$75,000	\$50,000
<b>Total Annualised Expense</b>	<b>\$2,354,592</b>	<b>\$1,583,968</b>	<b>\$1,537,334</b>	<b>\$772,000</b>

Options 1 and 2 have a life expectancy of 5 years or less, with no certainty that the structure would be maintainable beyond that.

Option 3 offers a slightly greater life expectancy.

Option 5 offers the longest usable life expectancy and also offers best value for money.

Demolition and replacement of the Jetty is the only viable option the SoE has and represents the best value for its ratepayers and community in providing a recreational jetty into the future.

### The Urgency of Prompt Controlled Demolition

Immediate and controlled demolition of the Jetty is now required, as the Jetty continues to deteriorate daily and presents a hazard to the Southern Ports Authority Port of Esperance (SPA) operations and a significant financial risk to the SoE if uncontrolled failure occurred and underwater recovery of the structure was forced by regulatory authorities. Demolition of the Jetty as it currently stands is a quantifiable task, and one which could be tendered by a competent contractor. In the event that sections of the jetty are allowed to deteriorate beyond the point of collapse, recovery and demolition of the collapsed section will become more complex and costly, requiring the use of specialised salvage and diving team; this would not be a quantifiable task.

SoE Officers have obtained two cost estimates for the demolition of the Jetty based on its current condition and that the structure is still standing while being demolished. Approximate budget estimates for demolition only are of the order of \$1,800,000.

Officers have undertaken initial liaison with the SPA Project Manager, who is aware of the condition of the Jetty, and is expecting an approach from SoE regarding demolition. SPA have stated that they do not hold a position on demolition other than marine safety and operations are paramount.

Officers have also undertaken initial liaison with the Department Environmental Regulation, who stated no opposition to the demolition of the Jetty subject to their requirements.

HCWA authorisation is now requested as a matter of urgency so the process of managing a controlled demolition of the existing structure can commence. Additional delays may result in an uncontrolled collapse, exposing the SoE and the Community to further risk and certain significant additional cost, there is no other realistic and economically viable alternative available.



## Community Consultation

The SoE undertook independent community consultation in late 2013, to discuss the replacement of the Jetty. Four consultation workshops were held including two community forums, a targeted Stakeholders forum and a meeting with Council and Executive of the Shire. In all, 136 people attended the forums.

The outcomes from each of the workshops reflected a wide range of perspectives and opinions the report is available in Appendix B. The common themes, although not supported by every participant, are the basis of the majority view of the 136 participants who attended the workshops.



The top three views from the participants were –

- Acceptance that the current Tanker Jetty is at the end of its useable life;
- Participants want a replacement structure;
- The replacement structure should be in the same location (ie: the Headland);

Based on these workshops, basic concepts designs on possible replacement elements were developed, and displayed at 2014 Esperance Agricultural Show.



The SoE plan to undertake further community consultation to assess public opinion as regards the location, form and function of the replacement jetty.

## Heritage Interpretation of Tanker Jetty

The SoE has already undertaken heritage interpretation of the Jetty as part of the Esperance Waterfront Project. In consultation with HCWA a Heritage Interpretation Plan was prepared on behalf of the SoE. The Heritage Interpretation Plan is Appendix C.

The heritage of the Jetty is represented within the Esperance Waterfront Project, a summary is provided below of the key elements included, a full list can be found in Appendix 1 of the Heritage Interpretation Plan as attached in Appendix D.

1. Historical images featuring the Jetty are presented in the amenities blocks and shelters as large-scale glass panels.
2. Extensive use of recycled Jetty timbers for benches, many of which also feature inset panels depicting extracts from the original construction drawings from the 1930's.
3. Use of recycled Jetty timbers in the headland playground for the construction of a play Jetty and a timber boardwalk.
4. Use of recycled Jetty timbers for wayfinding and heritage signage along the full extent of the waterfront.
5. Use of recycled Jetty timbers for marker posts to denote the location of the underground oil pipeline as an aesthetically pleasing alternative to steel or plastics posts.
6. Use of recycled Jetty timbers as inset panels in street lighting poles along the Jetty boardwalk. The inset panels also feature images and information panels depicting the Jetty's history through the decades, starting with construction in the 1930's.
7. The alignment of the previously dismantled section of the Jetty within the headland is represented by a pre-cast concrete boardwalk constructed along the same line and level as the original structure.
8. Sections of railway line are set into the exposed aggregate paving at the start of the boardwalk on the same alignment as the rail track that used to serve the Jetty when it was in commercial operation, pre-1960's.
9. Use of recycled Jetty timbers as cardinal compass points in the headland artworks 'Directions'.







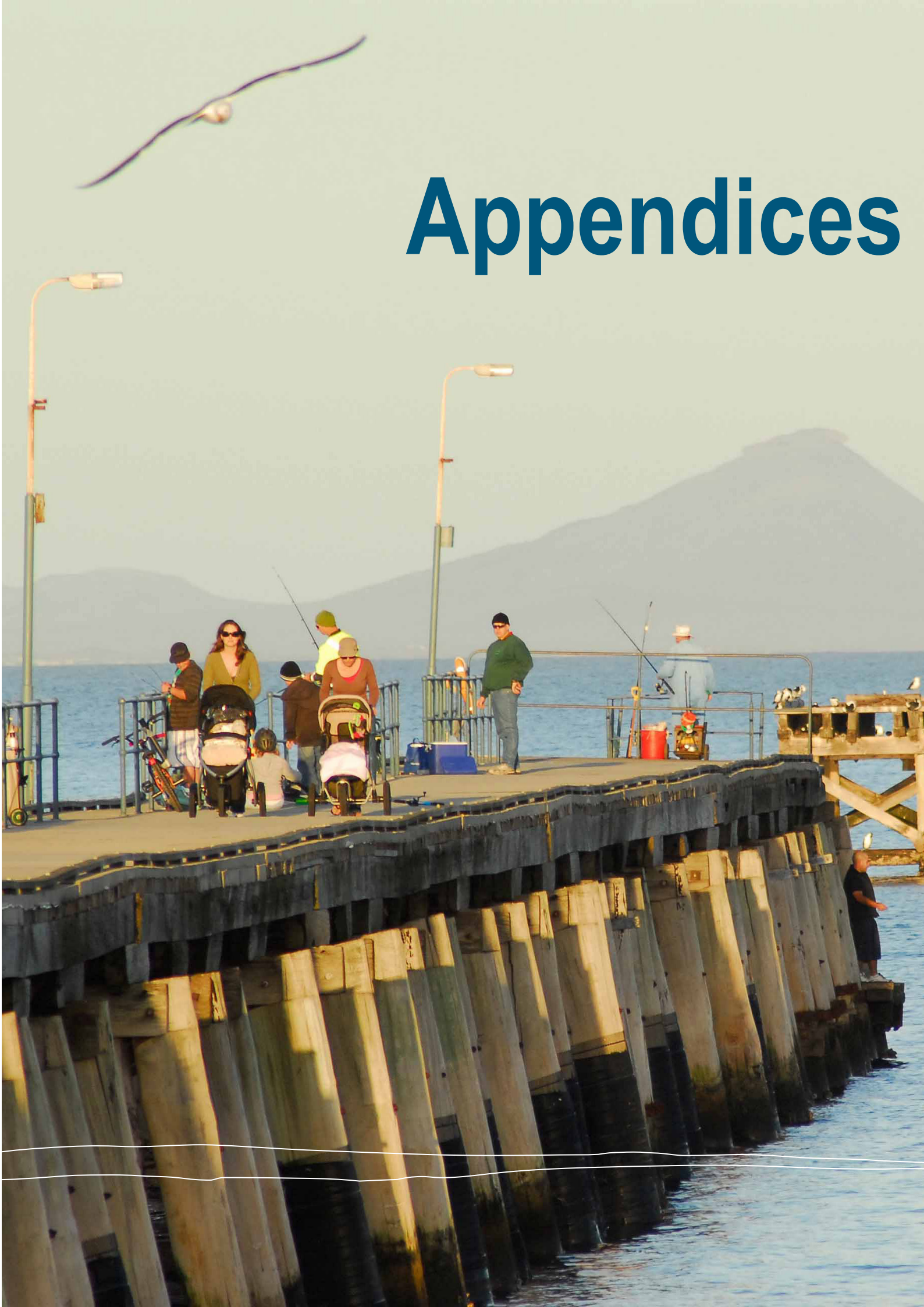
## Conclusion

The Jetty has exceeded its useful life and is now in an extremely poor state. Demolition has been identified as the most economically viable option from the findings and recommendations presented in the BMT JFA report. Approval for demolition of the Jetty from HCWA will allow the SoE to promptly and safely remove the structure, as the Jetty continues to deteriorate daily. While the Jetty remains and uncontrolled failure occurs, it presents a hazard to the SPA operations and a significant financial risk to the SoE. The SoE is committed to acknowledging the significant heritage value of Jetty shown by the interpretation works already undertaken and the intention to provide a replacement structure. The SoE would appreciate HCWA's priority consideration of this proposal to demolish the Jetty.





# Appendices





# Appendix A



# Appendix B





# Appendix C



# Appendix D

