



# City of Wanneroo Assets Structural Assessment

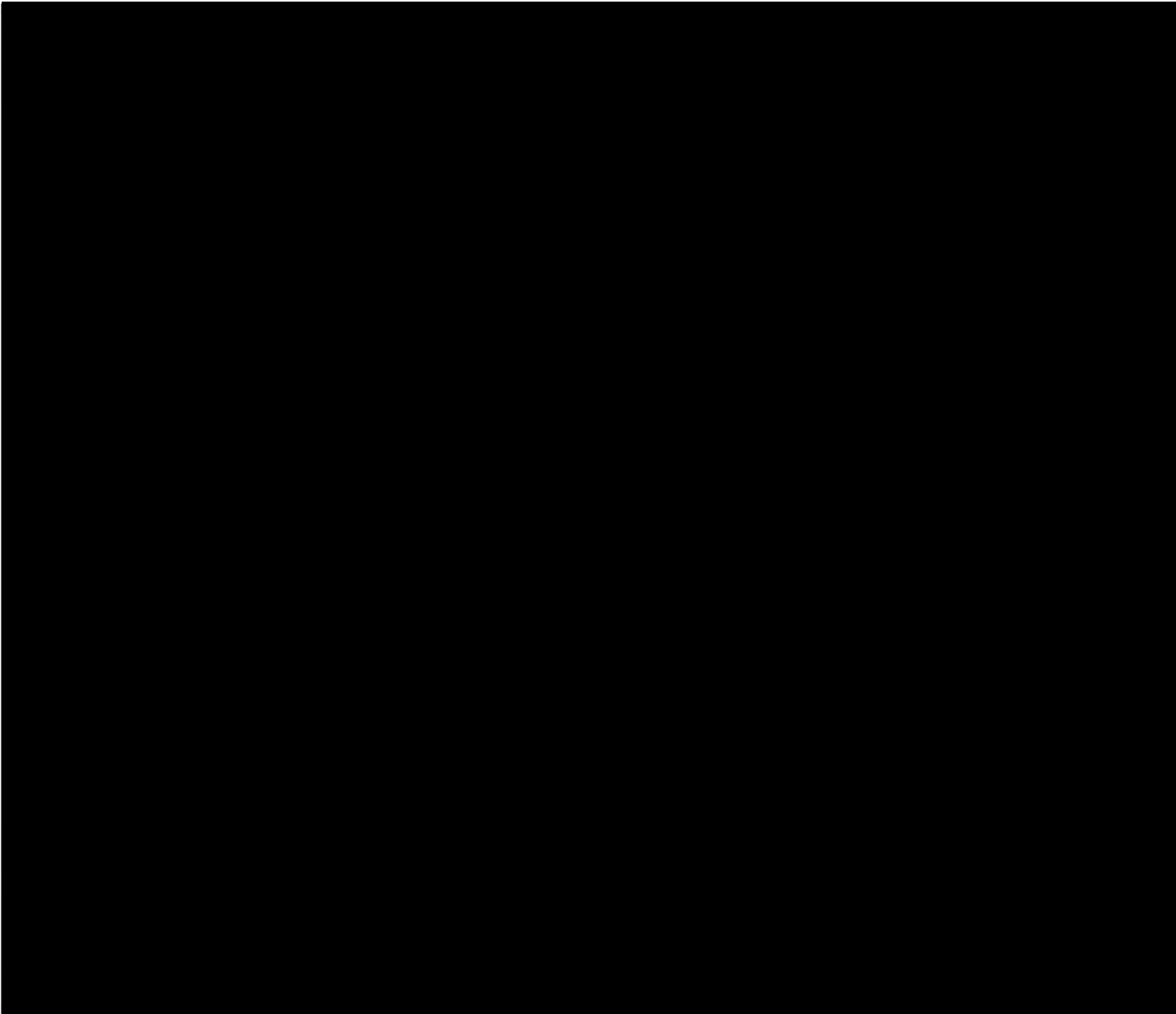
## Coastal Assets

City Of Wanneroo

30 July 2021

→ **The Power of Commitment**





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# Executive summary

The City has engaged GHD Pty Ltd (GHD) to provide a detailed condition assessment of 33 no. nominated coastal assets and including identification of immediate health and safety and/or structural risks and provide maintenance recommendations to be completed within the next 5 years and asset renewal recommendations to be completed within the next 20 years. The outcomes of the inspections will be used to budget for and schedule in maintenance works for the following 5 years and identify a priority list for asset renewal capital works from 2021/22 to 2041/42.

The assets requiring condition assessment included but were not limited to the following:

- Gazebos.
- Boardwalks, platforms, handrails.
- Stairs and Landings.
- Viewing Platforms.
- Fencing.
- Foundations, support structure and connections of the above.

This report presents the following:

- The current condition of each structural component for the nominated coastal infrastructure assets utilising the City's current asset condition rating system.
- A list of all defects for each structural component of the specified coastal infrastructure assets with accompanying photographs.
- Prioritised renewal recommendations for each asset component and/or whole of asset replacement.
- Maintenance recommendations including required timeframes for undertaking the works.
- Cost estimates for all recommended works.
- Summary of all maintenance/renewal priorities, which prioritises maintenance/renewal according to each site's most critical component.
- Recommendation for further investigations and/or testing.

Based on the outcomes of the site inspection all 33 assets were prioritised. The priority was determined by the most critical component (i.e the component with the highest overall rating, condition rating x risk rating) followed by the average of all component overall ratings for the site. The maintenance/renewal priority list and associated critical component is presented below. The condition of the assets varied with a number of assets in good condition with little to no maintenance required whilst a number of assets were found to be in poor condition with significant maintenance required.

## Maintenance/renewal priority list

Priority	Coastal Asset	Location	Maximum Rating	Average of all Ratings	Critical Component Maintenance	Critical Component Renewal
1	C1	North Two Rocks Foreshore	288	20	Remove redundant formwork at concrete path edge, repair to damaged concrete and limestone block. Replace steel fencing as required	Replace concrete slabs, replace timber posts, replace FRP mesh, and steelwork, replace stair structure and handrailing.
2	C25	Quinns Rocks Beach Foreshore	135	41	Apply protective coating on steel foundations	Replace steel plies, and handrails as required.

Priority	Coastal Asset	Location	Maximum Rating	Average of all Ratings	Critical Component Maintenance	Critical Component Renewal
3	C17	Jindalee Foreshore	128	23	Repair damaged grout on limestone walls and replace decking steel and timber components as required.	Replace decking and handrailing.
4	C18	Jindalee Foreshore	112	28	Apply protective coating for stairs and replace fixings in handrails as required.	Replace staircase and handrailing.
5	C13	Alkimos Beach	108	18	Fill in pothole in concrete base slab and apply protecting coating on steel sign.	Replace fencing, bollard, bench, support steelwork and timber roofing.
6	C19	North Quinns Rocks Foreshore	96	23	Apply protective coating on steel pedestals and repair fencing as required.	Replace steel fencing, bollards, pedestals, and stairs.
7	C23	North Quinns Rocks Foreshore	96	45	Replace existing fencing with permeant steel fencing, replace corroded connections and sections in stairs.	Replace steel and timber supports, decking, refencing and replace handrailing as required, replace timber benches, supports, and stair structure.
8	C32	North Mindarie Foreshore	96	41	Investigate and repair limestone footing as required.	Replace stairs, fencing, bench and signage.
9	C33	South Mindarie Foreshore	96	27	Resurface bitumen base area, reinspect steel drink fountain, and repair concrete stairs	Replace bitumen base, limestone wall, fencing. Replace bollards with more durable materials. Replace drinking fountain, stair treads, handrails, and fencing.

Priority	Coastal Asset	Location	Maximum Rating	Average of all Ratings	Critical Component Maintenance	Critical Component Renewal
10	C9	South Yanchep Foreshore	90	21	Replace timber rails as required. Replace failed cable wires and corroded mesh and staples. Repair localised cracks in asphalt base slab.	Replace fencing, aluminium deck planks, steel bollards and balustrades. Resurface asphalt base slab, timber fencing and steel handrails. Re-instate concrete stairs.
11	C15	Jindalee Foreshore	84	33	Replace concrete retaining wall.	Replace concrete footings, timber/steel walls, staircase, decking and handrail.
12	C28	North Mindarie Foreshore	84	31	Repair concrete walls and cracks in concrete base slab. Apply protective coating for steel handrails.	Replace plastic ramp, steel handrailing and balustrades, signs, steel stairs, timber and steel fencing.
13	C2	South Two Rocks Foreshore	80	30	Patch broken edges of asphalt base slab, replace steel chain as required, apply protective coating for steel bollards and signs.	Resurface asphalt path. Replace timber stairs, steel bollards and signs. Replace fencing as a whole.
14	C3	North Yanchep Foreshore	80	19	Replace corroded steel connections, screws and strainer wires. Replace timber bracing and rotten planks.	Resurface limestone base slab. Replace timber/steel fencing. Replace timber decking, supports and handrails.
15	C30	North Mindarie Coastal Walk	80	31	Replace steel mesh strainer wires. Apply protective coating for steel signs.	Replace timber/steel fencing and steel signage.
16	C12	Waterfront Park	72	26	Replace steel signpost, corroded handrails and	Replace steel/timber fencing and handrails, steel

Priority	Coastal Asset	Location	Maximum Rating	Average of all Ratings	Critical Component Maintenance	Critical Component Renewal
					bench. Repair cracks in concrete base slab.	signpost, bench, handrails and balustrades.
17	C20	North Quinns Rocks Foreshore	63	24	Replace damaged mesh and re-tension wires. Replace steel handrails as required.	Replace steel fencing and handrails.
18	C21	North Quinns Rocks Foreshore	63	18	Clear sand from drains in concrete base slab, replace steel bollards and fencing as required.	Replace steel bollards and fencing.
19	C14	Jindalee Foreshore Carpark	56	22	Replace steel fencing as required. Install missing padlocks in bollards.	Replace fencing and bollards.
20	C22	North Quinns Rocks Foreshore	56	28	Clear drainage channels in concrete base slabs. Replace steel fencing and timber rails as required. Replace water fountain.	Replace steel bollards and timber fencing.
21	C27	South Quinns Rocks Foreshore	56	22	Replace north steel fencing mesh.	Replace timber/steel fencing and steel signs.
22	C24	Quinns Rocks Beach Foreshore	54	29	Apply protective coating for steel handrail.	Replace steel handrail.
23	C7	Newman Park (North)	48	15	Replace steel fencing mesh, strainer wires and staples.	Replace timber fencing posts, steel bollards and composite handrails.
24	C8	South Yanchep Foreshore	40	10	Replace steel fencing mesh and staples.	Replace steel bollards, timber/steel fencing, composite bench, and steel balustrades.
25	C4	North Yanchep Foreshore	36	22	Replace and reinstate steel screws as required.	Replace timber and steel supports, handrails and bench.

Priority	Coastal Asset	Location	Maximum Rating	Average of all Ratings	Critical Component Maintenance	Critical Component Renewal
26	C16	Jindalee Foreshore	24	17	Replace steel handrail mesh strain wire and damaged timber deck planks.	Replace timber and steel decking connections, timber and steel handrails.
27	C6	Yanchep Surf Life Saving Club	20	14	Apply protective coating for steel handrails.	Replace steel handrails.
28	C10	Eglinton Foreshore	20	14	Replace steel mesh and fabric cloth in fencing as required.	Replace fencing.
29	C11	Amberton Beach Foreshore South	20	7	N/A	Replace steel handrails.
30	C31	North Mindarie Coastal Walk	20	10	N/A	Replace steel/timber fencing and aluminium/timber bench.
31	C26	South Quinns Rocks Foreshore	18	10	Refix and cloth fencing mesh, strainer wires, and staples.	Replace timber/steel fencing and FRP/steel balustrades.
32	C29	North Mindarie Coastal Walk	18	9	N/A	Replace steel/timber fencing and FRP signage.
33	C5	Old Yanchep Surf Life Saving Club	6	5	N/A	Replace steel support beams connections, composite balustrade, steel handrails, composite material/steel bench.

This report is subject to, and must be read in conjunction with, the limitations set out in Section 1.5 and the assumptions and qualifications contained throughout the Report.

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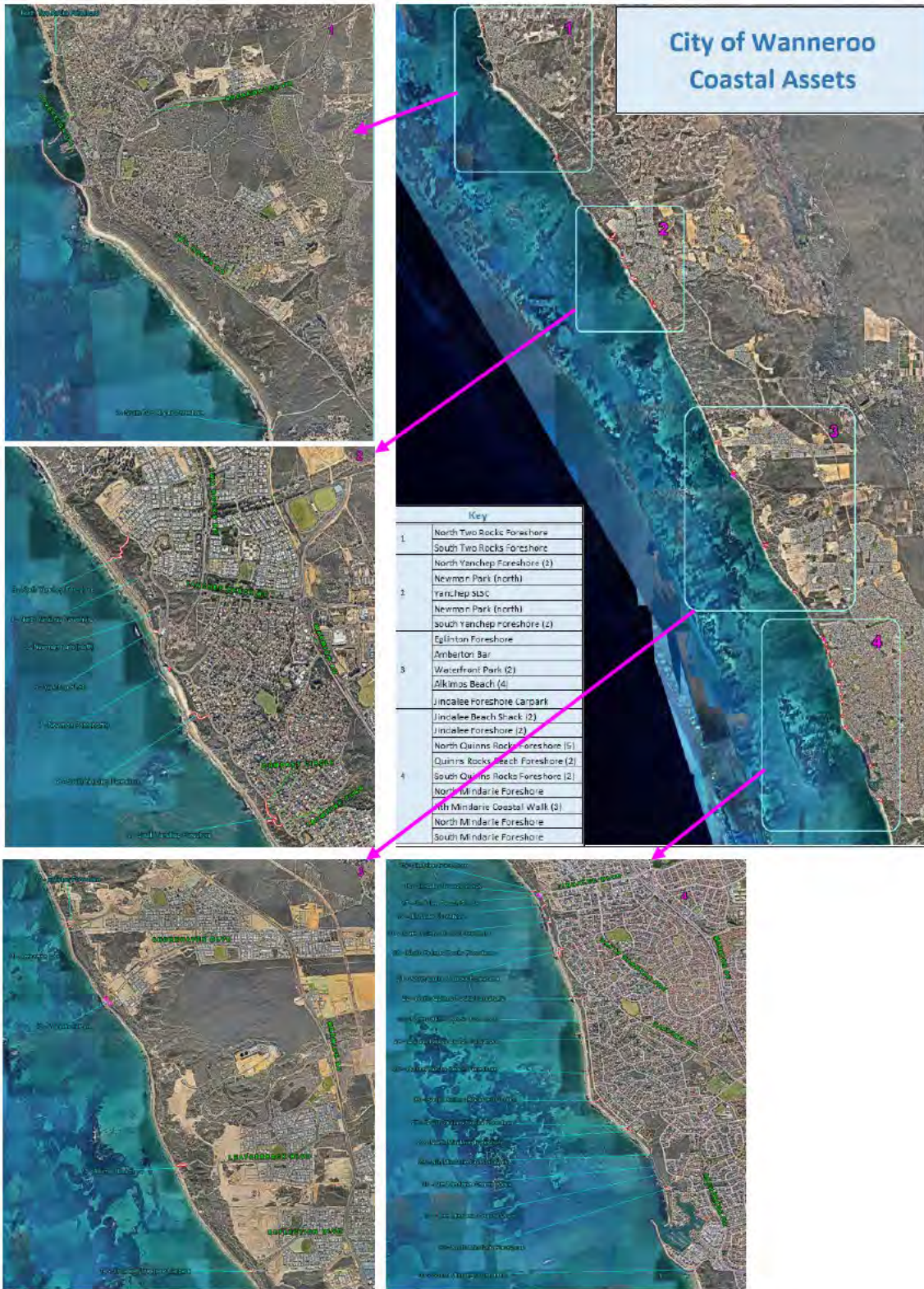


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# 1. Introduction

## 1.1 Background

The City of Wanneroo (the City) maintains and manages a number of coastal infrastructure assets , consisting but not limited to handrails, supports and balustrades, concrete paths and ramps, foundations, boardwalks, platforms, lookouts, stairs, landings, retaining walls, fencing etc., at various locations within their jurisdiction.

The City has engaged GHD Pty Ltd (GHD) to provide a detailed condition assessment of 33 No. nominated coastal assets and including identification of immediate health and safety and/or structural risks and provide maintenance recommendations to be completed within the next 5 years and asset renewal recommendations to be completed within the next 20 years. The outcomes of the inspections will be used to budget for and schedule in maintenance works for the following 5 years and identify a priority list for asset renewal capital works from 2021/22 to 2041/42.

This report will be used to inform the City's future Capital Works infrastructure asset renewal program of current and future maintenance requirements.

All inspections were completed between January and March 2021.

## 1.2 Scope of work

GHD undertook a scope of work in general accordance with its response to Tender 20119 submitted in October 2020, with the actual tasks completed as outlined below:

- Project Establishment, Planning & Job Coordination, GHD Health and Safety & Quality Assurance Procedures and development of Project Plan.
- Development of Job Safety Environment Analysis (JSEA), completion of all relevant safety documentation and attendance of mandatory site induction.
- Conducted visual inspection of the structural components of the 13 nominated park assets. The visual inspection included the following:
  - Identified all visible asset components and sub-components at each park asset.
  - Condition rated all visible asset components/sub-components as per the City's condition rating system.
  - Recorded all current visible defects or damage to each component of the assets.
  - Captured photographs of all visible defects, damage and other risks/concerns.
  - Measured approximate defect areas.
- Conducted a risk assessment for each component of the specified assets, similar to the assessment undertaken in the 2015 Coastal Assets Assessment report.
- Provided an Asset Structural Assessment (ASA) Report which included the following:
  - Executive summary briefly outlining the scope, methodology and recommendations for all inspected assets.
  - Introduction.
  - Scope of work.
  - Assumptions.
  - Summary of available information and main components assessed for each inspected asset.
  - Detailed methodology.
  - Risk assessment results based on both public safety and structural risks.
  - Condition assessment results including the current condition of each asset component and a detailed list of all structural defects/damage.

- Prioritised renewal recommendations for each asset component and/or whole of asset replacement.
- Maintenance recommendations including required minimum timeframes for undertaking the works.
- Cost estimates for all recommended works.

## 1.3 Purpose of this report

The purpose of this report is to provide the City with the findings of the condition assessment of the 33 No. nominated coastal assets, including summary of the condition of each asset and recommended maintenance requirements and asset renewal recommendations.

## 1.4 This Report

This report: has been prepared by GHD for The City of Wanneroo and may only be used and relied on by The City of Wanneroo for the purpose agreed between GHD and The City of Wanneroo as set out in section 1.3 of this report.

GHD otherwise disclaims responsibility to any person other than The City of Wanneroo arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in section 1.5 and throughout this report. GHD disclaims liability arising from any of the assumptions being incorrect.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

Site conditions (including the presence of hazardous substances and/or site contamination) may change after the date of this Report. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

GHD has prepared this report on the basis of information provided by The City of Wanneroo and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

GHD has prepared the preliminary cost estimates set out in section 3 of this report using information reasonably available to the GHD employee(s) who prepared this report; and based on assumptions and judgments made by GHD .

The Cost Estimate has been prepared for the purpose of assisting with City with budgeting purposes and must not be used for any other purpose.

The Cost Estimate is a preliminary estimate only. Actual prices, costs and other variables may be different to those used to prepare the Cost Estimate and may change. Unless as otherwise specified in this report, no detailed quotation has been obtained for actions identified in this report. GHD does not represent, warrant or guarantee that the [works/project] can or will be undertaken at a cost which is the same or less than the Cost Estimate.

Where estimates of potential costs are provided with an indicated level of confidence, notwithstanding the conservatism of the level of confidence selected as the planning level, there remains a chance that the cost will be greater than the planning estimate, and any funding would not be adequate. The confidence level considered to be most appropriate for planning purposes will vary depending on the conservatism of the user and the nature of the project. The user should therefore select appropriate confidence levels to suit their particular risk profile.

## 1.5 Assumptions and limitations

The assumptions and limitations in this report and include:

- The assessments were based on a visual inspection of the structural components and appraisal of all parts of the structures that could be readily accessed, i.e. undersides of structures over water were not inspected.
- Recommended remedial works are for items that require attention as soon as practicable, and maintenance work that is recommended to be carried out on a regular basis, however defects noted with no remedial actions should be monitored at the next visual inspection.
- No responsibility is accepted or implied for defects which are latent or otherwise not reasonably detectable during the inspections.
- The assumptions on the remaining useful life are outlined in Section 2.6 of this report.

## 1.6 Summary of provided information

A summary of information provided by the City to GHD is presented in Table 1.1.

Table 1.1 Summary of provided information

Asset No.	Incoming file name	File Numbers	Date
C1 North Two Rocks Foreshore	Project closure report JN32911	-	February 2018
	Cost breakdown	-	-
C2 South Two Rocks Foreshore	-	-	-
C3 and C4 North Yanchep Foreshore	A1 Approved Plans Landscaping YANC-028 – Capricorn Beach Access 1 YANCHEP	Drawing	February 2008
	B0494 - BA1 - L103 REV C		
	B0494 - BA1 - L104 REV C		
	BEACH ACCESS 1 base REV D (NEWSCAPE RE-PRICE)		
	BEACH ACCESS 2 base REV E (RE-PRICE NEWSCAPE)		
	BEACH ACCESS 2 base REV E cover sheet		
	BEACH ACCESS 2 base REV E L101		
	BEACH ACCESS 2 base REV E L102		
C5 Old Yanchep Surf Life Saving Club	3248-1 to 3248-15	Drawing	January 2018
C6 Yanchep Surf Life Saving Club	3248-3 to 3248-15	Drawing	January 2018

Asset No.	Incoming file name	File Numbers	Date
C7 Newman Park (North)	28382-BA_AS_CON_COMBINED_2010.dwg	Various	August 2016
	Fishermans Hollow Beach Access - Certified As Constructed Drawings.pdf		
	P1229-03a - Yanchep Clearing Plan MGA94 export.dwg		
	P1229-03a - Yanchep Clearing Plan MGA94.pdf		
	PR-2475 Fishermans Hollow Beach Access - ASCON Clearing.msg		
	RE Fishermans Hollow Beach Access - Clearing Permit.msg		
	RE P1229 - FISHERMANS HOLLOW STAIRS YANCHEP JN 28382 .msg		
	3109-1-2.pdf		
C8 South Yanchep Foreshore	2998-3-0 (2).dwg	Various	October 2014
	2998-3-0 (2).pdf		
	2998-3-0.pdf		
	Brazier Rd firetrack_ reveg planting list.xlsx		
	Project Estimating Template_ Brazier Rd Firebreak track_ Softworks.pdf		
	Project Estimating Template_ Brazier Rd Firebreak track_ Softworks.xlsm		
C9 South Yanchep Foreshore	15 -25	Drawings and PDF	November 2008
	1 - K12_siteplan_eng.dwg	Various	
	22.pdf		
	Dwgs etc to J trimmer.msg		
	FW FW FW Bridge specification TAKE 2.msg		
	FW Yanchep Boardwalk - As Constructed Drawings.msg		
	FW Yanchep Boardwalk - Confirmation of Gradient on As Constructed Drawings.msg		
	K12_Übersichtplan_antwort.pdf		
	plot.log		
	RE Yanchep 08035 - Practical Completion Certificate.msg		
	YANCHEP.dwg		
	YANCHEP1.pdf		
	YANCHEP2.pdf		
C10 Eglinton Foreshore	-	-	-
C11 Amberton Beach Foreshore South	-	-	-
C12 Waterfront Park	DA2018228 Stage 3 Access Track- Ascons, Asset List, Ospec.ZIP	Drawings	August 2019
	Shorehaven DA20181370 playground - PC - OSPEC.ZIP		
	DA201938 Sand Management LS Ascons and Ospec.ZIP		
C13 Alkimos Beach	-	-	-

Asset No.	Incoming file name	File Numbers	Date
C14 Jindalee Foreshore Carpark			
C15 Jindalee Foreshore	JIND-011 Ascons LandscapeJB-05-02-04 Rev 0.dwg	-	April 2007
C16, C17 and C18 Jindalee Foreshore	Application - Jindalee Beach Stairs (north)	-	November 2015
	Building Approval Certificate - Jindalee Beach Stairs (North)		
C19 North Quinns Rocks Foreshore	As Con and Maintenance Information - Quinns WL Point Beach Access - PR2561 - Contract 17076	-	October 2018
	Cost Breakdown		
C20 North Quinns Rocks Foreshore	-	-	-
C21 North Quinns Rocks Foreshore	Cost	Various	May 2018
	287 Quinns AS-CONSTRUCTED Cross-Sections Groyne 4 03052018.pdf		
	287 Quinns Asc onstructed Plan Groyne 4 03052018.pdf		
	287 Quinns As constructed Progress Groyne 4.dwg		
	287 Quinns AS-CONSTRUCTED RED Ink Markup Groyne 4.pdf		
	New Beach Access Dune Profile Groyne 4 14062018.dwg		
	New Beach Access Dune Profile Groyne 4 14062018.pdf		
	287 Quinns AS-CONSTRUCTED Beach Access Path_Cross-Sections_18052018.pdf		
	287 Quinns AS-CONSTRUCTED Beach Access Path_Markup_18052018.pdf		
C22 North Quinns Rocks Foreshore	058 1380_As constructed drawing of works & MP ROGERS PDF-A1L-SJW.pdf	Various	October 2012
	058 1380_As constructed drawing of works Rev B.dwg		
	058 1380_As constructed drawing of works Rev B-A1L-Asphar.pdf		
	20121011161818.pdf		
	ACAD-058 1380_As constructed drawing of works & MP ROGERS PDF.dwg		
	as-con check extent of clearing.pdf		
	as-con check fence.pdf		
	as-con check ramp.pdf		
C23 North Quinns Rocks Foreshore	-	-	-
C24 Quinns Rocks Beach Foreshore	-	-	-
C25 Quinns Rocks Beach Foreshore	As Con and Maintenance Information - Quinns Groyne 1 Beach Access - PR2561 - Contract 17076	Various	October 2018
	Cost Breakdown		
	2. AS-CON for Repair Details-001_1.pdf	Various	Febuary 2019

Asset No.	Incoming file name	File Numbers	Date
C26 South Quinns Rocks Foreshore	3. As-CON Staircase_I.pdf		
	4. AS-CON_Staircase_II.pdf		
	6. AS-CON_Survey_Path and Dune Stabilisation Areas.pdf		
	Cost Breakdown.pdf		
	1. AS-CON Connection Details.pdf		
C27 South Quinns Rocks Foreshore	-	-	-
C28 North Mindarie Foreshore	FW Quinns Mindarie Access Ramp As Constructed Drawing.msg	Various	September 2009
	Handrail panels.pdf		
	img-421135135.pdf		
	Webforge Handrail.pdf		
	09172ascon Rev3.pdf		
C29, C30 and C31 North Mindarie Coastal Walk	-	-	-
C32 North Mindarie Foreshore	-	-	-
C33 South Mindarie Foreshore	PR2672 Claytons Beach Access [As Cons] Alternative Pad Footing Detail.pdf	Various	May 2020
	PR2672 Claytons Beach Access [As Cons] Concrete Path and Downturn Detail.pdf		
	PR2672 Claytons Beach Access [AsCons] Clayton's Beach Drawings.pdf		
	PR2672 Claytons Beach Access [AsCons] Wagners Design Drawings.pdf		
	Cost Breakdown.pdf		

## 2. Methodology

### 2.1 General

GHD completed inspections of the coastal assets on the dates outlined in Table 2.1. Figure 2.1 presents location plans for all coastal assets. A condition rating was given to each component of the coastal asset in accordance with the City's condition rating system. The current condition and observed defects were documented and photographed in a defect form. The coastal assets were inspected in order to identify the typical defects shown in Table 2.2.

Table 2.1 City of Wanneroo coastal Assets

Asset No.	Asset Name	Inspection Date
C1	North Two Rocks Foreshore	25/02/2021
C2	South Two Rocks Foreshore	25/02/2021
C3	North Yanchep Foreshore	25/02/2021
C4	North Yanchep Foreshore	25/02/2021
C5	Old Yanchep Surf Life Saving Club	25/02/2021
C6	Yanchep Surf Life Saving Club	25/02/2021
C7	Newman Park (North)	25/02/2021
C8	South Yanchep Foreshore	25/02/2021
C9	South Yanchep Foreshore	25/02/2021
C10	Eglinton Foreshore	25/02/2021
C11	Amberton Beach Foreshore South	25/02/2021
C12	Waterfront Park	25/02/2021
C13	Alkimos Beach	15/03/2021
C14	Jindalee Foreshore Carpark	25/02/2021
C15	Jindalee Foreshore	25/02/2021
C16	Jindalee Foreshore	25/02/2021
C17	Jindalee Foreshore	25/02/2021
C18	Jindalee Foreshore	25/02/2021
C19	North Quinns Rocks Foreshore	09/02/2021
C20	North Quinns Rocks Foreshore	09/02/2021
C21	North Quinns Rocks Foreshore	09/02/2021
C22	North Quinns Rocks Foreshore	09/02/2021
C23	North Quinns Rocks Foreshore	09/02/2021
C24	Quinns Rocks Beach Foreshore	09/02/2021
C25	Quinns Rocks Beach Foreshore	09/02/2021
C26	South Quinns Rocks Foreshore	09/02/2021
C27	South Quinns Rocks Foreshore	20/01/2021
C28	North Mindarie Foreshore	20/01/2021
C29	North Mindarie Coastal Walk	20/01/2021
C30	North Mindarie Coastal Walk	20/01/2021
C31	North Mindarie Coastal Walk	20/01/2021
C32	North Mindarie Foreshore	20/01/2021

Asset No.	Asset Name	Inspection Date
C33	South Mindarie Foreshore	15/01/2021

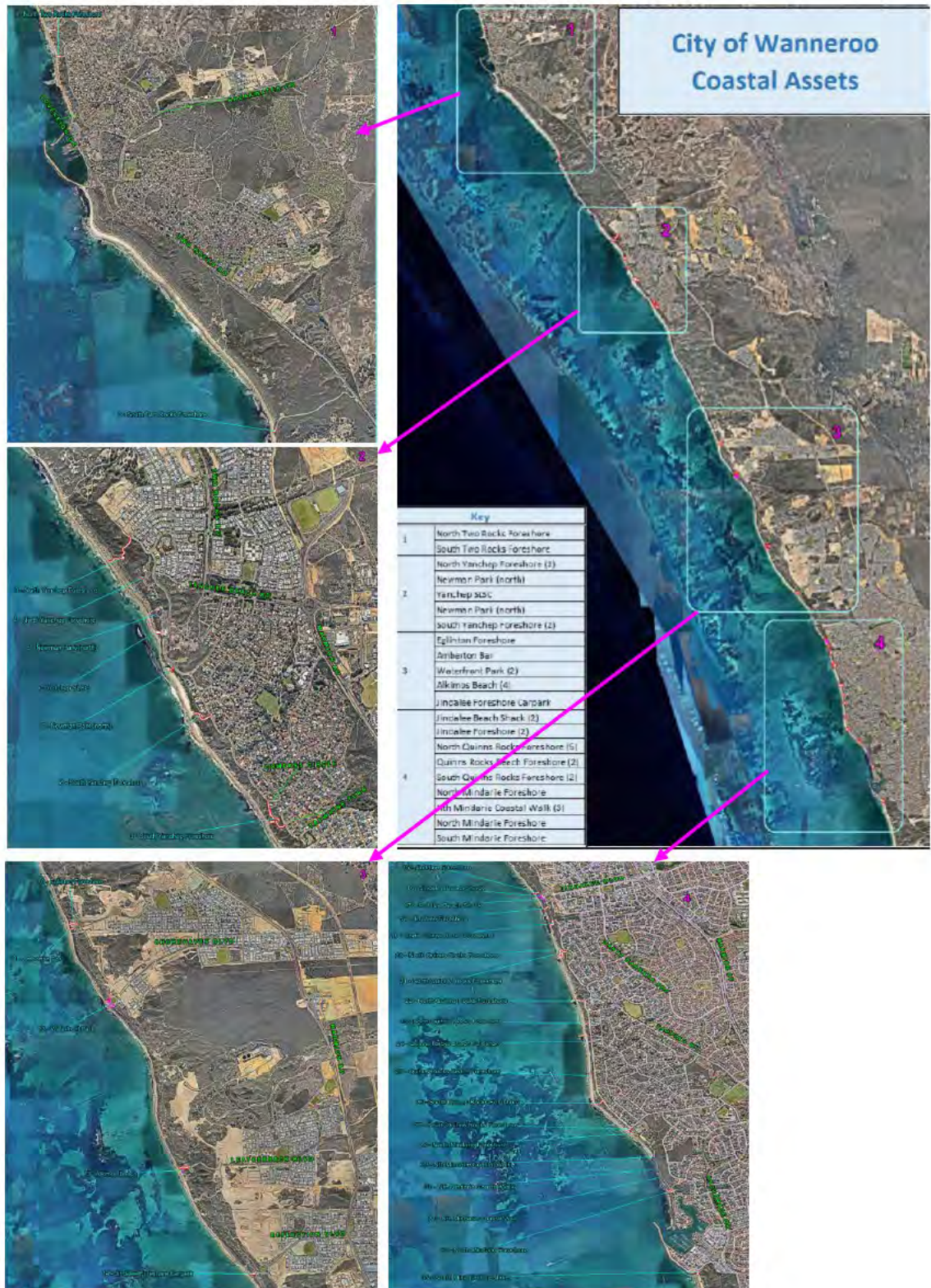


Figure 2.1 Location plans of coastal assets

Table 2.2 Typical Defects

Material Type	Typical Defects	
Timber	Decay, rot or fungi attack	Termite attack
	Necking	Salt kill
	Splitting, checking or crushing	Deformation or deflection
	Impact, mechanical or fire damage	Corrosion of fasteners/connections
	Loose joints, missing connections/fixings	Vandalism damage (i.e graffiti)
Concrete	Cracking, rust staining	Delamination, spalling, exposed reinforcement
	Honeycombing, poor compaction	Leaking, efflorescence, evidence of water ingress
	Debris build up	Condition of previous repairs
	Impact or mechanical damage	Abrasion or erosion.
Steel	Corrosion, section loss of members	Coating condition (blistering, peeling, rust staining, coating breakdown).
	Debris build up	Condition of previous repairs
	Buckling, cracking, deformation, fracture;	Cracking or other signs of distress at welds;
	Impact or mechanical damage	Vandalism damage (i.e graffiti)
Limestone	Erosion	Missing/deteriorated grout
	Impact or mechanical damage	Cracking
	Damaged/missing blocks	Scour/subsidence
General	Subsidence, sinking, rotation;	Erosion
	Loss of contact with underlying ground surface.	Foundation damage

## 2.2 Condition rating

The coastal assets were assessed and condition rated in accordance with the City’s provided condition rating system shown below in Table 2.3. Coastal assets were broken down into components and sub components with each item individually condition rated.

Table 2.3 City of Wanneroo Condition Rating System

Condition Rating	Condition Description	Deterioration Signs	Serviceability Problems	Maintenance Costs
1	New or restored to new	No visible signs	None	None
2	Near New	No visible signs	None	Low, if any
3	Excellent	Slight deterioration, obviously no longer new	None	Low, if any
4	Very good	Early stages of deterioration, still minor in detail	None	Low

Condition Rating	Condition Description	Deterioration Signs	Serviceability Problems	Maintenance Costs
5	Good	Obvious deterioration	Impaired slightly	Low
6	Fair	Obvious deterioration	Some loss	Low, but starting to rise
7	Fair to poor	Quite obvious	Medium loss	Starting to become high
8	Poor	Quite poor	Starting to limit useability	High
9	Very poor	Quite severe	Heavily impacting on useability - low risk to remain in service	High and rising
10	Extremely poor	Becoming very severe	Needs rehabilitation immediately - High risk to remain in service	Very high

## 2.3 Risk assessment

A risk assessment was undertaken for each component of the nominated coastal assets, the risk assessment was completed in a similar manner of the provided “2015 Coastal Assets Assessment Report” by AECOM. The risk assessment considered the asset’s functionality and the consequence and probabilities of failures occurring over the next 5 years as described below:

- **Potential risks appropriate for the asset component for a ‘do nothing’ approach:** For a scenario of no intervention, the risk of current and future deterioration of a component was considered.
- **Consequence assessment of the risk occurring, i.e. the component fails:** Level of consequence was quantified using five levels of identification ranging from ‘Insignificant’ to ‘Catastrophic’ and assessed in terms of actual and/or perceived safety for the user, environmental repercussions and financial and/or reputational loss for the City. This was evaluated on a site-by-site basis and dependant on the surrounds. whether failure of a fence post results in access to dangerous locations (i.e unstable cliffs). The assigned level of consequence was reduced where the failure of one item would be mitigated by redundancy in the remaining structure.
- **Likelihood assessment of the risk occurring in the next five years:** Level of likelihood was quantified using five levels of identification ranging from ‘Rare’ to ‘to ‘Probable’ and assessed in terms of a component’s current condition as well as its expected rate of deterioration

As advised by the City, the same risk assessment matrix was used as per AECOM 2015 report for consistency. The risk assessment matrix shown in Table 2.4 was used on each component.

Table 2.4 Risk Assessment Matrix

Risk Assessment Matrix		Consequence				
		Insignificant	Minor	Moderate	Major	Catastrophic
Likelihood of Occurrence	Probable	5	10	15	20	25
	Likely	4	8	12	16	20
	Possible	3	6	9	12	15
	Unlikely	2	4	6	8	10
	Rare	1	2	3	4	5

An overall rating for each component was defined as the product of the condition rating and risk rating. This value was used to prioritise renewal recommendations at each site. Based on these results, all 33 coastal assets were prioritised according to recommended renewal/repair of asset components. This process was quantitative, with ranking influenced primarily by each site's most critical component, followed by the average of all component ratings for that site. All components requiring immediate repair due to health and safety concerns, were prioritized first, despite their risk rating not having the highest value.

## 2.4 Maintenance recommendations and priority of repair

Immediate and ongoing/preventative maintenance requirements were recommended for each asset.

Maintenance recommendations typically addressed the following:

- Immediate public safety risks and/or current structural defects/damage.
- Preventative maintenance recommendations to assist with improving material durability and extending the remaining life of the asset.

Where applicable maintenance recommendations included replacement of a portion of a component (i.e. damaged balustrade); however replacement of the full asset component was classified as a renewal recommendation.

Based on the condition and risk assessment results, maintenance recommendations were linked to one of the following timeframes as provided by the City:

- Immediately.
- Within 6 months.
- Within 1-2 years.
- Within 5 years.
- Greater than 5 years (re-assess at the next visual inspection assumed to occur every 5 years).

The likely impacts of not undertaking maintenance works in terms of current and future risks and the potential for renewal works to be required sooner was discussed for each asset.

## 2.5 Renewal recommendations

Renewal recommendations relating to the replacement of a component in its entirety (i.e. replacement of all handrails for the asset) or whole of asset replacement were made for each coastal asset.

The timing and priority of asset renewal/replacement was identified with consideration of its current condition, the completed risk assessment and the anticipated deterioration rate in the future. Advice on the remaining useful life of each asset was also provided which will assist the City in establishing a priority list for whole of asset renewal works over the next 20 years.

Advice on the remaining useful life was generated based on the assessed condition and industry recognised serviceable life. This will assist in establishing a priority list for whole of asset renewal works over the next 20 years.

Asset serviceable lives take into account a wide range of factors including construction material, asset use and purpose, degree of maintenance and application of life-extension products (ie. Protective coating on timber and steel structures).

The following reference materials were used to establish the typical useful lives.

- Australian Infrastructure Financial Manual 2015, Institute of Public Works Engineering Australasia
- The Local Government and Municipal Knowledge Base Infrastructure Asset Useful Lives

- GHD project database

Assumptions around the remaining useful lives include:

- A reasonable level of maintenance is applied throughout the life of the assets.
- The City will conduct its own annual visual inspections and undertake detailed inspections by a structural engineer at 5 yearly intervals.
- Useful lives are not equivalent to the economic life (length of time for which maintaining and operating the asset remains the lowest cost alternative for providing the nominated level of service.)

Table 2.5 below shows the assumed useful lives of components associated with the Coastal assets with condition rating “1” in Table 2.3. The remaining useful lives referred in subsequent sections are derived from the respective condition rating based on visual inspection, and are only for indicative purposes. GHD notes that the remaining useful estimations do not include condition of elements that have not been inspected (e.g. buried/obstructed).

Table 2.5 Typical Useful lives of elements

Element	Assumed Useful Life (Years)
Reinforced Concrete Slab	60
Un-reinforced concrete paver	30
Limestone Walls and Pedestals	50
Coated Steel (Structural Steel)	40
Timber	30
Roof Sheeting (Colourbond)	30
Composite Materials	25
Connections (steel)	20
Handrailing (steel)	15
Fencing (timber)	15
Miscellaneous Items (i.e benches)	15 to 30

Cost estimates for all renewal/replacement recommendations were provided to assist the City in development of budget requirements for assets renewal works over the next 20 years.

Recommendations for renewal/replacement works took into account the following:

- Change of material type to increase durability and reduce maintenance costs (e.g. use of FRP and stainless steel).
- Change of asset type (e.g. replacement of staircase with a ramp).
- Change of location/orientation (i.e. relocating a staircase landward to reduce wave impacts/undermining or change of staircase orientation to reduce maintenance issues).

## 2.6 Maintenance and renewal cost estimate

The replacement value of an asset is the cost to replace the asset with a “like for like” or modern equivalent asset regardless of the current condition, including use of more durable materials where applicable. Australian Accounting Standards Board (AASB) Standard AASB13 Fair Value Measurement, August 2015 defines the replacement cost as the fair value at initial recognition. Assets that have no like for like replacement (e.g. outdated design, materials, technology etc.) have been valued according to what their likely replacement would be. Where assets are considered obsolete and having no equivalent technology, an assessment of “zero” for the replacement value would apply.

The replacement value for assets covered by this report is for the completely installed item, including preliminary costs, earthworks and clearing, demolition of existing, and temporary fencing. The replacement value does not include contractor mark-up or Goods and Services Tax (GST).

Assumptions were made on dimensions of assets that were not readily accessible during inspection e.g. depth of structures below ground and / or below water level. These assumptions were based on professional engineering opinion.

A range of sources have been drawn on to determine the replacement costs of these assets. These include:

- Industry acceptable resources (e.g. Rawlinsons Australian Construction Handbook 2021).
- Information provided to GHD by the City.
- Suppliers.
- Professional engineering opinion.

### 3. Site description, inspection findings and discussion

#### 3.1 Site No C1 – North Two Rocks Foreshore

##### 3.1.1 General

Site C1 provides beach access and a coastal lookout along Sovereign Drive, opposite Spectre Court in Two Rocks. Based on provided information the staircase and viewing platform were installed circa 2018. The site consists of a concrete path leading to a steel lookout shelter. Beach access is provided via a steel/composite fibre staircase, which appears to have been installed on the old structures embedded steel pedestals.

In addition to this, shower facilities are also provided at the edge of the street access, which is bordered by a limestone retaining wall. Refer Figure 3.1 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.2. The assets within site C1 were found to be in good condition with a number of elements requiring maintenance within 1-2 years.



Figure 3.1 C1 Assets

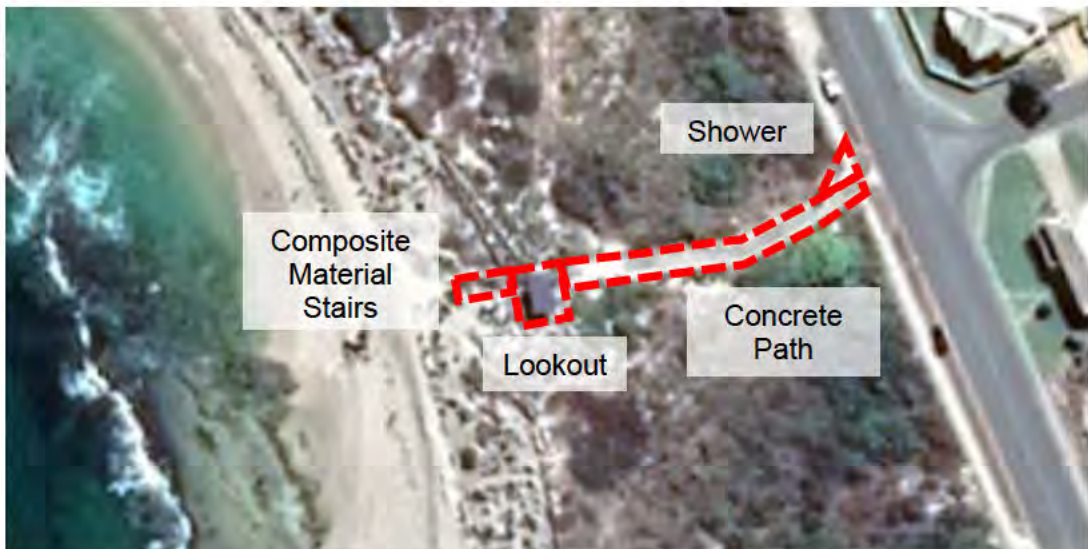


Figure 3.2 C1 Site Inspection Extent

##### 3.1.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.1. Please refer to Table 3.4 for detailed inspection findings and Appendix A for the defect forms.

Table 3.1 C1 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Concrete Path</b>			
Formwork	Redundant formwork at edge of lookout is splitting	35	C1-1
Base Slab	Large crack area approx.. 200 x 100 mm at the western edge upon entry. Crack observed throughout up to 5 mm due to subsidence of sand at bend in path, and at the edge of the lookout. Minor chipping at joints.	36	C1-2
Shower Base Slab	Generally good condition with minor surface deterioration observed.	2	C1-3
Bollards	No visible defects observed	4	C1-4
Shower and Drinking Fountain	Generally good condition with minor tea staining observed.	4	C1-5
Shower Retaining Wall	Erosion observed to be typical to the wall. Drainage holes also observed to be about 75% clogged.	30	C1-6
Fencing Posts	Generally good condition with minor timber splitting, subsidence, sinking and rotation observed.	16	C1-7
Fencing Mesh	Corrosion with section loss was observed, as well as loose and deformed areas.	28	C1-8
Fencing Top Wire	No visible defects observed.	2	C1-9
Sign	Coating loss and surface corrosion was observed to be typical to bolts and posts on sign.	20	C1-10
<b>Lookout</b>			
Deck Planks	Generally, in good condition. A cut section between two panels causing a dip was observed.	12	C1-11
Bench	Generally good condition. With some minor graffiti and the south post connection bolt missing.	12	C1-12
Columns	Some minor wear and tear on SHS observed	12	C1-13
Support Beams	Generally good condition. southern beam installed lower than others .	16	C1-14
Roof Support Steelwork	No visible defects observed	6	C1-15
Roofing Connections	Generally good condition with minor tea staining observed	6	C1-16
Roof Sheeting	No visible defects observed	6	C1-17
<b>Stairs</b>			
Pedestals	Significant corrosion with potential section loss observed to pedestals. New stairs have been installed on old pedestals, with a rubber mat installed between the two elements.	128	C1-18
Stringers, Tread Supports and Stubs	Generally good condition. North western support stub at bottom landing has stiffener. Southern side of stairs had build up of sand was unable to be inspected. Generally welds appeared to be of poor workmanship.	32	C1-19
Treads	Generally good condition. Sand build up in areas, with the bottom of the stairs being buried and were unable to be inspected.	18	C1-20
Balustrade Post (Localised)	One of the posts observed to contain coating loss with corrosion and section loss. Most likely due to poor weld quality.	42	C1-21
Balustrade Railing	No visible defects observed	3	C1-22

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
Balustrade Posts	No visible defects observed	3	C1-23
Balustrade Weld Connection	Localised holes in welds, generally workmanship of welds is poor	8	C1-24
Balustrade Connections	Generally good condition with minor tea staining.	2	C1-25
Handrail Screw Fixings	Dissimilar metal corrosion and missing screws were observed. There were 13 screws which were observed to be either heavily corroded or missing.	42	C1-26
Handrail and Connections	No visible defects observed	6	C1-27

### 3.1.3 Prioritised Maintenance Recommendations

Table 3.2 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.2 Site C1 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Stairs - Pedestals	Abrasive blast clean and apply protective coating, weld a structural plate if section loss justifies.	Within 6 months
2	Concrete Path - Old Formwork	Remove formwork to prevent further deterioration and minimize trip hazards.	Within 1-2 years
	Concrete Path - Fencing Mesh	Replace areas of fence which have heavy corrosion and section loss. Tighten fence mesh or replace areas with significant deformation.	
	Lookout - Bench	Reinstate missing bolt.	
	Stairs - Balustrade Post (Localised)	Remove corrosion product and apply protective coating.	
	Stairs - Balustrade Weld Connection	Fill holes with a suitable filler to prevent water ingress and corrosion.	
3	Stairs - Handrail Screw Fixings	Replace heavily corroded screws and missing screws with stainless steel screws.	Within 5 years
	Concrete Path - Base Slab	Conventional Concrete Repair	
	Concrete Path – Shower Retaining Wall	Replace damaged blocks and clear drainage holes.	
4	Concrete Path - Sign	Abrasive blast clean steel and apply protective coating.	Greater than 5 years
	Concrete Path - Shower Base Slab	Monitor and reinspect at next scheduled inspection.	
	Concrete Path - Bollards		
	Concrete Path - Shower and Drinking Fountain		
	Concrete Path - Fencing Posts		
	Concrete Path - Fencing Top Wire		
Lookout - Columns			

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
	Lookout - Roof Support Steelwork		
	Lookout - Roofing Connections		
	Lookout - Roof Sheeting		
	Stairs - Stringers, Tread Supports and Stubs		
	Stairs - Tread Plates and Landings		
	Stairs - Balustrade Railing		
	Stairs - Balustrade Posts		
	Stairs - Balustrade Connections		
	Stairs - Handrail and Connections		
	Lookout - Deck Planks		
	Lookout – Support Beams		

### 3.1.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.1.3 are not carried out in the timeframes specified, the following safety issues could occur:

- The stair pedestals will continue to corrode, potentially resulting in section loss and reduced capacity, which may result in structural failure. This could lead to serious injury and/or fatalities to members of the general public on or near the stairs.
- Old Formwork will continue to deteriorate, resulting in potentially slip and trip hazards.
- Fencing mesh and connections will continue to deteriorate. Heavy deterioration may reduce the capacity and potentially fail when a load is applied (i.e member of the public leaning on the railing), leading to potential fall zone. This could lead to serious injury and/or fatalities to members of the general public on or near the fenced areas.
- The missing bolts at the connection plates of the benches may potentially result in failure of the benches leading to injury to members of the general public as well as financial and reputational implications.
- The sections of balustrade will continue to corrode due to the holes and water present. This may result in the steel corroding further, causing section loss to the balustrades. Perforations may reduce the capacity and potentially fail when a load is applied (i.e. member of the public leaning on the railing), resulting in a potential fall from lookout.
- Handrail connections will continue to corrode and rust. Heavy corrosion may reduce the capacity and potentially fail when a load is applied leading to injury to members of the general public as well as financial and reputational implications.
- The cracks on the Base Slab may begin to spall and may eventually become a trip hazard, resulting in injury to members of the general public.

- The shower area limestone wall will continue to erode and the mortar will continue to deteriorate leading to structural instability and potential collapse leading to injury to members of the general public as well as financial and reputational implications.
- Corrosion and coating loss on steel members may continue to deteriorate, delaying and/or not completing repairs will result in an increase in defect area required for repair, which may result in a significantly higher cost for repair.

### 3.1.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.3 *Renewal Recommendations for site C1*

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Concrete path	Concrete slab, steel fencing, steel bollards, shower, and sign.	Repair concrete slab, replace steel fencing, steel bollards, shower, and sign.	2027	\$72,932
Lookout	FRP mesh, steel bench, support steelwork, and roof connections.	Replace FRP mesh, steel bench, support steelwork, and roof connections	2032	\$16,370
Stairs	Support steelwork and steel handrails	Replace steelwork and steel handrails.	2033	\$281,474

Table 3.4 C1 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Concrete Path – Overall Rating 18</b>																	
C1-1	Foundation	Old Formwork	Timber	7	Redundant formwork at edge of lookout is splitting	N	1	5	5	35	6	Remove formwork to prevent further deterioration and minimize trip hazards.	Within 1-2 years	\$550	N/A removed as part of maintenance requirements.	-	-
C1-2	Foundation	Base Slab	Concrete	4	Large cracked area approximately 200 x 100 mm at the western edge upon entry. Crack observed throughout up to 5 mm due to subsidence of sand at bend in path, and at the edge of the lookout. Minor chipping at joints.	N	2	3	6	36	18	Conventional concrete repair	Within 5 years	\$1,780	Replace slab.	2039	\$59,775
C1-3	Shower	Base Slab	Concrete	2	Generally good condition with minor surface deterioration observed.	N	1	1	1	2	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
C1-4	Bollards		Coated Steel	2	No visible defects observed	N	2	1	2	4	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace bollard	2037	\$1,433
C1-5	Shower	Shower and Drinking Fountain	Stainless Steel	2	Generally good condition with minor tea staining observed.	N	2	1	2	4	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace shower / drinking fountain	2033	\$2,650
C1-6	Shower	Wall	Limestone	5	Erosion observed to be typical to the wall. Drainage holes also observed to be about 75% clogged.	N	3	2	6	30	25	Replace damaged blocks and clear drainage holes.	Within 5 years	\$735	Maintain existing material	2046	
C1-7	Fencing	Timber posts	Timber	4	Generally good condition with minor timber splitting, subsidence, sinking and rotation observed.	N	2	2	4	16	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace posts	2030 (recommend to complete in 2027)	\$8,444

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C1-8	Fencing	Mesh	Steel	7	Corrosion with section loss was observed, as well as loose and deformed areas.	N	2	2	4	28	6	Replace areas of fence which have heavy corrosion and section loss. Tighten fence mesh or replace areas with significant deformation.	Within 1-2 years	\$1,920	Replace mesh	2027	
C1-9	Fencing	Top wire	Coated Steel	2	No visible defects observed.	N	1	1	1	2	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace strainer wire/	2037 (recommend to complete in 2027)	
C1-10	Sign		Coated Steel	5	Coating loss and surface corrosion was observed to be typical to bolts and posts on sign.	N	2	2	4	20	8	Abrasive blast clean steel and apply protective coating	Within 5 years	\$360	Replace sign	2029	\$630
<b>Lookout – Overall Rating 10</b>																	
C1-11	Platform	Mesh	FRP	4	Generally, in good condition. A cut section between two panels causing a dip was observed.	N	3	1	3	12	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace mesh	2039	\$5,606
C1-12	Bench	-	Coated Steel, Stainless Steel, Composite Material	3	Generally good condition. With some minor graffiti and the south post connection bolt missing.	N	2	2	4	12	11	Reinstate missing bolt.	Within 1-2 years	\$480	Replace bench	2032	\$2,783
C1-13	Support Steelwork	Columns	Galvanised Steel	3	Some minor wear and tear on SHS observed	N	4	1	4	12	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace steelwork	2042 (recommend to complete in 2039)	\$7,000
C1-14	Support Steelwork	Support Beams	Galvanised Steel	4	Generally good condition. southern beam installed lower than others .	N	4	1	4	16	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2039	
C1-15	Support Steelwork	Lookout roof steelwork	Galvanised Steel	2	No visible defects observed	N	3	1	3	6	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2045 (recommend to complete in 2039)	

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C1-16	Roof	Roof connection	Galvanised Steel	2	Generally good condition with minor tea staining observed	N	3	1	3	6	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace connection	2037	\$981
C1-17	Roof	Roof sheeting	Colourbond	3	No visible defects observed	N	3	1	3	9	21	Monitor and reinspect at next scheduled inspection. Consider using alternate inspection methods to inspect top of roof (i.e drones)	Greater than 5 years		Maintain existing material	2042	
<b>Stairs – Overall Rating 28</b>																	
C1-18	Stairs	Pedestals	Steel	8	Significant corrosion with potential section loss observed to pedestals.	N	4	4	16	128	6	Abrasive blast clean and apply protective coating, weld a structural plate if section loss justifies.	Within 6 months	\$2,500	Replace stair structure	2027 (recommend to complete in 2039)	\$216,474
C1-19	Stairs	Support steelwork including stringers, tread supports and stub columns	Galvanised Steel	4	Generally good condition. North western support stub at bottom landing has stiffener. Southern side of stairs had build up of sand was unable to be inspected. Generally welds appeared to be of poor workmanship.	N	4	2	8	32	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2039	
C1-20	Stairs	Treads, including landings	FRP	3	Generally good condition. Sand build up in areas, with the bottom of the stairs being buried and were unable to be inspected.	N	3	2	6	18	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2042 (recommend to complete in 2039)	
C1-21	Handrails	Balustrade Post (Localised)	Coated Steel	7	One of the posts observed to contain coating loss with corrosion and section loss. Most likely due to poor weld quality.	N	2	3	6	42	6	Remove corrosion product and apply protective coating.	Within 1-2 years	\$360	Replace handrailing and balustrades	N/A (refer railing and posts)	\$65,000

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS		
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe
C1-22	Handrails	Rail	Coated Steel	1	No visible defects observed	N	3	1	3	3	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2039	
C1-23	Handrails	Post	Coated Steel	1	No visible defects observed	N	3	1	3	3	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2039	
C1-24	Handrails	Balustrade Weld Connection	Coated Steel	4	Localised holes in welds, generally workmanship of welds is poor	N	2	1	2	8	12	Fill holes with a suitable filler to prevent water ingress and corrosion.	Within 1-2 years	\$720	2033	
C1-25	Handrails	Connections	Stainless Steel	2	Generally good condition with minor tea staining.	N	1	1	2	2	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2037	
C1-26	Handrails	Connections from rail to post connection bracket	Steel	7	Dissimilar metal corrosion and missing screws were observed. There were 13 screws which were observed to be either heavily corroded or missing.	N	2	3	6	42	6	Replace heavily corroded screws and missing screws with stainless steel screws.	Within 1-2 years	\$480	N/A (refer railing and posts)	
C1-27	Handrails	Handrail and connection	Stainless Steel	2	No visible defects observed	N	3	1	3	6	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years	\$550	2037	

## 3.2 Site No C2 – South Two Rocks Foreshore

### 3.2.1 General

Site C2 provides beach access at The Spot, accessed from Two Rocks Road. No drawings were available/provided to GHD, hence the age of the structure is not known. The site consists of set of timber sleeper style stairs, a coastal lookout and a sand path. The coastal lookout and sand path are bordered by steel mesh and timber post fence which has been considered as 1 asset for this site. The fencing comprises of coated steel mesh transitioning into plain steel square mesh wire. An asphalt surface links the three paths together. Refer Figure 3.3 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.4. The assets within site C2 were generally found to be in adequate condition with routine maintenance generally required within 5 years.

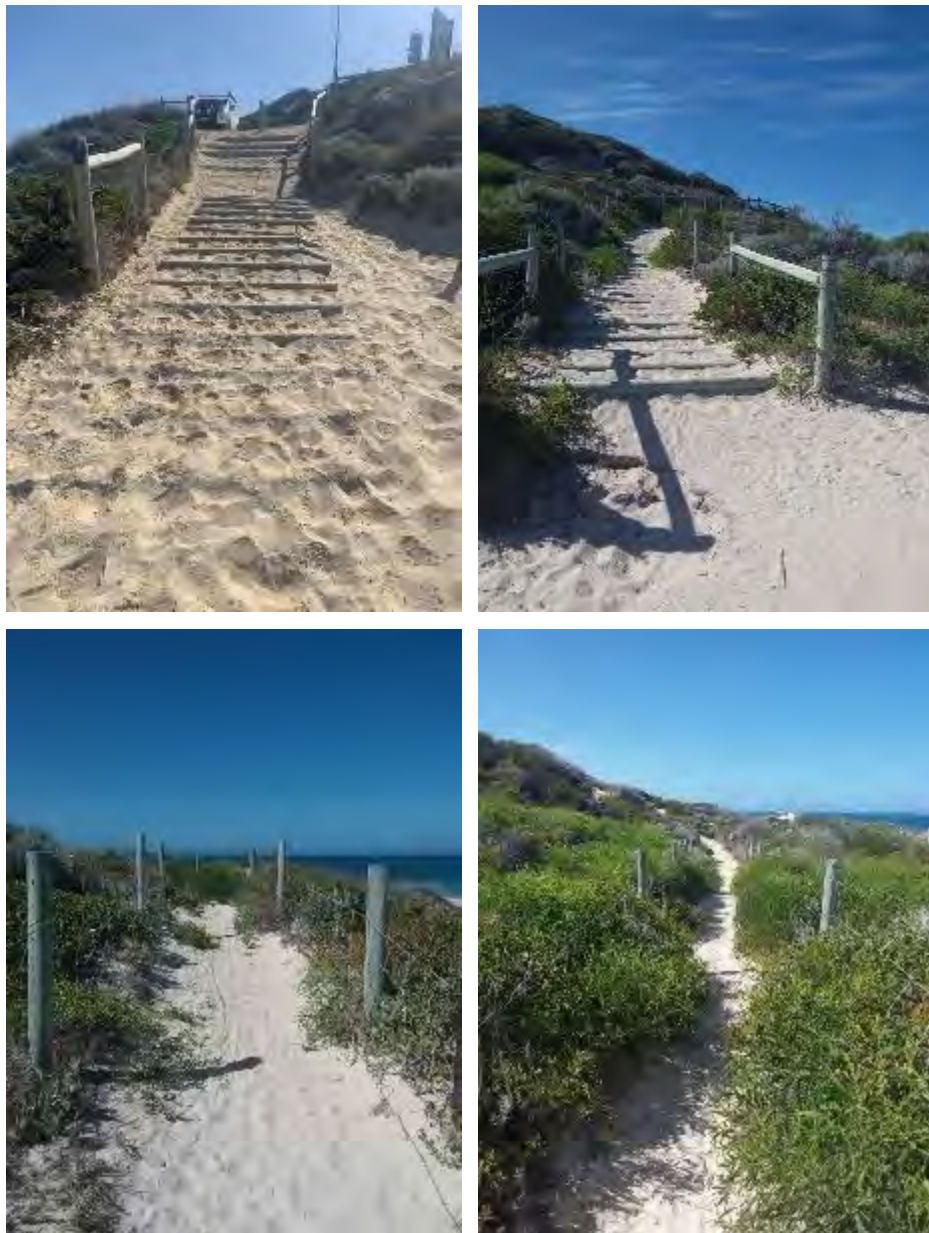


Figure 3.3 C2 Assets

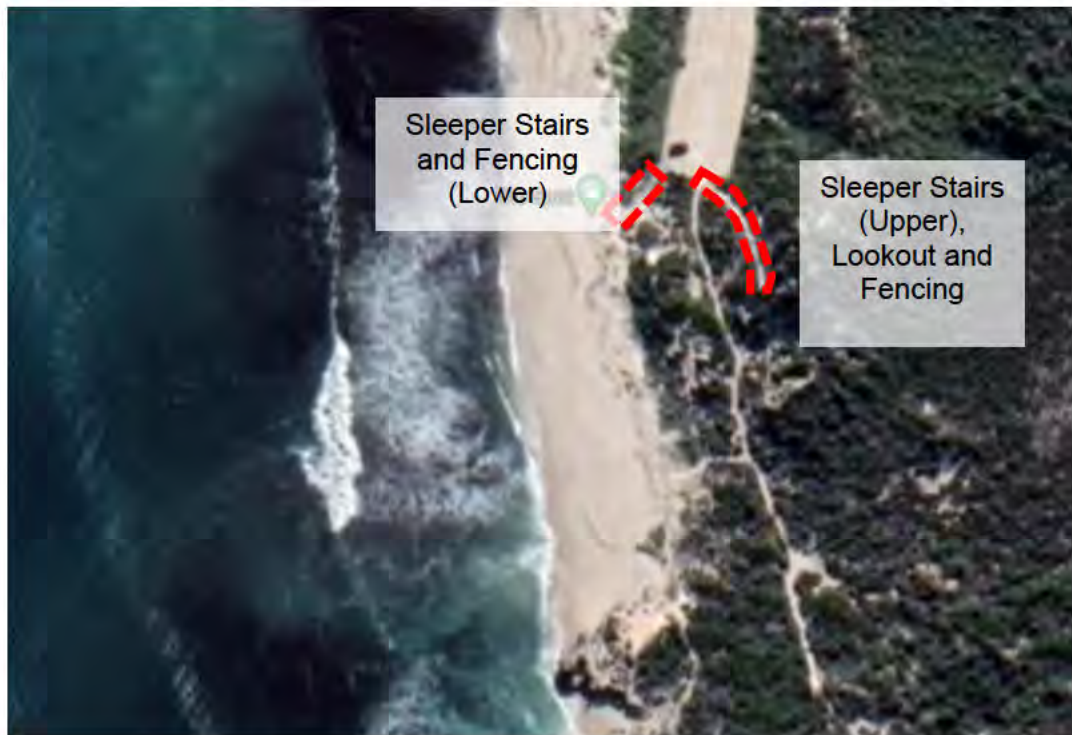


Figure 3.4 C2 Site Inspection Extent

### 3.2.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.5. Please refer to Table 3.8 for detailed inspection findings and Appendix B for the defect forms.

Table 3.5 C2 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Sleeper Stairs Upper/Lower &amp; Lookout</b>			
Asphalt path	The asphalt path was deteriorated with edges broken away. A large percentage of the path was buried under sand and not inspected.	30	C2-1
Lower Stair Sleepers and Connections	Minor corrosion observed to connections. Minor timber splitting as well as subsidence, sinking and rotation observed to the timber sections. The Chain on the stairs was broken with heavy corrosion and section loss. Inspection limited due to lower half being buried in sand.	80	C2-2
Upper Stair Sleepers and Connections	Minor corrosion observed to connections. Minor timber splitting as well as subsidence, sinking and rotation observed to the timber sections.	6	C2-3
Bollards	Surface corrosion and coating loss observed to be typical to the steel section.	24	C2-4
Signs	Coating loss and surface corrosion were observed to be typical throughout.	12	C2-5
<b>Fencing</b>			
Posts	Generally good condition with timber splitting observed to be typical throughout. Inspection limited due to significant vegetation growth	32	C2-6
Mesh	Mesh observed to have localised areas of coating loss, as well as the mesh not being fixed to the rail properly (prominent in the south west corner).	36	C2-7

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
Mesh Staples	Typical widespread corrosion to staples.	12	C2-8
Strainer Wires	Strainer wire failed on western edge of top fence. Fence observed to be typically buckling or loose.	36	C2-9
Railing	Generally good condition with timber splitting observed to be typical throughout.	32	C2-10

### 3.2.3 Prioritised Maintenance Recommendations

Table 3.6 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.6 Site C2 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Lower Stair Sleepers and Connections	Replace broken and corroded chain.	Within 6 months
2	Signs	Abrasive blast clean steel and apply protective coating	Within 1-2 years
	Mesh	Reinstate mesh connection to the railing. Replace heavily corroded fence areas.	
3	Asphalt path	Patch broken edge with asphalt to prevent trip hazards.	Within 5 years
	Bollards	Abrasive blast clean steel and apply protective coating	
	Mesh Staples	Replace heavily corroded staples.	
	Strainer Wires	Replace or tighten failed or loose strainer wires.	
4	Upper stairs and connections	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Posts		
	Railing		

### 3.2.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.2.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Lower Stair Sleepers and connections will continue to corrode and split. Subsidence, sinking and rotation will also worsen. This could lead to movement of the stair landings and potentially be a slips and trip hazard.
- Lookout fencing posts rails, mesh and connections will continue to deteriorate. Heavy deterioration may reduce the capacity and potentially fail when a load is applied (i.e member of the public leaning on the railing), leading to potential fall zones. This could lead to serious injury and/or fatalities to members of the general public on or near the fenced areas.
- The defects on the asphalt slab will increase in size and may eventually become a trip hazard, resulting in injury to members of the general public.

- Corrosion and coating loss on steel members (bollard / sign) may continue to deteriorate, delaying and/or not completing repairs will result in an increase in defect area required for repair, which may result in a significantly higher cost for repair.
- Mesh staples will continue to corrode potentially leading to failure at connections. Failure of the connections may lead to large sections of the mesh collapsing, which may result in a significantly higher cost for repair.
- Strainer wires will continue to deteriorate and fail due resulting in loose mesh, which maybe susceptible to damage from users of the path and result in failure of the mesh.

### 3.2.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.7 Renewal Recommendations for site C2

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Sleeper stairs/Lookouts	Bitumen base slab, timber stairs, steel/concrete stairs, and steel sign.	Resurface bitumen base slab. Replace timber stairs, steel/concrete stairs, and steel sign.	2027	\$103,321
Fencing	Timber and steel components of the fence.	Replace fence as a whole.	2027	\$33,612

Table 3.8 C2 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Sleeper Stairs/Lookout – Overall Rating 30</b>																	
C2-1	Asphalt Path	Base Slab	Bitumen	5	The asphalt path was deteriorated with edges broken away. A large percentage of the path was buried under sand and not inspected.	N	2	3	6	30	12	Patch broken edge with asphalt to prevent trip hazards.	Within 5 years	\$450	Resurface path	2033	\$84,054
C2-2	Stairs	Lower stairs and connections	Timber	8	Minor corrosion observed to connections. Minor timber splitting as well as subsidence, sinking and rotation observed to the timber sections. The Chain on the stairs was broken with heavy corrosion and section loss. Inspection limited due to lower half being buried in sand.	N	2	5	10	80	6	Replace broken and corroded chain.	Within 6 months	\$600	Replace stair sleepers and connections	2027	\$5,866
C2-3	Stairs	Upper stairs and connections	Timber	3	Minor corrosion observed to connections. Minor timber splitting as well as subsidence, sinking and rotation observed to the timber sections.	N	2	1	2	6	15	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace stair sleepers and connections	2036	\$10,302
C2-4	Bollards	N/A	Steel, Concrete	6	Surface corrosion and coating loss observed to be typical to the steel section.	N	2	2	4	24	8	Abrasive blast clean steel and apply protective coating	Within 5 years	\$360	Replace	2029	\$2,457
C2-5	Sign	N/A	Coated Steel, Galvanised Steel	6	Coating loss and surface corrosion were observed to be typical throughout.	N	2	1	2	12	9	Abrasive blast clean steel and apply protective coating	Within 1-2 years	\$360	Replace	2030	\$642
<b>Fencing – Overall Rating 30</b>																	
C2-6	Fencing	Timber Posts	Timber	4	Generally good condition with timber splitting observed to be typical throughout. Inspection limited due to significant vegetation growth	N	4	2	8	32	6	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace fencing as a whole	2027	\$33,612

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C2-7	Fencing	Mesh	Steel	6	Mesh observed to have localised areas of coating loss, as well as the mesh not being fixed to the rail properly (prominent in the south west corner).	N	2	3	6	36	8	Reinstate mesh connection to the railing. Replace heavily corroded fence areas.	Within 1-2 years			2029 (recommend to complete by 2027)	
C2-8	Fencing	Mesh Staples	Steel	6	Typical widespread corrosion to staples.	N	1	2	2	12	6	Replace heavily corroded staples.	Within 5 years			2027	
C2-9	Fencing	Strainer Wires	Steel	6	Strainer wire failed on western edge of top fence. Fence observed to be typically buckling or loose.	N	2	3	6	36	8	Replace or tighten failed or loose strainer wires.	Within 5 years			2029 (recommend to complete by 2027)	
C2-10	Fencing	Timber Rail	Timber	4	Generally good condition with timber splitting observed to be typical throughout.	N	4	2	8	32	6	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2027	

### 3.3 Site No C3 – North Yanchep Foreshore

#### 3.3.1 General

Site C3 provides beach access and a coastal lookout via a pathway from the corner of Lookout Drive and Capricorn Esplanade, in Yanchep. Based on provided information the assets were constructed circa 2013. The pathway consists of 2 sets of timber staircases and a timber lookout. Timber sleepers and crushed limestone are used intermittently throughout the pathways. Refer Figure 3.5 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.6. The assets within site C3 were found to be in relatively good condition with a number of elements requiring maintenance within 1 -2 years.

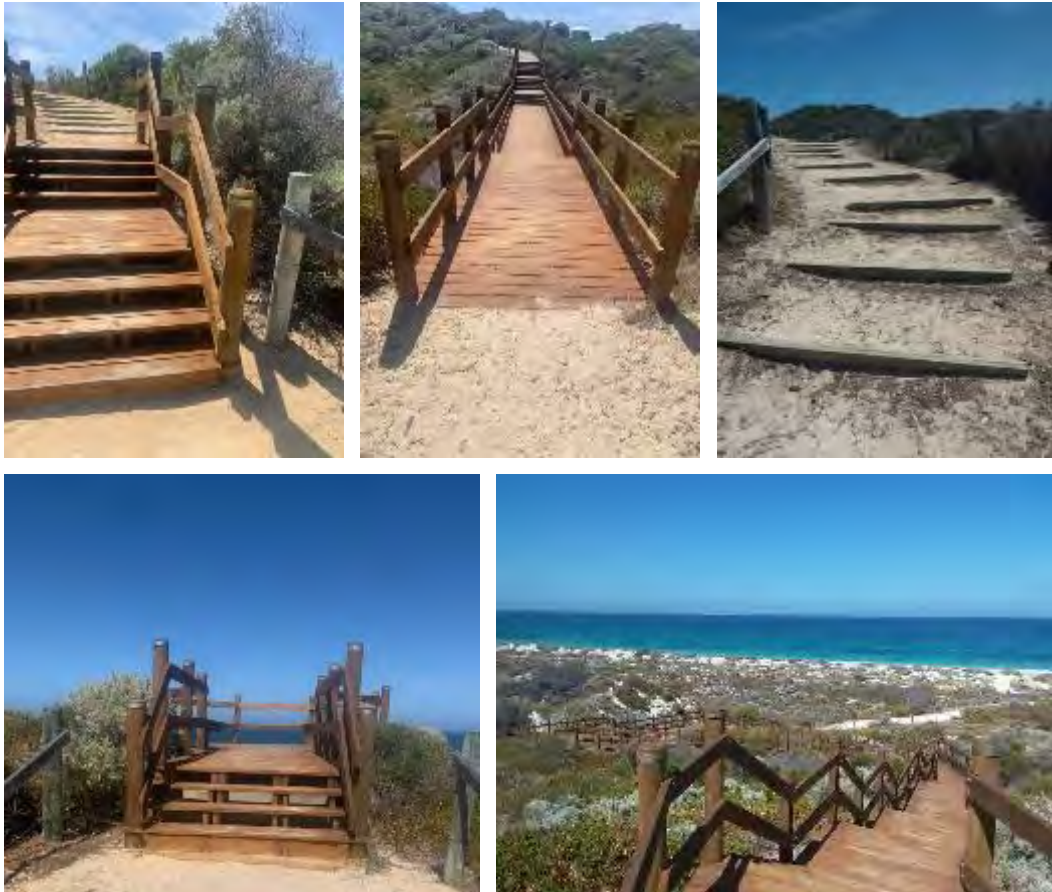


Figure 3.5 C3 Assets



Figure 3.6 C3 Site Inspection Extent

### 3.3.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.9. Please refer to Table 3.12 for detailed inspection findings and Appendix C for the defect forms.

Table 3.9 C3 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Pathway</b>			
Path base slab	Generally good condition with minor damage to the corner at control joint.	6	C3-1
Sleepers and Connections	No visible defects were observed.	8	C3-2
Steps	Generally good condition with some minor erosion observed..	8	C3-3
Fencing Posts	Generally good condition with minor timber splitting observed to be typical throughout.	12	C3-4
Fencing Mesh Strainer Wires	Surface corrosion was observed to be typical throughout. Localised areas of deformed wires were also observed.	36	C3-5
Fencing Bracing	General damage and timber splitting observed. One brace has failed, and one is bowed.	80	C3-6
<b>Lookout</b>			
Support Columns	Generally good condition with some minor timber splitting and wear and tear.	9	C3-7
Support Connections	Heavy surface corrosion was observed to be typical throughout.	36	C3-8

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
Beams	Generally good condition with some minor timber splitting and damage observed.	12	C3-9
Decking	Generally good condition with some minor timber splitting observed.	12	C3-10
Decking screws	Generally good condition with some localised screws observed to be corroded.	30	C3-11
Handrail	Generally good condition with some minor timber splitting and graffiti observed.	24	C3-12
Bench	Minor split timber was observed to be typical. Localised areas of timber rotting were also observed.	12	C3-13
Boardwalk/Stairs			
Support Columns	Generally good condition with some damage and split timber observed.	9	C3-14
Support Connections	Generally good condition with surface corrosion observed to be typical throughout.	9	C3-15
Support Beams and connections	No visible defects were observed to timber members. Connections observed to have minor surface corrosion.	24	C3-16
Timber Sleepers	Generally good condition with minor timber splitting and coating loss observed to be typical. A number of bolts were raised from tread level.	18	C3-17
Decking	Generally good condition with minor timber splitting and wear and tear observed.	12	C3-18
Decking screws	Generally good condition with minor surface corrosion observed to be typical and some screws in localised areas observed to not be sitting flush.	30	C3-19
Handrail Posts	Generally good condition. Minor timber splitting observed to be typical throughout. Localised rot to 2 No. timber posts.	24	C3-20
Handrails	Generally good condition with some minor deterioration and split timber observed.	12	C3-21
Handrail Bolts	Generally good condition with surface corrosion observed to be typical throughout.	9	C3-22
Steel fasteners to posts	Generally good condition with minor surface corrosion observed to be typical.	6	C3-23

### 3.3.3 Prioritised Maintenance Recommendations

Table 3.10 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.10 Site C3 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Pathway - timber bracing	Replace bracing.	Within 1-2 years
2	Lookout - Support Connections	Replace heavily corroded connections.	Within 1-2 years
	Lookout- Bench	Replace rotted timber planks.	
3	Pathway - Fencing Mesh Strainer Wires	Replace heavily corroded or deformed strainer wires.	Within 5 years
	Lookout - Decking screws	Replace heavily corroded screws.	

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
	Boardwalk -Timber Sleepers	Localised replacement of screws which aren't flush	
	Boardwalk - Decking screws	Replace heavily corroded screws and localised replacement of screws which aren't flush.	
4	Pathway - Path base slab	Monitor and reinspect at next scheduled inspection.	Greater than 5 years.
	Boardwalk - Sleepers and Connections		
	Pathway - Fencing Posts		
	Boardwalk - Support Connections		
	Boardwalk - Support Beams and connections		
	Boardwalk - Handrail Bolts		
	Boardwalk - Steel fasteners to posts)		
	Lookout - Support Columns		
	Lookout -Beams		
	Lookout - Decking		
	Lookout - Handrail		
	Boardwalk - Support Columns		
	Boardwalk - Decking		
	Boardwalk -Handrail Posts		
	Boardwalk - Handrails		

### 3.3.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.4.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Timber bracing has failed and is no longer serving its purpose, it also allows easy access to adjacent vegetation and should be replaced within the given timeframe.
- Protruding screws are a potential trip hazard, if repairs are not completed there is a risk of injury to the general public.
- Damaged timber planks will continue to deteriorate and may eventually become a trip or fall hazard, resulting in injury to members of the general public.
- Timber elements will continue to split, deteriorate. Delay in repairs may result in potential reduced capacity, which may result in roof structure failing. This could lead to serious injury and/or fatalities to members of the general public. Defect areas will also increase resulting in increased repair costs.
- Strainer wires will continue to deteriorate and fail due resulting in loose mesh, which maybe susceptible to damage from users of the path and result in failure of the mesh.

### 3.3.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.11 Renewal Recommendations for site C3

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Pathways	Limestone base slab, fencing – timber posts, steel mesh strainer wires, and timber braces.	Resurface limestone slab. Replace fencing – timber posts, steel mesh strainer wires, and timber braces.	2027	\$151,269
Lookout	Galvanised steel connections, timber support beams, decking, handrails, and bench	Replace galvanised steel connections, timber support beams, decking, handrails, and bench	2029	\$64,848
Boardwalk/Stairs	Timber deck planks, timber handrail posts and railing, steel handrail bolts and banding.	Replace deck planks, timber handrail posts and railing, steel handrail bolts and banding.	2030	\$82,000

Table 3.12 C3 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Pathways (All) – Overall Rating 25</b>																	
C3-1	Concrete Path	Base Slab	Concrete	3	Generally good condition with minor damage to the corner at control joint.	N	2	1	2	6	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2042	
C3-2	Supports	Timber sleepers and galvanised connection	Galvanised Steel, Timber	2	No visible defects were observed.	N	2	2	4	8	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
C3-3	Steps	Base Slab	Limestone	4	Generally good condition with some minor erosion observed..	N	2	1	2	8	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Resurface	2039	\$133,832
C3-4	Fencing	Timber Posts	Timber	3	Generally good condition with minor timber splitting observed to be typical throughout.	N	2	2	4	12	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace fencing	2032 (Recommend to complete by 2027)	\$17,437
C3-5	Fencing	Mesh strainer wires	Steel	6	Surface corrosion was observed to be typical throughout. Localised areas of deformed wires were also observed.	N	2	3	6	36	6	Replace heavily corroded or deformed strainer wires.	Within 5 years	\$480		2027	
C3-6	Fencing	Timber Braces	Timber	8	General damage and timber splitting observed. One brace has failed, and one is bowed.	N	2	5	10	80	3	Replace bracing.	Within 1-2 years	\$960		2024 (Recommend to complete by 2027)	
<b>Lookout – Overall Rating 19</b>																	
C3-7	Support columns	Timber columns	Timber	3	Generally good condition with some minor timber splitting and wear and tear.	N	3	1	3	9	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2042	
C3-8	Supports	Connection	Galvanised Steel	6	Heavy surface corrosion was observed to be typical throughout.	N	3	2	6	36	8	Replace heavily corroded connections.	Within 1-2 years	\$960	Replace connections	2029	\$1,120
C3-9	Support	Support Beams	Timber	4	Generally good condition with some minor timber splitting and damage observed.	N	3	1	3	12	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace decking and supports	2039 (Recommend to complete by 2033)	\$39,295

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C3-10	Decking	Deck Planks	Timber	4	Generally good condition with some minor timber splitting observed.	N	3	1	3	12	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2033		
C3-11	Decking	Deck Screws	Galvanised Steel	5	Generally good condition with some localised screws observed to be corroded.	N	2	3	6	30	10	Replace heavily corroded screws.	Within 5 years	\$850	2031 (Recommend to complete by 2033)		
C3-12	Handrails	Railing	Timber	4	Generally good condition with some minor timber splitting and graffiti observed.	N	2	3	6	24	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace handrailing	2033	\$17,752
C3-13	Bench	-	Timber	4	Minor split timber was observed to be typical. Localised areas of timber rotting were also observed.	N	3	1	3	12	9	Replace rotten plank.	Within 1-2 years	\$250	Replace	2030	\$6,681
<b>Boardwalk/Stairs – Overall Rating 15</b>																	
C3-14	Supports	Support Columns	Timber	3	Generally good condition with some damage and split timber observed.	N	3	1	3	9	21	Monitor and reinspect at next scheduled inspection	Greater than 5 years		Maintain existing material	2042	
C3-15	Supports	Connections	Galvanised Steel	3	Generally good condition with surface corrosion observed to be typical throughout.	N	3	1	3	9	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2035 (Complete with item 18)	Inc item 18
C3-16	Supports	Beams and Connections	Timber	4	No visible defects were observed to timber members. Connections observed to have minor surface corrosion.	N	3	2	6	24	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2039 (Complete with item 18)	Inc item 18
C3-17	Supports	Sleeper beams and Connections	Timber	3	Generally good condition with minor timber splitting and coating loss observed to be typical. A number of bolts were raised from tread level.	N	3	2	6	18	21	Localised replacement of screws which aren't flush	Within 5 years	\$240	Maintain existing material	2042	
C3-18	Decking	Deck planks	Timber	4	Generally good condition with minor timber splitting and wear and tear observed.	N	3	1	3	12	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2033	\$68,000

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C3-19	Decking	Decking screws	Galvanised Steel	5	Generally good condition with minor surface corrosion observed to be typical and some screws in localised areas observed to not be sitting flush.	N	2	3	6	30	10	Replace heavily corroded screws and localised replacement of screws which aren't flush.	Within 5 years	\$240	Replace	2031 (Complete with item 18)	Inc item 18
C3-20	Handrail	Handrail Posts	Timber	4	Generally good condition. Minor timber splitting observed to be typical throughout. Localised rot to 2 No. timber posts.	N	3	2	6	24	9	Monitor and reinspect at next scheduled inspection	Greater than 5 years		Replace handrailing	2030	\$14,000
C3-21	Handrail	Railing	Timber	4	Generally good condition with some minor deterioration and split timber observed.	N	3	1	3	12	9	Monitor and reinspect at next scheduled inspection	Greater than 5 years			2030	
C3-22	Handrail	Handrail Bolts	Galvanised Steel	3	Generally good condition with surface corrosion observed to be typical throughout.	N	3	1	3	9	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2032	
C3-23	Handrail	Steel banding	Galvanised Steel	3	Generally good condition with minor surface corrosion observed to be typical.	N	1	2	2	6	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2032	

## 3.4 Site No C4 – North Yanchep Foreshore

### 3.4.1 General

Site C4 provides a coastal lookout at the Mary Lindsay Lookout off Capricorn Esplanade in Yanchep. Based on provided information the lookout was constructed circa 2011. The structure consists of a timber boardwalk, stairs, and round platform area. Refer Figure 3.7 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.8. The assets within site C4 were found to be in good condition with only minor maintenance required within 5 years.



Figure 3.7 C4 Assets



Figure 3.8 C4 Site Inspection Extent

### 3.4.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.13. Please refer to Table 3.16 for detailed inspection findings and Appendix D for the defect forms.

Table 3.13 C4 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Boardwalk to Elevated Lookout</b>			
Support Beams	Minor damage and timber splitting observed.	9	C4-1
Support Connections	Minor surface corrosion and coating loss were observed to be typical.	27	C4-2
Deck Planks	Minor damage and timber splitting was observed.	9	C4-3
Decking Screws	Surface corrosion was observed to be typical to decking screws.	30	C4-4
Timber Posts	Split timber was observed to be typical throughout.	36	C4-5
Post Fasteners	Minor surface corrosion observed to fasteners. Some screws were observed to be missing.	24	C4-6
Railing	Damage was observed to the top rail at the elevated lookout. Paint deterioration, minor timber splitting was also observed. The steel bolts were observed to be corroding. A notch outside of the rail was also noticed.	36	C4-7
Bench	Minor damage and timber splitting was observed.	6	C4-8

### 3.4.3 Prioritised Maintenance Recommendations

Table 3.14 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.14 Site C4 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Decking Screws	Replace heavily corroded screws.	Within 5 years
2	Support Beams	Monitor and reinspect at next scheduled inspection	Greater than 5 years
	Deck Planks		
	Bench		
	Support Connections		
	Timber Posts		
	Railing		
	Post Fasteners		

### 3.4.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.3.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Decking screws will continue to corrode, eventually failing potentially. This may result in the timber deck planks becoming loose and creating a potential trip or fall hazard which could lead to serious injury to members of the general public as well as significant financial and reputational implications.

### 3.4.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.15 *Renewal Recommendations for site C4*

<b>Asset</b>	<b>Critical Component/s</b>	<b>Renewal Recommendations</b>	<b>Renewal Year</b>	<b>Renewal Cost</b>
Boardwalk/Lookout	Timber support beams, galvanised steel connections and decking screws, timber handrails and bench	Replace Timber support beams, galvanised steel connections and decking screws, timber handrails and bench	2030	\$88,628

Table 3.16 C4 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Boardwalk/Lookout – Overall Rating 18</b>																	
C4-1	Supports	Beams	Timber	3	Minor damage and timber splitting observed.	N	3	1	3	9	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2032	\$37,649
C4-2	Supports	Connections	Galvanised Steel	4	Typical minor surface corrosion to connections.	N	2	2	4	16	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2033	\$2,429
C4-3	Decking	Deck planks	Timber	3	Minor damage and timber splitting was observed.	N	3	1	3	9	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2042	
C4-4	Decking	Screws	Galvanised Steel	4	Surface corrosion was observed to be typical to decking screws.	N	2	2	4	16	12	Replace heavily corroded screws.	Within 5 years	\$480	Replace	2033	\$2,429
C4-5	Handrail	Timber Posts	Timber	6	Split timber was observed to be typical throughout.	N	3	2	6	36	6	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace handrail	2031	\$38,635
C4-6	Handrail	Post Fasteners	Galvanised Steel	6	Minor surface corrosion observed to fasteners. Some screws were observed to be missing.	N	1	2	2	12	6	Reinstate missing screws.	Within 5 years	\$240		2027 (recommend to complete by 2031)	
C4-7	Handrail	Railing	Timber/Galvanised Steel	3	Damage was observed to the top rail at the elevated lookout. Typical coating deterioration, minor timber splitting and surface corrosion to connection bolts observed.	N	3	2	6	36	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2032 (recommend to complete by 2031)	
C4-8	Bench	Bench	Timber	4	Minor damage and timber splitting was observed.	N	2	1	2	8	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace benches	2030	\$7,486

## 3.5 Site No C5 – Old Yanchep Surf Life Saving Club

### 3.5.1 General

Site C5 consists of an elevated platform lookout with bench seats. The lookout is accessed from the west side of the car park at the Old Yanchep Surf Life Saving Club. Based on provided information the platform was constructed circa 2020. The platform consists of a steel support system, composite material decking and a combination of steel and composite balustrade. There are four benches comprised of composite material and stainless steel. Refer Figure 3.9 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.10. The assets within site C5 were found to be in good condition with no maintenance for at least 5 years.



Figure 3.9 C5 Assets



Figure 3.10 C5 Site Inspection Extent

### 3.5.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.17. Please refer to Table 3.21 for detailed inspection findings and Appendix E for the defect forms.

Table 3.17 C5 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Lookout</b>			
Beams	No visible defects were observed.	6	C5-1
Beam Connections	No visible defects were observed.	4	C5-2
Deck Planks	No visible defects were observed.	4	C5-3
Decking Screws	No visible defects were observed.	4	C5-4
Handrail Posts	No visible defects were observed.	4	C5-5
Handrails	Minor tea staining observed.	6	C5-6
Bench	No visible defects were observed.	4	C5-7

### 3.5.3 Prioritised Maintenance Recommendations

Figure 3.14 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.18 C5 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Beams	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Beam Connections		
	Deck Planks		
	Decking Screws		
	Handrail Posts		
	Handrails		
	Bench		

### 3.5.4 Implications of Repairs / Delay of repairs

No maintenance items required for at least 5 years.

### 3.5.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.19 *Renewal Recommendations for site C5*

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Lookout	Galvanised steel connections and decking screws, composite balustrade post, stainless steel handrails and bench	Replace galvanised steel connections and decking screws, composite balustrade post, stainless steel handrails and bench	2035	\$43,313

Table 3.20 C5 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Lookout – Overall Rating 5</b>																	
C5-1	Support Beams	Beams	Composite Material	2	No visible defects were observed.	N	3	1	3	6	32	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2053	
C5-2	Support Beams	Connections	Galvanised Steel	2	No visible defects were observed.	N	2	1	2	4	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace all connections	2037	\$4,598
C5-3	Decking	Deck planks	Composite Material	2	No visible defects were observed.	N	2	1	2	4	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
C5-4	Decking	Decking screws	Stainless Steel	2	No visible defects were observed.	N	2	1	2	4	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2037	Included in item 2
C5-5	Handrails	Balustrade post	Composite Material	2	No visible defects were observed.	N	2	1	2	4	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2037	\$7,288
C5-6	Handrails	Rails	Stainless Steel	3	Minor tea staining observed.	N	2	1	2	6	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2035	\$16,750
C5-7	Bench	Bench	Composite Material/ Stainless Steel	2	No visible defects were observed.	N	2	1	2	4	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2037	\$14,677

## 3.6 Site No C6 – Yanchep Surf Life Saving Club

### 3.6.1 General

Site C6 provides access to the beach via a disabled access ramp and concrete vehicle ramp at the Yanchep Surf Life Saving Club on Brazier Road, Yanchep. Based on provided information the vehicle and disabled access ramps were constructed circa 2018. Both ramps comprise of concrete base, with the disabled access ramp supported by concrete walls and a coated steel balustrade along the length of the ramp on both sides. The Northern side of the disabled access ramp has a limestone retaining wall. Refer Figure 3.11 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.12. The assets within site C6 were found to be in good condition with only minor maintenance required.



Figure 3.11 C6 Assets



Figure 3.12 C6 Site Inspection Extent

### 3.6.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.21. Please refer to Table 3.24 for detailed inspection findings and Appendix F for the defect forms.

Table 3.21 C6 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Disabled Access Ramp</b>			
Concrete Base Slab	Surface cracks observed to be typical to surface slab. Prior concrete repairs to slab edge facing the ocean above the storage area were noticed.	9	C6-1
Concrete Walls	Generally good condition. With noticeable prior concrete repairs to edge facing ocean above storage area. Some minor erosion at base near storage area observed.	9	C6-2
Retaining Wall	No visible defects were observed	16	C6-3
Balustrade (All Components)	Generally good condition. Vertical rails missing for 6 panels on Northern side, and 1 panel on Southern side at ramp entry. Local coating loss, surface corrosion and rust staining observed. Inconsistent fixings used with some screws being stainless steel and some general steel.	18	C6-4
<b>Vehicle Ramp Access</b>			
Concrete Base Slab	Cracking observed, likely due to subsidence (i.e. sand movement).	20	C6-5

### 3.6.3 Prioritised Maintenance Recommendations

Table 3.22 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.22 Site C6 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Balustrade (All Components)	Localised abrasive cleaning and application of protective coating.	Within 5 years
2	Concrete Base Slab	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Concrete Walls		
	Concrete Base Slab		
	Retaining Wall		

### 3.6.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.6.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Corrosion and coating loss on steel members may continue to deteriorate, delaying and/or not completing repairs will result in an increase in defect area required for repair, which may result in a significantly higher cost for repair.

### 3.6.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.23 Renewal Recommendations for site C6

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Disabled access ramp	Coated steel handrail	Replace coated steel handrail	2031	\$107,077

Table 3.24 C6 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Disabled Access Ramp – Overall Rating 9</b>																	
1	Base Slab	N/A	Reinforced Concrete	3	Surface cracks observed to be typical to surface slab.	N	3	1	3	9	35	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2042	
2	Walls	N/A	Reinforced Concrete	3	Generally good condition. With noticeable prior concrete repairs to edge facing ocean above storage area. Some minor erosion at base near storage area observed.	N	3	1	3	9	35	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2056	
3	Handrail	N/A	Coated Steel	5	Generally good condition. Vertical rails missing for 6 panels on Northern side, and 1 panel on Southern side at ramp entry. Local coating loss, surface corrosion and rust staining observed. Inconsistent fixings used with some screws being stainless steel and some general steel.	N	3	1	3	15	10	Localised abrasive cleaning and application of protective coating.	Within 5 years	\$1515	Replace	2031	\$107,077
4	Retaining Wall	N/A	Limestone	2	No visible defects were observed	N	2	1	2	4	48	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2069	
<b>Vehicle Access Ramp – Overall Rating 8</b>																	
5	Base Slab	N/A	Reinforced Concrete	4	Cracking observed, likely due to subsidence (i.e. sand movement).	N	2	1	2	8	30	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2051	

## 3.7 Site No C7 – Newman Park (North)

### 3.7.1 General

Site C7 provides beach access south of Yanchep Lagoon on Brazier Road in Yanchep. Based on provided information the staircase was constructed circa 2016. The site consists of a set of two sets of limestone stairs with mesh fencing, leading to two sets of composite fibre staircases which branch from a single platform. Refer Figure 3.13 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.14. The assets within site C7 were found to be in good condition with localised maintenance required within 1 – 2 years.

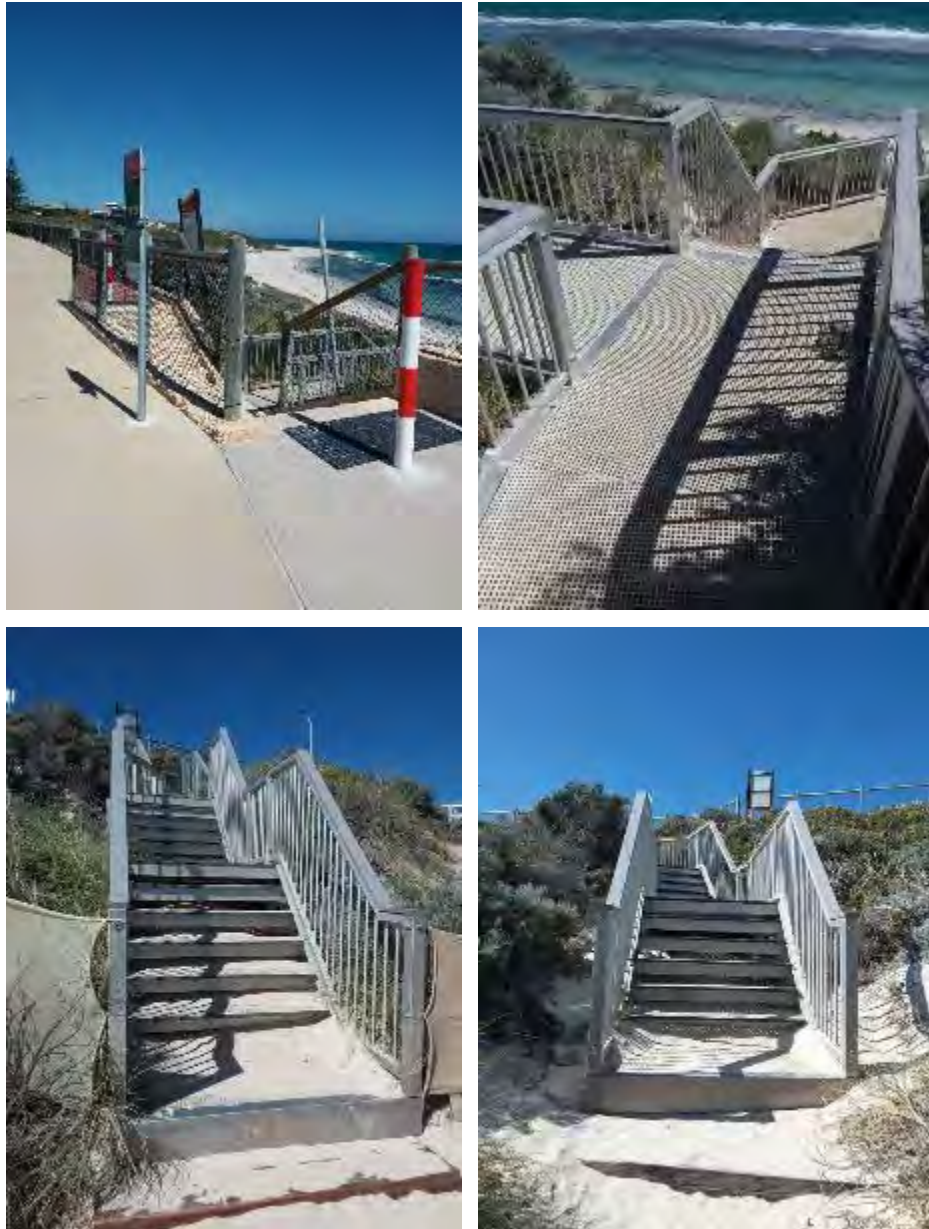


Figure 3.13 C7 Assets



Figure 3.14 C7 Site Inspection Extent

### 3.7.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.25. Please refer to Table 3.28 for detailed inspection findings and Appendix G for the defect forms.

Table 3.25 C7 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Limestone Stairs</b>			
Limestone Steps	Grout observed to be in good condition. Erosion was observed to be typical.	12	C7-1
Limestone Retaining Wall	Grout observed to be in good condition. Minor erosion was observed to be typical.	12	C7-2
Fencing Posts	Minor timber splitting was observed to be typical throughout.	12	C7-3
Fencing Mesh, Strainer Wires and Staples	A hole was found in the mesh. Surface corrosion to staples was observed to be typical.	48	C7-4
Bollards	Minor coating loss and surface corrosion.	12	C7-5
<b>Composite Fibre/Steel Stairs</b>			
Tread Plates and Landings	No visible defects were observed	6	C7-6
Stair Stringers, Support Beams and Columns	No visible defects were observed. Inspection limited due to debris build up on platform and surroundings.	8	C7-7
Balustrade	Generally good condition. Some fasteners observed to have corrosion.	9	C7-8

### 3.7.3 Prioritised Maintenance Recommendations

Table 3.26 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.26 Site C7 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Fencing Mesh, Strainer Wires and Staples	Replace damaged mesh and heavily corroded staples.	Within 1-2 years
2	Limestone Retaining Wall	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Fencing Posts		
	Bollards		
	Tread Plates and Landings		
	Limestone Steps		
	Stair Stringers, Support Beams and Columns		
Balustrade			

### 3.7.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.7.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Mesh staples will continue to corrode potentially leading to failure at connections. Failure of the connections may lead to large sections of the mesh collapsing, which may result in a significantly higher cost for repair. Damaged mesh may increase in size resulting in access to adjacent vegetation.

### 3.7.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.27 Renewal Recommendations for site C7

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Limestone stairs	Timber fencing posts and steel bollards	Replace timber fencing posts and steel bollards	2032	\$6,616
Composite material/steel stairs	Composite handrails	Replace composite handrails	2035	\$37,335

Table 3.28 C7 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Limestone Stairs – Overall Rating 19</b>																	
1	Stairs	N/A	Limestone	4	Grout observed to be in good condition. Erosion was observed to be typical.	N	3	1	3	12	30	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2051	
2	Retaining Wall	N/A	Limestone	4	Grout observed to be in good condition. Minor erosion was observed to be typical.	N	3	1	3	12	30	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2051	
3	Fencing	Timber Posts	Timber	3	Minor timber splitting was observed to be typical throughout.	N	2	2	4	12	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace fencing	2032	\$3,957
4	Fencing	Mesh/Strainer Wires/Staples	Coated Steel	6	A hole was found in the mesh. Surface corrosion to staples was observed to be typical.	N	2	4	8	48	8	Replace damaged mesh and heavily corroded staples.	Within 1-2 years	\$960		2029 (recommend to complete in 2032)	
5	Bollards	Bollards	Coated Steel	3	Minor coating loss and surface corrosion.	N	2	2	4	12	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2032	\$2,659
<b>Composite Material/Steel Stairs – Overall Rating 8</b>																	
6	Stairs	Treads/Landings	Composite Material	2	No visible defects were observed	N	3	1	3	6	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
7	Stairs	Support Steelwork	Galvanised Steel	2	No visible defects were observed. Inspection limited due to debris build up on platform and surroundings.	N	4	1	4	8	32	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2053	
8	Stairs	Handrail	Composite Material	3	Generally good condition. Some fasteners observed to have corrosion.	N	3	1	3	9	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace handrails	2035	\$37,335

## 3.8 Site No C8 – South Yanchep Foreshore

### 3.8.1 General

Site C8 provides beach access via a long concrete path, leading to a staircase and lookout, located off Brazier road on the Foreshore Reserve. Based on provided information the concrete path, staircase and lookout were constructed circa 2015. The Staircase and lookout are made of composite fibre mesh with steel supports. The concrete path has timber fencing on each side along the full the length of the path until reaching the platform. Refer Figure 3.15 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.16. The assets within site C8 were found to be in good condition with only minor maintenance required.



Figure 3.15 C8 Assets

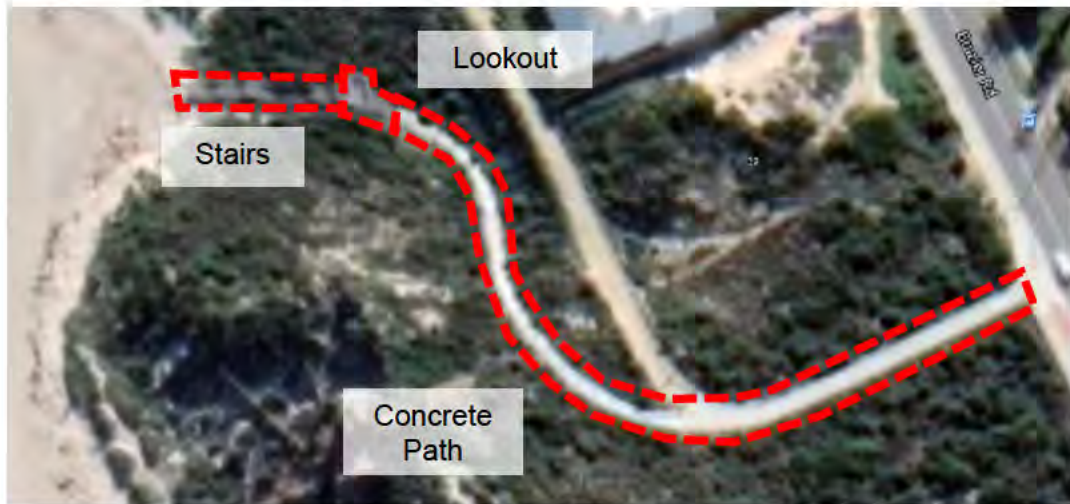


Figure 3.16 C8 Site Inspection Extent

### 3.8.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.29. Please refer to Table 3.32 for detailed inspection findings and Appendix H for the defect forms.

Table 3.29 C8 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Concrete Path</b>			
Concrete Base Slab	Spalling/cracking with minor deterioration at joints were observed.	12	C8-1
Bollards / Traffic Diverters	Paint and tape deterioration were observed to be typical to all bollards and traffic diverters. Surface corrosion to fixings and lock were also observed.	12	C8-2
Fencing Posts and Railing	Minor timber splitting was observed. Rail was found to be missing at connection to stairs.	12	C8-3
Fencing Mesh and Staples	Corrosion with section loss observed to be typical throughout.	40	C8-4
Fencing Mesh Strainer Wires	No visible defects were observed	8	C8-5
<b>Stairs/Lookout</b>			
Footings	No visible defects were observed	6	C8-6
Columns	No visible defects were observed	6	C8-7
Grid Mesh Support Beams	No visible defects were observed	6	C8-8
Support Connections	No visible defects were observed	6	C8-9
Decking	No visible defects were observed	6	C8-10
Stair Stringers	No visible defects were observed	6	C8-11
Bench Seats	No visible defects were observed	4	C8-12
Balustrade	No visible defects were observed	6	C8-13
Railing and Connections	No visible defects were observed	6	C8-14

### 3.8.3 Prioritised Maintenance Recommendations

Table 3.30 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.30 Site C8 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Fencing Mesh and Staples	Replace heavily corroded sections of mesh or staples.	Within 5 years
2	Concrete Base Slab	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Bollards / Traffic Diverters		
	Fencing Posts and Railing		
	Fencing Mesh Strainer Wires		
	Footings		
	Columns		
	Grid Mesh Support Beams		
	Support Connections		
	Decking		
	Stair Stringers		
	Bench Seats		
	Balustrade		
	Railing and Connections		

### 3.8.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.8.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Mesh staples will continue to corrode potentially leading to failure at connections. Failure of the connections may lead to large sections of the mesh collapsing, which may result in a significantly higher cost for repair. Damaged mesh may increase in size resulting in access to adjacent vegetation.

### 3.8.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.31 Renewal Recommendations for site C8

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Concrete path	Steel bollards/gate, timber fencing posts, steel mesh, staples, strainer and wires	Replace steel bollards/gate, timber fencing posts, steel mesh, staples, strainer and wires	2029	\$49,836

<b>Asset</b>	<b>Critical Component/s</b>	<b>Renewal Recommendations</b>	<b>Renewal Year</b>	<b>Renewal Cost</b>
Stairs/Lookout	Coated steel bench seats, steel balustrades and handrails	Replace coated steel bench seats, steel balustrades and handrails	2033	\$81,910

Table 3.32 C8 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Concrete Path – Overall Rating 17</b>																	
1	Foundation	Base Slab	Concrete	3	Spalling/cracking with minor deterioration at joints was observed.	N	2	2	4	12	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2042	
2	Bollards / Gate	Bollards / Gate	Coated Steel	5	Coating and reflective tape deterioration typica. Surface corrosion to fixings.	N	2	2	4	20	8	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2029	\$5,020
3	Fencing	Timber Posts	Timber	3	Minor timber splitting was observed. Rail was found to be missing at connection to stairs.	N	2	2	4	12	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace fencing	2032	\$44,816
4	Fencing	Mesh and staples	Steel	5	Corrosion with section loss observed to be typical throughout.	N	2	4	8	40	8	Replace heavily corroded sections of mesh or staples.	Within 5 years	\$720		2029 (recommend to complete in 2032)	
5	Fencing	Mesh strainer wires	Coated Steel	2	No visible defects were observed	N	1	1	2	2	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2037 (recommend to complete in 2032)	
<b>Stairs/Lookout – Overall Rating 6</b>																	
6	Foundation	Footing	Reinforced Concrete	3	No visible defects were observed	N	3	1	3	9	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2042	
7	Support Steel	Columns	Stainless Steel	2	No visible defects were observed	N	3	1	3	6	32	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2053	
8	Support Steel	Grid Mesh Support Beams	Stainless Steel	2	No visible defects were observed	N	3	1	3	6	32	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2053	
9	Support Steel	Connections	Stainless Steel	2	No visible defects were observed	N	3	1	3	6	32	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2053	

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
10	Decking	Grid-mesh	Composite Material	2	No visible defects were observed	N	3	1	3	6	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
11	Stair	Stringers	Stainless Steel	2	No visible defects were observed	N	3	1	3	6	32	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2053	
12	Bench	Seats	Coated Steel/ Stainless Steel/ Composite Material	2	No visible defects were observed	N	2	1	2	4	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2033	\$2,842
13	Balustrade	Balustrade	Coated Steel	2	No visible defects were observed	N	3	1	3	6	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2045	\$54,992
14	Balustrade	Handrail	Coated Steel	2	No visible defects were observed	N	3	1	3	6	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2045	\$24,076

## 3.9 Site No C9 – South Yanchep Foreshore

### 3.9.1 General

Site C9 forms part of a walking trail between Compass Circle and Foreshore Vista, in Yanchep. Based on provided information the assets were constructed circa 2009. The site consists of a concrete path from the Compass Circle entry which branches into two sections, the first leading to an elevated alloy boardwalk and the second leading to an ocean lookout with benches. A red asphalt path is provided at the entry point from Foreshore Vista which leads to the other side of the alloy boardwalk and a set of concrete stairs which provides access to the beach. Mesh fencing is provided along both sides of the asphalt path and surrounds the ocean lookout. Refer Figure 3.17 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.18. The assets within site C9 were found to be in good condition with a few maintenance requirements.



Figure 3.17 C9 Assets



Figure 3.18 C9 Site Inspection Extent

### 3.9.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.33. Please refer to Table 3.36 for detailed inspection findings and Appendix I for the defect forms.

Table 3.33 C9 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Concrete Path/Lookout</b>			
Base Slab	Generally good condition, with local areas of minor impact damage and erosion.	6	C9-1
Fence Posts	Minor timber splitting was observed to be typical throughout.	12	C9-2
Fencing Mesh	Typically, good condition. Mesh observed to not be secured well to top rail at the lookout. Strainer wire in the same area is loose.	30	C9-3
Fencing Mesh Staples	Minor surface corrosion was observed	9	C9-4
Fencing Rail	Minor timber splitting was observed to be typical throughout.	12	C9-5
<b>Alloy Boardwalk</b>			
Abutment	No visible defects were observed.	8	C9-6
Deck Planks	Cap plates are typically in good condition. Decking observed to contain some coating degradation and flaking.	24	C9-7

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
Bollards	Some minor surface corrosion was observed on the bollards.	2	C9-8
Fencing Cable	Generally good condition. Some wires have been replaced.	3	C9-9
Fencing Cable (Localised Failure)	Cable has failed in localised area.	90	C9-10
Rail and Bracing	Localised impact damage, general wear and tear. One connection bolt missing, but not of concern.	24	C9-11
<b>Asphalt Path</b>			
Asphalt	Localised areas with cracking observed.	20	C9-12
Fence Posts	Minor to moderate timber splitting observed.	24	C9-13
Fencing Mesh	Minor corrosion observed on the staples. Mesh observed to be slightly loose.	36	C9-14
Fencing Rail	Localised warping of railing observed. Typical minor splits and rot in timber.	30	C9-15
<b>Concrete Stairs</b>			
Stairs and Path base	Generally good condition. Minor cracking and chipping observed.	12	C9-16
Fencing Posts	Minor timber splitting was observed to be typical throughout.	18	C9-17
Fencing Mesh and Staples	Some areas of corrosion with section loss were observed. Mesh was not tight in some areas.	36	C9-18
Handrails	Minor tea staining was observed.	9	C9-19

### 3.9.3 Prioritised Maintenance Recommendations

Table 3.34 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.34 Site C9 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Alloy Boardwalk – Balustrade Cable	Replace failed cable wires.	Within 1-2 years
	Concrete Path - Fencing Mesh	Fix mesh to the top rail.	
2	Asphalt Path - Fencing Rail	Replace split, rotten, and deformed rails.	Within 5 years
	Asphalt Path - Fencing Mesh and Staples	Replace heavily corroded mesh areas or staples. Tighten loose mesh.	
	Concrete Stairs - Fencing Mesh and Staples	Replace heavily corroded mesh areas or staples. Tighten loose mesh.	
	Asphalt Path – Base Slab	Localised asphalt repairs at cracked areas	
3	Lookout - Fence Posts	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Lookout - Fencing Mesh Staples		
	Alloy Boardwalk – Abutment		

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
	Alloy Boardwalk –Deck Planks)		
	Alloy Boardwalk – Bollards		
	Alloy Boardwalk –Rail and Bracing		
	Asphalt Path - Asphalt		
	Asphalt Path - Fence Posts)		
	Asphalt Path - Fencing Mesh		
	Concrete Stairs - Stairs and Path base		
	Concrete Stairs - Fencing Posts		
	Concrete Stairs - Handrails		

### 3.9.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.9.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Fencing mesh and staples may continue to deteriorate, resulting in an increase in defect area required for repair in future, which may result in a significantly higher cost for repair. Widespread areas of deteriorated fencing are also aesthetically unpleasing which may lead to complaints from users of the asset.
- The cracks on the Asphalt base slab may begin to spall and may eventually become a trip hazard, resulting in injury to members of the general public.
- Fencing cable will failure if not addressed will allow for easy undesired access to the surrounding bushland which may result in injury of the general public as well as financial and reputational implications.
- Timber elements will continue to split, deteriorate. Delay in repairs may result in potential reduced capacity, which may result in roof structure failing. This could lead to serious injury and/or fatalities to members of the general public. Defect areas will also increase resulting in increased repair costs.

### 3.9.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.35 Renewal Recommendations for site C9

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Concrete path/Lookout	Timber fencing posts, steel mesh and staples, and timber rails.	Replace timber fencing posts, steel mesh and staples, and timber rails.	2032	\$67,930

<b>Asset</b>	<b>Critical Component/s</b>	<b>Renewal Recommendations</b>	<b>Renewal Year</b>	<b>Renewal Cost</b>
Alloy Boardwalk	Aluminium deck planks, steel bollards, stainless steel cables and aluminium railing/bracing.	Replace aluminium deck planks, steel bollards, stainless steel cables and aluminium railing/bracing.	2033	\$326,670
Asphalt Path	Asphalt base slab, fencing – timber posts, steel mesh, and timber rail.	Resurface asphalt path. Replace fencing – timber posts, steel mesh, and timber rail.	2029	\$79,309
Concrete Stairs	Concrete stairs, fencing – timber posts and steel mesh and staples, steel railing and posts.	Replace concrete stairs, fencing – timber posts and steel mesh and staples, steel railing and posts.	2032	\$64,248

Table 3.36 C9 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Concrete Path/Lookout – Overall Rating 14</b>																	
C9-1	Base Slab Surface	Concrete Paver	Concrete	3	Generally good condition, with local areas of minor impact damage and erosion.	N	2	1	2	6	35	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2056	
C9-2	Fencing	Timber posts	Timber	3	Minor timber splitting was observed to be typical throughout.	N	2	2	4	12	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace fencing	2032	\$67,930
C9-3	Fencing	Mesh	Coated Steel	5	Typically, good condition. Mesh observed to not be secured well to top rail at the lookout. Strainer wire in the same area is loose.	N	2	3	6	30	10	Fix mesh to the top rail.	Within 1-2 years	\$360		2031 (recommend to complete in 2032)	
C9-4	Fencing	Mesh Staples	Galvanised Steel	3	Minor surface corrosion was observed	N	1	3	3	9	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2032	
C9-5	Fencing	Timber rail	Timber	3	Minor timber splitting was observed to be typical throughout.	N	2	2	4	12	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2032	
<b>Alloy Boardwalk – Overall Rating 25</b>																	
C9-6	Foundation	Abutment	Reinforced Concrete	2	No visible defects were observed.	N	4	1	4	8	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
C9-7	Decking	Deck Planks	Aluminium Alloy	3	Cap plates are typically in good condition. Decking observed to contain some coating degradation and flaking.	N	4	2	8	24	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2039	\$220,000
C9-8	Bollards	Bollards	Steel	2	Some minor surface corrosion was observed on the bollards.	N	1	1	1	2	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2033	\$2,654

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C9-9	Balustrade	Cable	Stainless Steel	3	Generally good condition. Some wires have been replaced.	N	1	1	1	3	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2035	\$104,016
C9-10	Balustrade	Cable	Stainless Steel	9	Cable has failed in localised area.	N	2	5	10	90	2	Replace failed cable wires.	Within 1-2 years	\$600		N/A localised repair.	
C9-11	Balustrade	Railing/Bracing	Aluminium Alloy	4	Localised impact damage, general wear and tear. One connection bolt missing, but not of concern.	N	3	2	6	24	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2033	
<b>Asphalt Path – Overall Rating 28</b>																	
C9-12	Base Slab	Asphalt	Asphalt	5	Localised areas with cracking observed.	N	2	2	4	20	15	Localised asphalt repairs at cracked areas	Within 5 years	\$450	Resurface	2036	\$40,095
C9-13	Fencing	Timber posts	Timber	4	Minor to moderate timber splitting observed.	N	2	3	6	24	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace fencing	2030 (recommend complete 2029)	\$39,214
C9-14	Fencing	Mesh	Coated Steel	6	Minor corrosion observed on the staples. Mesh observed to be slightly loose.	N	2	3	6	36	8	Replace staples and tighten mesh.	Within 5 years	\$320		2029	
C9-15	Fencing	Timber rail	Timber	5	Localised warping of railing observed. Typical minor splits and rot in timber.	N	2	3	6	30	8	Replace split, rotten, and deformed rails.	Within 5 years	\$1,350		2029	
<b>Concrete Stairs – Overall Rating 19</b>																	
C9-16	Stairs	Stairs	Concrete	4	Generally good condition. Minor cracking and chipping observed.	N	3	1	3	12	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Re-instate concrete stairs	2039	\$22,173
C9-17	Fencing	Timber posts	Timber	3	Minor timber splitting was observed to be typical throughout.	N	1	3	6	18	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace Fencing	2032	\$14,373
C9-18	Fencing	Mesh and Staples	Coated Steel, Steel	6	Some areas of corrosion with section loss were observed. Mesh was not tight in some areas.	N	2	3	6	36	6	Replace heavily corroded mesh areas or staples. Tighten loose mesh.	Within 5 years	\$320		2027 (recommend to complete 2032)	

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C9-19	Handrails	Railing and posts	Stainless Steel	3	Minor tea staining was observed.	N	3	1	3	9	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace handrailing	2032	\$27,702

## 3.10 Site No C10 – Eglinton Foreshore

### 3.10.1 General

Site C10 consists of a concrete path providing beach access from the car park on Idyllic View, in Eglinton. Based on provided information the concrete path was constructed circa 2018. The path has steel mesh and fabric fencing along both sides and bollards to stop vehicle access. Refer Figure 3.19 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.20. The assets within site C10 were found to be in good condition with only minor maintenance required.



Figure 3.19 C10 Assets



Figure 3.20 C10 Site Inspection Extent

### 3.10.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.37. Please refer to Table 3.40 for detailed inspection findings and Appendix J for the defect forms.

Table 3.37 C10 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Vehicle Access Ramp</b>			
Concrete Paver	No visible defects observed. Inspection limited as bottom of path buried in sand.	20	C10-1
Bollards	Surface corrosion and coating loss observed to three bollards. Top north bollard observed to be in good condition.	12	C10-2
Fencing Posts	Timber splitting observed to be typical throughout	20	C10-3
Fencing Mesh	Coating loss and rust staining observed to be typical throughout. Some areas of fence observed to be deformed.	20	C10-4
Fencing Cloth	Some tears and disconnected areas observed.	12	C10-5
Fencing Strainer Wires	Generally good condition with minor surface corrosion on tensioners was observed.	6	C10-6

### 3.10.3 Prioritised Maintenance Recommendations

Table 3.38 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.38 Site C10 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Fencing Mesh	Replace heavily corroded or heavily deformed areas of fencing.	Within 5 years
2	Fencing Cloth	Replace/patch-up torn areas and reinstate disconnected areas.	Within 5 years
3	Concrete Paver	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Bollards		
	Fencing Posts		
	Fencing Strainer Wires		

### 3.10.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.10.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Fencing mesh and cloth may continue to deteriorate, resulting in an increase in defect area required for repair in future, which may result in a significantly higher cost for repair. Widespread areas of deteriorated fencing are also aesthetically unpleasing which may lead to complaints from users of the asset.

### 3.10.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.39 *Renewal Recommendations for site C10*

<b>Asset</b>	<b>Critical Component/s</b>	<b>Renewal Recommendations</b>	<b>Renewal Year</b>	<b>Renewal Cost</b>
Vehicle access ramp	Fencing – timber posts/rails, steel mesh and strainer wires, and fabric cloth	Replace fencing	2030	\$35,000

Table 3.40 C10 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Vehicle Access Ramp – Overall Rating 15</b>																	
C10-1	Foundation	Concrete Paver	Concrete	2	No visible defects observed. Inspection limited as bottom of path buried in sand.	N	3	1	3	6	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2045		
C10-2	Bollards	Bollards	Coated Steel	5	Surface corrosion and coating loss observed to three bollards. Top north bollard observed to be in good condition.	N	2	2	4	20	8	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2029		
C10-3	Fencing	Posts/Rails	Timber	4	Timber splitting observed to be typical throughout	N	1	3	3	12	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years	Replace fencing	2030	\$35,000	
C10-4	Fencing	Mesh	Galvanised Steel	5	Coating loss and rust staining observed to be typical throughout. Some areas of fence observed to be deformed.	N	1	4	4	20	10	Replace heavily corroded or heavily deformed areas of fencing.	Within 5 years		\$3,200.00		2031 (recommend complete by 2030)
C10-5	Fencing	Cloth	Fabric	5	Some tears and disconnected areas observed.	N	1	4	4	20	8	Replace/patch-up torn areas and reinstate disconnected areas.	Within 5 years		\$360		2029 (recommend complete in 2030)
C10-6	Fencing	Mesh Strainer Wires	Coated Steel	3	Generally good condition with minor surface corrosion on tensioners was observed.	N	2	2	4	12	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years				2032 (recommend complete by 2030)

## 3.11 Site No C11 – Amberton Beach Foreshore South

### 3.11.1 General

Site C11 provides beach access via a composite fibre staircase from Idyllic View, in Eglington. No drawings were available/provided to GHD, hence the age of the structure is not known. The staircase is constructed from composite materials, steel support frame and is fitted with a stainless-steel handrail either side. Refer Figure 3.21 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.22. The assets within site C11 were found to be in good condition with no maintenance required for at least 5 years.



Figure 3.21 C11 Assets



Figure 3.22 C11 Site Inspection Extent

### 3.11.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.41. Please refer to Table 3.44 for detailed inspection findings and Appendix K for the defect forms.

Table 3.41 C11 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Stairs</b>			
Columns	Coating loss and rust staining were observed to be typical. Inspection limited due to access.	20	C11-1
Stringers and Supports	Generally good condition with minor corrosion observed at welds.	9	C11-2
Decking	Some minor coating loss and one small crack observed.	9	C11-3
Handrails	Rust staining observed to be typical throughout.	4	C11-4

### 3.11.3 Prioritised Maintenance Recommendations

Table 3.42 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.42 Site C11 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Columns	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Handrails		
	Stringers and Supports		
	Decking		

### 3.11.4 Implications of Repairs / Delay of repairs

No maintenance items required for at least 5 years.

### 3.11.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.43 *Renewal Recommendations for site C11*

<b>Asset</b>	<b>Critical Component/s</b>	<b>Renewal Recommendations</b>	<b>Renewal Year</b>	<b>Renewal Cost</b>
Stairs	Stainless steel handrail	Replace stainless steel handrail	2033	\$34,043

Table 3.44 C11 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Stairs – Overall Rating 11</b>																	
C11-1	Supports	Columns	Galvanised Steel	5	Coating loss and rust staining were observed to be typical. Inspection limited due to access.	N	4	1	4	20	20	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2041	
C11-2	Supports	Stringers and Supports	Galvanised Steel	3	Generally good condition with minor corrosion observed at welds.	N	3	1	3	9	28	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2049	
C11-3	Decking	Decking	Composite Material	3	Some minor coating loss and one small crack observed.	N	3	1	3	9	28	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2049	
C11-4	Handrails	Handrail	Stainless Steel	2	Rust staining observed to be typical throughout.	N	2	1	2	4	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace handrails	2033	\$34,043

## 3.12 Site No C12 – Waterfront Park

### 3.12.1 General

Site C12 comprises of a vehicle access ramp from carpark to the beach, a collection of concrete walkway paths, stairs, handrails and limestone retaining walls along the border of Waterfront Park. There is a lookout area to the south east of the park, which is boarded with steel handrailing. Based on provided information the assets were constructed circa 2019. Refer Figure 3.23 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.24. The assets within site C12 were generally found to be in good condition with the exception of a number of items which require maintenance required within 1 – 2 years. There was a bench which had failed with danger tape which requires immediate remediation.

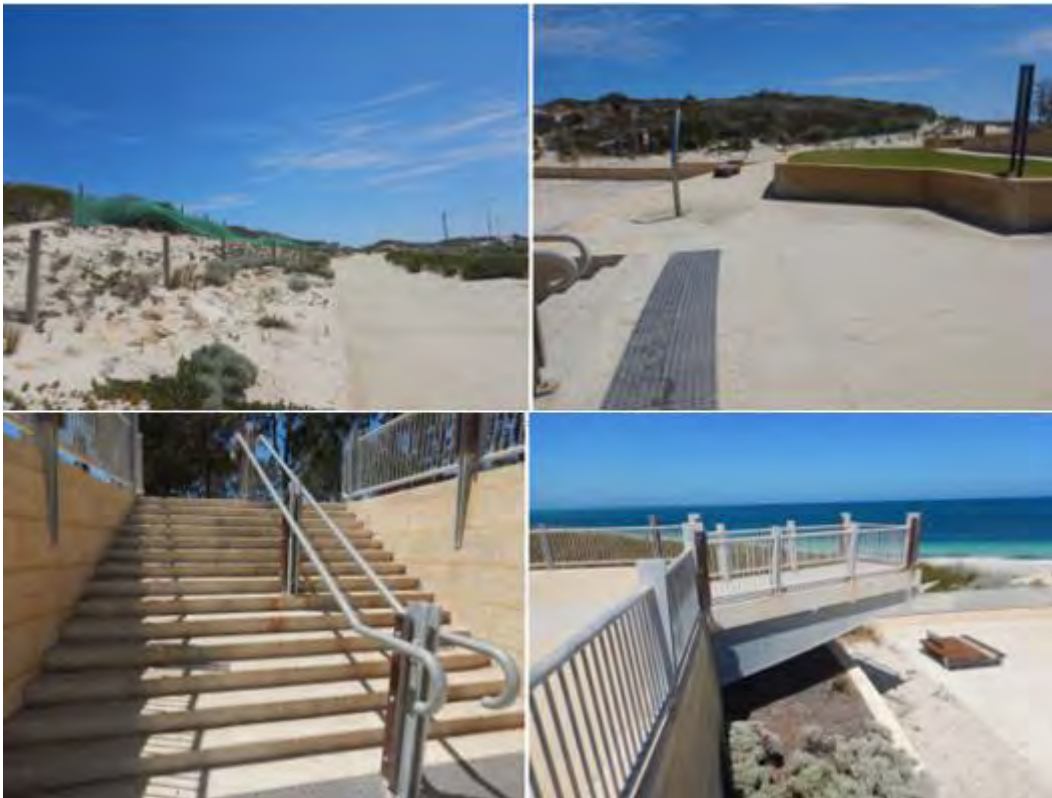


Figure 3.23 C12 Assets

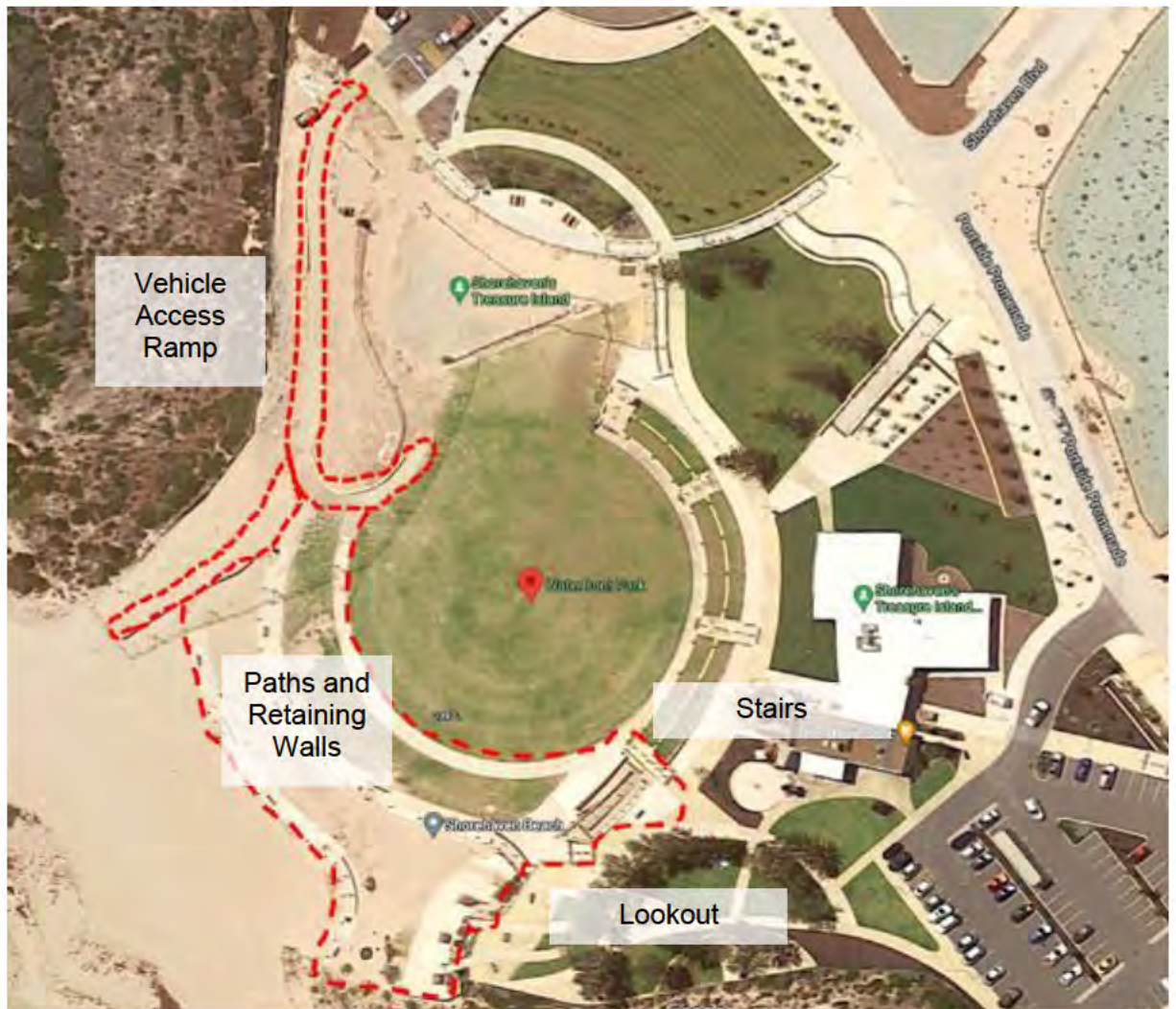


Figure 3.24 C12 Site Inspection Extent

### 3.12.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.45. Please refer to Table 3.48 for detailed inspection findings and Appendix L for the defect forms.

Table 3.45 C12 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Vehicle Access Ramp</b>			
Base slab	Generally good condition with minor spalling and cracking observed at the joints.	9	C12-1
Boom gate	Generally good condition with minor coating loss observed to be typical on the top and bottom of the gate.	16	C12-2
Timber posts	Generally good condition with minor timber splitting observed.	8	C12-3
Mesh & Staples	Generally good condition. Minor surface corrosion was observed at localised areas. The corrosion was observed to be more predominant on the northern fence. Deformation due to sand build up was also observed.	16	C12-4

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
Windbreak Fencing - Shade Cloth	Cloth observed to be deteriorated and failed at base of northern fence. Cloth noticed to be typically loose throughout.	56	C12-5
Strainer Wires	Generally good condition with localised areas of loose wire observed (most likely due to overgrown vegetation).	12	C12-6
<b>Concrete Path and Stairs</b>			
Concrete Path	Generally good condition. Minor deterioration of joint sealant at wall interface was observed to be typical along with some localised areas of joint sealant failure. Minor cracking at southern most staircase was also observed.	9	C12-7
Concrete Path (Localised)	Heavy crack on adjacent southern most bench on level three was observed.	56	C12-8
Staircase	Generally good condition. The south side stairwell was observed to possess some discoloration, minor cracking and one small chip.	12	C12-9
Handrail Posts	Surface corrosion, coating loss and rust staining were typical throughout on posts and connections. These were observed to be more prominent on the ocean side of the posts.	40	C12-10
Handrails (Timber Members)	Generally good condition. Coating loss was observed to be typical throughout. Some members were also observed to contain split timber.	6	C12-11
Handrails	White rust observed to be typical to handrails. Some areas with minor corrosion were also observed.	16	C12-12
Sign	Heavy corrosion with sections loss observed on the signpost at the base of the vehicle access ramp.	63	C12-13
<b>General</b>			
Retaining Walls	Generally good condition with minor erosion noticed on the retaining walls, specifically those closest to the water. Walls along the staircases were found to contain small to large cracks.	12	C12-14
Bench	One failed bench, marked with danger tape. The remainder of the benches observed to be in good condition.	72	C12-15
<b>Lookout</b>			
Handrails and Balustrades	Generally good condition with minor surface corrosion and coating loss observed to be typical throughout.	18	C12-16

### 3.12.3 Prioritised Maintenance Recommendations

Table 3.46 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.46 Site C12 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Bench	Replace / Repair failed bench.	Immediately
2	Windbreak Fencing - Shade Cloth	Replace full length of cloth.	Within 1-2 years
	Concrete Path	Repair cracks	Within 1-2 years

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
	Sign	Replace signpost	Within 1-2 years
3	Handrail Posts)	Replace heavily corroded posts and fixings.	Within 5 years
4	Base slab	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Boom gate		
	Timber posts		
	Mesh & Staples		
	Strainer Wires		
	Concrete Path		
	Staircase		
	Handrails (Timber Members)		
	Retaining Walls		
	Handrails and Balustrades		

### 3.12.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.12.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Danger tape on bench suggest bench is not fit for service and is a potential health and safety issue and should be addressed immediately.
- Fencing cloth may continue to deteriorate, resulting in an increase in defect area required for repair in future, which may result in a significantly higher cost for repair. Widespread areas of deteriorated fencing are also aesthetically unpleasing which may lead to complaints from users of the asset.
- The cracks on the base slab may begin to spall and may eventually become a trip hazard, resulting in injury to members of the general public.
- Handrail connections will continue to corrode and rust. Heavy corrosion may reduce the capacity and potentially fail when a load is applied leading to injury to members of the general public as well as financial and reputational implications.
- Corrosion and coating loss on steel members may continue to deteriorate, delaying and/or not completing repairs will result in an increase in defect area required for repair, which may result in a significantly higher cost for repair.

### 3.12.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.47 Renewal Recommendations for site C12

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Vehicle Access Ramp	Galvanised steel boom gate, fencing mesh and staples, windbreak fencing shade cloth	Replace galvanised steel boom gate, fencing mesh and staples, windbreak fencing shade cloth	2024	\$20,512

<b>Asset</b>	<b>Critical Component/s</b>	<b>Renewal Recommendations</b>	<b>Renewal Year</b>	<b>Renewal Cost</b>
Concrete Path	Galvanised steel handrail posts, railing and sign, and timber handrail members.	Replace galvanised steel handrail posts, railing and sign, and timber handrail members.	2026	\$9,553
General	Steel bench seating	Replace all benches	2032	\$18,825
Lookout	Galvanised steel handrails and balustrades	Replace galvanised steel handrails and balustrades	2032	\$11,942

Table 3.48 C12 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Vehicle Access Ramp – Overall Rating 20</b>																	
C12-1	Foundation	Base slab	Reinforced Concrete	3	Generally good condition with minor spalling and cracking observed at the joints.	N	3	1	3	9	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2042	
C12-2	Fencing	Boom gate	Galvanised Steel	4	Generally good condition with minor coating loss observed to be typical on the top and bottom of the gate.	N	2	2	4	16	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2030	\$4,780
C12-3	Fencing	Timber posts	Timber	4	Generally good condition with minor timber splitting observed.	N	2	1	2	8	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace fencing	2033	
C12-4	Fencing	Mesh & Staples	Galvanised Steel	4	Generally good condition. Minor surface corrosion was observed at localised areas. The corrosion was observed to be more predominant on the northern fence. Deformation due to sand build up was also observed.	N	2	2	4	16	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2033 (recommend complete by 2030)	\$14,000
C12-5	Fencing	Windbreak Fencing – Shade Cloth	Geofabric	7	Cloth observed to be deteriorated and failed at base of northern fence. Cloth noticed to be typically loose throughout.	N	2	4	8	56	5	Replace full length of cloth.	Within 1-2 years			2024	\$1,732
C12-6	Fencing	Strainer Wires	Coated Steel	3	Generally good condition with localised areas of loose wire observed (most likely due to overgrown vegetation).	N	2	2	4	12	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2035 (recommend complete by 2033)	
<b>Concrete Path – Overall Rating 29</b>																	

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C12-7	Foundation	Base slab	Concrete	3	Generally good condition. Minor deterioration of joint sealant at wall interface was observed to be typical along with some localised areas of joint sealant failure. Minor cracking at southern most staircase was also observed.	N	3	1	3	9	35	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2056	
C12-8	Base Slab	Localised	Concrete	7	Heavy crack on adjacent southern most bench on level three was observed.	N	2	4	8	56	9	Crack Repair	Within 1-2 years	\$480	N/A localised repair refer item 7		
C12-9	Stairs	Staircase Base	Concrete	2	Generally good condition. The south side stairwell was observed to possess some discoloration, minor cracking and one small chip.	N	3	2	6	12	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
C12-10	Handrails	Handrail Posts	Galvanised Steel	5	Surface corrosion, coating loss and rust staining were typical throughout on posts and connections. These were observed to be more prominent on the ocean side of the posts.	N	2	4	8	40	8	Replace heavily corroded posts and fixings.	Within 5 years	\$960	Replace	2027	\$4,042
C12-11	Handrails	Handrails (Timber Members)	Timber	3	Generally good condition. Coating loss was observed to be typical throughout. Some members were also observed to contain split timber.	N	1	2	2	6	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2032	\$1,781
C12-12	Handrails	Railing	Galvanised Steel	4	White rust observed to be typical to handrails. Some areas with minor corrosion were also observed.	N	2	2	4	16	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years	\$180	Replace	2030	\$2,471
C12-13	Sign	Sign	Galvanised Steel	7	Heavy corrosion with sections loss observed on the signpost at the base of the vehicle access ramp.	N	3	3	9	63	5	Replace signpost	Within 1-2 years	\$1,259	Replace	2026	\$1,259

General – Overall Rating 42

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C12-14	Walls	Retaining Wall	Limestone	2	Generally good condition with minor erosion noticed on the retaining walls, specifically those closest to the water. Walls along the staircases were found to contain small to large cracks.	N	3	2	6	12	40	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2061	
C12-15	Seating	Bench	Steel	8 (1 bench) 3 (remaining)	One failed bench, marked with danger tape. The remainder of the benches observed to be in good condition.	Y	3	3	9	72	11	Replace / Repair failed bench.	Immediately	\$360	Replace all benches	2032	\$18,825
<b>Lookout – Overall Rating 18</b>																	
C12-16	Handrails	Handrails and Balustrades	Galvanised Steel	3	Generally good condition with minor surface corrosion and coating loss observed to be typical throughout.	N	3	2	6	18	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2032	\$11,942

## 3.13 Site No C13 – Alkimos Beach

### 3.13.1 General

Site C13 provides a sheltered coastal lookout with bench seats atop a staircase, and vehicle access to the beach located at the Alkimos Surf Life Saving Club, off Marginella Boulevard. No drawings were available/provided to GHD, hence the age of the structure is not known. The fence that borders the lookout and paths to the beach and carpark is comprised of timber posts and railing with a steel mesh fencing and cloth. The lookout comprises of timber decking with steel columns supporting timber / FRP roofing. The vehicle access ramp comprises of asphalt base slab. Refer Figure 3.25 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.26. The assets within site C13 were found to be in good condition with the exception of a pothole located at the base of the access ramp which requires immediate remediation and a number of items which require maintenance with 5 years.



Figure 3.25 C13 Assets



Figure 3.26 C13 Site Inspection Extent

### 3.13.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.49. Please refer to Table 3.52 for detailed inspection findings and Appendix M for the defect forms.

Table 3.49 C13 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Vehicle Access Ramp</b>			
Base Slab (localised)	An asphalt pothole was observed (1.8 m from bottom of ramp).	108	C13-1
Base Slab	Generally good condition with some cracking observed adjacent to the footpath.	9	C13-2
Fencing Posts	Localised salt kill and split timber was observed.	15	C13-3
Mesh	Localised impact damage, typical widespread corrosion.	15	C13-4
Mesh Staples	Typical surface corrosion. A number of loose and missing staples were also observed.	12	C13-5
Fencing Strainer Wires	Generally good condition with some minor corrosion observed at localised areas. A loose wire was also observed on the north side halfway down the ramp (due to missing staples).	18	C13-6
Bollards	Surface corrosion was observed around the lock bracket. The bollard was observed to be missing its lock.	10	C13-7
Sign	Some surface corrosion with apparent section loss to the signs.	54	C13-8
<b>Stairs</b>			
Stair Treads	No visible defects were observed	6	C13-9
Base Slab (Staircase)	No visible defects were observed	4	C13-10
<b>Fencing (Lookout and Staircase)</b>			

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
Fencing Posts and Railing	Timber splitting was noticed to be typical throughout (Observed to be more common to railing than posts.)	15	C13-11
Fencing Shade Cloth	Some areas with holes and tears were noticed. There were observed to be parts with detached or loose sections (this was more common on the sand path leading to the carpark from the lookout)	30	C13-12
Fencing Mesh & Staples	No visible defects were observed	4	C13-13
Lookout			
Deck Planks (& Connections)	No visible defects were observed	6	C13-14
Deck Chairs	No visible defects were observed on timber sections. Minor coating loss was observed to steel base plates	4	C13-15
Columns	Generally good condition with some minor surface corrosion to the base plates observed, and minor surface corrosion and white rust to the columns also observed.	12	C13-16
Support Beams	No visible defects were observed	8	C13-17
Support bolts	No visible defects were observed	6	C13-18
Timber Roofing	One section of the roof contains a small crack	18	C13-19
FRP Roofing	No other visible defects were observed	6	C13-20

### 3.13.3 Prioritised Maintenance Recommendations

Table 3.50 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.50 Site C13 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Vehicle Access Ramp - Base Slab (localised)	Fill in pothole.	Immediately
2	Vehicle Access Ramp - Bollards	Replace lock if required by CoW	Immediately
3	Vehicle Access Ramp - Sign	Abrasive blast clean steel and apply protective coating.	Within 1-2 years
4	Lookout and Staircase - Fencing Shade Cloth	Replace or reinstate torn and detached sections	Within 5 years
5	Vehicle Access Ramp - Fencing	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Stairs - Stair Treads		
	Stairs - Base Slab		
	Lookout and Staircase - Fencing		
	Lookout - Deck Planks		
	Lookout - Deck Chairs		
Lookout - Support Steelwork			

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
	Lookout – Roofing		

### 3.13.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.13.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Corrosion and coating loss on steel members (bollard / sign) may continue to deteriorate, delaying and/or not completing repairs will result in an increase in defect area required for repair, which may result in a significantly higher cost for repair.
- Bollards without locks could be removed by the general public allowing undesired car access to the beach.
- The pothole could deteriorate further, resulting in a larger slip and trip hazard. Leading to injury to members of the general public as well as financial and reputational implications.

### 3.13.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.51 Renewal Recommendations for site C13

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Vehicle Access Ramp	Timber fencing posts, galvanised steel mesh and staples, coated steel strainer wires, bollards, and sign.	Replace fencing, bollards, and sign.	2027	\$16,881
Stairs	Stair treads and base slabs	Maintain existing material	2053	N/A
Fencing (Lookout and Staircase)	Timber fencing posts and railings, fencing shade cloth, and coated steel fencing mesh and staples	Replace fencing	2029	\$45,000
Lookout	Timber/steel deck chairs, galvanised steel support bolts, timber roofing	Replace timber/steel deck chairs and timber roofing stats	2033	\$51,444

Table 3.52 C13 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Vehicle Access Ramp – Overall Rating 30</b>																	
C13-1	Foundation	Base Slab (localised)	Asphalt	9	An asphalt pothole was observed (1.8 m from bottom of ramp).	Y	3	4	12	108	3	Fill in pothole.	Immediately	\$550	N/A localised repair refer item 2		
C13-2	Foundation	Base Slab	Asphalt	3	Generally good condition with some cracking observed adjacent to the footpath.	N	3	1	3	9	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2042	
C13-3	Fencing	Fencing Posts	Timber	5	Localised salt kill and split timber was observed.	N	1	3	3	15	8	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace fencing	2029	
C13-4	Fencing	Mesh	Galvanised Steel	5	Localised impact damage, typical widespread corrosion.	N	1	3	3	15	10	Replace damaged and heavily corroded sections	Within 5 years			2031 (recommend complete by 2029)	
C13-5	Fencing	Mesh Staples	Galvanised Steel	4	Typical surface corrosion. A number of loose and missing staples were also observed.	N	1	3	3	12	9	Replace Missing, and heavily rusted staples	Within 5 years			2030 (recommend complete by 2029)	
C13-6	Fencing	Fencing Strainer wires	Coated Steel	3	Generally good condition with some minor corrosion observed at localised areas. A loose wire was also observed on the north side halfway down the ramp (due to missing staples).	N	2	3	6	18	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2032 (recommend complete by 2029)	
C13-7	Bollards	Bollards	Coated Steel	5	Surface corrosion was observed around the lock bracket. The bollard was observed to be missing its lock.	Y	2	1	2	10	8	Replace lock if required by COW	Immediately	\$100	Replace bollard	2029	\$2,457
C13-8	Sign	Sign	Coated Steel	6	Some surface corrosion with apparent section loss to the signs.	N	3	3	9	54	6	Abrasive blast clean steel and apply protective coating	Within 1-2 years	\$300	Replace sign	2027	\$606
<b>Stairs – Overall Rating 5</b>																	

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C13-9	Stairs	Stair Treads	Reinforced Concrete	2	No visible defects were observed	N	3	1	3	6	32	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2053	
C13-10	Stairs	Base Slab (Staircase)	Concrete	2	No visible defects were observed	N	2	1	2	4	32	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2053	
<b>Fencing (Lookout and Staircase) – Overall Rating 16</b>																	
C13-11	Fencing	Fencing Posts and Railing	Timber	5	Timber splitting was noticed to be typical throughout (Observed to be more common to railing than posts.)	N	1	3	3	15	8	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace fencing	2029	
C13-12	Fencing	Fencing Shade Cloth	Geofabric	6	Some areas with holes and tears were noticed. There were observed to be parts with detached or loose sections (this was more common on the sand path leading to the carpark from the lookout)	N	1	5	5	30	6	Replace or reinstate torn and detached sections	Within 5 years			2027 (recommend complete in 2029)	\$45,000
C13-13	Fencing	Fencing Mesh & Staples	Coated Steel	2	No visible defects were observed	N	1	2	2	4	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2037 (recommend complete by 2029)	
<b>Lookout – Overall Rating 9</b>																	
C13-14	Decking	Deck Planks (& Connections)	Timber	2	No visible defects were observed	N	3	1	3	6	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
C13-15	Bench	Deck Chairs	Timber,Steel	2	No visible defects were observed on timber sections. Minor coating loss was observed to steel base plates	N	2	1	2	4	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace deck chairs	2033	\$14,369

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C13-16	Support Steelwork	Columns	Galvanised Steel	3	Generally good condition with some minor surface corrosion to the base plates observed, and minor surface corrosion and white rust to the columns also observed.	N	4	1	4	12	28	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2049	
C13-17	Support Steelwork	Support Beams	Galvanised Steel	2	No visible defects were observed	N	4	1	4	8	32	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2053	
C13-18	Support Steelwork	Support bolts	Galvanised Steel	2	No visible defects were observed	N	3	1	3	6	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace connections	2037	\$3,000
C13-19	Roof	Timber Roofing	Timber	3	One section of the roof contains a small crack No other visible defects were observed	N	3	2	6	18	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace timber roofing slats	2035	\$34,075
C13-20	Roof	FRP Roofing	FRP	2	No visible defects were observed	N	3	1	3	6	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	

## 3.14 Site No C14 – Jindalee Foreshore Carpark

### 3.14.1 General

Site C14 provides vehicle access to the beach from the car park on Thala View, in Jindalee. No drawings were available/provided to GHD, hence the age of the structure is not known.. This vehicle ramp consists of two sections with a concrete base slab section at the entry from the car park, extending to an exposed aggregate concrete base leading to the beach as seen below. Refer Figure 3.27 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.28. The assets within site C14 were found to be in good condition with minor maintenance required within 5 years.



Figure 3.27 C14 Assets



Figure 3.28 C14 Site Inspection Extent

Note the area containing the showers, drink fountain, bike racks and benches has been excluded from scope. Only the limits extending to the bollards have been inspected

### 3.14.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.53. Please refer to Table 3.56 for detailed inspection findings and Appendix N for the defect forms.

Table 3.53 C14 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Vehicle Access Ramp</b>			
Base slab (Reinforced Concrete)	No visible defects were observed	4	C14-1
Base Slab (Exposed Aggregate)	No Visible defects were observed. Inspection limited as bottom 20 m of base buried.	6	C14-2
Posts	Generally good condition with minor timber splitting and salt kill observed.	6	C14-3
Mesh (Failure)	Mesh fence has partially been removed outside the ramp area to the north near the benches	45	C14-4
Mesh	Surface corrosion and coating loss was observed to be typical throughout. Many areas of the fence were observed to be deformed due to impact damage.	30	C14-5
Mesh Staples	Surface corrosion was observed to be typical throughout. Some loose and missing staples were observed.	24	C14-6
Strainer Wires	Damaged and loose wire observed on the north side (Approx. 30 m from bottom of path). Corroded and rusted tension wire observed on the south site (approx. 10 and 15 m from top of access ramp).	56	C14-7
Bollards	No visible defects were observed	4	C14-8

### 3.14.3 Prioritised Maintenance Recommendations

Table 3.54 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.54 Site C14 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Bollards	Replace lock if required by CoW	Immediately
2	Mesh (Failure)	Replace damaged section of fencing.	Within 6 Months
3	Mesh	Replace or fix heavily damaged fence sections.	Within 5 years
	Mesh Staples	Replace missing and loose staples.	Within 5 years
	Strainer Wires	Replace damaged strainer wires.	Within 5 years
4	Base slab (Reinforced Concrete)	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Base Slab (Exposed Aggregate)		
	Posts		

### 3.14.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.14.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Bollards without locks could be removed by the general public allowing undesired car access to the beach.
- Missing mesh grants access to adjacent vegetation and should be re-instated within the recommended timeframe.
- Fencing mesh, staples and wires may continue to deteriorate, resulting in an increase in defect area required for repair in future, which may result in a significantly higher cost for repair. Widespread areas of deteriorated fencing are also aesthetically unpleasing which may lead to complaints from users of the asset.

### 3.14.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.55 Renewal Recommendations for site C10

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Vehicle access ramp	Fencing – timber posts, galvanised steel mesh and staples, coated steel strainer wires and bollards.	Replace fencing and coated steel bollards.	2029	\$35,201

Table 3.56 C14 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			MAINTENANCE RECOMMENDATION – 5 YEARS				RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)	Overall Rating (CR x RR)	Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Vehicle Access Ramp – Overall Rating 23</b>																	
C14-1	Foundation	Base slab (Concrete)	Concrete	2	No visible defects were observed		2	1	2	4	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
C14-2	Foundation	Base Slab (Exposed Aggregate)	Concrete	3	No visible defects were observed. Inspection limited as bottom 20 m of base buried.		2	1	2	6	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2042	
C14-3	Fencing	Posts	Timber	3	Generally good condition with minor timber splitting and salt kill observed.		2	1	3	6	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace fencing	2030	\$32,744
C14-4	Fencing	Mesh (Localised)	Galvanised Steel	9	Mesh fence has partially been removed outside the ramp area to the north near the benches		1	5	5	45	2	Replace damaged section of fencing.	Within 6 months.	\$1,600		Included in item 13	
C14-5	Fencing	Mesh	Galvanised Steel	6	Surface corrosion and coating loss was observed to be typical throughout. Many areas of the fence were observed to be deformed due to impact damage.		1	5	5	30	8	Replace or fix heavily damaged fence sections.	Within 5 years	\$3,200		2026 (recommend to complete in 2030)	
C14-6	Fencing	Mesh Staples	Galvanised Steel	6	Surface corrosion was observed to be typical throughout. Some loose and missing staples were observed.		1	4	4	24	6	Replace missing and loose staples.	Within 5 years	\$600		2027 (recommend to complete in 2030)	
C14-7	Fencing	Strainer Wires	Coated Steel	7	Damaged and loose wire observed on the north side (Approx. 30 m from bottom of path). Corroded and rusted tension wire observed on the south site (approx. 10 and 15 m from top of access ramp).		2	4	8	56	5	Replaced damaged strainer wires.	Within 5 years	\$480		2024 (recommend to complete in 2030)	

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C14-8	Bollards	Bollards	Coated Steel	5	Surface corrosion was observed to the lock brackets. The bollards were observed to have no padlocks.		1	2	2	10	8	Install missing padlocks.	Immediately	\$200	Replace	2029	\$2,457

## 3.15 Site No C15 – Jindalee Foreshore

### 3.15.1 General

Site C15 provides beach access via a timber staircase, just North of the Jindalee Foreshore. Based on provided information the staircase was constructed circa 2015. This asset comprises of timber decking / boardwalk, timber handrailing with steel cord-strand balustrade and a timber staircase founded on concrete footings. Refer Figure 3.29 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.30. The assets within site C15 were found to be in adequate condition. The footings embedded in limestone bedrock require further detailed investigation and a number of assets require maintenance within 1 – 2 years.



Figure 3.29 C15 Assets



Figure 3.30 C15 Site Inspection Extent

### 3.15.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.57. Please refer to Table 3.60 for detailed inspection findings and Appendix O for the defect forms.

Table 3.57 C15 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Stairs</b>			
Footings	Number of supports founded on eroding limestone	84	C15-1
Retaining Wall	Subsidence, sinking, rotation, Foundation damage, Loss of contact with underlying ground surface were all observed. Timber retaining walls have begun to slip and are no longer retaining soil, connections attached are risk of failing. Some corrosion was also noticed on steel sections.	84	C15-2
Timber Posts	Salt kill, fungi attack, and timber splitting were observed to be typical to 5 of the posts, affecting mostly their bases.	30	C15-3
Steel Support Beams	Corrosion with section loss, rust staining and surface corrosion were all observed. Corrosion to support beams observed to be mainly on the northern end.	63	C15-4
Timber Support Beams	Generally good condition with minor split timber and deterioration observed.	12	C15-5
Support Bolts	Note: Pertains to timber beams and joists	36	C15-6
Stair Stringers	Moderate to heavy corrosion typical to connection bolts.	12	C15-7
Stringer Bolts	No visible defects were observed.	36	C15-8
Deck Planks	Note: Inspected from safe vantage points and above stair treads	45	C15-9
Decking Connections	Moderate to heavy corrosion to the bottom staircase stringer bolts.	12	C15-10
Handrail Posts	Generally good condition with some minor timber splitting and salt kill observed	12	C15-11
Handrail Connections	Generally good condition with some minor rust staining observed.	12	C15-12
Mesh Strainer Wires	Generally good condition with some minor timber splitting observed.	12	C15-13
Railing	Generally good condition with some minor rust staining observed.	16	C15-14

### 3.15.3 Prioritised Maintenance Recommendations

Table 3.58 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.58 Site C15 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Footings	Further detailed investigation including geotechnical / structural review of structure.	Within 6 Months
2	Walls	Replace retaining walls.	Within 1-2 years
	Steel Support Beams	Blast clean corroded support beams. If they possess significant section loss replace them.	Within 1-2 years
3	Timber Posts	Re-coat the 5 damaged timber posts.	Within 5 years
	Support Bolts	Replace heavily corroded bolts.	

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
	Stringer Bolts	Replace heavily corroded bolts.	
4	Mesh Strainer Wires	Install missing wire and replace or tighten loosened wire.	Within 5 years
5	Railing	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Deck Planks		
	Timber Support Beams		
	Stair Stringers		
	Decking Connections		
	Handrail Posts		
	Handrail Connections		

### 3.15.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.15.3 are not carried out in the timeframes specified, the following safety issues could occur:

- The stair footings founded on eroding limestone bedrock require further detailed geotechnical / structural investigation to confirm the erosion of the bedrock has not comprised integrity of the staircase. The provided drawings indicate the footings are installed at a depth of 200 mm within the bedrock.
- The timber retaining wall is beginning to fail and is no longer retaining soil on the embankment. If repairs / replacement is delayed, soil from the embankment will continue to fall to the ground, potentially resulting in undermining of the staircase.
- Steel supports will continue to corrode, potentially resulting in section loss and reduced capacity, which may result in structure collapse. This could lead to serious injury and/or fatalities to members of the general public on or beneath the staircase.
- The timber support posts will continue to deteriorate, which has the potential to lead to reduced capacity and subsequent failure of the structure. This could lead to serious injury and/or fatalities to members of the general public on or near the staircase as well as significant financial and reputational implications.
- The corroded bolts stair stringers and timber supports will continue to corrode and may potentially fail. This could lead to serious injury and/or fatalities to members of the general public on or near the viewing platform.
- Failed balustrade wires are no longer functioning as designed and should be replaced within the recommended timeframe.

### 3.15.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.59 Renewal Recommendations for site C15

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Vehicle Access Ramp	Limestone/concrete footings, timber/steel retaining walls, staircase, decking and handrails	Replace footing, replace retaining walls with concrete or limestone, replace staircase,	2025	\$258,348

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
		decking, and handrails.		

Table 3.60 C15 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Vehicle Access Ramp – Overall Rating 33</b>																	
C15-1	Foundation	Footings	Limestone / Concrete	7	Number of supports founded on eroding limestone	N	4	3	12	84	15	Further detailed investigation including geotechnical / structural review of structure.	Within 6 Months	N/A	Replace footings	2036	\$19,288
C15-2	Retaining Wall	Walls	Timber, Steel	7	Subsidence, sinking, rotation, Foundation damage, Loss of contact with underlying ground surface were all observed. Timber retaining walls have begun to slip and are no longer retaining soil, connections attached are risk of failing. Some corrosion was also noticed on steel sections.	N	3	4	12	84	3	Replace retaining walls.	Within 1-2 years	\$10,204	Replace wall with concrete or limestone	2025	\$11,063
C15-3	Stairs	Timber Posts	Timber	5	Salt kill, fungi attack, and timber splitting were observed to be typical to 5 of the posts, affecting mostly their bases.	N	3	2	6	30	8	Apply protective coating to timber posts.	Within 5 years		Replace staircase and decking	2029	\$176,625
C15-4	Stairs	Steel Support Beams	Steel	7	Corrosion with section loss, rust staining and surface corrosion were all observed. Corrosion to support beams observed to be mainly on the northern end.	N	3	3	9	63	9	Abrasive blast clean and apply protective coating. If section loss has occurred replacement of support beams maybe required..	Within 1-2 years			2030	
C15-5	Stairs	Timber Support Beams	Timber	4	Generally good condition with minor split timber and deterioration observed. Note: Pertains to timber beams and joists	N	3	1	3	12	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2039	
C15-6	Stairs	Support Bolts	Steel	6	Moderate to heavy corrosion typical to connection bolts.	N	2	3	6	36	6	Replace heavily corroded bolts.	Within 5 years			2029	

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS		
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe
C15-7	Stairs	Stair Stringers	Timber	4	No visible defects were observed. Note: Inspected from safe vantage points and above stair treads	N	3	1	3	12	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2039	
C15-8	Stairs	Stringer Bolts	Steel	6	Moderate to heavy corrosion to the bottom staircase stringer bolts.	N	2	3	6	36	6	Replace heavily corroded bolts.	Within 5 years		2029	
C15-9	Stairs	Deck Planks	Timber	5	Generally good condition with some minor timber splitting and salt kill observed	N	3	3	9	45	6	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2033	
C15-10	Stairs	Decking Connections	Galvanised Steel	3	Generally good condition with some minor rust staining observed.	N	2	2	4	12	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2033 (Recommend to complete with item 13)	
C15-11	Handrails	Handrail Posts	Timber	3	Generally good condition with some minor timber splitting observed.	N	2	2	4	12	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2032	
C15-12	Handrails	Handrail Connections	Galvanised Steel	3	Generally good condition with some minor rust staining observed.	N	2	2	4	12	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2032 (Recommend to complete with item 10)	
C15-13	Handrails	Steel cord-strand balustrade	Stainless Steel	4	Minor rust staining was observed to be typical to the ends of the wires. One wire was loose and one missing.	N	1	3	3	12	12	Install missing wire and replace or tighten loosened wire.	Within 5 years		2033 (Recommend to complete with item 10)	\$51,372
C15-14	Handrails	Railing	Timber	4	Generally good condition. Moderate timber splitting and salt kill were observed in small, localized areas.	N	2	2	4	16	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2030 (Recommend to complete with item 10)	

## 3.16 Site No C16 – Jindalee Foreshore

### 3.16.1 General

Site C16 consists of a coastal lookout with steps along the Jindalee Foreshore just south of the Jindalee Beach Shack. Based on provided information the lookout was constructed circa 2010. The lookout is a timber structure with two platform levels separated by a set of timber steps. A timber and steel cord-strand balustrade borders the lookout. The platforms are accessed via limestone steps with limestone retaining walls at both ends. Refer Figure 3.31 for general photos of the structures. The inspection was limited to platform level and the view from the adjacent path, the battery limits of the inspection are shown in Figure 3.32. The assets within site C16 were found to be in good condition with the exception of one damaged timber plank which requires replacement within 6 months.

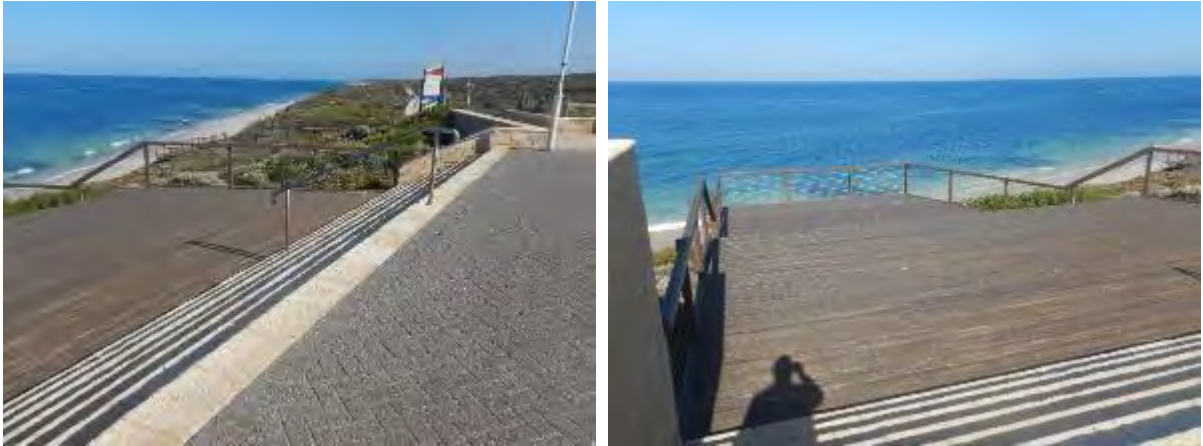


Figure 3.31 C16 Assets



Figure 3.32 C16 Site Inspection Extent

### 3.16.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.61. Please refer to Table 3.64 for detailed inspection findings and Appendix P for the defect forms.

Table 3.61 C16 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Lookout</b>			
Support Beams	Generally good condition with some minor timber splitting observed.	16	C16-1
Deck Planks (Including Timber stairs)	Note: Inspected from above only - no access to underside of structure	24	C16-2
Decking Connections	Note: Pertains to timber supports including joists and beams	4	C16-3
Limestone Stair Treads	Generally good condition with only minor timber splitting was observed to be typical throughout. Minor chipping on the edges of the stair planks were observed. 8th row from west end has a large crack in it that goes through the connections.	24	C16-4
Retaining Walls	No visible defects observed	9	C16-5
Handrail Posts	Generally good condition. Minor impact damage to end of treads observed. Minor grout loss and deterioration found to be typical. Debris build up on edges was also observed.	24	C16-6
Handrail Connections	Previous repairs evident.	12	C16-7
Handrail Mesh Strain Wire	No visible defects observed	24	C16-8
Handrails	Pertains to northern retaining wall	24	C16-9
Stair Handrails	Minor timber splitting was observed to be typical throughout.	6	C16-10

### 3.16.3 Prioritised Maintenance Recommendations

Table 3.62 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.62 Site C16 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Deck Planks	Replace damaged plank.	Within 6 months
2	Handrail Mesh Strain Wire	Replace damaged and failed wires.	Within 1-2 years
3	Support Beams	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Decking Connections		
	Limestone Stair Treads		
	Retaining Walls		
	Handrail Connections		
	Handrails		
	Stair Handrails		

### 3.16.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.16.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Damaged timber planks on the boardwalk will continue to deteriorate, resulting in a higher replacement costs and may eventually become a trip hazard, resulting in injury to members of the general public.
- Failed balustrade wires are no longer functioning as designed and should be replaced within the recommended timeframe.

### 3.16.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.63 *Renewal Recommendations for site C16*

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Lookout	Timber support beam, deck planks, galvanised steel decking and supports, timber and steel components of handrails.	Replace timber beam connections, decking and support connections and handrails.	2030	\$99,588

Table 3.64 C16 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Lookout – Overall Rating 17</b>																	
C16-1	Decking and Supports	Support Beams	Timber	4	Generally good condition with some minor timber splitting observed. Note: Inspected from above only - no access to underside of structure Note: Pertains to timber supports including joists and beams	N	4	1	4	16	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace connections	2039	\$21,023
C16-2	Decking and Supports	Deck Planks (Including Timber stairs)	Timber	4	Generally good condition with only minor timber splitting was observed to be typical throughout. Minor chipping on the edges of the stair planks were observed. 8th row from west end has a large crack in it that goes through the connections.	N	3	2	6	24	18	Replace damaged plank.	Within 6 months	\$200	Replace connections	2039	\$37,714
C16-3	Decking and Supports	Decking Connections	Galvanised Steel	2	No visible defects observed	N	2	1	2	4	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace connections	2037	\$2,615
C16-4	Stairs	Limestone Stair Treads	Limestone	4	Generally good condition. Minor impact damage to end of treads observed. Minor grout loss and deterioration found to be typical. Debris build up on edges was also observed. Previous repairs evident.	N	2	3	6	24	30	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2051	
C16-5	Walls	Retaining Walls	Limestone	3	No visible defects observed Pertains to northern retaining wall	N	3	1	3	9	35	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2056	
C16-6	Handrails	Handrail Posts	Timber	4	Minor timber splitting was observed to be typical throughout.	N	3	2	6	24	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace handrails	2030	\$30,688

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS				
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)	
C16-7	Handrails	Handrail Connections	Galvanised Steel	3	Generally good condition with minor rust staining observed to be typical throughout.	N	2	2	4	12	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2032 (recommend complete by 2030)			
C16-8	Handrails	Handrail Mesh Strain Wire	Stainless Steel	4	Generally good condition with minor rust staining observed to be typical on ends. Two wires have failed on one side and one wire is slightly deformed, most likely due to impact damage.	N	2	3	6	24	12	Replace damaged and failed wires	Within 1-2 years	\$720			2033 (recommend complete by 2030)	
C16-9	Handrails	Handrailing	Timber	4	Minor timber splitting was observed to be typical throughout.	N	3	2	6	24	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years				2030	
C16-10	Stairs	Stair Handrails	Stainless Steel	3	Generally good condition with some minor tea staining observed.	N	2	1	2	6	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2032	\$7,548	

## 3.17 Site No C17 – Jindalee Foreshore

### 3.17.1 General

Site C17 consists of a boardwalk along Jindalee Foreshore by the Jindalee Beach Shack. Based on provided information the boardwalk was constructed circa 2009. The boardwalk consists of a timber decking with a composite and coated steel handrail on the oceanside, and small sections of limestone walls on the other side, it is supported by a steel structure and limestone retaining wall. Refer Figure 3.33 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.34. The assets within site C17 were found to be in good condition with only one urgent maintenance requirement.



Figure 3.33 C17 Assets



Figure 3.34 C17 Site Inspection Extent

## 3.17.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.65. Please refer to Table 3.68 for detailed inspection findings and Appendix Q for the defect forms.

Table 3.65 C17 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Boardwalk</b>			
Support Columns	Minor white rust was observed to be typical throughout Note: Inspected from safe access point on boardwalk	12	C17-1
Support Beams	Minor white rust was observed Note: Inspected from safe access point on boardwalk	16	C17-2
Limestone Wall (A)	Minor impact damage observed on the corner. Generally good condition Note: Pertains to southern most retaining wall	16	C17-3
Limestone Wall (B & C)	No visible defects observed Note: Pertains to the two walls on the northern end on top of boardwalk	6	C17-4
Large Retaining Walls	No visible defects observed Note: Pertains to large retaining walls Note: Inspected from boardwalk no access for close inspection	12	C17-5
Deck Planks	Minor timber splitting was observed. A couple loose planks due to loosened bolts also observed.	24	C17-6
Deck Connections	Generally good condition. With minor rust Staining observed to be typical. A couple loose bolts observed (causing loose planks). A small hole was observed to be patched with a metal square	16	C17-7
Water Fountain Decking	Heavy moss growth on deck around water fountain was observed.	128	C17-8
Handrail Posts	Rust staining observed to be typical throughout	18	C17-9
Handrail Bottom Rail	Minor surface corrosion was observed to be typical throughout.	9	C17-10
Handrail Connections	Minor tea staining observed to be typical throughout.	6	C17-11
Handrail Fencing and Top Railing	Minor localised surface corrosion.	6	C17-12

## 3.17.3 Prioritised Maintenance Recommendations

Table 3.66 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.66 Site C17 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Water Fountain Decking	Clean surrounding moss and replace timber planks if rotten.	Within 6 months
2	Limestone Wall (A)	Repair grout on damaged corner	Within 5 years
	Deck Connections	Replace loose bolts.	

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
3	Support Columns	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Support Beams		
	Limestone Wall (B & C)		
	Large Retaining Walls		
	Deck Planks		
	Handrail Posts		
	Bottom Rail		
	Handrail Connections		
	Handrail Fencing and Top Railing		

### 3.17.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.17.3 are not carried out in the timeframes specified, the following safety issues could occur:

- The moss underneath the water fountain is slippery and a potentially slip hazard for the general public. The decking itself may be rotting and could potential fail when an unexpected load is applied. Potentially leading to injury to members of the general public as well as financial and reputational implications
- Decking screws will continue to corrode, eventually failing potentially. This may result in the timber deck planks becoming loose and creating a potential trip or fall hazard which could lead to serious injury to members of the general public as well as significant financial and reputational implications.
- The minor defect on the limestone wall may continue to deteriorate, delaying and/or not completing repairs will result in an increase in defect area required for repair, which may result in a significantly higher cost for repair.

### 3.17.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.67 *Renewal Recommendations for site C17*

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Boardwalk	Timber decking, stainless steel deck supports, and handrails.	Replace timber decking, stainless steel deck supports, and handrails.	2024	\$108,307

Table 3.68 C17 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Boardwalk – Overall Rating 24</b>																	
C17-1	Supports	Support Columns	Galvanised Steel	4	Minor white rust was observed to be typical throughout Note: Inspected from safe access point on boardwalk	N	4	1	4	16	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
C17-2	Supports	Support Beams	Galvanised Steel	4	Minor white rust was observed Note: Inspected from safe access point on boardwalk	N	4	1	4	16	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
C17-3	Retaining Wall	Limestone Wall (A)	Limestone	4	Minor impact damage observed on the corner. Generally good condition Note: Pertains to southern most retaining wall	N	2	2	4	16	30	Repair grout on damaged corner	Within 5 years	\$600	Maintain existing material	2051	
C17-4	Retaining Wall	Limestone Wall (B & C)	Limestone	3	No visible defects observed Note: Pertains to the two walls on the northern end on top of boardwalk	N	2	1	2	6	35	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2056	
C17-5	Retaining Wall	Large Retaining Walls	Limestone	3	No visible defects observed Note: Pertains to large retaining walls Note: Inspected from boardwalk no access for close inspection	N	4	1	4	12	35	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2056	
C17-6	Decking	Deck Planks	Timber	4	Minor timber splitting was observed. A couple loose planks due to loosened bolts also observed.	N	4	2	8	32	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace decking	2039	\$45,423

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C17-7	Decking	Deck Connections	Stainless Steel	4	Generally good condition. With minor rust Staining observed to be typical. A couple loose bolts observed (causing loose planks). A small hole was observed to be patched with a metal square	N	2	2	4	16	12	Replace loose bolts.	Within 5 years	\$960	Replace connections	2033 (recommend to complete in 2039)	\$3,631
C17-8	Decking	Water Fountain Decking	Timber	8	Heavy moss growth on deck around water fountain was observed.	N	4	4	16	128	3	Clean surrounding moss and replace timber planks if rotten.	Within 6 months	\$860	Replace	2024	\$5,606
C17-9	Handrail	Handrail Posts	Coated Steel	4	Rust staining observed to be typical throughout	N	3	2	6	24	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace handrailing.	2033 (recommend to complete in 2035)	\$53,647
C17-10	Handrail	Bottom Rail	Galvanised Steel	3	Minor surface corrosion was observed to be typical throughout.	N	3	1	3	9	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2035	
C17-11	Handrail	Handrail Connections	Stainless Steel	2	Minor tea staining observed to be typical throughout.	N	3	1	3	6	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2037 (recommend to complete in 2035)	
C17-12	Handrail	Top Railing and Balustrade	Coated Steel	2	Minor localised surface corrosion.	N	3	1	3	6	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2033 (recommend to complete in 2035)	

## 3.18 Site No C18 – Jindalee Foreshore

### 3.18.1 General

Site C18 provides beach access via a staircase from the Jindalee Foreshore roughly 50 m south of the Jindalee Beach Shack. Based on provided information the staircase was constructed circa 2009. Majority of the structure is timber, with steel mounts at the base of the structure into the limestone bedrock. A steel mounting frame is provided at the base of the staircase on the beach to support the bottom landing. The stairs have a timber and steel chord handrail (both sides) for most of the length, except the last set of stairs between the bottom and second landing. Refer Figure 3.35 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.36. Site C18 was found to be in good condition with exception to the supports and footings which require urgent and significant maintenance.



Figure 3.35 C18 Assets



Figure 3.36 C18 Site Inspection Extent

An extension at the base of the staircase has been added since the last inspections in 2015, noted from the increased site extents (refer to Site 13 from the AECOM Report).

### 3.18.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.69. Please refer to Table 3.72 for detailed inspection findings and Appendix R for the defect forms.

Table 3.69 C18 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Staircase</b>			
Footings	Foundation damage and loss of contact with underlying ground surface was observed to be typical across the whole embankment	112	C18-1
Support Posts	Minor timber splitting was observed	16	C18-2
Support Beams	No visible defects observed	12	C18-3
Support Beams (Steel)	Surface corrosion and coating loss was observed. (Pertains to steel support at base of stairs)	12	C18-4
Support Bolts	Surface corrosion was observed to be typical across all connection bolts and screws	54	C18-5
Support Beam Brackets	Some corrosion has been observed. (pertains to support brackets embedded within limestone. limestone has eroded, and exposed steel is now corroding)	72	C18-6
Joists	Minor timber splitting was observed	12	C18-7
Support Stringers	Minor timber splitting was observed	12	C18-8
Deck Planks	Split timber was observed to be typical across the whole landing. A couple of chips were observed on the staircase planks	32	C18-9
Decking Connections	Rust staining was observed to be typical throughout. One nail observed to be protruding out on the edge of the deck plank. A number of loose connections.	16	C18-10
Decking Edges	Minor timber splitting was observed to be typical.	8	C18-11

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
Handrail Posts	Minor timber splitting was observed to be typical.	6	C18-12
Tension Wires	Rust staining and coating loss was observed to be typical to the ends of the wires. There were a number of sagging wires observed	30	C18-13
Handrails	Split timber was observed to be typical throughout. One slightly loose plank was observed.	16	C18-14
Handrail Connections	Minor rust staining was observed to be typical to handrail connections.	12	C18-15

### 3.18.3 Prioritised Maintenance Recommendations

Table 3.70 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.70 Site C18 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Footings	Further detailed investigation including geotechnical / structural review of structure.	Within 6 Months
2	Support Beam Brackets	Abrasive blast clean and apply protective coating.	Within 1-2 years
3	Support Beams (Steel)	Abrasive blast clean and apply protective coating.	Within 5 years
	Support Bolts	Replace heavily corroded bolts and screws.	
	Tension Wires	Tighten or replace sagging wires. Monitor and reinspect the rest at the next scheduled inspection.	
	Handrails	Replace or fix the loose plank	
3	Support Posts	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Support Beams		
	Joists		
	Support Stringers		
	Deck Planks		
	Decking Connections		
	Decking Edges		
	Handrail Posts		
Handrail Connections			

### 3.18.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.18.3 are not carried out in the timeframes specified, the following safety issues could occur:

- The stair footings founded on eroding limestone bedrock require further detailed geotechnical / structural investigation to confirm the erosion of the bedrock has not comprised integrity of the staircase. The provided drawings indicate the footings are installed at a depth of 200 mm within the bedrock.
- Steel supports will continue to corrode, potentially resulting in section loss and reduced capacity, which may result in structure collapse. This could lead to serious injury and/or fatalities to members of the general public on or beneath the staircase.
- The timber support posts will continue to deteriorate, which has the potential to lead to reduced capacity and subsequent failure of the structure. This could lead to serious injury and/or fatalities to members of the general public on or near the staircase as well as significant financial and reputational implications.
- The corroded bolts stair stringers and timber supports will continue to corrode and may potentially fail. This could lead to serious injury and/or fatalities to members of the general public on or near the viewing platform.
- Failed balustrade wires are no longer functioning as designed and should be replaced within the recommended timeframe.

### 3.18.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.71 *Renewal Recommendations for site C18*

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Staircase	Limestone footing, timber and steel components of the stairs and handrails	Replace staircase and handrails	2029	\$303,916

Table 3.72 C18 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Staircase – Overall Rating 28</b>																	
C18-1	Foundation	Footings	Limestone	7	Foundation damage and loss of contact with underlying ground surface was observed to be typical across the whole embankment	N	4	4	16	112	15	Further detailed investigation including geotechnical / structural review of structure.	Within 6 Months	N/A	Replace staircase	2036	\$230,308
C18-2	Staircase	Support Posts	Timber	4	Minor timber splitting was observed	N	4	1	4	16	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2030	
C18-3	Staircase	Support Beams	Timber	4	No visible defects observed	N	3	1	3	12	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2039	
C18-4	Staircase	Support Beams (Steel)	Coated Steel	4	Surface corrosion and coating loss was observed. (Pertains to steel support at base of stairs)	N	3	1	3	12	18	Abrasive blast clean and apply protective coating.	Within 5 years	\$1,920		2039	
C18-5	Staircase	Support Bolts	Steel	6	Surface corrosion was observed to be typical across all connection bolts and screws	N	3	3	9	54	8	Replace heavily corroded bolts and screws.	Within 5 years	\$960		2029	
C18-6	Staircase	Support Beam Brackets	Steel	6	Some corrosion has been observed. (pertains to support brackets embedded within limestone. limestone has eroded, and exposed steel is now corroding)	N	4	3	12	72	12	Abrasive blast clean and apply protective coating.	Within 1-2 years	\$960		2033	
C18-7	Staircase	Joists	Timber	4	Minor timber splitting was observed	N	3	1	3	12	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2039	
C18-8	Staircase	Support Stringers	Timber	4	Minor timber splitting was observed	N	3	1	3	12	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2039	

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C18-9	Staircase	Deck Planks	Timber	4	Split timber was observed to be typical across the whole landing. A couple of chips were observed on the staircase planks	N	4	2	8	32	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2039		
C18-10	Staircase	Decking Connections	Steel	4	Rust staining was observed to be typical throughout. One nail observed to be protruding out on the edge of the deck plank. A number of loose connections.	N	2	2	4	16	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2039		
C18-11	Staircase	Decking Edges	Timber	4	Minor timber splitting was observed to be typical.	N	2	1	2	8	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2039		
C18-12	Handrailing	Handrail Posts	Timber	3	Minor timber splitting was observed to be typical.	N	2	1	1	6	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2030		
C18-13	Handrailing	Tension Wires	Stainless Steel	5	Rust staining and coating loss was observed to be typical to the ends of the wires. There were a number of sagging wires observed	N	3	2	6	30	8	Tighten or replace sagging wires. Monitor and reinspect the rest at the next scheduled inspection.	Within 5 years	\$600	Replace	2029	\$73,608
C18-14	Handrailing	Handrails	Timber	4	Split timber was observed to be typical throughout. One slightly loose plank was observed.	N	2	2	4	16	9	Replace or fix the loosened plank	Within 5 years	\$720		2030	
C18-15	Handrailing	Handrail Connections	Steel	3	Minor rust staining was observed to be typical to handrail connections.	N	2	2	4	12	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2032	

## 3.19 Site No C19 – North Quinns Rocks Foreshore

### 3.19.1 General

Site C19 provides beach access from the car park at the end of Waterland Point, in Quinns Rocks. Based on provided information the staircase were constructed circa 2018, no information has been provided on the concrete path. The site comprises of a concrete path leading to a steel/composite material staircase leading directly to the beach. A timber and steel mesh fence borders the length of the concrete path. The staircase is fitted with a stainless steel handrailing. Refer Figure 3.37 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.38. The assets within site C19 were found to be in good condition with the exception of heavy corrosion to the existing stair structure pedestals and localised damage to the fencing which requires maintenance within 6 months and 1 – 2 years respectively.



Figure 3.37 C19 Assets



Figure 3.38 C19 Site Inspection Extent

### 3.19.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.73. Please refer to Table 3.76 for detailed inspection findings and Appendix S for the defect forms.

Table 3.73 C19 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Concrete Path</b>			
Concrete Paver	Generally in good condition with the exception of localised impact damage. The top sealant material has deteriorated and typical debris build-up on joints was observed.	9	C19-1
Bollards	No visible defects were observed	4	C19-2
Fence Posts	Timber splitting observed to be typical throughout.	24	C19-3
Fencing Mesh (localised)	Heavy deformation observed on the bottom 5 m of the path.	56	C19-4
Fencing Mesh staples and clips	White rust on mesh and staples observed to be typical. Impact damage on mesh causing deformation observed to be typical.	12	C19-5
Sign	No visible defects were observed	4	C19-6
<b>Stairs</b>			
Pedestals	Moderate to heavy corrosion on pedestals. Signs of exfoliation corrosion and potential section loss.	96	C19-7
Support Stubs	Generally good condition. With some minor surface corrosion at connection points.	32	C19-8
Tread Plate, Landing Platforms and Clip Connections	No visible defects observed. Inspection limited due to bottom section buried in sand.	8	C19-9
Balustrade	Minor surface corrosion at connections, and minor graffiti to paintwork. Bottom of stairs buried in sand.	18	C19-10
Handrail	Generally good condition. With some minor surface corrosion at bolts on connections.	12	C19-11
Gate	No visible defects observed to gate. Corrosion on chain attaching gate to post found. Some minor graffiti observed.	6	C19-12

### 3.19.3 Prioritised Maintenance Recommendations

Table 3.74 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.74 Site C19 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Pedestals	Blast clean and re-coat all pedestals	Within 6 months
2	Fencing Mesh (Localised)	Replace damaged fence areas	Within 1-2 years
4	Stringers and connections	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Concrete Path		
	Bollards		
	Fence Posts		
	Fencing Mesh staples and clips		
	Sign		

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
	Tread Plate, Landing Platforms and Clip Connections		
	Balustrade		
	Handrail		
	Gate		

### 3.19.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.19.3 are not carried out in the timeframes specified, the following safety issues could occur:

- The stair pedestals will continue to corrode, potentially resulting in section loss and reduced capacity, which may result in structural failure. This could lead to serious injury and/or fatalities to members of the general public on or near the stairs.
- Fencing mesh and connections will continue to deteriorate. Heavy deterioration may reduce the capacity and potentially fail when a load is applied (i.e member of the public leaning on the railing), leading to potential fall zone. This could lead to serious injury and/or fatalities to members of the general public on or near the fenced areas.

### 3.19.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.75 Renewal Recommendations for site C19

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Concrete path	Coated steel bollards, fencing, coated steel sign.	Replace coated steel bollards, fencing, coated steel sign.	2030	\$23,654
Stairs	Steel pedestals, coated steel balustrades and gate, galvanised steel railing	Replace steel pedestals, coated steel balustrades and gate, galvanised steel railing	2029	\$74,550

Table 3.76 C19 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Concrete Path – Overall Rating 18</b>																	
C19-1	Surface	Concrete paver	Concrete	3	Generally in good condition with the exception of localised impact damage. The top sealant material has deteriorated and typical debris build-up on joints was observed.	N	3	1	3	9	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2042	
C19-2	Bollards	Bollards	Coated Steel	2	No visible defects were observed	N	2	1	2	4	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2033	\$1,327
C19-3	Fencing	Timber posts/rails	Timber	4	Timber splitting observed to be typical throughout.	N	3	2	6	24	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2030	\$5,711
C19-4	Fencing	Mesh (localised)	Galvanised Steel	7	Heavy deformation observed on the bottom 5 m of the path.	N	2	4	8	56	6	Replace damaged fence areas	Within 1-2 years	\$800	Replace	N/A localised repair	\$15,935
C19-5	Fencing	Mesh, staples and clips (general)	Galvanised Steel, Nylon	3	White rust on mesh and stapes observed to be typical. Impact damage on mesh causing deformation observed to be typical.	N	2	2	4	12	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2035	
C19-6	Sign	Sign	Coated Steel	2	No visible defects were observed	N	2	1	2	4	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2033	\$681
<b>Stairs – Overall Rating 29</b>																	
C19-7	Foundation	Pedestals	Steel	8	Moderate to heavy corrosion on pedestals. Signs of exfoliation corrosion and potential section loss.	N	4	3	12	96	8	Abrasive blast clean steel and apply protective coating	Within 6 months	\$2,160	Replace pedestals	2029	\$25,000
C19-8	Supports	Stringers and connections	Galvanised Steel	4	Generally good condition. With some minor surface corrosion at connection points.	N	4	2	8	32	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2039	\$-

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C19-9	Stairs	Tread Plate, Landing Platforms and Clip Connections	FRP	2	No visible defects observed. Inspection limited due to bottom section buried in sand.	N	4	1	4	8	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
C19-10	Stairs	Balustrade	Coated Steel	3	Minor surface corrosion at connections, and minor graffiti to paintwork. Bottom of stairs buried in sand.	N	3	2	6	18	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2035	\$27,218
C19-11	Stairs	Railing	Galvanised Steel	3	Generally good condition. With some minor surface corrosion at bolts on connections.	N	2	2	4	12	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2032	\$21,469
C19-12	Stairs	Gate	Coated Steel	3	No visible defects observed to gate. Corrosion on chain attaching gate to post found. Some minor graffiti observed.	N	2	1	2	6	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2032	\$863

## 3.20 Site No C20 – North Quinns Rocks Foreshore

### 3.20.1 General

Site C20 provides beach access from the car park on Ocean Drive, in North Quinns Rocks. No drawings were available/provided to GHD, hence the age of the structure is not known. The site comprises of a concrete path boarded by a timber and steel mesh fence, which leads to a steel / composite staircase which provides access to the beach. Refer Figure 3.39 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.40. The assets within site C20 were found to be in good condition with the exception of a number of items which require maintenance within 1 – 2 years.



Figure 3.39 C20 Assets



Figure 3.40 C20 Site Inspection Extent

### 3.20.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.77. Please refer to Table 3.80 for detailed inspection findings and Appendix T for the defect forms.

Table 3.77 C20 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Concrete Path</b>			
Base slab	No visible defects.	6	C20-1
Fencing Posts	Minor splitting typical.	12	C20-2
Fencing Mesh (East)	Typical white corrosion to mesh. Turnbuckles corroded. Localised areas of red surface corrosion. Tension wires corroded Top 2 tension wires are nylon coated and appear in good condition.	20	C20-3
Fencing Mesh (West)	Buckling and deformation were observed to be typical throughout. With loose and corroded mesh also typical.	42	C20-4
<b>Stairs</b>			
Support Stringers and Stubs	Localised coating loss, and white rust on stubs.	24	C20-5
Tread Plates	Generally good condition. Bottom treads buried in sand.	9	C20-6
Landing	No visible defects. Generally good condition.	9	C20-7
Handrails Localised	Localised impact damage has caused weld to split, localised hole on rail. Areas covered by sand not inspected.	63	C20-8
Handrails	Generally good condition. Signs of surface corrosion at connections, as well as rust staining at connection to mesh strainer wire. Top section on southern side observed to be buried in sand up to middle rail. Connection point to stairs is not welded closed, which could lead to water ingress.	30	C20-9

### 3.20.3 Prioritised Maintenance Recommendations

Table 3.78 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.78 Site C20 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Railing and stanchions (localised)	Replace damaged components.	Within 1-2 years
2	Fencing Mesh (West)	Replace damaged mesh. Re-tension wires.	Within 1-2 years
3	Railing and stanchions (general)	Re-coat corroded and coating lost areas of the handrail. Re-weld separated joint.	Within 5 years
4	Fencing Mesh (East)	Replace heavily corroded and rusted areas. Re-tension wires.	Within 5 years
5	Base Slab	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Fencing Posts		

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
	Tread Plates		
	Landing		

### 3.20.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.20.3 are not carried out in the timeframes specified, the following safety issues could occur:

- The sections of handrail will continue to corrode due to the holes and water present. This may result in the steel corroding further, causing section loss to the balustrades. Perforations may reduce the capacity and potentially fail when a load is applied (i.e. member of the public leaning on the railing), resulting in a potential fall from the stair case.
- Fencing mesh and connections will continue to deteriorate. Heavy deterioration may reduce the capacity and potentially fail when a load is applied (i.e member of the public leaning on the railing), leading to potential fall zone. This could lead to serious injury and/or fatalities to members of the general public on or near the fenced areas.

### 3.20.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.79 Renewal Recommendations for site C20

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Concrete path	Timber posts and galvanised steel fencing mesh.	Replace fence	2031	\$35,200
Stairs	Coated steel railing and stanchions.	Replace handrailing.	2029	\$21,375

Table 3.80 C20 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Concrete Path – Overall Rating 20</b>																	
C20-1	Surface	Base Slab	Reinforced Concrete	2	No visible defects.	N	3	1	3	6	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
C20-2	Fencing	Timber posts	Timber	3	Minor splitting typical.	N	2	2	4	12	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace fence	2032	
C20-3	Fencing	Mesh East	Galvanised Steel, Nylon	5	Typical white corrosion to mesh. Turnbuckles corroded. Localised areas of red surface corrosion. Tension wires corroded. Top 2 tension wires are nylon coated and appear in good condition.	N	2	2	4	20	10	Replace damaged mesh. Re-tension wires.	Within 5 years	\$1,230		2031	\$17,600
C20-4	Fencing	Mesh West	Coated Steel, Galvanised Steel	7	Buckling and deformation were observed to be typical throughout. With loose and corroded mesh also typical.	N	2	3	6	42	5	Replace damaged mesh. Re-tension wires.	Within 1-2 years	\$4,800		2026 (recommend to with item 2 and 3)	\$17,600
<b>Stairs – Overall Rating 27</b>																	
C20-5	Supports	Stringers/Stub Columns	Coated Steel	4	Localised coating loss, and white rust on stubs.	N	3	2	6	24	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
C20-6	Stairs	Stair treads	FRP	3	Generally good condition. Bottom treads buried in sand.	N	3	1	3	9	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2042	
C20-7	Stairs	Landing	FRP	3	No visible defects. Generally good condition.	N	3	1	3	9	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2042	

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C20-8	Handrails	Railing and stanchions (localised)	Coated Steel	7	Localised impact damage has caused weld to split, localised hole on rail. Areas covered by sand not inspected.	N	3	3	9	63	5	Replace damaged sections.	Within 1-2 years	\$699	Replace handrailing	2026 (recommend to complete with item 9)	\$21,375
C20-9	Handrails	Railing and stanchions (general)	Coated Steel	5	Generally good condition. Signs of surface corrosion at connections, as well as rust staining at connection to mesh strainer wire. Top section on southern side observed to be buried in sand up to middle rail. Connection point to stairs is not welded closed, which could lead to water ingress.	N	3	2	6	30	8	Re-coat corroded and coating lost areas of the handrail. Re-weld separated joints.	Within 5 years	\$480		2029	

## 3.21 Site No C21 –North Quinns Rocks Foreshore

### 3.21.1 General

Site C21 provides vehicular beach access from the car park at Queenscliff park on Ocean Drive, in Quinns Rocks. Based on provided information the vehicle access ramp was constructed circa 2017. The site consists of a concrete vehicle access ramp which is lined by timber and coated steel wire mesh fence along both sides for the full length. Refer Figure 3.41 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.42. The assets within site C21 were found to be in good condition with the exception of corroded traffic bollards which require maintenance within 1 -2 years.



Figure 3.41 C21 Assets



Figure 3.42 C21 Site Inspection Extent

### 3.21.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.81. Please refer to Table 3.84 for detailed inspection findings and Appendix U for the defect forms.

Table 3.81 C21 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Vehicle Access Ramp</b>			
Base slab	Localised spalling at the joints was observed. Localised horizontal cracks across the width were also typical. It was also noticed that the drain is blocked with sand.	6	C21-1
Bollard	One bollard was observed to be new. The other two bollards contain coating loss and are corroding with some section loss. One of these is also missing its base plate.	63	C21-2
Timber posts and rails (North)	Minor timber splitting was observed to be typical throughout.	6	C21-3
Timber posts and rails (South)	Minor timber splitting was observed to be typical throughout. Inspection of the bottom 10 m limited due to fence buried in sand.	6	C21-4
Mesh (North)	Generally good condition. Some minor white rust observed on the staples.	8	C21-5
Mesh (South)	Impact damage at the top of the ramp was noticed, the extent of the damage is approximately 500 mm. Corrosion was observed to the turnbuckle.	24	C21-6

### 3.21.3 Prioritised Maintenance Recommendations

Table 3.82 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.82 Site C21 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Bollards	Replace heavily corroded bollards. Reinstall the missing base plate.	Within 1-2 years
2	Base slab	Clear sand from drains	Within 1-2 years
3	Fencing Mesh Localised	Replace or fix damaged fence section. Replace corroded turnbuckle	Within 5 years
4	Concrete Paver	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Fencing Posts and Rails (North Side)		
	Fencing Posts and Rails (South Side)		
	Fencing Mesh and Staples		

### 3.21.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.21.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Corrosion and coating loss on steel bollards may continue to deteriorate, delaying and/or not completing repairs will result in an increase in defect area required for repair, which may result in a significantly higher cost for repair.
- Sand in drain prevents adequate drainage and may result in drainage related issues around the asset.
- Fencing mesh and staples may continue to deteriorate, resulting in an increase in defect area required for repair in future, which may result in a significantly higher cost for repair.

Widespread areas of deteriorated fencing are also aesthetically unpleasing which may lead to complaints from users of the asset.

### 3.21.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.83 *Renewal Recommendations for site C21*

<b>Asset</b>	<b>Critical Component/s</b>	<b>Renewal Recommendations</b>	<b>Renewal Year</b>	<b>Renewal Cost</b>
Vehicle access ramp	Coated steel bollards, timber posts and rails, and coated steel mesh.	Replace bollards and fence	2026	\$29,333

Table 3.84 C21 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Vehicle Access Ramp – Overall Rating 19</b>																	
C21-1	Foundation	Base slab	Reinforced Concrete	3	Localised spalling at the joins was observed. Localised horizontal cracks across the width were also typical. It was also noticed that the drain is blocked with sand.	N	2	1	2	6	35	Clear sand from drains	Within 1-2 years	\$1,200	Maintain existing material	2056	
C21-2	Bollards	Bollard	Coated Steel	7	One bollard was observed to be new. The other two bollards contain coating loss and are corroding with some section loss. One of these is also missing its base plate.	N	3	3	9	63	5	Replace heavily corroded bollards. Reinststate the missing base plate.	Within 1-2 years	\$1,800	Replace bollards	2026	\$2,781
C21-3	Fencing	Timber posts and rails (North)	Timber	2	Minor timber splitting was observed to be typical throughout.	N	3	1	3	6	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace Fencing	2033	\$29,333
C21-4	Fencing	Timber posts and rails (South)	Timber	2	Minor timber splitting was observed to be typical throughout. Inspection of the bottom 10 m limited due to fence buried in sand.	N	3	1	3	6	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2033	
C21-5	Fencing	Mesh (North)	Coated Steel	2	Generally good condition. Some minor white rust observed on the staples.	N	2	2	4	8	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2037 (recommend complete in 2033)	
C21-6	Fencing	Mesh (South)	Coated Steel	4	Impact damage at the top of the ramp was noticed, the extent of the damage is approximately 500 mm. Corrosion was observed to the turnbuckle.	N	2	3	6	24	12	Replace or fix damaged fence section. Replace corroded turnbuckle	Within 5 years	\$800		2033	

## 3.22 Site No C22 –North Quinns Rocks Foreshore

### 3.22.1 General

Site C22 provides vehicular access to the beach via a concrete path from a car park off the corner of Ocean Drive and Camira Way, in Quinns Rocks. Based on provided information the vehicle access ramp was constructed circa 2012. The site consists of a concrete vehicle access ramp which is boarded by timber and coated steel wire mesh fence along both sides for the full length. Three steel removable bollards are provided at the access point from the car park. Refer Figure 3.43 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.44. The assets within site C22 were found to be in good condition, with the exception of a number of localised items which require maintenance..

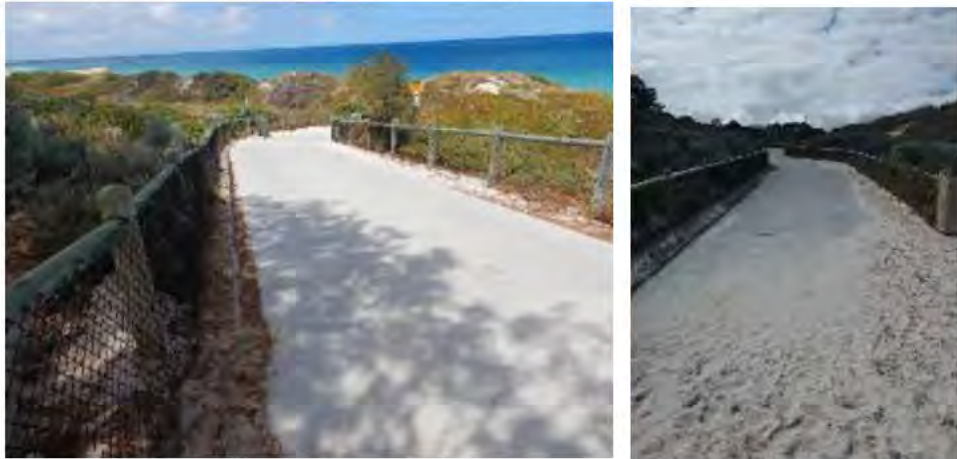


Figure 3.43 C22 Assets



Figure 3.44 C22 Site Inspection Extent

### 3.22.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.85. Please refer to Table 3.88 for detailed inspection findings and Appendix V for the defect forms.

Table 3.85 C22 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Concrete Path</b>			
Base Slab	Localised spalling was observed at the joints, the joint material at the larger joints was also found to be deteriorated	9	C22-1
Bollards	No visible defects were observed	4	C22-2
Timber posts	Heavy timber splitting and rotting was observed to three posts including: 4 <sup>th</sup> post on the northern side from the bottom of the path, 5 <sup>th</sup> post on the southern side from the bottom of the path, and 10 <sup>th</sup> post on the southern side from the top of the path.	56	C22-3
Mesh (general)	Generally in good condition. With the exception of the following defects: <ul style="list-style-type: none"> <li>North Side: Impact damage at end of path, hole at base 10 m from bottom of path, not secured to top rail at approx. 35 m from bottom of path , mesh stretched locally at 8 m from top.</li> <li>South side: coating loss and corrosion 1 m from top of path, mesh not secure at base midway of path, mesh not secure to posts at mid-height typical along length, localised stretching at post 40 m along length, not secured to top rail well (4 m) approx. 25 m from bottom of path.</li> <li>Typical : Vegetation growth at ocean end mesh including strainer wire and staples</li> </ul>	30	C22-4
Mesh (localised)	A 2 m section midway along the path was observed to show deformation and also found not to be secured to the top rail.	56	C22-5
Timber rail (general)	Minor timber splitting was observed to be typical throughout, with heavier splitting on the western and eastern sides of the fencing.	16	C22-6
Timber rail (localised)	Heavy timber splitting was observed between post 5 and 6 from the base of the pathway on the south side fence.	56	C22-7
Sign	Coating loss and corrosion was observed on the signposts.	36	C22-8
Water Fountain	The fountain was observed to be wrapped in danger tape and marked with an out of order sign. Corrosion was observed on the shower base. The limestone walls and base slab were in good condition.	16	C22-9
Walls	The limestone walls and base slab were in good condition.	4	C22-10

### 3.22.3 Prioritised Maintenance Recommendations

Table 3.86 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.86 Site C22 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Drinking fountain	Replace	Within 6 months
2	Fencing Post (localised)	Replace damaged timber posts	Within 1-2 years
	Fencing Mesh (Localised)	Replace damaged mesh area	Within 1-2 years

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
	Fencing Rail (Localised)	Replace damaged timber rail	Within 1-2 years
	Base Slab	Clear drainage channel.	Within 1-2 years
3	Fencing Mesh	Replace damaged areas mesh	Within 5 years
	Fencing Rail	Replace timber posts which contain heavy splitting.	Within 5 years
	Sign	Abrasive blast clean and apply protective coating	Within 5 years
4	Bollards	Monitor and reinspect at next scheduled inspection.	Greater than 5 years

### 3.22.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.22.3 are not carried out in the timeframes specified, the following safety issues could occur:

- The drinking fountain is no longer performing as designed and should be replaced.
- Sand in drain prevents adequate drainage and may result in drainage related issues around the asset.
- Fencing mesh and staples may continue to deteriorate, resulting in an increase in defect area required for repair in future, which may result in a significantly higher cost for repair. Widespread areas of deteriorated fencing are also aesthetically unpleasing which may lead to complaints from users of the asset.
- Timber elements will continue to split, deteriorate. Delay in repairs may result in potential reduced capacity, which may result in failure of the fence. This could lead to injury and/or to members of the general public. Defect areas will also increase resulting in increased repair costs.
- Corrosion and coating loss on steel members may continue to deteriorate, delaying and/or not completing repairs will result in an increase in defect area required for repair, which may result in a significantly higher cost for repair.

### 3.22.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.87 *Renewal Recommendations for site C22*

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Concrete path	Coated steel bollards, fencing, and steel sign	Replace coated steel bollards, fencing, and steel sign	2027	\$33,816

Table 3.88 C22 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Concrete Path – Overall Rating 28</b>																	
C22-1	Foundation	Base Slab	Concrete	3	Localised spalling was observed at the joints, the joint material at the larger joints was also found to be deteriorated. Drainage channel blocked with sand.	N	3	1	3	9	35	Clear drainage channel	Within 1-2 years	\$1,200	Maintain existing material	2056	
C22-2	Bollards	Bollards	Coated Steel	2	No visible defects were observed	N	2	1	2	4	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2035	\$2,781
C22-3	Fencing	Timber posts	Timber	3 (general) 7 (rotten posts)	Heavy timber splitting and rotting was observed to three posts including: 4 <sup>th</sup> post on the northern side from the bottom of the path, 5 <sup>th</sup> post on the southern side from the bottom of the path, and 10 <sup>th</sup> post on the southern side from the top of the path.	N	2	4	8	56	11	Replace damaged timber posts	Within 1-2 years	\$720	Replace fencing	2032	\$30,400

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			MAINTENANCE RECOMMENDATION – 5 YEARS				RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)	Overall Rating (CR x RR)	Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C22-4	Fencing	Mesh (general)	Coated Steel	5	<p>Generally in good condition. With the exception of the following defects:</p> <ul style="list-style-type: none"> <li>North Side: Impact damage at end of path, hole at base 10 m from bottom of path, not secured to top rail at approx. 35 m from bottom of path, mesh stretched locally at 8 m from top.</li> <li>South side: coating loss and corrosion 1 m from top of path, mesh not secure at base midway of path, mesh not secure to posts at mid-height typical along length, localised stretching at post 40 m along length, not secured to top rail well (4 m) approx. 25 m from bottom of path.</li> </ul> <p>Typical : Vegetation growth at ocean end mesh including strainer wire and staples</p>	N	2	3	6	30	10	Replace damaged areas of the mesh	Within 5 years	\$2,400		2031 (recommend complete in 2032)	
C22-5	Fencing	Mesh (localised)	Coated Steel	7	A 2 m section midway along the path was observed to show deformation and also found not to be secured to the top rail.	N	2	4	8	56	4	Replace damaged mesh area	Within 1-2 years	\$320		2025 (recommend complete in 2032)	

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C22-6	Fencing	Timber rail (general)	Timber	4	Minor timber splitting was observed to be typical throughout, with heavier splitting on the western and eastern sides of the fencing.	N	2	2	4	16	9	Replace timber posts with heavy splitting.	Within 5 years	\$960		2030 (recommend complete in 2032)	
C22-7	Fencing	Timber rail (localised)	Timber	7	Heavy timber splitting was observed between post 5 and 6 from the base of the pathway on the south side fence.	N	2	4	8	56	5	Replace damaged timber rail	Within 1-2 years	\$540		2026 (recommend complete in 2032)	
C22-8	Sign	Sign	Coated Steel	6	Coating loss and corrosion was observed on the signposts.	N	2	3	6	36	6	Abrasive blast clean and apply protective coating	Within 5 years	\$360	Replace	2027	\$635
C22-9	Shower	Water Fountain	Stainless Steel	8	The fountain was observed to be wrapped in danger tape and marked with an out of order sign. Corrosion was observed on the shower base. The limestone walls and base slab were in good condition.	N	2	1	2	16	0	Replace fountain.	Within 6 months	\$2,416	As per maintenance requirement	2021	
C22-10	Shower	Walls	Limestone	2	The limestone walls and base slab were in good condition.	N	2	1	2	4	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2042	

## 3.23 Site No C23 –North Quinns Rocks Foreshore

### 3.23.1 General

Site C23 provides a coastal lookout and beach access via a staircase from the car park at the corner of Ocean Drive and Mary Street, in Quinns Rocks. No drawings were available/provided to GHD, hence the age of the structure is not known. The coastal lookout comprises of timber decking and supports and a steel corrugated roof supported with timber columns and timber purlins and rafters. The lookout is connected to the adjacent timber staircase which descends to the beach. Access under the lookout structure has been limited with a combination of typical balustrade panels, square steel mesh and steel wire mesh (i.e. chicken wire). Refer Figure 3.45 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.46. The assets within site C23 were found to be in poor condition with a number of items requiring maintenance within 6 months.

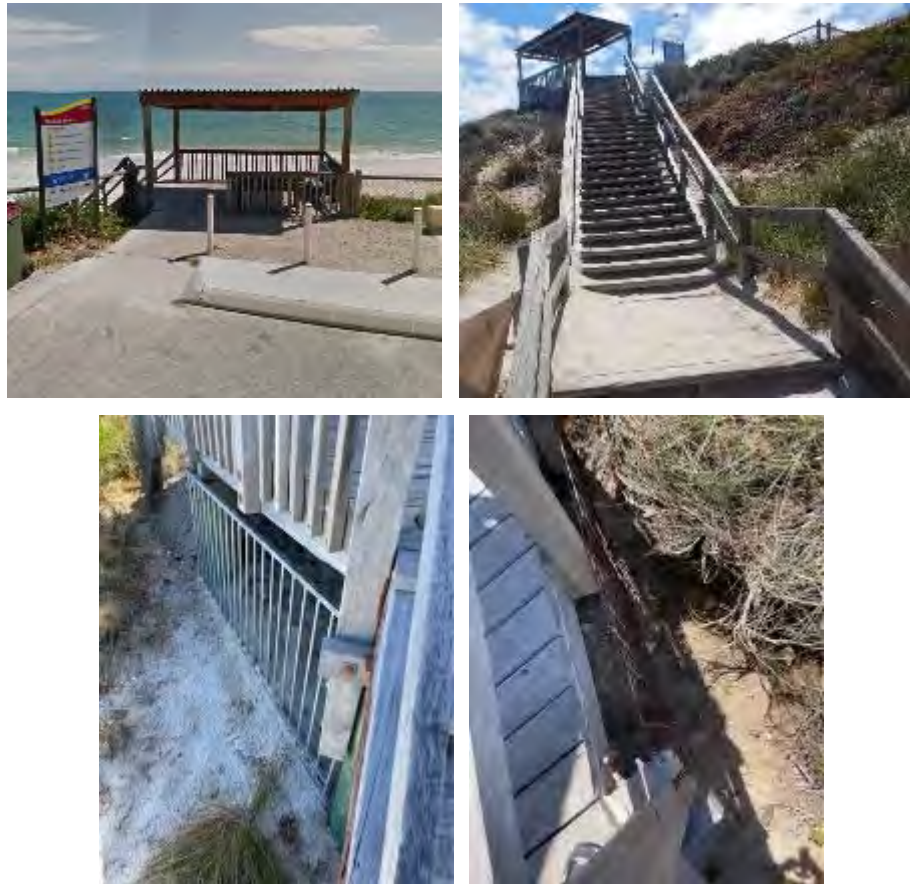


Figure 3.45 C23 Assets



Figure 3.46 C23 Site Inspection Extent

### 3.23.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.89. Please refer to Table 3.92 for detailed inspection findings and Appendix W for the defect forms.

Table 3.89 C23 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Lookout</b>			
Piles	Generally good condition. Connection bolts observed to be typically corroded. Inspected from stair case due to restricted access	12	C23-1
Columns	Minor timber splitting observed to be typical throughout	16	C23-2
Support Connections	Heavy corrosion to connections on columns was observed.	96	C23-3
Bracing	Generally good condition with some corrosion to connection bolts Inspected from stair case due to restricted access	16	C23-4
Deck Planks and Fixings	Generally good condition with minor timber splitting observed. No visible defects on fixings.	12	C23-5
Fencing Balustrade Panel	Moderate coating loss to steel fence under lookout was observed.	20	C23-6
Balustrade	Minor timber splitting and coating loss were observed. Surface corrosion to bolts also observed.	24	C23-7
Fencing Mesh	Generally good condition. Minor surface corrosion and localised section of failed mesh under the covered lookout was observed.	64	C23-8
Bench	Coating loss and minor impact damage were observed.	8	C23-9
Rafters/Purlins	Heavy timber rot observed, predominantly on the 4th rafter from the seaward end.	84	C23-10

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
Roof sheeting	Underside typically in good condition. One localised area of damage observed. Inspection limited to underside.	18	C23-11
<b>Stairs</b>			
Piles	Timber members observed to contain splitting. Steel bolts observed to contain corrosion with potential section loss on washer plates.	40	C23-12
Timber Sleeper Beams	Timber members generally in good condition. Corrosion and section loss to connections observed.	72	C23-13
Support Stubs	New support stub added to structure at top on south side. surface corrosion to bolts. Remaining stubs in good condition.	24	C23-14
Tie rods	Severe corrosion with potential section loss observed.	96	C23-15
Stringers	Timber splitting observed to be typical throughout, with corrosion of fasteners and connections. North side at the top showing heavy splits in timber. South side shows additional unstable support and contains an angle section bolted under timber stringer.	84	C23-16
Treads	Localised rotting and timber splitting observed. Paint observed to be completely deteriorated.	60	C23-17
Stair Tread Nails	Some nails observed to be protruding, causing a safety hazard.	54	C23-18
Handrails	Paint observed to have completely deteriorated. Splitting timber and corrosion around the bolts observed to be typical throughout. Inspection limited due to buried base.	45	C23-19

### 3.23.3 Prioritised Maintenance Recommendations

Table 3.90 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.90 Site C23 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Stair - Tread Nails	Replace protruding nails	Immediately
2	Lookout - Support Connections	Replace	Within 6 months
3	Lookout - Fencing Mesh	Replace with permanent fencing.	Within 6 months
4	Lookout - Rafters/Purlins	Replace heavily rotted timber rafters and purlins	Within 1-2 years
5	Stairs - Timber Beams	Replace corroded connections	Within 1-2 years
	Stairs - Tie rods	Replace heavily corroded tie rods	Within 1-2 years
	Stairs - Stringers	Replace damaged, split and corroded sections.	Within 1-2 years
6	Lookout - Fencing (Balustrade Panel)	Replace with permanent fencing.	Within 5 years (recommend to complete with mesh replacement)
7	Stairs - Treads	Replace heavily split or rotted sections.	Within 5 years
8	Lookout - Piles		

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
	Lookout - Columns	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Lookout - Bracing		
	Lookout - Deck Planks and Fixings		
	Lookout - Balustrade		
	Lookout - Bench		
	Lookout - Roof sheeting		
	Stairs - Piles		
	Stairs - Support Stubs		
	Stairs -Handrails		

### 3.23.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.23.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Protruding deck screws are a trip hazard, if repairs are not completed there is a risk of injury to the general public.
- The timber support connections will continue to corrode, which has the potential to lead to reduced capacity and subsequent failure of the lookout structure. This could lead to serious injury and/or fatalities to members of the general public on or near the staircase as well as significant financial and reputational implications.
- Holes in the fencing underneath the lookout structure will grant un-authorised access to the area and should be repaired within the recommended timeframe.
- The timber supports (purlins / rafters) will continue to deteriorate, which has the potential to lead to reduced capacity and subsequent failure of the lookout structure. This could lead to serious injury and/or fatalities to members of the general public on or near the lookout as well as significant financial and reputational implications.
- The corroded steel connection will continue to corrode and may potentially fail. This could lead to serious injury and/or fatalities to members of the general public on or near the lookout.
- The timber stair support connections will continue to corrode, which has the potential to lead to reduced capacity and subsequent failure of the staircase. This could lead to serious injury and/or fatalities to members of the general public on or near the staircase as well as significant financial and reputational implications.
- Timber elements of the stairs will continue to deteriorate. Delay in repairs may result in potential reduced capacity, which may result in the stair structure failing. This could lead to serious injury and/or fatalities to members of the general public on or near the staircase as well as significant financial and reputational implications.

### 3.23.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.91 Renewal Recommendations for site C23

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Lookout	Timber columns, bracings, decking, railing, posts,	Replace timber columns, bracings, decking, railing,	2025	\$46,152

<b>Asset</b>	<b>Critical Component/s</b>	<b>Renewal Recommendations</b>	<b>Renewal Year</b>	<b>Renewal Cost</b>
	balustrades, bench, rafters and purlins. Steel connections, balustrades, mesh, and roof sheeting.	posts, balustrades, bench, rafters and purlins. Steel connections, balustrades, mesh, and roof sheeting.		
Stairs	Stair structure and timber posts, railing and connections.	Replace stair structure and timber posts, railing and connections.	2024	\$213,018

Table 3.92 C23 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Lookout – Overall Rating 34</b>																	
C23-1	Foundation	Piles	Timber	3	Generally good condition. Connection bolts observed to be typically corroded. Inspected from stair case due to restricted access	N	4	1	4	12	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2042	
C23-2	Supports	Timber column	Timber	4	Minor timber splitting observed to be typical throughout	N	4	1	4	16	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2039	\$5,270
C23-3	Supports	Steel connections	Steel	8	Heavy corrosion to connections on columns was observed.	N	4	3	12	96	4	Replace	Within 6 months		Replace	2025	\$1,820
C23-4	Supports	Bracing	Timber	4	Generally good condition with some corrosion to connection bolts. Inspected from stair case due to restricted access	N	4	1	4	16	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2039	\$2,600
C23-5	Decking	Deck planks and Fixings	Timber, Galvanised Steel	4	Generally good condition with minor timber splitting observed. No visible defects on fixings.	N	3	1	3	12	18	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace decking	2039	\$3,800
C23-6	Fencing	Balustrade Panel	Steel	5	Moderate coating loss to steel fence under lookout was observed.	N	2	2	4	20	10	Replace with permanent fencing.	Within 5 years	\$2,000	Refencing entire underside of lookout	2031	\$7,936
C23-7	Handrailing	Railing, posts and balustrades	Timber	4	Minor timber splitting and coating loss were observed. Surface corrosion to bolts also observed.	N	3	2	6	24	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace handrailing	2030	\$7,936
C23-8	Fencing	Mesh	Galvanised Steel	8	Generally good condition. Minor surface corrosion and localised section of failed mesh under the covered lookout was observed.	N	2	4	8	64	3	Replace with permanent fencing.	Within 6 months	\$1,000	Refencing entire underside of lookout	2024 (recommend to complete in 2031 with item 6)	Refer item 6

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C23-9	Bench	Timber bench	Timber	4	Coating loss and minor impact damage were observed.	N	2	1	2	8	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2030	\$2,790
C23-10	Supports	Rafters and purlins	Timber	7	Heavy timber rot observed, predominantly on the 4 <sup>th</sup> rafter from the seaward end.	N	4	3	12	84	9	Replace heavily rotted timber rafters and purlins	Within 1-2 years		Replace	2030	\$14,000
C23-11	Roof	Roof sheeting	Steel	3	Underside typically in good condition. One localised area of damage observed. Inspection limited to underside.	N	3	2	6	18	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2042	
<b>Stairs – Overall Rating 59</b>																	
C23-12	Foundation	Piles	Timber, Steel	5	Timber members observed to contain splitting. Steel bolts observed to contain corrosion with potential section loss on washer plates.	N	4	2	8	40	15	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace stair structure	2036 (recommend to complete in 2033)	\$199,102
C23-13	Supports	Timber Beams	Timber, Steel	6	Timber members generally in good condition. Corrosion and section loss to connections observed.	N	4	3	12	72	12	Replace corroded connections	Within 1-2 years	\$1,540		2033	
C23-14	Supports	Stair support stubs	Timber	3	New support stub added to structure at top on south side. surface corrosion to bolts. Remaining stubs in good condition.	N	4	2	8	24	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2042 (recommend to complete in 2033)	
C23-15	Supports	Tie Rods	Steel	8	Severe corrosion with potential section loss observed.	N	3	4	12	96	6	Replace heavily corroded sections.	Within 1-2 years	\$1,540		2027 (recommend to complete in 2033)	

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			MAINTENANCE RECOMMENDATION – 5 YEARS				RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)	Overall Rating (CR x RR)	Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C23-16	Supports	Stringers	Timber, Steel	7	Timber splitting observed to be typical throughout, with corrosion of fasteners and connections. North side at the top showing heavy splits in timber. South side shows additional unstable support and contains an angle section bolted under timber stringer.	N	4	3	12	84	9	Replace damaged, split and corroded sections.	Within 1-2 years	\$2,400		2030 (recommend to complete in 2033)	
C23-17	Stair treads	Treads	Timber	5	Localised rotting and timber splitting observed. Paint observed to be completely deteriorated.	N	4	3	12	60	15	Replace heavily split or rotted sections.	Within 5 years	\$1,200		2036 (recommend to complete in 2033)	
C23-18	Stair tread	Nails	Steel	9	Some nails observed to be protruding, causing a safety hazard.	Y	2	3	6	54	3	Replace protruding nails	Immediately	\$360		2024	
C23-19	Handrails	Posts, railing and connections	Timber	5	Paint observed to have completely deteriorated. Splitting timber and corrosion around the bolts observed to be typical throughout. Inspection limited due to buried base.	N	3	3	9	45	15	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2036	\$13,916

## 3.24 Site No C24 –Jindalee Foreshore

### 3.24.1 General

Site C24 provides beach access via a staircase of Ocean Drive, in Jindalee. No drawings were available/provided to GHD, hence the age of the structure is not known. The stairs are constructed from concrete pavers laid on top of bricks. A grouted rock retaining wall borders the stair case with a steel handrails provided along the North side.. Refer Figure 3.47 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.48. The assets within site C24 were found to be in adequate condition with visible signs of deterioration to the stairs and handrailing.



Figure 3.47 C24 Assets



Figure 3.48 C24 Site Inspection Extent

### 3.24.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.93. Please refer to Table 3.96 for detailed inspection findings and Appendix X for the defect forms.

Table 3.93 C24 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Stairs</b>			
Stair Treads	Generally good condition. Some grout deterioration observed between brick courses. Inspection limited due to sand covering approx. 6 steps.	54	C24-1
Handrail	Widespread surface corrosion and coating loss.	30	C24-2
Wall	Localised grout loss on top of wall, however does not appear to affect functionality of wall.	16	C24-3
Sign (bottom of stairs)	Generally good condition. Surface corrosion to bolts as well as minor flaking of paint on east side were observed.	16	C24-4
Sign (top of stairs)	Generally good condition. Minor corrosion observed on the Quinns beach sign to the post.	30	C24-5

### 3.24.3 Prioritised Maintenance Recommendations

Table 3.94 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.94 Site C24 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Railing and posts	Abrasive blast clean and apply protective coating.	Within 1-2 years
2	Sign (bottom of stairs)	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Stair Treads		
	Wall		
	Sign (top of stairs)		

### 3.24.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.24.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Corrosion and coating loss on steel members (handrails) may continue to deteriorate, delaying and/or not completing repairs will result in an increase in defect area required for repair, which may result in a significantly higher cost for repair.

### 3.24.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.95 Renewal Recommendations for site C24

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Stairs	Galvanised steel railing, posts, and signs.	Replace galvanised steel railing, posts, and signs.	2030	\$8,922

Table 3.96 C24 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Stairs – Overall Rating 29</b>																	
C24-1	Stairs	Treads	Bricks, Concrete Paver	5	Generally good condition. Some grout deterioration observed between brick courses. Inspection limited due to sand covering approx. 6 steps.	N	3	2	6	30	25	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2046	
C24-2	Handrail	Railing and posts	Galvanised Steel	6	Widespread surface corrosion and coating loss.	N	3	3	9	54	12	Abrasive blast clean and apply protective coating.	Within 1-2 years	\$2,400	Replace	2033	\$7,812
C24-3	Wall	Retaining Wall	Grouted Rock	5	Localised grout loss on top of wall, however does not appear to affect functionality of wall.	N	3	2	6	30	25	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2046	
C24-4	Sign	Bottom of Stairs	Galvanised Steel	4	Generally good condition. Surface corrosion to bolts as well as minor flaking of paint on east side were observed.	N	2	2	4	16	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2030	\$555
C24-5	Sign	Top of Stairs	Galvanised Steel, Coated Steel	4	Generally good condition. Minor corrosion observed on the Quinns beach sign to the post.	N	2	2	4	16	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2030	\$555

## 3.25 Site No C25 –Quinns Rocks Beach Foreshore

### 3.25.1 General

Site C25 provides beach access via a staircase near Frederick Stubbs Park, off Ocean Drive in Quinns Rocks. Based on provided information the staircase was constructed circa 2018. The staircase is comprised of coated steelwork supports and balustrades with FRP decking. The staircase has replaced a previous structure and has been installed on the previous structures footings.. Refer Figure 3.49 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.50. The assets within site C25 were found to be in good condition with the exception of localised vandalism which has caused damage to the balustrades.

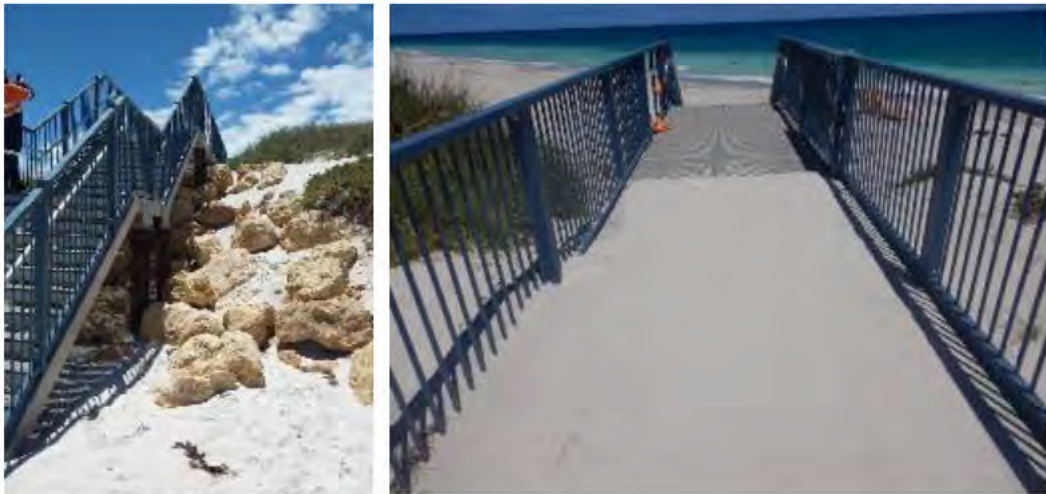


Figure 3.49 C25 Assets



Figure 3.50 C25 Site Inspection Extent

### 3.25.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.97. Please refer to Table 3.100 for detailed inspection findings and Appendix Y for the defect forms.

Table 3.97 C25 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Stairs</b>			
Piles	Heavy corrosion with apparent section loss.	96	C25-1
Support Steelwork	Generally good condition. Some minor corrosion at connections on stringers observed.	24	C25-2
Stair treads	No visible defects were observed. Top and bottom landing partially obstructed by sand and not inspected	6	C25-3
Balustrade (general)	Generally good condition.. Minor surface corrosion observed at connections. Inspection limited due to bottom section being buried.	18	C25-4
Balustrade (localised)	A number of south side balustrade members missing	135	C25-5
Connections (Localised)	Failed connection at base of staircase.	80	C25-6
Connections (General)	No visible defects were observed.	4	C25-7
Top rail	No visible defects were observed on the gate. Minor white rust noticed on the chain.	6	C25-9

### 3.25.3 Prioritised Maintenance Recommendations

Table 3.98 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.98 Site C25 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Balustrade Localised	Replace missing members	Immediately
2	Piles	Abrasive blast clean and apply protective coating, weld a structural plate if section loss justifies.	Within 6 months
3	Handrail Connections Localised	Replace failed connections.	Within 6 months
4	Support Steelwork	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Stair Treads		
	Balustrade		
	Handrail connections		
	Handrail (Top rail)		
	Gate		

### 3.25.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.25.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Missing balustrade members are potential fall hazards especially for younger children, resulting in serious injury and/or fatalities to members of the general public on or near the staircase as well as significant financial and reputational implications.
- The stair piles will continue to corrode, potentially resulting in section loss and reduced capacity, which may result in the structure failing. This could lead to serious injury and/or fatalities to members of the general public on or near the stairs.
- Loose handrail connections may affect the functionality of the handrailing and has the potential to lead to injury to users of the staircase.

### 3.25.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.99 Renewal Recommendations for site C25

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Stairs	Steel piles, coated steel balustrades, and handrails.	Replace steel piles, coated steel balustrades, and handrails.	2024	\$97,628

Table 3.100 C25 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS				
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)	
<b>Stairs – Overall Rating 41</b>																		
C25-1	Foundation	Piles	Steel	8	Heavy corrosion with apparent section loss.	N	4	3	12	96	8	Abrasive blast clean and apply protective coating, weld a structural plate if section loss justifies.	Within 6 months	\$3,200	Replace	2029	\$73,378	
C25-2	Stairs	Support Steelwork	Galvanised Steel	3	Generally good condition. Some minor corrosion at connections on stringers observed.	N	4	2	8	24	28	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2049		
C25-3	Stairs	Stair treads	FRP	2	No visible defects were observed. Top and bottom landing partially obstructed by sand and not inspected	N	3	1	3	6	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045		
C25-4	Handrails	Balustrade (general)	Coated Steel	3	Generally good condition.. Minor surface corrosion observed at connections. Inspection limited due to bottom section being buried.	N	3	2	6	18	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2035	\$12,400	
C25-5	Handrails	Balustrade (localised)	Coated Steel	9	A number of south side balustrade members missing	Y	3	5	15	135	2	Replace missing members	Immediately	\$1,040		2023 (recommend to complete in 2035)		
C25-6	Handrails	Connections (Localised)	Stainless Steel	8	Failed connection at base of staircase.	N	2	5	10	80	3	Replace failed connections.	Within 6 months	\$720	Replace	2024	\$11,850	
C25-7	Handrails	Connections (General)	Stainless Steel	2	No visible defects were observed.	N	2	1	2	4	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2033		
C25-8	Handrails	Top rail	Stainless Steel	2	No visible defects were observed.	N	2	1	2	4	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2033		

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS		
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe
C25-9	Stairs	Gate	Coated Steel	3	No visible defects were observed on the gate. Minor white rust noticed on the chain.	N	2	1	2	6	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2032	

## 3.26 Site No C26 –South Quinns Rocks Foreshore

### 3.26.1 General

Site C26 provides beach access via a concrete path and steel staircase off Ocean Drive just north of Pearce Street, in Quinns Rocks. Based on provided information the steel staircase and concrete path were constructed circa 2018. The concrete path is boarded by a timber and steel wire mesh fence. The staircase is comprised of coated steelwork supports and balustrades with FRP decking. Fencing continues from the base of the staircase until reaching the beach front. Refer Figure 3.51 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.52. The assets within site C26 were found to be in good condition with minor maintenance required.

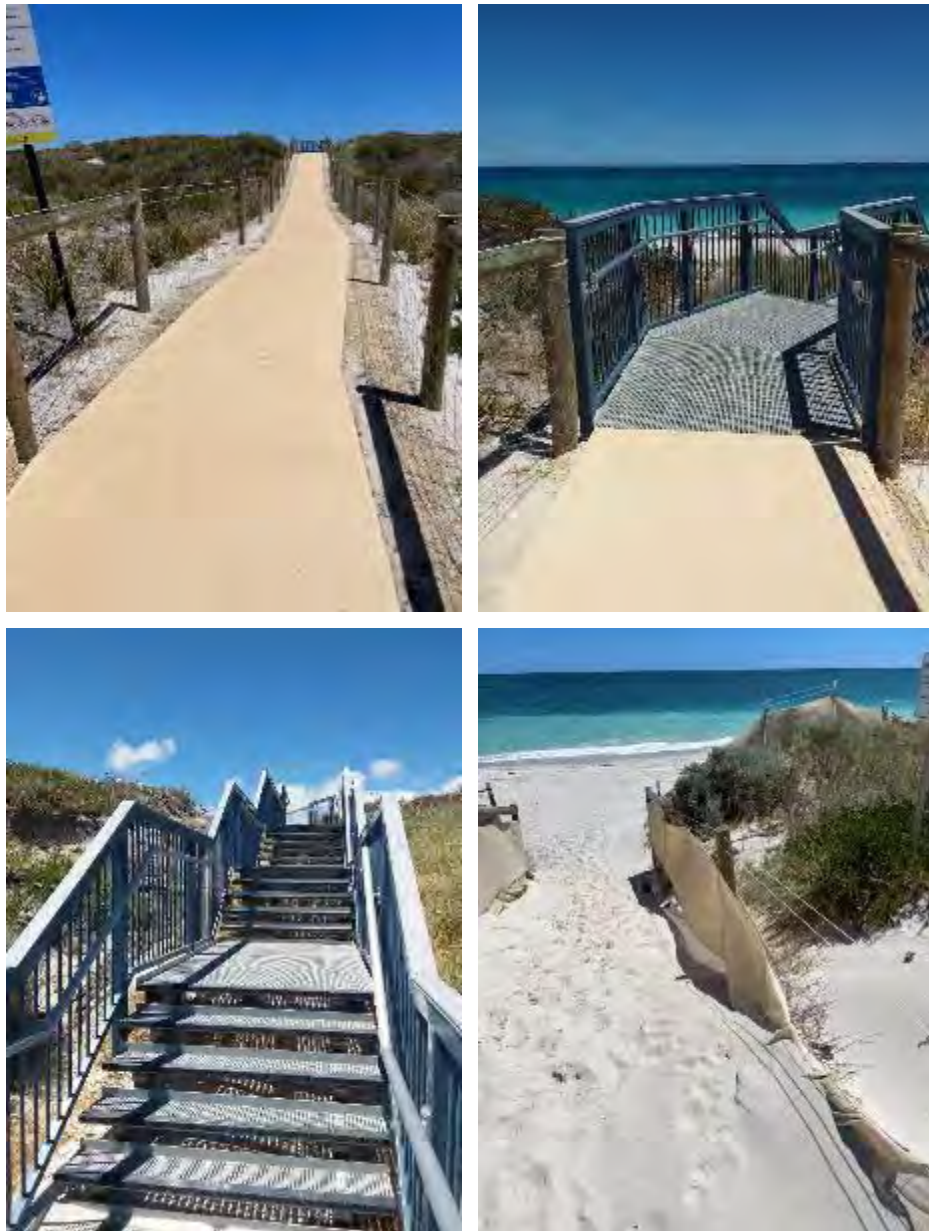


Figure 3.51 C26 Assets



Figure 3.52 C26 Site Inspection Extent

### 3.26.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.101. Please refer to Table 3.104 for detailed inspection findings and Appendix Z for the defect forms.

Table 3.101 C26 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Concrete Path</b>			
Concrete Paver	Minor cracks and damage were observed at the joints.	9	C26-1
Fencing (Posts and Rails)	Generally good condition. Minor timber splitting was observed.	18	C26-2
Fencing (Mesh, Strainer Wire and Staples)	Generally good condition. Sand cloth at base of fence has come loose and requires re-fixing	12	C26-3
<b>Stairs</b>			
Piles	No visible defects were observed	8	C26-4
Supports	Generally good condition. Minor staining was observed to unpainted steelwork supporting treads and connection plates.	8	C26-5
Tread Plate	No visible defects were observed	6	C26-6
Balustrade	No visible defects were observed	6	C26-7
CHS	Minor surface corrosion.	12	C26-8

### 3.26.3 Prioritised Maintenance Recommendations

Table 3.102 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.102 Site C26 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Fencing (Mesh, Strainer Wire and Staples)	Refix sand cloth to fence	Within 5 years.
2	Concrete Paver	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Fencing (Posts and Rails)		
	Piles		
	Supports		
	Tread Plate		
	Balustrade		
CHS			

### 3.26.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.26.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Fencing cloth may continue to deteriorate, resulting in an increase in defect area required for repair in future, which may result in a significantly higher cost for repair. Widespread areas of deteriorated fencing are also aesthetically unpleasing which may lead to complaints from users of the asset.

### 3.26.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.103 Renewal Recommendations for site C26

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Concrete Path	Fencing mesh, strainer wires and staples.	Replace fencing mesh, strainer wires and staples.	2035	\$17,400
Stairs	FRP and coated steel balustrades.	Replace steel piles, coated steel balustrades, and handrails.	2037	\$17,360

Table 3.104 C26 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Concrete Path – Overall Rating 13</b>																	
C26-1	Foundation	Base Slab	Concrete	3	Minor cracks and damage were observed at the joints.	N	3	1	3	9	42	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2063	
C26-2	Fencing	Timber Posts and Rails	Timber	3	Generally good condition. Minor timber splitting was observed.	N	3	2	6	18	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2032 (recommend to complete in 2035)	\$17,400
C26-3	Fencing	Mesh (incl strainer wires, staples, etc)	Galvanised Steel, Coated Steel Geofabric	3	Generally good condition. Sand cloth at base of fence has come loose and requires re-fixing	N	2	2	4	12	14	Refix sand cloth.	Within 5 years	\$240		2035	
<b>Stairs – Overall Rating 8</b>																	
C26-4	Foundation	Piles	Reinforced Concrete/Corrugated Steel	2	No visible defects were observed	N	4	1	4	8	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
C26-5	Stairs	Support Steelwork	Coated Steel, Stainless Steel	2	Generally good condition. Minor staining was observed to unpainted steelwork supporting treads and connection plates.	N	4	1	4	8	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
C26-6	Stairs	Treads/ Landing	FRP	2	No visible defects were observed	N	3	1	3	6	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
C26-7	Stairs	Balustrades	FRP, Coated Steel	2	No visible defects were observed	N	3	1	3	6	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2037	\$17,360
C26-8	Stairs	Handrails	Galvanised Steel	3	Minor surface corrosion.	N	2	2	4	12	28	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2049	

## 3.27 Site No C27 – South Quinns Rock Foreshore

### 3.27.1 General

Site C27 provides vehicle access to the beach from the foreshore on the South-West bend in Ocean Drive, Quinns Rocks. No drawings were available/provided to GHD, hence the age of the structure is not known. The concrete ramp is boarded by a timber and mesh fence, there is geofabric cloth on the North side fencing. Refer Figure 3.53 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.54. The assets within site C27 were found to be in good condition, with the exception of minor defects to the fencing which requires maintenance.

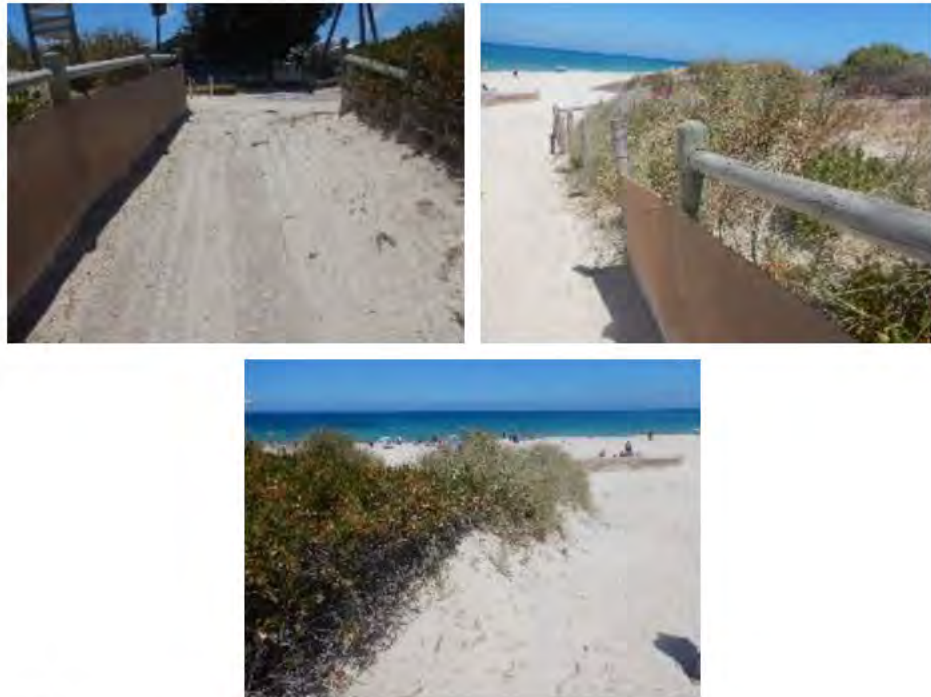


Figure 3.53 C27 Assets



Figure 3.54 C27 Site Inspection Extent

### 3.27.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.105. Please refer to Table 3.108 for detailed inspection findings and Appendix AA for the defect forms.

Table 3.105 C27 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Vehicle Access Ramp</b>			
Bitumen Base	Localised damage	12	C27-1
Fencing Post	Minor timber splitting observed	12	C27-2
Fencing Rail	Timber splitting observed to be typical throughout. One rail was observed to be missing at the base of the ramp.	16	C27-3
Fencing Mesh North	Northern fence has buckled and failed in areas. Surface corrosion observed to be typical throughout.	56	C27-4
Fencing Mesh South	Generally good condition. Inspection limited due to portion of mesh being buried in sand.	18	C27-5
Sign	Coating loss and surface corrosion was observed on one of the three signs.	16	C27-6

### 3.27.3 Prioritised Maintenance Recommendations

Table 3.106 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.106 Site C27 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Fencing Mesh North	Replace damaged, corroded, and failed mesh.	Within 1-2 years.
2	Fencing Rail	Replace heavily split railing and reinstate missing rail.	Within 5 years
3	Sign	Blast Clean and re-coat the sign which contains coating loss and corrosion.	Within 5 years
4	Bitumen Base	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Fencing Post		
	Fencing Mesh South		

### 3.27.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.27.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Fencing mesh and cloth may continue to deteriorate, resulting in an increase in defect area required for repair in future, which may result in a significantly higher cost for repair. Widespread areas of deteriorated fencing are also aesthetically unpleasing which may lead to complaints from users of the asset.
- Corrosion and coating loss on steel members (sign) may continue to deteriorate, delaying and/or not completing repairs will result in an increase in defect area required for repair, which may result in a significantly higher cost for repair.

### 3.27.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.107 *Renewal Recommendations for site C27*

<b>Asset</b>	<b>Critical Component/s</b>	<b>Renewal Recommendations</b>	<b>Renewal Year</b>	<b>Renewal Cost</b>
Vehicle access ramp	Fencing and sign.	Replace fencing and sign.	2030	\$9,020

Table 3.108 C27 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Vehicle Access Ramp – Overall Rating 21</b>																	
C27-1	Foundation	Base slab	Asphalt	4	Localised minor potholes in surface. 50% covered with sand and not inspected.	N	4	1	4	16	30	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2051	
C27-2	Fencing	Timber Posts	Timber	3	Minor timber splitting observed. Partially buried on western side.	N	2	2	4	12	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2032	\$7,400
C27-3	Fencing	Timber Rail	Timber	4	Timber splitting observed to be typical throughout. One rail was observed to be missing at the base of the ramp.	N	2	2	4	16	12	Replace missing rail.	Within 5 years	\$320		2033 (recommend to complete in 2032)	
C27-4	Fencing	Mesh (North)	Steel with geofabric	6	Northern fence has buckled and failed in areas. Surface corrosion observed to be typical throughout.	N	2	4	8	48	8	Replace damaged, corroded, and failed mesh.	Within 1-2 years.	\$1,600		2029 (recommend to complete in 2032)	
C27-5	Fencing	Mesh (South)	Steel	3	Generally good condition. Inspection limited due to portion of mesh being buried in sand.	N	2	3	6	18	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2035 (recommend to complete in 2032)	
C27-6	Sign		Coated Steel	4	Coating loss and surface corrosion was observed on one of the three signs.	N	2	2	4	16	9	Abrasive blast clean and apply protective coating	Within 5 years	\$400		Replace signs	

## 3.28 Site No C28 – North Mindarie Foreshore

### 3.28.1 General

Site C38 provides pedestrian and vehicle access to the beach from the foreshore at Quinns Mindarie Surf Life Saving Club, in Mindarie. Based on provided information the pedestrian and vehicle access ramps were constructed circa 2008. The site comprises of a disabled access ramp, stairs and vehicle access ramp all constructed from concrete. The disabled access ramp is boarded by galvanised steel balustrade. The stairs are boarded by galvanised steel handrailing. There is a timber fencing on the southern side of the access ramp. Refer Figure 3.55 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.56. The assets within site C28 were found to be in good condition with the exception of the steel handrailing and balustrades on the disabled access ramp which was heavily corroded.

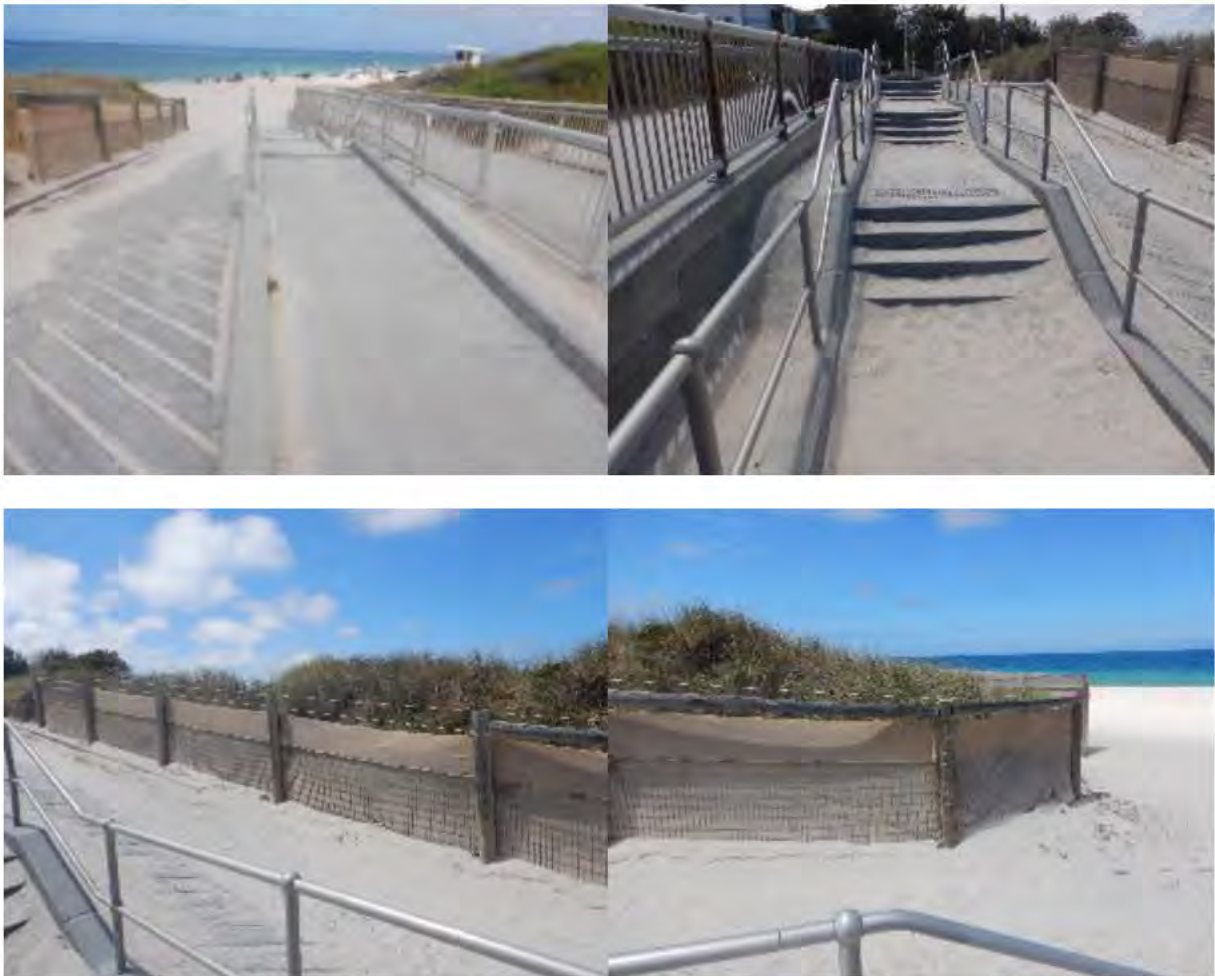


Figure 3.55 C28 Assets

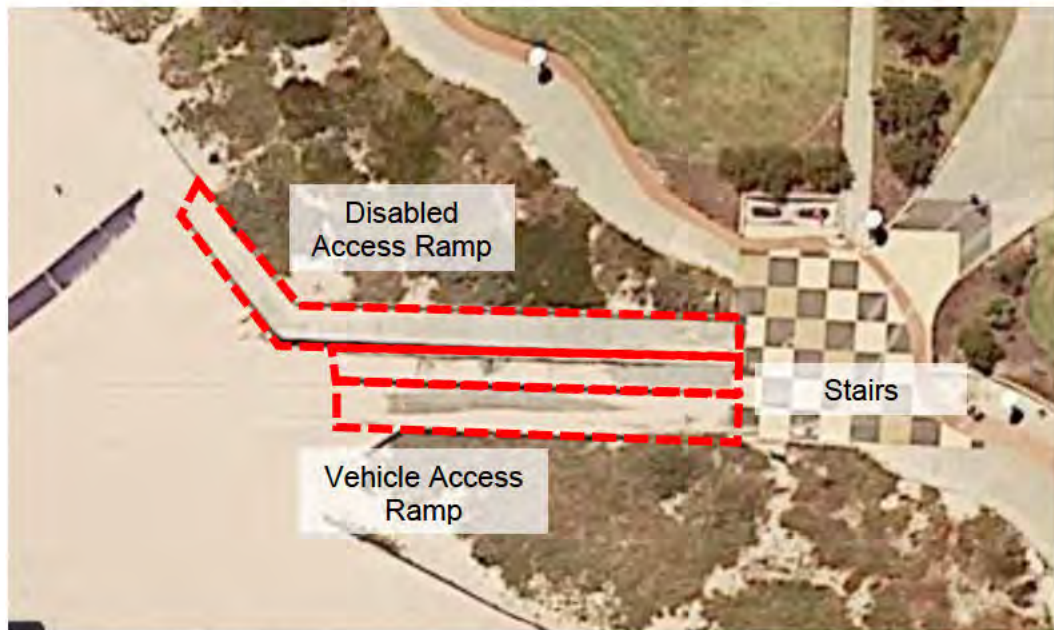


Figure 3.56 C28 Site Inspection Extent

### 3.28.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.109. Please refer to Table 3.112 for detailed inspection findings and Appendix BB for the defect forms.

Table 3.109 C28 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Disabled Access Ramp</b>			
Base Slab	Typical minor hairline cracking on surface. Typical sealant deterioration. large cracks up to 10 mm at corner panels. Delaminated concrete at the end of the adjacent stairs.	36	C28-1
Plastic Ramp	Good condition. No visible defects were observed. Inspection limited as ramp was buried in sand.	2	C28-2
Connections	Deterioration of grout typical exposing bolts. Surface corrosion to base plate typical. Missing bolt top on one connection. Base plates on eastern side covered in sand and not inspected.	63	C28-3
Balustrade (General)	Minor to moderate widespread corrosion.	63	C28-4
Balustrade (Localised)	Impact damage to bottom 2 m balustrade section.	84	C28-5
Handrail	Heavy surface corrosion, coating loss and rust staining observed approximately 30% of handrailing.	63	C28-6
Sign	Generally good condition. Minor surface corrosion, rust staining and coating loss was observed.	8	C28-7
<b>Stairs</b>			
Stairs Treads	No visible defects were observed. Inspection limited due to approximately 30% covered in sand	6	C28-8
Stair Wall (General)	Vertical cracks up to 0.3 mm at each balustrade post were observed (typically self-healed).	24	C28-9
Stair Wall (Localised)	Exposed reinforcement was observed locally after the midpoint of the stairs, towards the ocean.	18	C28-10

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
Handrail (General)	No visible defects were observed	18	C28-11
Handrail (Localised)	Localised damage to the base of balustrade 6 from the top, resulting in loose section was observed.	63	C28-12
Vehicle Access Ramp			
Base Slab	No visible defects observed. Inspection limited due to 40% being covered in sand.	12	C28-13
Timber Posts	Split timber was observed to be typical throughout	16	C28-14
Mesh	Surface corrosion and impact damage were observed towards seaward edge.	18	C28-15
Timber Rail	Minor timber splitting was observed.	12	C28-16
Sign	Coating loss observed to be typical across signs.	16	C28-17

### 3.28.3 Prioritised Maintenance Recommendations

Table 3.110 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.110 Site C28 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Stairs - Handrail Localised	Replace damaged balustrade.	Within 6 months
2	Disabled Access Ramp - Balustrade (Localised)	Replace damaged section	Within 1-2 years
3	Disabled Access Ramp – Handrail	Abrasive blast clean and apply protective coating	Within 1-2 years
	Disabled Access Ramp - Balustrade connections	Replace missing connections. Re-instate missing grout. Abrasive clean and apply protective coating to base plate.	Within 1-2 years
	Disabled Access Ramp – Balustrades (General)	Abrasive blast clean and apply protective coating	
4	Disabled Access Ramp – Base Slab	Conventional concrete repair to cracked and delaminated area	Within 1-2 years
	Stair - Wall (Localised)	Conventional concrete repair	
5	Vehicle Access Ramp - Sign	Abrasive clean and apply protective coating.	Within 5 years
6	Vehicle Access Ramp - Concrete Paver	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Handrails		
	Vehicle Access Ramp - Fencing Mesh		
	Vehicle Access Ramp - Fencing Posts		
	Vehicle Access Ramp - Fencing Rail		
	Disabled Access Ramp – Sign		
	Stair – Stair treads		
	Disabled Access Ramp – Plastic Ramp		

### 3.28.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.28.3 are not carried out in the timeframes specified, the following safety issues could occur:

- The loose balustrade post, may have reduced capacity and is a potential health and safety risk and should be remediated within the recommended timeframe.
- The impact damaged balustrade section at the base, may have reduced capacity due to the impact damage and may continue to deteriorate, if capacity is lost there is potential for the section to fail when a load is applied (i.e. member of the public leaning on the railing).
- Handrail connections will continue to corrode. Heavy corrosion may reduce the capacity and potentially fail when a load is applied leading to injury to members of the general public as well as financial and reputational implications.
- Corrosion and coating loss on steel members may continue to deteriorate, delaying and/or not completing repairs will result in the steel corroding further, causing section loss to the balustrades./ handrails Perforations may reduce the capacity and potentially fail when a load is applied (i.e. member of the public leaning on the railing). Delay of repairs may also result in an increase in defect area required for repair, which may result in a significantly higher cost for repair.
- Cracked, delaminated and spalled concrete is a potential sign of reinforcement corrosion. Widespread reinforcement corrosion may lead to reduction of capacity of the structure. Delay of repairs may also result in an increase in defect area required for repair, which may result in a significantly higher cost for repair.

### 3.28.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.111 *Renewal Recommendations for site C28*

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Disable access ramp	FPR plastic ramp, handrailing and balustrade and steel sign.	Replace FPR plastic ramp, handrailing and balustrade and steel sign.	2026	\$52,655
Stairs	Steel handrails	Replace steel handrails	2035	\$22,749
Vehicle access ramp	Fencing and sign.	Replace fencing and sign.	2030	\$10,956

Table 3.112 C28 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Disable Access Ramp – Overall Rating 46</b>																	
C28-1	Foundation	Base Slab	Reinforced Concrete	6	Typical minor hairline cracking on surface. Typical sealant deterioration. large cracks up to 10 mm at corner panels. Delaminated concrete at the end of the adjacent stairs.	N	3	2	6	36	20	Conventional concrete repair to cracked and delaminated areas.	Within 1-2 years	\$2,670	Maintain existing material	2041	
C28-2	Foundation	Plastic Ramp	FRP	2	Good condition. No visible defects were observed. Inspection limited as ramp was buried in sand.	N	1	1	1	2	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace plastic ramp	2037	\$2,600
C28-3	Balustrade	Connections	Steel / Grout	7	Deterioration of grout typical exposing bolts. Surface corrosion to base plate typical. Missing bolt top on one connection. Base plates on eastern side covered in sand and not inspected.	N	3	3	9	63	6	Replace missing connections. Re-instate missing grout. Abrasive clean and apply protective coating to base plate.	Within 1-2 years	\$1,440	Replace handrailing and balustrades	2027	\$48,976
C28-4	Handrails	Balustrade (General)	Galvanised Steel	7	Minor to moderate widespread corrosion.	N	3	3	9	63	6	Abrasive blast clean and apply protective coating.	Within 1-2 years	\$4,800		2027	
C28-5	Handrails	Balustrade (Localised)	Galvanised Steel	7	Impact damage to bottom 2 m balustrade section.	N	3	4	12	84	6	Replace damaged section.	Within 1-2 years	\$960		2027	
C28-6	Handrails	Handrail	Coated Steel	7	Heavy surface corrosion, coating loss and rust staining observed approximately 30% of handrailing.	N	3	3	9	63	5	Abrasive blast clean and apply protective coating.	Within 1-2 years	Included in item		2026	
C28-7	Sign	Sign	Steel	4	Generally good condition. Minor surface corrosion, rust staining and coating loss was observed.	N	2	1	2	8	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace signs	2030	\$1,079
<b>Stairs – Overall Rating 26</b>																	

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C28-8	Stairs	Stairs Treads	Reinforced Concrete	2	No visible defects were observed. Inspection limited due to approximately 30% covered in sand	N	3	1	3	6	32	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2053	
C28-9	Walls	Stair Wall (General)	Reinforced Concrete	4	Vertical cracks up to 0.3 mm at each balustrade post were observed (typically self-healed).	N	3	2	6	24	30	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2051	
C28-10	Walls	Stair Wall (Localised)	Reinforced Concrete	6	Exposed reinforcement was observed locally after the midpoint of the stairs, towards the ocean.	N	3	1	3	18	20	Conventional concrete repair	Within 1-2 years	\$2,670	Maintain existing material	2041	
C28-11	Stairs	Handrail (General)	Steel	3	No visible defects were observed	N	3	2	6	18	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace	2035	\$22,749
C28-12	Stairs	Handrail (Localised)	Steel	7	Localised damage to the base of balustrade 6 from the top, resulting in loose section.	Y	3	3	9	63	6	Replace damaged balustrade.	Within 6 months	\$480		N/A localised repair	
<b>Vehicle Access Ramp – Overall Rating 15</b>																	
C28-13	Foundation	Base Slab	Reinforced Concrete	3	No visible defects observed. Inspection limited due to 40% being covered in sand.	N	2	2	4	12	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2042	
C28-14	Fencing	Timber Posts	Timber	4	Split timber was observed to be typical throughout	N	2	2	4	16	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace fencing	2030	\$8,387
C28-15	Fencing	Mesh	Galvanised Steel	3	Surface corrosion and impact damage were observed towards seaward edge.	N	2	3	6	18	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2035	
C28-16	Fencing	Timber Rail	Timber	3	Minor timber splitting was observed.	N	2	2	4	12	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2032	
C28-17	Sign	Sign	Steel	4	Coating loss observed to be typical across signs.	N	2	2	4	16	9	Abrasive clean and apply protective coating.	Within 5 years	\$360	Replace	2030	\$2,569

## 3.29 Site No C29 – North Mindarie Coastal Walk

### 3.29.1 General

Site C29 provides a coastal lookout along the walking trail accessed via an asphalt pathway at the intersection of Duncannon Rise and Kinsale Drive in Mindarie. Based on provided information the lookout was constructed circa 2018. The lookout is located approximately 80 metres to the north after turning right on the pathway intersection. The site consists of a newly constructed concrete slab, with a timber and coated mesh around the North, West and South sides. Refer Figure 3.57 for general photos of the structure. the inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.58. The assets within site C29 were found to be in in good condition with no maintenance for at least 5 years.



Figure 3.57 C29 Assets



Figure 3.58 C29 Site Inspection Extent

### 3.29.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.113. Please refer to Table 3.116 for detailed inspection findings and Appendix CC for the defect forms.

Table 3.113 C29 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Lookout</b>			
Concrete Pad	Good condition typically. Apparent drainage hole on north west corner.	4	C29-1
Fencing Posts	Timber splitting was observed to be typical throughout.	16	C29-2
Fencing Mesh	No visible defects were observed	6	C29-3
Mesh Staples	Minor surface corrosion was observed	18	C29-4
Sign	No visible defects were observed	2	C29-5

### 3.29.3 Prioritised Maintenance Recommendations

Table 3.114 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.114 Site C29 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Concrete Pad	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Fencing Posts		
	Fencing Mesh		
	Mesh Staples		
	Sign		

### 3.29.4 Implications of Repairs / Delay of repairs

No maintenance items required for at least 5 years.

### 3.29.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.115 Renewal Recommendations for site C29

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Lookout	Fencing and signage.	Replace fencing and signage.	2030	\$3,707

Table 3.116 C29 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Lookout – Overall Rating 9</b>																	
C29-1	Base Slab	Concrete Pad	Reinforced Concrete	2	Good condition typically. Apparent drainage hole on north west corner.	N	2	1	2	4	48	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2069	
C29-2	Fencing	Timber Posts and Railing	Timber	4	Minor vertical timber splitting was observed.	N	2	2	4	16	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace fencing	2030	\$3,000
C29-3	Fencing	Mesh	Coated Steel	3	No visible defects were observed	N	2	1	2	6	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2035 (recommend to complete in 2030)	
C29-4	Fencing	Mesh Staples	Galvanised Steel	3	Minor surface corrosion was observed	N	2	3	6	18	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2032 (recommend to complete in 2030)	
C29-5	Sign	QR Code Post	FRP	1	No visible defects were observed	N	2	1	2	2	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace signage	2035	\$707

### 3.30 Site No C30 – North Mindarie Coastal Walk

#### 3.30.1 General

Site C30 provides a coastal lookout along the walking trail accessed via an asphalt pathway at the intersection of Duncannon Rise and Kinsale Drive in Mindarie. Based on provided information the lookout was constructed circa 2018. The lookout is located approximately 75 metres to the south after turning right on the pathway intersection. The site consists of a newly constructed concrete slab, with a timber and coated mesh around the North, West and South sides. Refer Figure 3.59 for general photos of the structure. the inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.60. The assets within site C30 were found to be in in good condition with the exception of damaged fencing mesh which requires repair within 6 months.



Figure 3.59 C30 Assets



Figure 3.60 C30 Site Inspection Extent

### 3.30.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.117. Please refer to Table 3.120 for detailed inspection findings and Appendix DD for the defect forms.

Table 3.117 C30 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Lookout</b>			
Concrete Pad	Generally good condition. Some minor scouring to the southern edge and some section loss on the south western corner at the base were observed.	12	C30-1
Fencing Timber Members	Generally good condition. With some minor timber splitting.	18	C30-2
Fencing Mesh	Generally good condition. With minor coating loss at staples. Noticed that the mesh was not connected to the middle strainer wire on western and southern sides.	8	C30-3
Fencing Mesh Staples	Generally good condition. Some surface corrosion has been observed. It was also observed that some staples have been replaced.	12	C30-4
Fence Mesh Strainer Wires	Generally good condition. Strainer wire broken on western side of fence.	80	C30-5
Sign	Some coating loss to the pole, and minor graffiti scratches on the sign were observed	24	C30-6

### 3.30.3 Prioritised Maintenance Recommendations

Table 3.118 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.118 Site C30 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Fence Mesh Strainer Wires	Replace failed mesh strainer wire	Within 6 months
2	Sign	Abrasive clean and apply protective coating.	Within 1-2 years
4	Fencing Timber Members	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Concrete Pad		
	Fencing Mesh		
	Fencing Mesh Staples		

### 3.30.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.30.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Strainer wires will continue to deteriorate and fail due resulting in loose mesh, which maybe susceptible to damage from users of the path and result in failure of the mesh.
- Corrosion and coating loss on steel members (sign) may continue to deteriorate, delaying and/or not completing repairs will result in an increase in defect area required for repair, which may result in a significantly higher cost for repair.

### 3.30.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.119 *Renewal Recommendations for site C30*

<b>Asset</b>	<b>Critical Component/s</b>	<b>Renewal Recommendations</b>	<b>Renewal Year</b>	<b>Renewal Cost</b>
Lookout	Fencing and signage.	Replace fencing and signage.	2027	\$3,630

Table 3.120 C30 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Lookout – Overall Rating 26</b>																	
C30-1	Foundation	Concrete Pad	Reinforced Concrete	3	Concrete in good condition. Minor scouring to southern edge.	N	2	2	4	12	42	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2063	
C30-2	Fencing	Posts and railing	Timber	3	Generally good condition. With some minor timber splitting.	N	3	2	6	18	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace fencing	2032	\$3,000
C30-3	Fencing	Mesh	Coated Steel	2	Generally good condition.	N	2	2	4	8	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2037 (recommend to complete in 2032)	
C30-4	Fencing	Mesh Staples	Coated Steel	3	Generally good condition. Some surface corrosion has been observed. It was also observed that some staples have been replaced.	N	2	2	4	12	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2032	
C30-5	Fencing	Mesh Strainer Wires	Coated Steel	8	Generally good condition. Strainer wire broken on western side of fence.	N	2	5	10	80	4	Replace Failed mesh strainer wire	Within 6 months	\$240		2025 (recommend complete in 2032)	
C30-6	Sign	Sign	Steel	6	Some coating loss to the pole, and minor graffiti scratches on the sign were observed	N	2	2	4	24	6	Abrasive clean and apply protective coating.	Within 1-2 years	\$360		Replace signage	

## 3.31 Site No C31 – North Mindarie Coastal Walk

### 3.31.1 General

Site C31 provides a lookout along the coastal walk accessed via a pathway at the intersection of Duncannon Rise and Kinsale Drive in Mindarie. Based on provided information the lookout was constructed circa 2018. The site consists of a newly constructed concrete slab, with a timber and coated mesh fence around the North, West and South sides. Refer Figure 3.61 for general photos of the structure. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.62. The assets within site C31 were found to be in good condition with the exception of minor maintenance required to the mesh staples within 5 years.



Figure 3.61 C31 Assets



Figure 3.62 C31 Site Inspection Extent

### 3.31.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.121. Please refer to Table 3.124 for detailed inspection findings and Appendix EE for the defect forms.

Table 3.121 C31 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Lookout</b>			
Base Slab	No visible defects were observed	4	C31-1

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
Fence Posts	Generally good condition. Minor timber splitting was observed.	12	C31-2
Fencing Mesh	No visible defects were observed	12	C31-3
Fencing Mesh Staples	Surface corrosion was observed to be typical throughout.	20	C31-4
Fence Mesh Strainer Wires	No visible defects were observed	4	C31-5
Fence Railing	Generally good condition. Minor timber splitting was observed.	12	C31-6
Bench	No visible defects were observed	4	C31-7

### 3.31.3 Prioritised Maintenance Recommendations

Table 3.122 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.122 Site C31 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Fencing Mesh Staples	Replace mesh staples	Within 5 years
2	Base Slab	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Fence Posts		
	Fencing Mesh		
	Fence Mesh Strainer Wires		
	Fence Railing		
	Bench		

### 3.31.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.31.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Mesh staples will continue to corrode potentially leading to failure at connections. Failure of the connections may lead to large sections of the mesh collapsing, which may result in a significantly higher cost for repair.

### 3.31.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.123 Renewal Recommendations for site C31

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Lookout	Fencing and bench.	Replace fencing and bench.	2032	\$5,954

Table 3.124 C31 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Lookout – Overall Rating 10</b>																	
C31-1	Foundation	Concrete Pad	Reinforced Concrete	2	No visible defects were observed	N	2	1	2	4	48	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2069	
C31-2	Fencing	Timber Posts	Timber	3	Generally good condition. Minor timber splitting was observed.	N	2	2	4	12	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace fencing	2032	\$3,000
C31-3	Fencing	Mesh	Coated Steel	3	No visible defects were observed	N	2	2	4	12	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2035 (recommend to complete in 2032)	
C31-4	Fencing	Mesh Staples	Galvanised Steel	5	Surface corrosion was observed to be typical throughout.	N	2	2	4	20	8	Replace mesh staples	Within 5 years			2029 (recommend to complete in 2032)	
C31-5	Fencing	Mesh Strainer Wires	Coated Steel	2	No visible defects were observed	N	2	1	2	4	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2033 (recommend to complete in 2032)	
C31-6	Fencing	Timber Rail	Timber	3	Generally good condition. Minor timber splitting was observed.	N	2	2	4	12	11	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2032	
C31-7	Bench	Bench	Aluminium /Timber	2	No visible defects were observed	N	2	1	2	4	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			Replace bench	

## 3.32 Site No C32 – North Mindarie Foreshore

### 3.32.1 General

Site C32 provides access to the beach from the parking lot at Rosslare Promenade in Mindarie via a dual use path. No drawings were available/provided to GHD, hence the age of the structure is not known. The site consists of an asphalt path which leads to a set of limestone steps down to the beach. The path is bordered by a steel mesh and timber fence and temporary fence in place of missing fence areas. Refer Figure 3.63 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.64. The assets within site C32 were found to be in average condition with a number of items requiring urgent maintenance.



Figure 3.63 C32 Assets



Figure 3.64 C32 Site Inspection Extent

### 3.32.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.125. Please refer to Table 3.128 for detailed inspection findings and Appendix FF for the defect forms.

Table 3.125 C32 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Asphalt Path</b>			
Bitumen base (localized)	Asphalt deteriorated near fence post on western side - approximately 400 x 15 mm	72	C32-1
Bitumen Base	Generally good condition. Minor cracks towards stairs end and minor deterioration along sides of path in sections was observed.	18	C32-2
Stair Footings	Evidence of scour next to the stairs was observed.	60	C32-3
Steps	Impact damage to 3 steps up to 50 mm loss in areas. Deteriorated grout observed to be typical. Also noticed that there were no handrails either side.	96	C32-4
Fencing Timber Members	Rust staining and splitting timber observed to be typical to rail and posts. Minor fungi attack to posts closest to ocean on mesh side of posts.	24	C32-5
Fencing Mesh	Coating loss observed to be typical throughout. Mesh has become unfixed on western side for entire section with temporary fence installed. Mesh not connected to top rail on southern face in one section.	12	C32-6
Fencing Mesh Staples	Surface corrosion observed to be typical throughout.	36	C32-7
Fencing Strainer Wires	Good condition with surface corrosion typical. Western fence has failed strainer wire.	12	C32-8
Bench	Generally good condition. With minor coating loss to base plate on northern side and Minor cracking to footing	4	C32-9
Sign	Sign in good condition. Significant corrosion with section loss to steel support members was observed.	72	C32-10

### 3.32.3 Prioritised Maintenance Recommendations

Table 3.126 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.126 Site C32 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Bitumen base (localized)	Replace Deteriorated bitumen	Within 6 months
2	Steps	Replaced heavily damaged steps	Within 6 months
3	Sign	Replace steel support members	Within 6 months
4	Stair Footings	Investigate cause of scour and locally repair.	Within 5 years
5	Bitumen Base	Monitor and reinspect at next scheduled inspection.	Greater than 5 years
	Fencing Timber Members		
	Fencing Mesh		
	Fencing Mesh Staples		
	Fencing Strainer Wires		
	Bench		

### 3.32.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.32.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Limestone steps will continue to deteriorate and the mortar will continue to deteriorate, This may result in trip hazards to the general public.
- Limestone steps will continue scour, This may cause structural instability and potential collapse leading to injury to members of the general public as well as financial and reputational implications.
- Corroded sign posts will continue to deteriorate and may potentially fail.
- Bitumen will continue to deteriorate, and may eventually become a trip hazard, resulting in injury to members of the general public.

### 3.32.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.127 Renewal Recommendations for site C32

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Asphalt path	Limestone footing and steps, fencing, bench and signage.	Replace stairs, fencing, bench and signage.	2024	\$44,678

Table 3.128 C32 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Asphalt Path – Overall Rating 41</b>																	
C32-1	Foundation	Base Slab (Localised)	Asphalt	8	Asphalt deteriorated near fence post on western side - approximately 400 x 15 mm	N	3	3	9	72	6	Patch deteriorated asphalt around post.	Within 6 months	\$620	Maintain existing material	N/A localised repair	
C32-2	Foundation	Base Slab (General)	Asphalt	3	Generally good condition. Minor cracks towards stairs end and minor deterioration along sides of path in sections was observed.	N	3	2	6	18	21	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2042	
C32-3	Stairs	Footings	Limestone	5	Evidence of scour next to the stairs was observed.	N	4	3	12	60	25	Investigate cause of scour and locally repair.	Within 5 years	\$4,000	Replace stairs	2046 (recommend to complete in 2031)	
C32-4	Stairs	Steps	Limestone	8	Impact damage to 3 steps up to 50 mm loss in areas. Deteriorated grout observed to be typical. Also noticed that there were no handrails either side.	N	4	3	12	96	10	Replaced heavily damaged steps	Within 6 months	\$3,200		2031	\$29,540
C32-5	Fencing	Timber Posts and Rails	Timber	4	Split timber typical on posts and rails. Minor fungi attack to posts closest to sea on mesh side of posts. Minor staining typical	N	3	2	6	24	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace fencing	2030	
C32-6	Fencing	Mesh	Coated Steel	3	Mesh has become unfixed on western side for entire section. Temporary fence installed. Minor Debris build up in sections typical. Pulled away from top rail on southern face at one section.	N	2	2	4	12	14	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2035 (recommend to complete in 2030)	\$9,519
C32-7	Fencing	Mesh Staples	Coated Steel	6	Surface corrosion observed to be typical throughout.	N	2	3	6	36	6	Replace	Within 5 years			2027 (recommend to complete in 2030)	

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C32-8	Fencing	Strainer Wires	Coated Steel	3	Good condition with surface corrosion typical. Western fence has failed strainer wire.	N	2	2	4	12	11	Replace	Within 5 years		2032 (recommend to complete in 2030)		
C32-9	Bench	Bench	Aluminium	2	Generally good condition. With minor coating loss to base plate on northern side and Minor cracking to footing	N	2	1	2	4	12	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace bench	2033	\$2,842
C32-10	Sign	Sign	Steel	8	Significant corrosion with section loss to steel support members.	N	3	3	9	72	3	Replace steel support members	Within 6 months	\$480	Replace signage	2024	\$2,777

### 3.33 Site No C33 – South Mindarie Foreshore

#### 3.33.1 General

Site C33 provides a coastal lookout and beach access to the South Mindarie Foreshore from the parking area off Alexandria View, opposite Stockton Lane in Mindarie. Based on provided information the lookout and beach access path were constructed circa 2004. The site consists of a lookout and shower area, with a set of concrete steps leading down to a concrete path and a subsequent set of composite fibre stairs which give access to the beach. Information provided by the CoW suggest repair works to the concrete path and installation of composite stairs were completed circa 2020. Refer Figure 3.65 for general photos of the structures. The inspection was completed from ground level, the battery limits of the inspection are shown in Figure 3.66. The assets within site C33 were found to be in good condition, however there were a number of items requiring maintenance.



Figure 3.65 C33 Assets

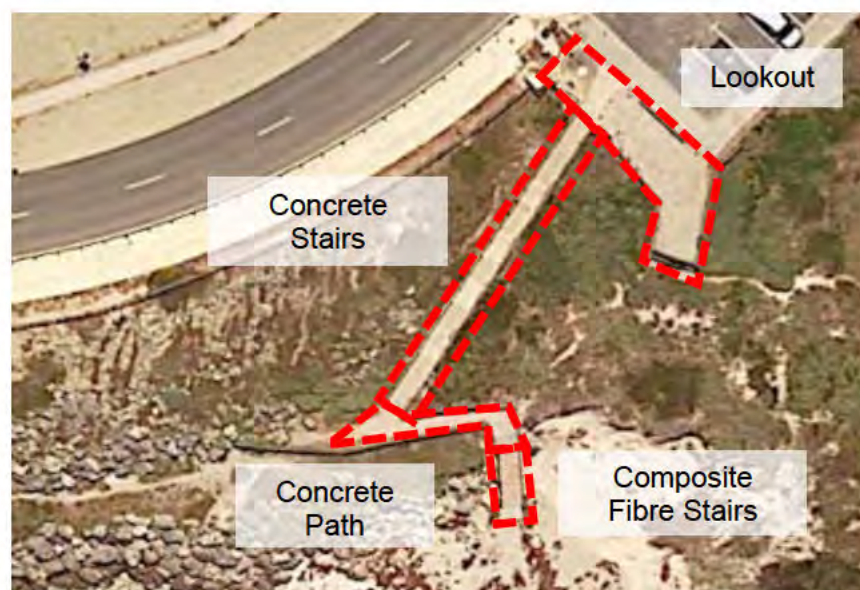


Figure 3.66 C33 Site Inspection Extent

### 3.33.2 Site Inspection Findings

A summary of the site inspection findings for each element has been provided below in Table 3.129. Please refer to Table 3.132 for detailed inspection findings and Appendix GG for the defect forms.

Table 3.129 C33 Site Inspection Summary

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
<b>Lookout</b>			
Bitumen Base	General deterioration and cracking potential trip hazard	30	C33-1
Pavers	Limestone pavers in shower area in good condition.	8	C33-2
Wall	Chipping to edges, erosion to limestone brick surface evident.	18	C33-3
Timber Posts (Localised)	Splitting and fungi attack typical.	24	C33-4
Timber Posts (General)	Minor splitting and rust staining typical on top rail and posts.	16	C33-5
Timber Rail	Vegetation impaired some visual inspection	60	C33-6
Mesh (general)	Minor splitting typical.	12	C33-7
Mesh (localised)	Significant salt attack causing soft wood along mid rail at northern and southern ends.	70	C33-8
Mesh (localised)	Generally good condition with surface corrosion and coating loss typical at staples.	20	C33-9
Mesh Staples	Small hole in fence mesh on western edge	20	C33-10
Bollards	Steel mesh on south eastern side. Vegetation limiting inspection. Typical corrosion to mesh and associated fixings.	6	C33-11
Sign	Strainer wires deteriorated.	15	C33-12
Bench	Mesh not well secured to top beam on western side.	4	C33-13
Shower	Surface corrosion and coating loss typical.	6	C33-14
Drain	Splitting typical	32	C33-15
Drink Fountain	6 posts total - corrosion with section loss to 1 post, rotation to 2 posts.	12	C33-16
<b>Concrete Stairs</b>			
Treads	Minor spalling at edge of treads.	24	C33-17
Timber Posts (localised)	Significant splitting typical.	96	C33-18
Timber Posts	Typical splits to timber posts.	18	C33-19
Timber Rail	Typical coating loss and minor splits and rot to railing.	36	C33-20
Timber Rail (localised)	Localised damage to bottom east top rail at connections.	84	C33-21
Connections	Corrosion of fasteners and connections. Bolt thread exposed on bottom southern post. Coating loss typical on bolts. Debris build up typical. Section loss to washers typical.	30	C33-22
<b>Concrete Path</b>			

Element	Site Inspection Findings	Overall Rating (Max)	Defect Form No.
Concrete Slab	No visible defects.	4	C33-23
Timber Posts	Splitting typical. Northern posts observed deflection due to subsidence. Minor rot observed.	30	C33-24
Timber Rail	Splitting typical. Rotation of rails due to post subsidence.	30	C33-25
Timber Connection	Heavy corrosion to connection bolts (typical)	30	C33-26
Mesh	Coating loss and corrosion near mesh staples typical. Mesh not appropriately secured to top rail and does not extend to ground level in some areas.	12	C33-27
Mesh Staples	Surface corrosion typical, however noticeable worse on eastern side.	20	C33-28
Mesh Strainer Wires	Coating loss at staple locations on timber posts. Middle strainer wire not connected to mesh on southern side. Mesh fixings have corroded and have a minor build-up of debris. No wires on western side.	20	C33-29
Sign	Heavy corrosion to 2 No signage posts, section loss evident.	42	C33-30
<b>Composite Fibre Stairs</b>			
Stringers, treads, support steelwork, connections etc.	Rust and tea staining typical at connections.	8	C33-31
Handrails	Minor corrosion at connections.	4	C33-32

### 3.33.3 Prioritised Maintenance Recommendations

Table 3.130 below summarises the priority maintenance recommendations for the defects identified at the site.

Table 3.130 Site C33 Priority Maintenance Recommendations

Priority	Element/Sub-Element	Maintenance Recommendation	Timeframe
1	Shower	Reinstate anti-slip tape	Within 6 months
2	Concrete Stairs – Handrail	Replace timber posts and rail that have significant splitting Replace damaged rail member Replace corroded fasteners	Within 6 months
3	Concrete Path – Sign	Replace corroded signposts	Within 1-2 years
4	Lookout – Fencing	Replace rotted timber members Fix small hole in mesh	Within 5 years
5	Lookout – Asphalt	Resurface area.	Within 5 years
6	Concrete Path – Fencing	Replace deflected and rotting timber members Replaced corroded bolts Refix mesh with new staples Refix strainer wires to mesh and posts with new staples/fixings	Within 5 years

7	Concrete Stairs – Stairs	Conventional concrete repair to damaged areas	Within 5 years
8	Lookout – Signs	Replace corroded posts	Within 5 years
9	Lookout – Limestone Wall	Replace eroded bricks	Greater than 5 years

### 3.33.4 Implications of Repairs / Delay of repairs

If the maintenance items identified in Section 3.33.3 are not carried out in the timeframes specified, the following safety issues could occur:

- Anti-slip tape on shower will continue to deteriorate potentially resulting in slips from shower users.
- Heavily split handrail timber post and railing will continue to deteriorate. Splits may reduce the capacity and potentially fail when a load is applied (i.e member of the public leaning on the railing). This could lead to serious injury and/or fatalities to members of the general public on or near the fenced areas.
- Lookout fencing posts rails, mesh and connections will continue to deteriorate. Heavy deterioration may reduce the capacity and potentially fail when a load is applied (i.e member of the public leaning on the railing), leading to potential fall zone from the unfenced cliff. This could lead to serious injury and/or fatalities to members of the general public on or near the fenced areas.
- Bitumen base will continue to deteriorate at lookout leading to potential trip hazard.
- Spalled areas of stair treads will continue to deteriorate which may potentially result in a reduction in landing area, resulting in potentially slip and trip hazards.
- Corroded signposts will continue to deteriorate and may potentially fail.

### 3.33.5 Renewal Recommendations

Table 3.3 below summarises the renewal recommendations on an entire asset level based on the condition of the critical components identified at the site. The renewal year for a given asset was based on the earliest renewal year of the corresponding component level within the considered asset.

Table 3.131 Renewal Recommendations for site C33

Asset	Critical Component/s	Renewal Recommendations	Renewal Year	Renewal Cost
Lookout	Bitumen base, limestone wall, fencing, bollards, signage, bench, shower, drain seal, and drinking fountain.	Replace bitumen base, limestone wall, fencing, signage, bench, shower, drain seal, and drinking fountain. Replace bollards with more durable materials.	2025	\$43,575
Concrete stairs	Concrete stair treads and timber handrails.	Replace concrete stair treads and timber handrails.	2023	\$57,838
Concrete path	Fencing and signage.	Replace fencing and signage.	2026	\$6,234
Composite fibre stairs	Stainless steel handrails.	Replace stainless steel handrails.	2029	\$10,594

Table 3.132 C33 Condition Assessment and Maintenance Plan Summary

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
<b>Lookout – Overall Rating 22</b>																	
C33-1	Surface	Bitumen Base	Asphalt	6	General deterioration and cracking potential trip hazard	N	2	3	6	30	8	Resurface area	Within 5 years	\$6,004	Replace bitumen base	2025	\$6,004
C33-2	Surface	Pavers	Limestone	2	Limestone pavers in shower area in good condition.	N	2	2	4	8	40	Monitor and reinspect at next scheduled inspection..	Greater than 5 years		Maintain existing material	2061	
C33-3	Wall	Wall	Limestone	6	Chipping to edges, erosion to limestone brick surface evident.	N	2	3	6	18	20	Replace damaged blocks	Greater than 5 years		Replace limestone wall	2041	\$3,249
C33-4	Fencing	Timber Posts (Localised)	Timber	4	Splitting and fungi attack typical.	N	4	2	8	24	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace fencing	2030	\$7,000
C33-5	Fencing	Timber Posts (General)	Timber	4	Minor splitting and rust staining typical on top rail and posts. Vegetation impaired some visual inspection	N	4	2	4	16	5	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2026	
C33-6	Fencing	Timber Rail	Timber	7	Minor splitting typical. Significant salt attack causing soft wood along mid rail at northern and southern ends.	N	4	3	12	60	12	Replace damaged timber railing	Within 5 years	\$760		2033	
C33-7	Fencing	Mesh (general)	Coated Steel	4	Generally good condition with surface corrosion and coating loss typical at staples.	N	2	2	4	12	4	Monitor and reinspect at next scheduled inspection.	Greater than 5 years			2025	
C33-8	Fencing	Mesh (localised)	Coated Steel	8	Small hole in fence mesh on western edge	N	2	5	10	70	6	Replace mesh	Within 1-2 years	\$240		2025	

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C33-9	Fencing	Mesh (localised)	Steel	7	Steel mesh on south eastern side. Vegetation limiting inspection. Typical corrosion to mesh and associated fixings. Strainer wires deteriorated. Mesh not well secured to top beam on western side.	N	2	2	4	20	9	Replace corroded mesh and refix.	Within 5 years	\$360		2027	
C33-10	Fencing	Mesh Staples	Coated Steel	6	Surface corrosion and coating loss typical.	N	2	2	4	20	6	Replace staples	Within 5 years	\$480		2030	
C33-11	Bollards	Bollards	Timber	4	Splitting typical	N	1	2	2	6	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace bollards with more durable material	2030	\$9,927
C33-12	Sign	Sign	Steel, Coated Steel	5	6 posts total - corrosion with section loss to 1 post, rotation to 2 posts. 4 signs total - 1 corroded, 2 rotated.	N	1	3	3	15	8	Replace corroded posts.	Within 5 years	\$648	Replace signage	2029	\$2,520
C33-13	Bench	Steel Frame and Base Plates	FRP / Steel	2	No visible defects.	N	2	1	2	4	16	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace bench	2037	\$3,071
C33-14	Shower		Stainless Steel	4	Minor surface corrosion at base	N	2	1	2	6	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace shower	2030	\$9,019
C33-15	Drain		Stainless Steel	3	No visible defects. Anti-slip tape coming off.	Y	2	2	4	32	11	Reinstate anti-slip tape	Within 6 months	\$125	Replace drain seal	2032	\$284
C33-16	Drink Fountain		Stainless Steel	4	Surface corrosion at base.	N	2	2	4	12	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years	\$6,004	Replace drinking fountain	2030	\$2,501
<b>Concrete Stairs – Overall Rating 48</b>																	
C33-17	Stairs	Treads	Reinforced Concrete	4	Minor spalling at edge of treads.	N	3	2	6	24	18	Conventional concrete repair	Within 5 years	\$3,600	Replace stair treads	2039	\$53,269
C33-18	Handrail	Timber Posts (localised)	Timber	9	Significant splitting typical.	N	3	4	12	96	2	Replace	Within 6 months	\$540	Replace handrail	2023	\$4,569

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C33-19	Handrail	Timber Posts	Timber	4	Typical splits to timber posts.	N	3	2	6	18	9	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		2030		
C33-20	Handrail	Timber Rail	Timber	4	Typical coating loss and minor splits and rot to railing.	N	3	3	9	36	9	Apply coating to timber fencing.	Within 5 years	\$390	2030		
C33-21	Handrail	Timber Rail (localised)	Timber	8	Localised damage to bottom east top rail at connections.	N	3	4	12	84	3	Replace	Within 1 – 2 years	\$260	2024		
C33-22	Handrail	Connections	Timber	6	Corrosion of fasteners and connections. Bolt thread exposed on bottom southern post. Coating loss typical on bolts. Debris build up typical. Section loss to washers typical.	N	3	2	6	30	6	Replace	Within 5 years	\$480	2027		
<b>Concrete Path – Overall Rating 24</b>																	
C33-23	Surface	Concrete Slab	Reinforced Concrete	2	No visible defects.	N	2	1	2	4	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
C33-24	Fencing	Timber Posts	Timber	6	Splitting typical. Northern posts observed deflection due to subsidence. Minor rot observed.	N	2	3	6	30	6	Replace damaged posts.	Within 5 years	\$720	Replace Fencing	2027	\$3,457
C33-25	Fencing	Timber Rail	Timber	5	Splitting typical. Rotation of rails due to post subsidence.	N	2	3	6	30	8	Replace	Within 5 years	\$640		2029 (recommend to complete in 2027)	
C33-26	Fencing	Timber Connection	Galvanised Steel	6	Heavy corrosion to connection bolts (typical)	N	2	3	6	30	6	Replace bolts	Within 5 years	\$480		2027	
C33-27	Fencing	Mesh	Coated Steel	6	Coating loss and corrosion near mesh staples typical. Mesh not appropriately secured to top rail and does not extend to ground level in some areas.	N	1	2	2	12	8	Refix mesh to top rail	Within 1-2 years	\$840		2025 (recommend to complete in 2027)	

ITEM DESCRIPTION				CONDITION RATING			RISK RATING			Overall Rating (CR x RR)	MAINTENANCE RECOMMENDATION – 5 YEARS			RENEWAL RECOMMENDATION – 20 YEARS			
Item No	Element	Sub-Element	Material Type	Condition Rating (CR)	Comments (Overall Condition/ Observed Defects)	Health and Safety Concern (Y/N)	Consequence of Failure	Likelihood of Failure in 5 Years	Risk Rating (RR)		Remaining Useful Life	Description	Timeframe	Cost Estimate (+/- 30%)	Description	Timeframe	Cost Estimate (+/- 30%)
C33-28	Fencing	Mesh Staples	Coated Steel	6	Surface corrosion typical, however noticeable worse on eastern side.	N	2	2	4	20	6	Replace corroded staples	Within 5 years	\$480		2025 (recommend to complete in 2027)	
C33-29	Fencing	Mesh Strainer Wires	Coated Steel	6	Coating loss at staple locations on timber posts. Middle strainer wire not connected to mesh on southern side. Mesh fixings have corroded and have a minor build-up of debris. No wires on western side.	N	2	2	4	20	6	Replace	Within 5 years	\$360		2027	
C33-30	Sign	Sign	Coated Steel	7	Heavy corrosion to 2 No signage posts, section loss evident.	N	2	3	6	42	5	Replace corroded posts.	Within 1 – 2 years	\$400	Replace signage	2026	\$2,777
<b>Composite Fibre Stairs – Overall Rating 6</b>																	
C33-31	Stairs	Stringers, treads, support steelwork, connections etc.	Composite Fibre, Steel	2	Rust and tea staining typical at connections.	N	4	1	4	8	24	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Maintain existing material	2045	
C33-32	Handrails	Handrails	Stainless Steel	2	Minor corrosion at connections.	N	2	1	2	4	8	Monitor and reinspect at next scheduled inspection.	Greater than 5 years		Replace handrail	2029	\$10,594

## 4. Conclusions

GHD completed detailed condition assessments and provided maintenance recommendations to be completed within the next 5 years and asset renewal recommendations to be completed within the next 20 years of 33 no. nominated coastal assets within the City's jurisdiction.

The condition of the assets varied with a number of assets in good condition with little to no maintenance required whilst other assets were found to be in poor condition with significant maintenance required.

Based on the outcomes of the site inspection all 33 assets were prioritised according to renewal/repair of asset components. The priority was determined by the sites most critical component (i.e the component with the highest overall rating) followed by the average of all overall ratings for the site. The maintenance/renewal priority list and associated critical component is presented below in Table 4.1.

Table 4.1 Maintenance/renewal priority list

Priority	Coastal Asset	Location	Maximum Rating	Average of all Ratings	Critical Component Maintenance	Critical Component Renewal
1	C1	North Two Rocks Foreshore	288	20	Remove redundant formwork at concrete path edge, repair to damaged concrete and limestone block. Replace steel fencing as required	Replace concrete slabs, replace timber posts, replace FRP mesh, and steelwork, replace stair structure and handrailing.
2	C25	Quinns Rocks Beach Foreshore	135	41	Apply protective coating on steel foundations	Replace steel plies, and handrails as required.
3	C17	Jindalee Foreshore	128	23	Repair damaged grout on limestone walls and replace decking steel and timber components as required.	Replace decking and handrailing.
4	C18	Jindalee Foreshore	112	28	Apply protective coating for stairs and replace fixings in handrails as required.	Replace staircase and handrailing.
5	C13	Alkimos Beach	108	18	Fill in pothole in concrete base slab and apply protecting coating on steel sign.	Replace fencing, bollard, bench, support steelwork and timber roofing.

Priority	Coastal Asset	Location	Maximum Rating	Average of all Ratings	Critical Component Maintenance	Critical Component Renewal
6	C19	North Quinns Rocks Foreshore	96	23	Apply protective coating on steel pedestals and repair fencing as required.	Replace steel fencing, bollards, pedestals, and stairs.
7	C23	North Quinns Rocks Foreshore	96	45	Replace existing fencing with permeant steel fencing, replace corroded connections and sections in stairs.	Replace steel and timber supports, decking, refencing and replace handrailing as required, replace timber benches, supports, and stair structure.
8	C32	North Mindarie Foreshore	96	41	Investigate and repair limestone footing as required.	Replace stairs, fencing, bench and signage.
9	C33	South Mindarie Foreshore	96	27	Resurface bitumen base area, reinspect steel drink fountain, and repair concrete stairs	Replace bitumen base, limestone wall, fencing. Replace bollards with more durable materials. Replace drinking fountain, stair treads, handrails, and fencing.
10	C9	South Yanchep Foreshore	90	21	Replace timber rails as required. Replace failed cable wires and corroded mesh and staples. Repair localised cracks in asphalt base slab.	Replace fencing, aluminium deck planks, steel bollards and balustrades. Resurface asphalt base slab, timber fencing and steel handrails. Re-instate concrete stairs.
11	C15	Jindalee Foreshore	84	33	Replace concrete retaining wall.	Replace concrete footings, timber/steel walls, staircase, decking and handrail.

Priority	Coastal Asset	Location	Maximum Rating	Average of all Ratings	Critical Component Maintenance	Critical Component Renewal
12	C28	North Mindarie Foreshore	84	31	Repair concrete walls and cracks in concrete base slab. Apply protective coating for steel handrails.	Replace plastic ramp, steel handrailing and balustrades, signs, steel stairs, timber and steel fencing.
13	C2	South Two Rocks Foreshore	80	30	Patch broken edges of asphalt base slab, replace steel chain as required, apply protective coating for steel bollards and signs.	Resurface asphalt path. Replace timber stairs, steel bollards and signs. Replace fencing as a whole.
14	C3	North Yanchep Foreshore	80	19	Replace corroded steel connections, screws and strainer wires. Replace timber bracing and rotten planks.	Resurface limestone base slab. Replace timber/steel fencing. Replace timber decking, supports and handrails.
15	C30	North Mindarie Coastal Walk	80	31	Replace steel mesh strainer wires. Apply protective coating for steel signs.	Replace timber/steel fencing and steel signage.
16	C12	Waterfront Park	72	26	Replace steel signpost, corroded handrails and bench. Repair cracks in concrete base slab.	Replace steel/timber fencing and handrails, steel signpost, bench, handrails and balustrades.
17	C20	North Quinns Rocks Foreshore	63	24	Replace damaged mesh and re-tension wires. Replace steel handrails as required.	Replace steel fencing and handrails.
18	C21	North Quinns Rocks Foreshore	63	18	Clear sand from drains in concrete base slab, replace steel bollards and fencing as required.	Replace steel bollards and fencing.

Priority	Coastal Asset	Location	Maximum Rating	Average of all Ratings	Critical Component Maintenance	Critical Component Renewal
19	C14	Jindalee Foreshore Carpark	56	22	Replace steel fencing as required. Install missing padlocks in bollards.	Replace fencing and bollards.
20	C22	North Quinns Rocks Foreshore	56	28	Clear drainage channels in concrete base slabs. Replace steel fencing and timber rails as required. Replace water fountain.	Replace steel bollards and timber fencing.
21	C27	South Quinns Rocks Foreshore	56	22	Replace north steel fencing mesh.	Replace timber/steel fencing and steel signs.
22	C24	Quinns Rocks Beach Foreshore	54	29	Apply protective coating for steel handrail.	Replace steel handrail.
23	C7	Newman Park (North)	48	15	Replace steel fencing mesh, strainer wires and staples.	Replace timber fencing posts, steel bollards and composite handrails.
24	C8	South Yanchep Foreshore	40	10	Replace steel fencing mesh and staples.	Replace steel bollards, timber/steel fencing, composite bench, and steel balustrades.
25	C4	North Yanchep Foreshore	36	22	Replace and reinstate steel screws as required.	Replace timber and steel supports, handrails and bench.
26	C16	Jindalee Foreshore	24	17	Replace steel handrail mesh strain wire and damaged timber deck planks.	Replace timber and steel decking connections, timber and steel handrails.
27	C6	Yanchep Surf Life Saving Club	20	14	Apply protective coating for steel handrails.	Replace steel handrails.
28	C10	Eglinton Foreshore	20	14	Replace steel mesh and fabric cloth in fencing as required.	Replace fencing.

Priority	Coastal Asset	Location	Maximum Rating	Average of all Ratings	Critical Component Maintenance	Critical Component Renewal
29	C11	Amberton Beach Foreshore South	20	7	N/A	Replace steel handrails.
30	C31	North Mindarie Coastal Walk	20	10	N/A	Replace steel/timber fencing and aluminium/timber bench.
31	C26	South Quinns Rocks Foreshore	18	10	Refix and cloth fencing mesh, strainer wires, and staples.	Replace timber/steel fencing and FRP/steel balustrades.
32	C29	North Mindarie Coastal Walk	18	9	N/A	Replace steel/timber fencing and FRP signage.
33	C5	Old Yanchep Surf Life Saving Club	6	5	N/A	Replace steel support beams connections, composite balustrade, steel handrails, composite material/steel bench.

## 5. Recommended Further Investigations or Testing

There was visible erosion of the limestone bank at assets C15 and C18, it is unclear if the erosion of the bank has affected the functionality of the stair footing. A further structural / geotechnical review is recommended. Possible review scope may include:

- Review as-built drawings, structural certifications and/or calculations to confirm structural adequacy.
- If as-built data are not available, a dimension survey will be required to record the structural support locations for structural modelling and verification purposes.
- Geotechnical investigation including limestone rock review and testing to assess geotechnical parameters.

Due to access restrictions, a number of roof structures were inspected from the underside only. It is recommended alternate inspection means (i.e. drone or elevated work platform) are implemented at the next inspection to determine the condition of the top of the roof structures in assets C1, C13, and C23.



# Appendices

# Appendix A

**Site C1 – North Two Rocks Foreshore  
Defect Forms**



Submit

## City of Wanneroo - Coastal Asset

### Defect

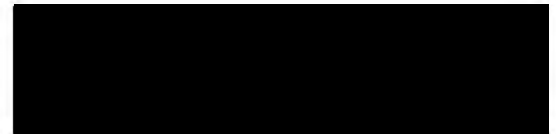
<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:43 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Concrete path
<b>Sub-element</b>	Old Formwork
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber, General damage
<b>Defect Description</b>	Redundant formwork at edge of lookout is splitting
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	5
<b>Risk Rating</b>	5
<b>Overall Rating (CR X RR)</b>	35
<b>Maintenance Recommendation</b>	Remove formwork to prevent further deterioration and minimize trip hazards.
<b>Maintenance Timeframe</b>	Within 1-2 years



## City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

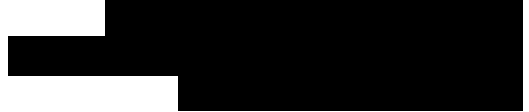
<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:46 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Concrete path
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Base slab
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Crack
<b>2021 Observed Defects (General)</b>	Subsidence, sinking, rotation
<b>Defect Description</b>	Eroded area approximately 200 x 100 mm at the western edge upon entry. Crack observed throughout up to 5 mm due to subsidence of sand at bend in path, and at the edge of the lookout. Minor chipping at joints.
<b>Quantity of Defects</b>	95m <sup>2</sup>
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Conventional concrete repair
<b>Maintenance Timeframe</b>	Within 5 years



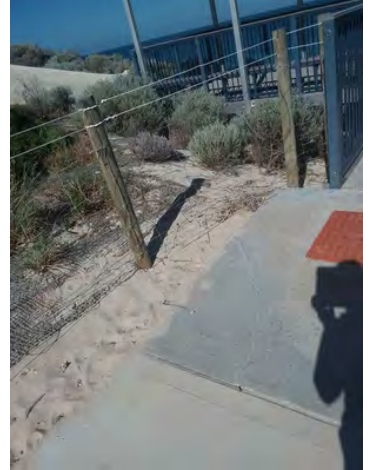
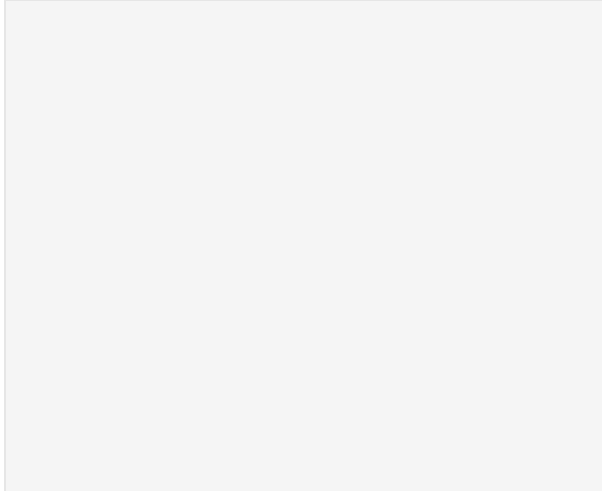
## City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:07 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Concrete path
<b>Element</b>	Shower Base Slab
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Deterioration
<b>Defect Description</b>	Generally good condition with minor surface deterioration observed.
<b>Quantity of Defects</b>	12m <sup>2</sup>
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	1
<b>Overall Rating (CR X RR)</b>	2
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**



**Other Comments/Inspection Limitations**

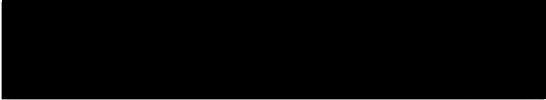
Monitor at next inspection



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:04 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Concrete path
<b>Element</b>	Bollards
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects observed
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

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## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:02 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Shower
<b>Element</b>	Other
<b>Element</b>	Shower and drinking fountain
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Tea Staining
<b>Defect Description</b>	Generally good condition with minor tea staining observed.
<b>Quantity of Defects</b>	1 shower, 1 drinking foundation
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

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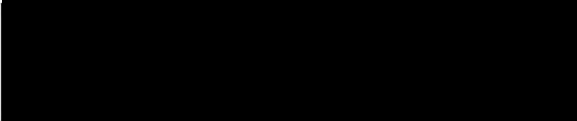




## City of Wanneroo - Coastal Asset

### Defect

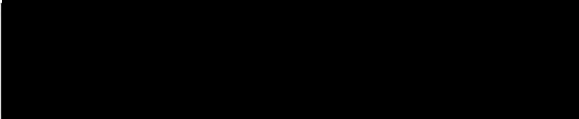
<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:58 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Shower at street end
<b>Sub-element (Walls)</b>	Shower Retaining Wall
<b>Material Type</b>	Limestone
<b>Defect Description</b>	Erosion observed to be typical to the wall. Drainage holes also observed to be about 75% clogged.
<b>Quantity of Defects</b>	10m fence, 500 high
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	30
<b>Maintenance Recommendation</b>	Replace damaged blocks and clear drainage holes.
<b>Maintenance Timeframe</b>	Within 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:44 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Concrete path
<b>Sub-element (Fencing)</b>	Fencing posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>2021 Observed Defects (General)</b>	Subsidence, sinking, rotation
<b>Defect Description</b>	Generally good condition with minor timber splitting, subsidence, sinking and rotation observed.
<b>Quantity of Defects</b>	36 posts 1.2m high
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

### Multi Photo

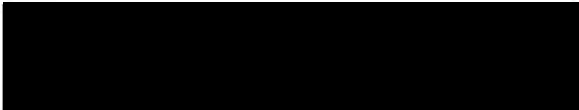




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:50 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Concrete path
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Corrosion with section loss, Loose mesh
<b>Defect Description</b>	Corrosion with section loss was observed, as well as loose and deformed areas.
<b>Quantity of Defects</b>	47m x 1 m high
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	28
<b>Maintenance Recommendation</b>	Replace areas of fence which have heavy corrosion and section loss. Tighten fence mesh or replace areas with significant deformation.
<b>Maintenance Timeframe</b>	Within 1-2 years



City of Wanneroo - Coastal Asset

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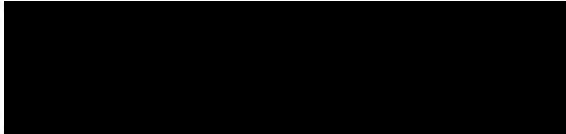




## City of Wanneroo - Coastal Asset

### Defect

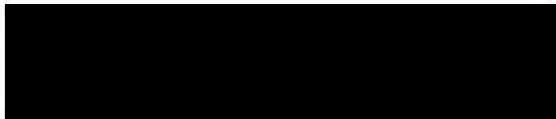
Site No.	C1
Site Name/ Location	North Two Rocks Foreshore
Date	25/02/2021
Time	08:53 (8 GMT)
Item Number	9
Costal Asset Type	Concrete path
Element	Fencing
Sub-element	Top wire
Material Type	Coated Steel
2021 Observed Defects (Steel)	No visible defects observed.
Quantity of Defects	47 x 4 m (note change fencing to 47x2
Condition Rating (0- 10)	2
Health and Safety Concern (Y/N)	No
Consequence of Failure	1
Likelihood of Failure within next 5 years	1
Risk Rating	1
Overall Rating (CR X RR)	2
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection.
Maintenance Timeframe	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:57 (8 GMT)
<b>Item Number</b>	10
<b>Costal Asset Type</b>	Concrete path
<b>Sub-element (Sign)</b>	Sign
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Coating loss
<b>Defect Description</b>	Coating loss and surface corrosion was observed to be typical to bolts and posts on sign.
<b>Quantity of Defects</b>	1 sign, 2 CHS, 4 bolts
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	20
<b>Maintenance Recommendation</b>	Abrasive blast clean steel and apply protective coating
<b>Maintenance Timeframe</b>	Within 5 years



# City of Wanneroo - Coastal Asset

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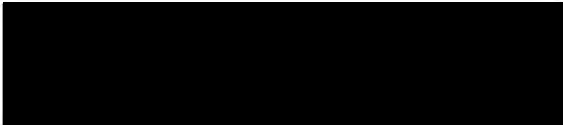




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:17 (8 GMT)
<b>Item Number</b>	11
<b>Costal Asset Type</b>	Lookout
<b>Sub-element (Decking and Supports)</b>	Deck planks
<b>Sub-element</b>	Landing
<b>Material Type</b>	FRP
<b>2021 Observed Defects (FRP)</b>	Other
<b>Defect Description</b>	Generally, in good condition. A cut section between two panels causing a dip was observed.
<b>Quantity of Defects</b>	22m2
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect bench at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years.



City of Wanneroo - Coastal Asset

Multi Photo

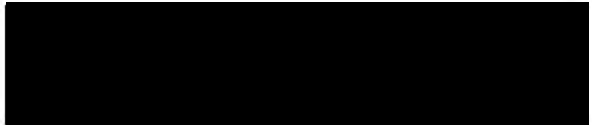




## City of Wanneroo - Coastal Asset

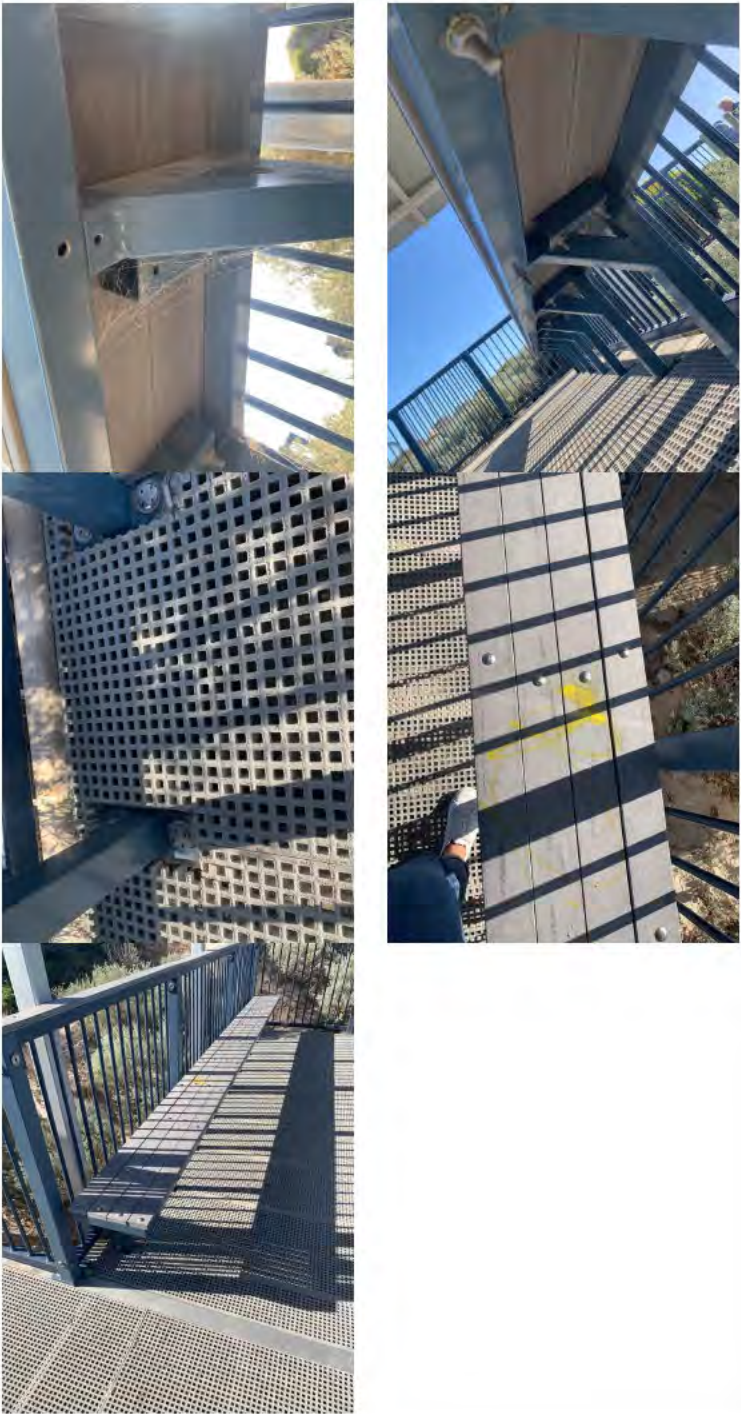
### Defect

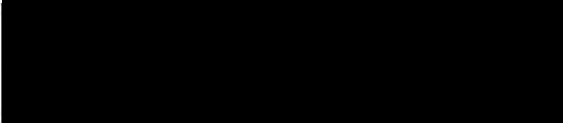
<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:27 (8 GMT)
<b>Item Number</b>	12
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Bench
<b>Material Type</b>	Coated Steel, Stainless Steel, Composite Material
<b>2021 Observed Defects (Steel)</b>	Graffiti, missing bolt
<b>Defect Description</b>	Generally good condition. With some minor graffiti and the south post connection bolt missing.
<b>Quantity of Defects</b>	5m of bench, 9 posts and connections
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Reinstate missing bolt.
<b>Maintenance Timeframe</b>	Within 1-2 years



City of Wanneroo - Coastal Asset

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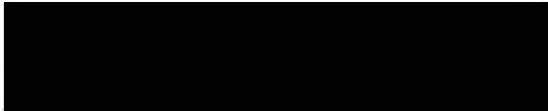




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:38 (8 GMT)
<b>Item Number</b>	13
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Lookouts
<b>Sub-element</b>	Column
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects
<b>Defect Description</b>	Minor wear and tear on SHS observed.
<b>Quantity of Defects</b>	18m
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

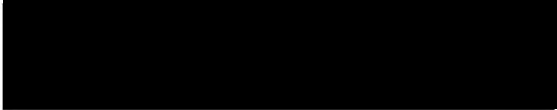
<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:29 (8 GMT)
<b>Item Number</b>	14
<b>Costal Asset Type</b>	Lookout
<b>Sub-element (Decking and Supports)</b>	Support beams
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Other
<b>Defect Description</b>	Generally good condition. southern beam installed lower than others .
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

### Defect

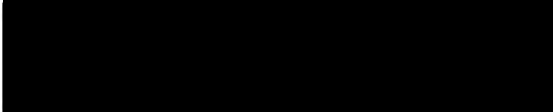
<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:36 (8 GMT)
<b>Item Number</b>	15
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Supports
<b>Sub-element</b>	Lookout roof steelwork
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects observed
<b>Quantity of Defects</b>	37m of roof beam SHS
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

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# City of Wanneroo - Coastal Asset

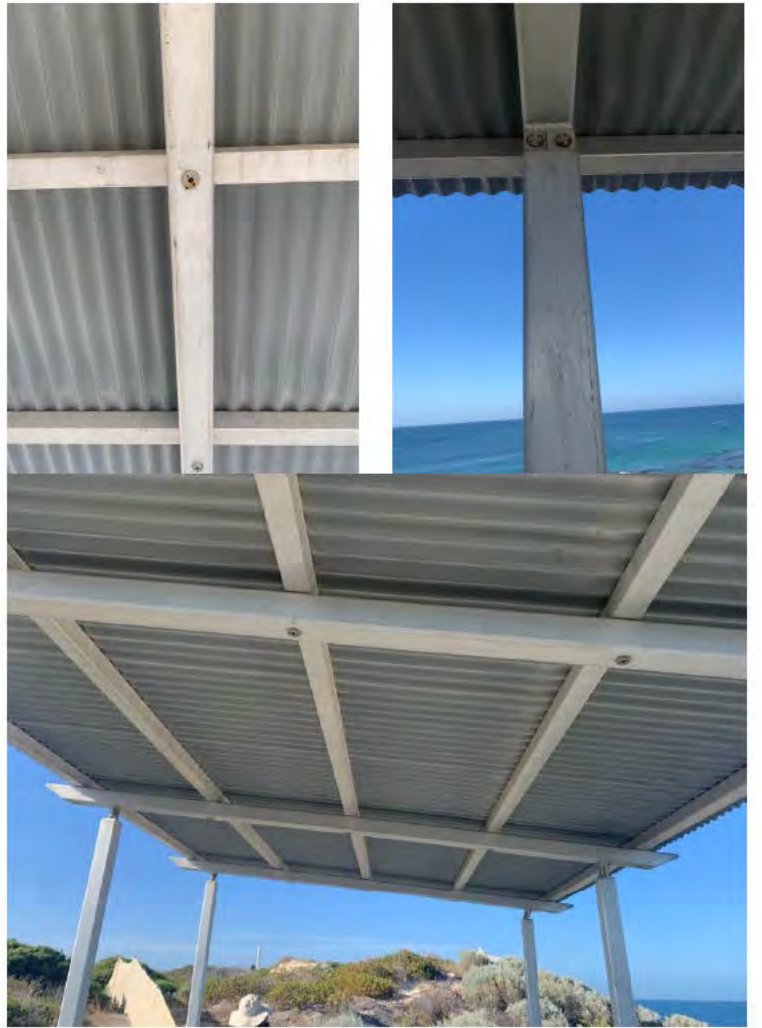
## Defect

<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:33 (8 GMT)
<b>Item Number</b>	16
<b>Costal Asset Type</b>	Lookout
<b>Sub-element</b>	Roof connection
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Tea Staining
<b>Defect Description</b>	Generally good condition with minor tea staining observed
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

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## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:40 (8 GMT)
<b>Item Number</b>	17
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Roof sheeting
<b>Material Type</b>	Colourbond
<b>2021 Observed Defects (Steel)</b>	No visible defects observed
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection. Consider using alternate inspection methods to inspect top of roof (i.e drones)
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

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## City of Wanneroo - Coastal Asset

### Defect

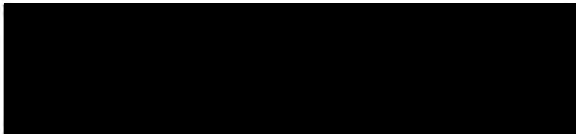
<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:07 (8 GMT)
<b>Item Number</b>	18
<b>Costal Asset Type</b>	Stairs
<b>Sub-element (Foundations)</b>	Pedestals
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Corrosion with section loss, Noticeable build-up of debris
<b>Defect Description</b>	Significant corrosion with potential section loss observed to pedestals.
<b>Quantity of Defects</b>	14 pedestals. Length unknown
<b>Condition Rating (0- 10)</b>	8
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	16
<b>Overall Rating (CR X RR)</b>	128
<b>Maintenance Recommendation</b>	Abrasive blast clean and apply protective coating, weld a structural plate if section loss justifies.
<b>Maintenance Timeframe</b>	Within 6 months



# City of Wanneroo - Coastal Asset

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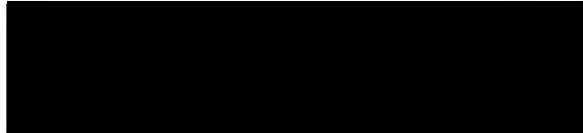




## City of Wanneroo - Coastal Asset

### Defect

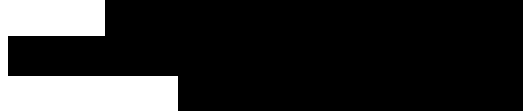
<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:02 (8 GMT)
<b>Item Number</b>	19
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element</b>	stringers, tread supports and support stubs
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Cracking or other signs of distress at welds
<b>Defect Description</b>	Generally good condition. North western support stub at bottom landing has stiffener. Southern side of stairs had build up of sand was unable to be inspected. Generally welds appeared to be of poor workmanship.
<b>Quantity of Defects</b>	70m of stringers, 6x support stubs at approx. 400mm height
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	32
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



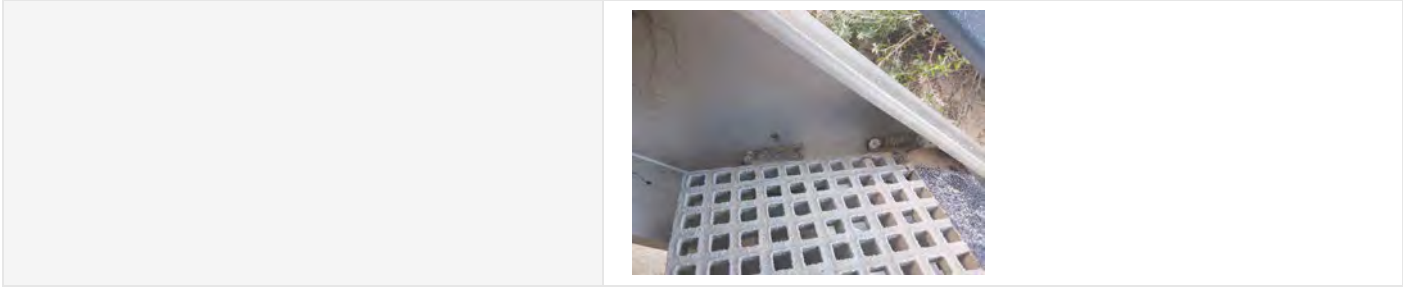
## City of Wanneroo - Coastal Asset

Multi Photo





**City of Wanneroo - Coastal Asset**





## City of Wanneroo - Coastal Asset

### Defect

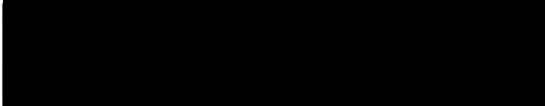
<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	07:56 (8 GMT)
<b>Item Number</b>	20
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Treads
<b>Sub-element</b>	including landings
<b>Material Type</b>	FRP
<b>2021 Observed Defects (FRP)</b>	Noticeable build-up of debris, No visible defects
<b>Defect Description</b>	Generally good condition. Sand build up in areas, with the bottom of the stairs being buried.
<b>Quantity of Defects</b>	37 steps, 4m2 landing
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	18
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

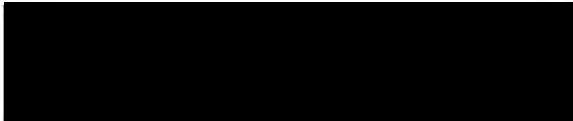
<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:24 (8 GMT)
<b>Item Number</b>	21
<b>Costal Asset Type</b>	Stairs
<b>Sub-element</b>	Balustrade Post (Localised)
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Corrosion with section loss
<b>Defect Description</b>	Corrosion and coating loss with section loss was observed. Most likely due to poor weld quality.
<b>Quantity of Defects</b>	1 post effected
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	42
<b>Maintenance Recommendation</b>	Remove corrosion product and apply protective coating.
<b>Maintenance Timeframe</b>	Within 1-2 years



City of Wanneroo - Coastal Asset

Multi Photo

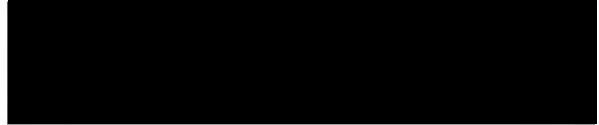




# City of Wanneroo - Coastal Asset

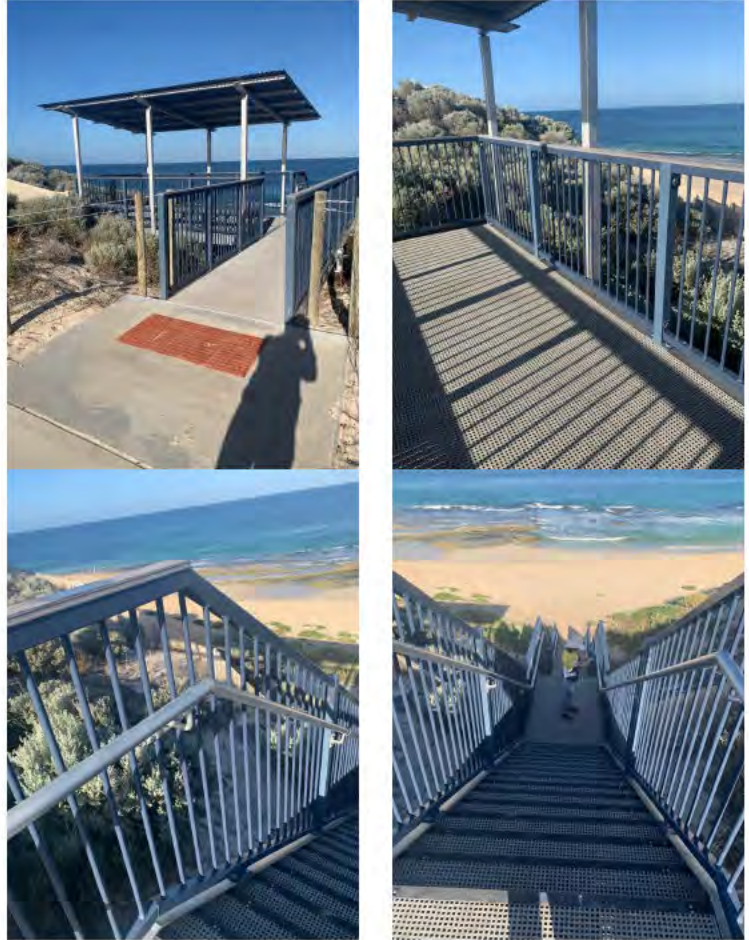
## Defect

<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	07:54 (8 GMT)
<b>Item Number</b>	22
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Balustrade Railing
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects observed
<b>Quantity of Defects</b>	70 m total balustrade 1.3m high
<b>Condition Rating (0- 10)</b>	1
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	3
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

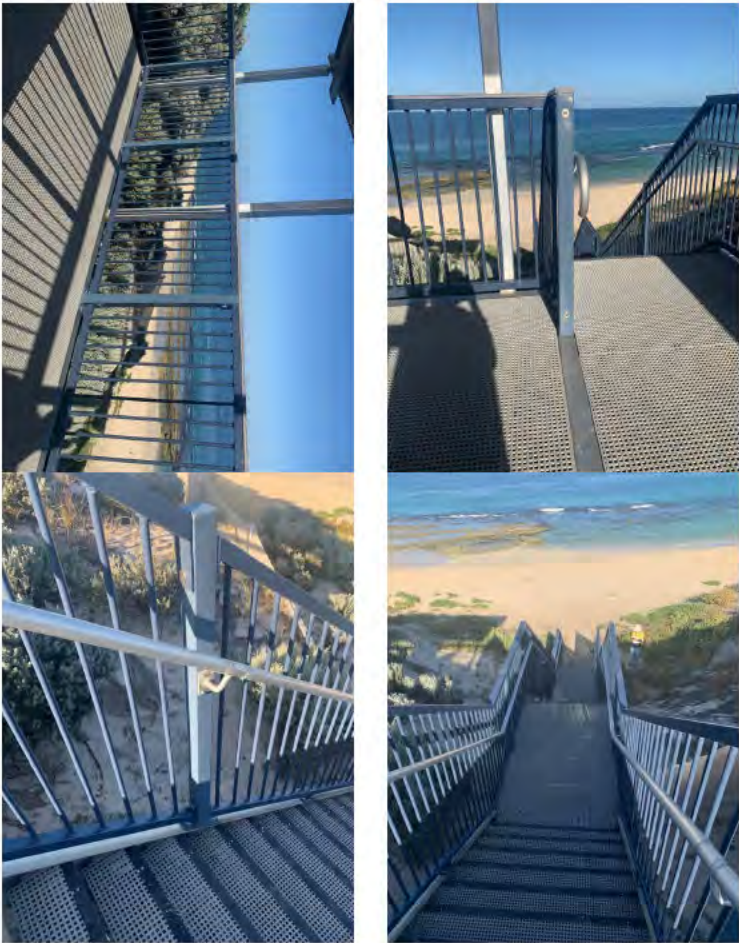
### Defect

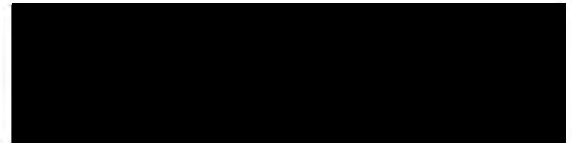
<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:01 (8 GMT)
<b>Item Number</b>	23
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Balustrade
<b>Sub-element</b>	Post
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects observed
<b>Quantity of Defects</b>	32 post 1.3m high
<b>Condition Rating (0- 10)</b>	1
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	3
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo

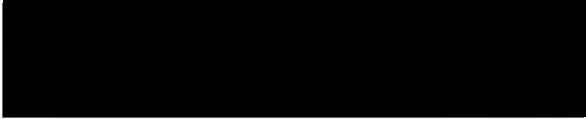




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:21 (8 GMT)
<b>Item Number</b>	24
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Balustrade
<b>Sub-element</b>	Vertical bar weld connection
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Poor welding
<b>Defect Description</b>	Localised holes in welds, generally workmanship of welds is poor
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Fill holes with a suitable filler to prevent water ingress and corrosion.
<b>Maintenance Timeframe</b>	Within 1-2 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

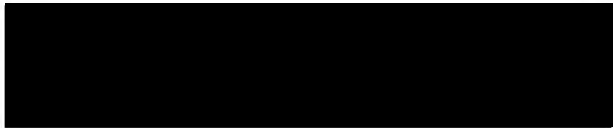




## City of Wanneroo - Coastal Asset

### Defect

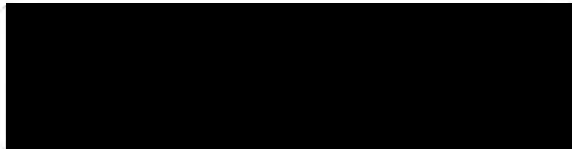
<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:05 (8 GMT)
<b>Item Number</b>	25
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Balustrade
<b>Sub-element (Stairs and Landing)</b>	Connections
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Tea staining
<b>Defect Description</b>	Generally good condition with minor tea staining.
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	2
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

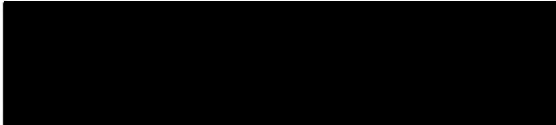




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:14 (8 GMT)
<b>Item Number</b>	26
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Sub-element</b>	Handrail screw fixings
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	corrosion
<b>Defect Description</b>	Dissimilar metal corrosion and missing screws were observed. There were 13 screws which were observed to be either heavily corroded or missing.
<b>Quantity of Defects</b>	13 bolts corroded / missing
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	42
<b>Maintenance Recommendation</b>	Replace heavily corroded screws and missing screws with stainless steel screws.
<b>Maintenance Timeframe</b>	Within 1-2 years



# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

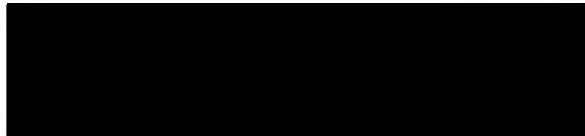
Replace with SS screws or provide isolation



## City of Wanneroo - Coastal Asset

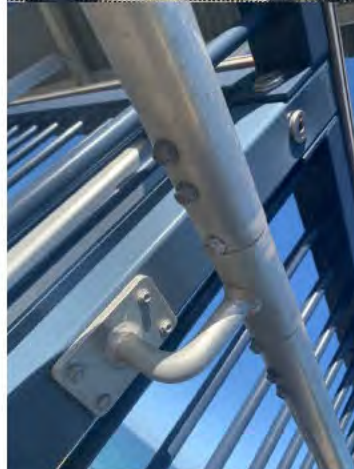
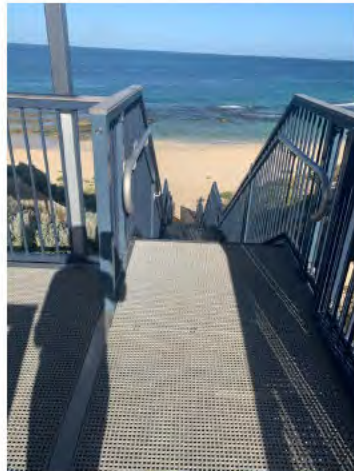
### Defect

<b>Site No.</b>	C1
<b>Site Name/ Location</b>	North Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:10 (8 GMT)
<b>Item Number</b>	27
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Sub-element</b>	Handrail and connection
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects observed
<b>Quantity of Defects</b>	42m of handrail
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



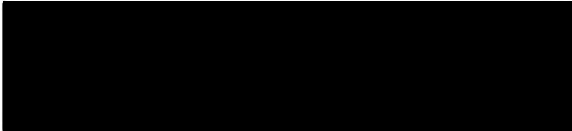
## City of Wanneroo - Coastal Asset

Multi Photo



# Appendix B

**Site C2 – South Two Rocks Foreshore  
Defect Forms**



# City of Wanneroo - Coastal Asset

## Defect

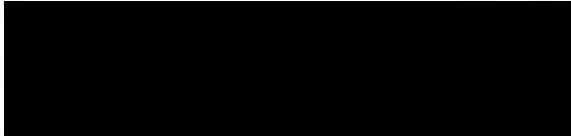
<b>Site No.</b>	C2
<b>Site Name/ Location</b>	South Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:43 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Asphalt path
<b>Sub-element (Surface)</b>	Bitumen base
<b>Material Type</b>	Asphalt
<b>Defect Description</b>	The asphalt path was deteriorated with edges broken away. A large percentage of the path was buried under sand and not inspected.
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Patch broken edge with asphalt to prevent trip hazards.
<b>Maintenance Timeframe</b>	Within 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**






## City of Wanneroo - Coastal Asset

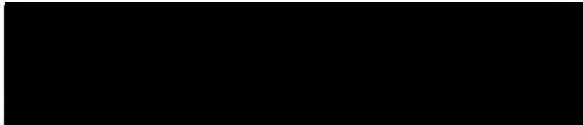
### Defect

Site No.	C2
Site Name/ Location	South Two Rocks Foreshore
Date	25/02/2021
Time	09:32 (8 GMT)
Item Number	2
Costal Asset Type	Stairs
Element	Other
Element	Timber stairs and connections
Material Type	Timber
2021 Observed Defects (Timber)	General damage, Split timber
2021 Observed Defects (General)	Subsidence, sinking, rotation
Defect Description	Minor corrosion observed to connections. Minor timber splitting as well as subsidence, sinking and rotation observed to the timber sections. The Chain on the stairs was broken with heavy corrosion and section loss. Inspection limited due to lower half being buried in sand.
Quantity of Defects	21 sleepers held together by chain or stubs
Condition Rating (0- 10)	8
Health and Safety Concern (Y/N)	No
Consequence of Failure	2
Likelihood of Failure within next 5 years	5
Risk Rating	10
Overall Rating (CR X RR)	80



### City of Wanneroo - Coastal Asset

<b>Maintenance Recommendation</b>	Replace broken and corroded chain. The sleepers and connections can be monitored and reinspected at the next scheduled inspection.
<b>Maintenance Timeframe</b>	Within 6 months
<b>Multi Photo</b>	
<b>Other Comments/Inspection Limitations</b>	Lower half buried




## City of Wanneroo - Coastal Asset

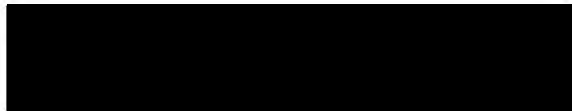
### Defect

<b>Site No.</b>	C2
<b>Site Name/ Location</b>	South Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:36 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Stairs
<b>Sub-element</b>	Upper stairs and connections
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber, No visible defects
<b>2021 Observed Defects (General)</b>	Subsidence, sinking, rotation
<b>Defect Description</b>	Minor corrosion observed to connections. Minor timber splitting as well as subsidence, sinking and rotation observed to the timber sections.
<b>Quantity of Defects</b>	31 upper sleepers, app 1.2m
<b>Defect Location</b>	Majority buried but no obvious defects
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.



## City of Wanneroo - Coastal Asset

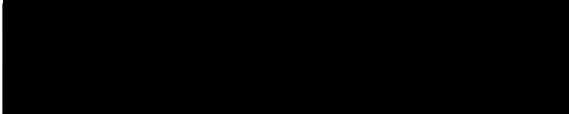
<b>Maintenance Timeframe</b>	Greater than 5 years
<b>Multi Photo</b>	



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C2
<b>Site Name/ Location</b>	South Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:58 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Bollards
<b>Material Type</b>	Steel, Other
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Coating loss
<b>Material Type (Other)</b>	Steel encased concrete
<b>Defect Description</b>	Surface corrosion and coating loss observed to be typical to the steel section.
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Abrasive blast clean steel and apply protective coating
<b>Maintenance Timeframe</b>	Within 5 years



City of Wanneroo - Coastal Asset

Multi Photo

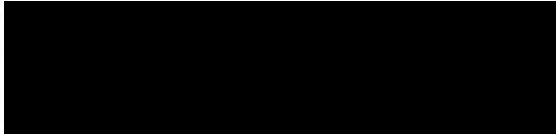




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C2
<b>Site Name/ Location</b>	South Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:57 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Sign
<b>Material Type</b>	Coated Steel, Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Coating loss, Surface corrosion
<b>Defect Description</b>	Coating loss and surface corrosion were observed to be typical throughout
<b>Quantity of Defects</b>	3 signs total 2 SHS 1 chs 2 angled I beams
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Clean and re-coat areas where there is heavy corrosion or coating loss.



# City of Wanneroo - Coastal Asset

Maintenance Timeframe

Within 1-2 years

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

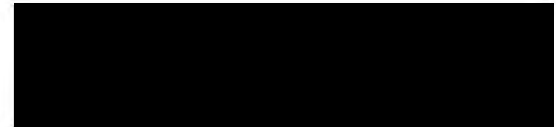
<b>Site No.</b>	C2
<b>Site Name/ Location</b>	South Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:31 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Generally good condition with timber splitting observed to be typical throughout. Inspection limited due to significant vegetation growth.
<b>Quantity of Defects</b>	84 posts
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	32
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

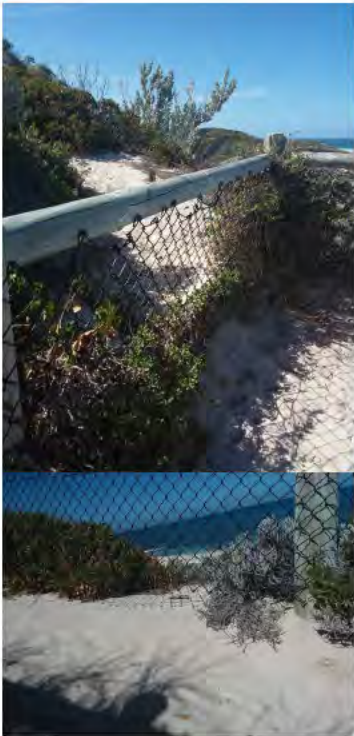
### Defect

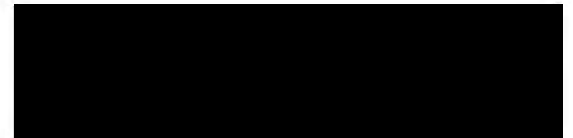
<b>Site No.</b>	C2
<b>Site Name/ Location</b>	South Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:42 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Coating loss
<b>Defect Description</b>	Mesh observed to have localised areas of coating loss, as well as the mesh not being fixed to the rail properly (prominent in the south west corner).
<b>Quantity of Defects</b>	50m2
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Reinstate mesh connection to the railing. Replace heavily corroded fence areas.
<b>Maintenance Timeframe</b>	Within 1-2 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

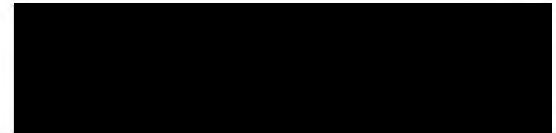
<b>Site No.</b>	C2
<b>Site Name/ Location</b>	South Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:47 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh staples
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Typical widespread corrosion to staples.
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Replace heavily corroded staples
<b>Maintenance Timeframe</b>	Within 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

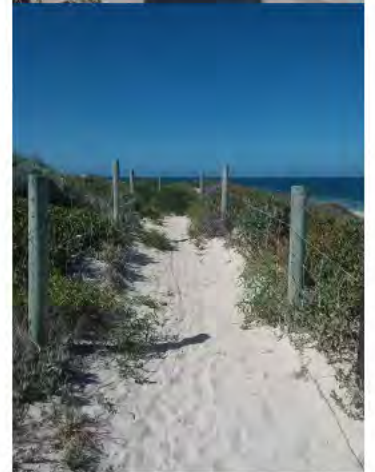
### Defect

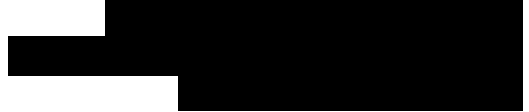
<b>Site No.</b>	C2
<b>Site Name/ Location</b>	South Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:50 (8 GMT)
<b>Item Number</b>	9
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Sub-element</b>	including strainer wires
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Failed
<b>Defect Description</b>	Strainer wire failed on western edge of top fence. Mesh typically loose.
<b>Quantity of Defects</b>	216m <sup>2</sup>
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Replace or tighten failed or loose strainer wires.
<b>Maintenance Timeframe</b>	Within 5 years



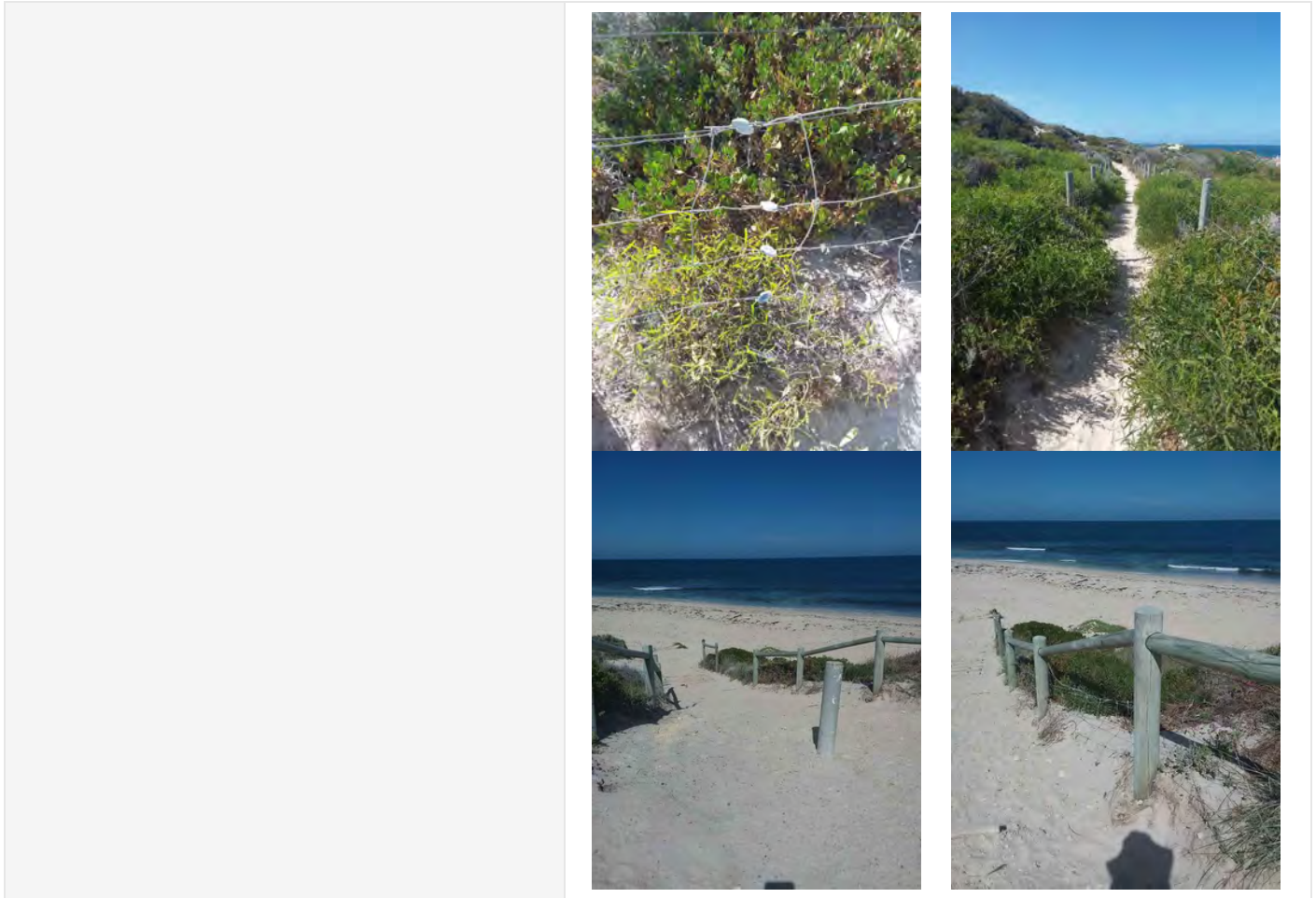
## City of Wanneroo - Coastal Asset

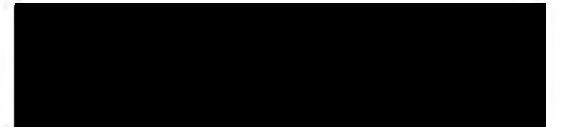
Multi Photo





## City of Wanneroo - Coastal Asset





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C2
<b>Site Name/ Location</b>	South Two Rocks Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:38 (8 GMT)
<b>Item Number</b>	10
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber rail
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Generally good condition with timber splitting observed to be typical throughout. Note: railing and post type changes at approx. 18m from southern edge
<b>Quantity of Defects</b>	52m
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	32
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance timeframe</b>	Greater than 5 years



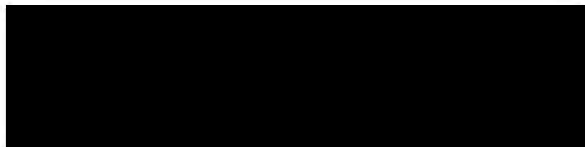
**City of Wanneroo - Coastal Asset**

**Multi Photo**



# Appendix C

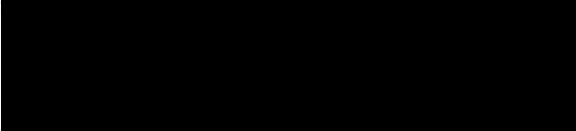
**Site C3 – North Yanchep Foreshore Defect  
Forms**



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C3
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	11:38 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Concrete path
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Cracking
<b>Defect Description</b>	Generally good condition with minor damage to the corner at control joint.
<b>Quantity of Defects</b>	33m2
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect (8)

<b>Site No.</b>	C4
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	11:12 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Timber sleepers
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	No visible defects
<b>Defect Description</b>	No visible defects were observed
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C3
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	11:25 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Other
<b>Asset Type</b>	Boardwalk / stairs
<b>Element</b>	Surface
<b>Sub-element</b>	Concrete steps
<b>Material Type</b>	Limestone
<b>Defect Description</b>	Generally good condition with some minor erosion observed to be typical.
<b>Quantity of Defects</b>	3m Wide x 77m
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



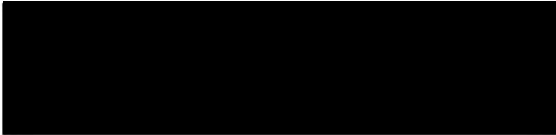
City of Wanneroo - Coastal Asset

Multi Photo





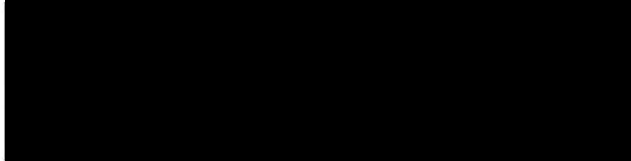
**City of Wanneroo - Coastal Asset**



# City of Wanneroo - Coastal Asset

## Defect

Site No.	C4
Site Name/ Location	North Yanchep Foreshore
Date	25/02/2021
Time	11:07 (8 GMT)
Item Number	4
Costal Asset Type	Fencing
Element	Fencing
Sub-element (Fencing)	Timber posts
Material Type	Timber
2021 Observed Defects (Timber)	Split timber
Defect Description	Generally good condition with minor timber splitting observed to be typical throughout.
Quantity of Defects	10 posts
Condition Rating (0- 10)	3
Health and Safety Concern (Y/N)	No
Consequence of Failure	2
Likelihood of Failure within next 5 years	2
Risk Rating	4
Overall Rating (CR X RR)	12
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection.
Maintenance Timeframe	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C4
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	11:09 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh strainer wires
<b>Sub-element</b>	strainer wires no mesh
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Deformation.
<b>Defect Description</b>	Surface corrosion was observed to be typical throughout. Localised areas of deformed wires were also observed.
<b>Quantity of Defects</b>	144m
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Replace heavily corroded or deformed strainer wires.
<b>Maintenance Timeframe</b>	Within 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

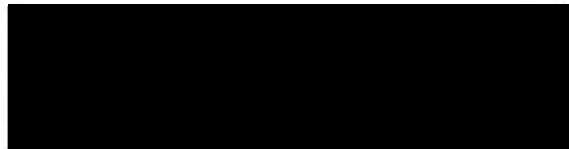




## City of Wanneroo - Coastal Asset

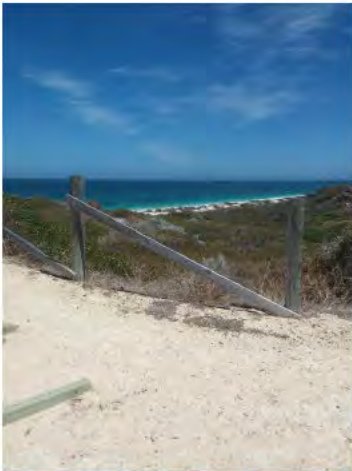
### Defect

<b>Site No.</b>	C3
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	11:26 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber members
<b>Sub-element</b>	Bracing
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Failed
<b>Defect Description</b>	Failed bracing and bowed bracing.
<b>Quantity of Defects</b>	39m
<b>Condition Rating (0- 10)</b>	8
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	5
<b>Risk Rating</b>	10
<b>Overall Rating (CR X RR)</b>	80
<b>Maintenance Recommendation</b>	Replace bracing.
<b>Maintenance Timeframe</b>	Within 6 months.



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C3
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	10:29 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Supports
<b>Sub-element</b>	Timber columns
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Generally good condition with some minor timber splitting and wear and tear.
<b>Quantity of Defects</b>	14 columns above ground height app 3m
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo

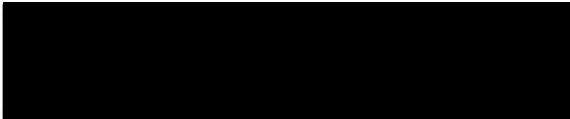




## City of Wanneroo - Coastal Asset

### Defect

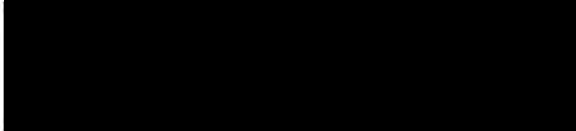
<b>Site No.</b>	C3
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	10:42 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Supports
<b>Sub-element</b>	Connection
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Localised surface corrosion to connections.
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Replace heavily corroded connections.
<b>Maintenance Timeframe</b>	Within 1-2 years



City of Wanneroo - Coastal Asset

Multi Photo





# City of Wanneroo - Coastal Asset

## Defect

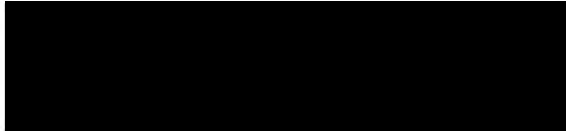
<b>Site No.</b>	C3
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	10:46 (8 GMT)
<b>Item Number</b>	9
<b>Costal Asset Type</b>	Lookout
<b>Sub-element</b>	Beams
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	General damage, Split timber
<b>Defect Description</b>	Generally good condition with some minor timber splitting and damage observed.
<b>Quantity of Defects</b>	Liner length 41m
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Oil at regular intervals. Monitor and reinspect at next scheduled inspection
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

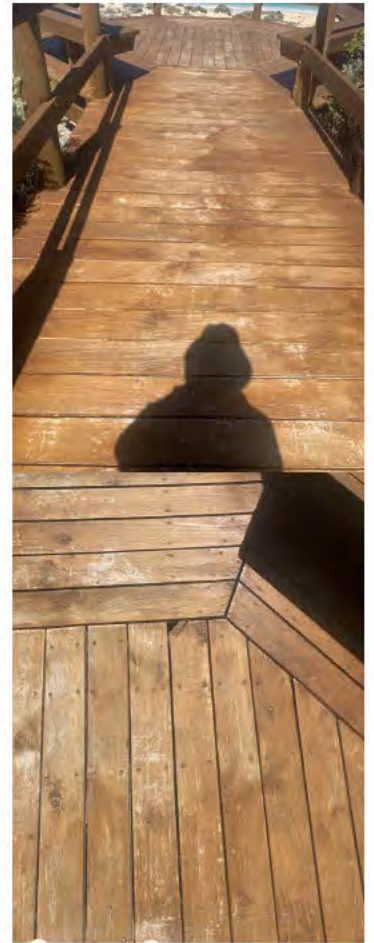
### Defect

<b>Site No.</b>	C3
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	10:24 (8 GMT)
<b>Item Number</b>	10
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Decking
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Generally good condition with some minor timber splitting and wear and tear to timber surface.
<b>Quantity of Defects</b>	13x1.5 (m2)
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo

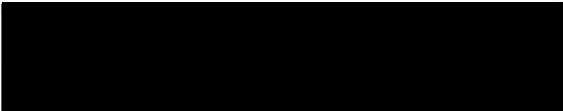




## City of Wanneroo - Coastal Asset

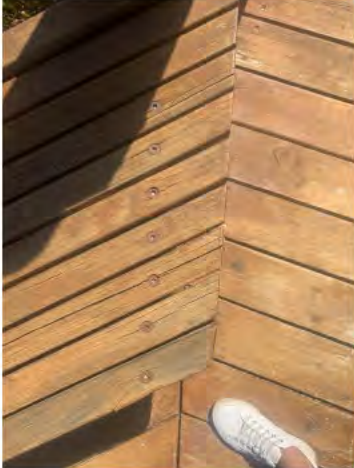
### Defect

<b>Site No.</b>	C3
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	10:40 (8 GMT)
<b>Item Number</b>	11
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Decking
<b>Sub-element (Decking and Supports)</b>	Decking screws
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Generally good condition with some localised screws observed to be corroded.
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	30
<b>Maintenance Recommendation</b>	Replace heavily corroded screws.
<b>Maintenance Timeframe</b>	Within 5 years



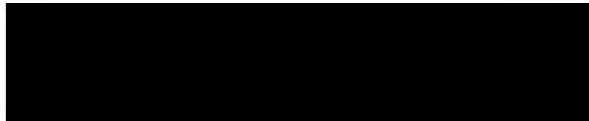
# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Localised replacement



## City of Wanneroo - Coastal Asset

### Defect

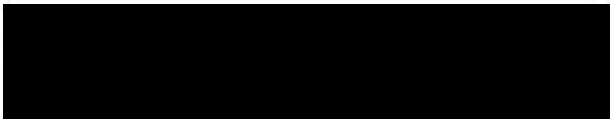
<b>Site No.</b>	C3
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	10:33 (8 GMT)
<b>Item Number</b>	12
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Handrails
<b>Sub-element (Fencing)</b>	Timber rail
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber, Other
<b>Defect Description</b>	Generally good condition with some minor deterioration and split timber observed. Localised graffiti.
<b>Quantity of Defects</b>	2x 16 (linear m)
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

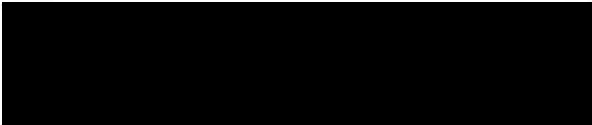




## City of Wanneroo - Coastal Asset

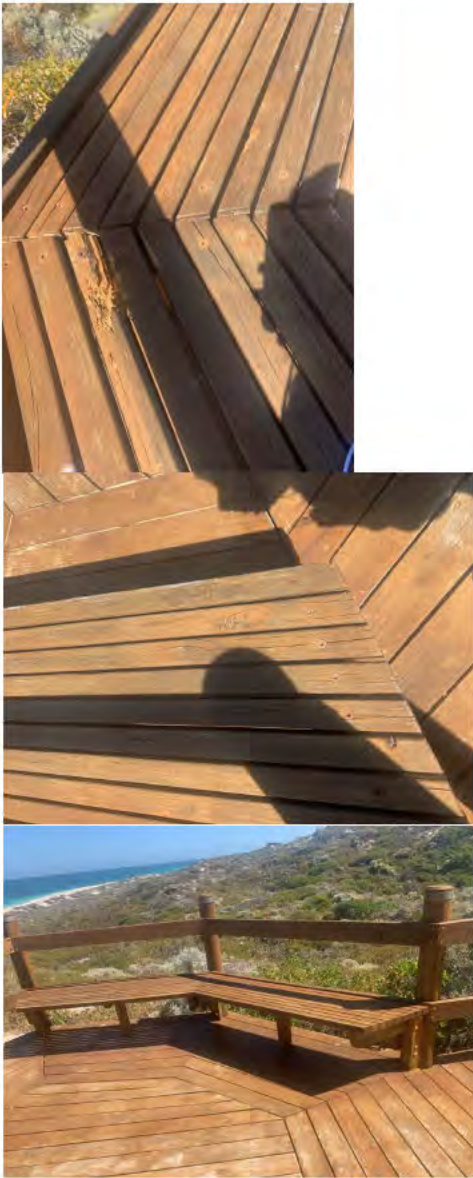
### Defect

<b>Site No.</b>	C3
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	10:36 (8 GMT)
<b>Item Number</b>	13
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Bench
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber, Decay
<b>Defect Description</b>	Minor split timber. Localised areas of timber rot.
<b>Quantity of Defects</b>	2 benches, 400mm wide x 3m, 6 support posts each,
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Replace rotten plank.
<b>Maintenance Timeframe</b>	Within 1-2 years



# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Replaced rotted planks, oil at regular intervals



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C3
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	10:59 (8 GMT)
<b>Item Number</b>	14
<b>Costal Asset Type</b>	Other
<b>Asset Type</b>	Boardwalk / stairs
<b>Element</b>	Supports
<b>Sub-element</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	General damage, Split timber
<b>Defect Description</b>	Generally good condition with some damage and split timber observed.
<b>Quantity of Defects</b>	Stairs - 10 posts Boardwalk - 46
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection

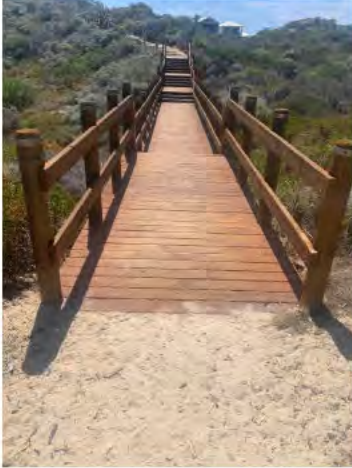


# City of Wanneroo - Coastal Asset

**Maintenance Timeframe**

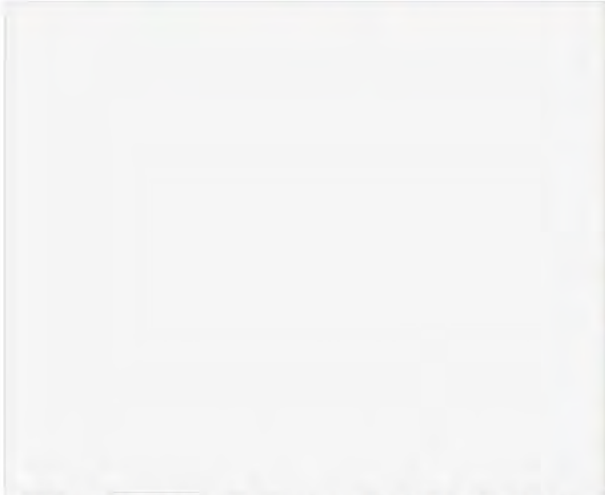
Greater than 5 years

**Multi Photo**



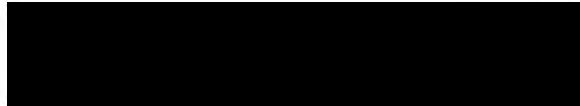


**City of Wanneroo - Coastal Asset**



**Other Comments/Inspection Limitations**

**Monitor at next inspection and oil at regular intervals**



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C3
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	11:17 (8 GMT)
<b>Item Number</b>	15
<b>Asset Type</b>	Boardwalk / stairs
<b>Element</b>	Supports
<b>Sub-element</b>	Connections
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect description</b>	Generally good condition, minor surface corrosion observed.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



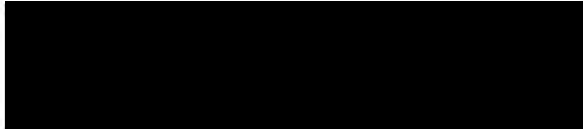
City of Wanneroo - Coastal Asset

Multi Photo





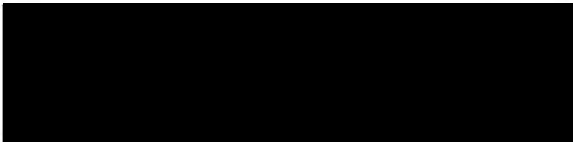
## City of Wanneroo - Coastal Asset



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C4
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	10:46 (8 GMT)
<b>Item Number</b>	16
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Timber support beam
<b>Sub-element</b>	support beam for treads and landings
<b>Material Type</b>	Timber, Steel
<b>2021 Observed Defects (Timber)</b>	No visible defects were observed.
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	No visible defects were observed to timber members. Connections observed to contain minor surface corrosion.
<b>Quantity of Defects</b>	180m across width of stairs, 224m along length of stairs/boardwalk
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

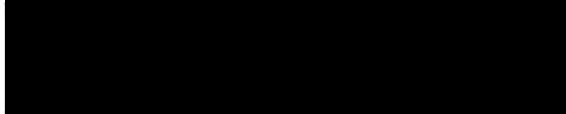




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C4
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	10:36 (8 GMT)
<b>Item Number</b>	17
<b>Costal Asset Type</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Timber sleepers
<b>Sub-element (Decking and Supports)</b>	Deck planks
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	General damage, Split timber, Other
<b>Defect Description</b>	Generally good condition with minor timber splitting and coating loss observed to be typical. A number of bolts were raised from tread level.
<b>Quantity of Defects</b>	112m2
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	30
<b>Maintenance Recommendation</b>	Recoat timber members which contain significant coating loss of timber splitting. Fix or replace raised bolts.
<b>Maintenance Timeframe</b>	Within 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C3
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	10:52 (8 GMT)
<b>Item Number</b>	18
<b>Costal Asset Type</b>	Other
<b>Asset Type</b>	Boardwalk and stairs
<b>Element</b>	Decking
<b>Sub-element (Decking and Supports)</b>	Deck planks
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	General damage, Split timber
<b>Defect Description</b>	Generally good condition with minor timber splitting and wear and tear observed.
<b>Quantity of Defects</b>	Boardwalk - 34x1.5 (including stairs) Stairs - 1.5x 5 including stairs
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.



## City of Wanneroo - Coastal Asset

<b>Maintenance Timeframe</b>	Greater than 5 years
<b>Multi Photo</b>	
<b>Other Comments/Inspection Limitations</b>	Monitor at next inspection, oil at regular intervals



# City of Wanneroo - Coastal Asset

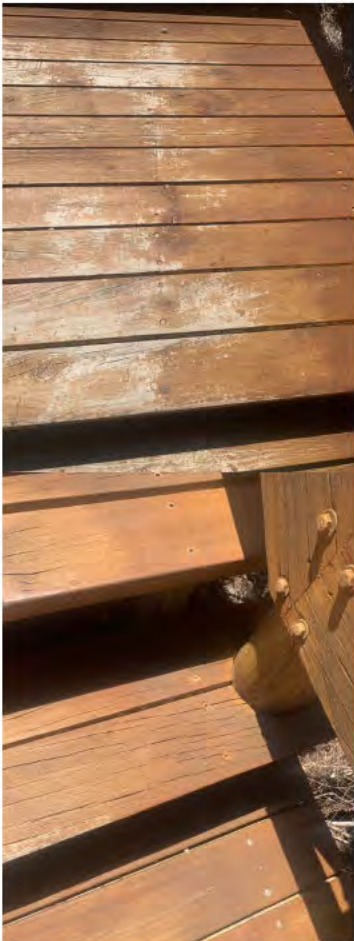
## Defect

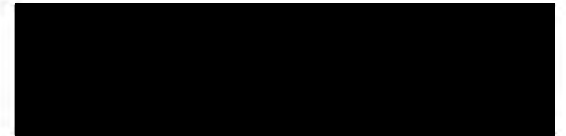
<b>Site No.</b>	C3
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	11:14 (8 GMT)
<b>Item Number</b>	19
<b>Asset Type</b>	Boardwalk / stairs
<b>Element</b>	Decking
<b>Sub-element (Decking and Supports)</b>	Decking screws
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Other
<b>Defect Description</b>	Generally good condition with minor surface corrosion observed to be typical and some screws in localised areas observed to not be sitting flush.
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	30
<b>Maintenance Recommendation</b>	Replace heavily corroded screws and localised replacement of screws which aren't flush.
<b>Maintenance Timeframe</b>	Within 5 years



City of Wanneroo - Coastal Asset

Multi Photo

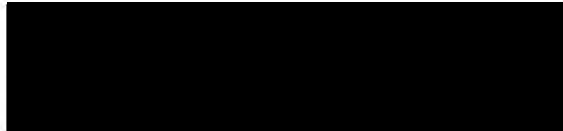




## City of Wanneroo - Coastal Asset

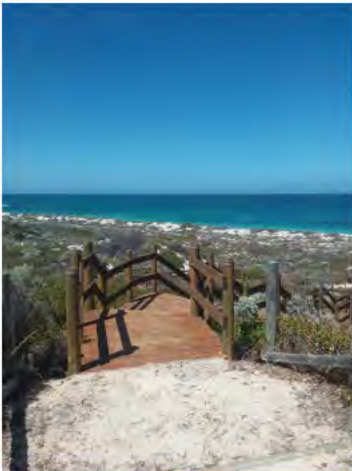
### Defect

<b>Site No.</b>	C4
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	10:25 (8 GMT)
<b>Item Number</b>	20
<b>Costal Asset Type</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber, Rotted timber
<b>Defect Description</b>	Localised rot to 2 No. timber posts.
<b>Quantity of Defects</b>	112
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection
<b>Maintenance Timeframe</b>	Greater than 5 years



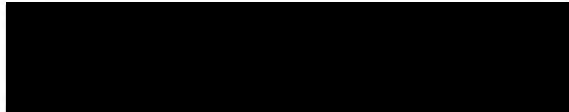
# City of Wanneroo - Coastal Asset

Multi Photo





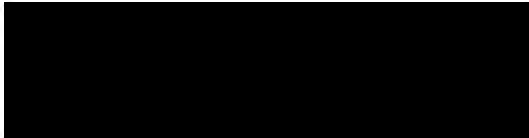
## City of Wanneroo - Coastal Asset



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C3
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	11:03 (8 GMT)
<b>Item Number</b>	22
<b>Asset Type</b>	Boardwalk / stairs
<b>Element</b>	Handrails
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber, General damage
<b>Defect Description</b>	Generally good condition with some minor deterioration and split timber observed.
<b>Quantity of Defects</b>	Boardwalk 4x span Stairs 4x span
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection
<b>Maintenance Timeframe</b>	Greater than 5 years



### City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Monitor at next inspection and oil at regular intervals



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C4
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	10:43 (8 GMT)
<b>Item Number</b>	22
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Bolts
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Generally good condition with surface corrosion observed to be typical throughout.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C4
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	10:34 (8 GMT)
<b>Item Number</b>	23
<b>Costal Asset Type</b>	Stairs
<b>Sub-element</b>	Steel banding
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	typical
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection
<b>Maintenance Timeframe</b>	Greater than 5 years



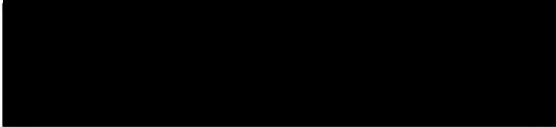
**City of Wanneroo - Coastal Asset**

**Multi Photo**



# Appendix D

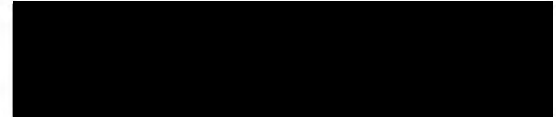
**Site C4 – North Yanchep Foreshore Defect  
Forms**



# City of Wanneroo - Coastal Asset

## Defect

Site No.	C4
Site Name/ Location	North Yanchep Foreshore
Date	25/02/2021
Time	11:51 (8 GMT)
Item Number	1
Costal Asset Type	Boardwalk to elevated look out
Element	Supports
Sub-element	Beams
Material Type	Timber
2021 Observed Defects (Timber)	General damage, Split timber
Defect Description	Minor damage and timber splitting observed.
Condition Rating (0- 10)	3
Health and Safety Concern (Y/N)	No
Consequence of Failure	3
Likelihood of Failure within next 5 years	1
Risk Rating	3
Overall Rating (CR X RR)	9
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection
Maintenance Timeframe	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Monitor at next inspection, oil at regular intervals



## City of Wanneroo - Coastal Asset

### Defect

Site No.	C4
Site Name/ Location	North Yanchep Foreshore
Date	25/02/2021
Time	11:57 (8 GMT)
Item Number	2
Costal Asset Type	Boardwalk to elevated look out
Element	Supports
Sub-element	Connections
Material Type	Galvanised Steel
2021 Observed Defects (Steel)	Surface corrosion, Coating loss
Defect Description	Typical minor surface corrosion to connections.
Condition Rating (0- 10)	4
Health and Safety Concern (Y/N)	No
Consequence of Failure	2
Likelihood of Failure within next 5 years	2
Risk Rating	4
Overall Rating (CR X RR)	16
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection.
Maintenance Timeframe	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

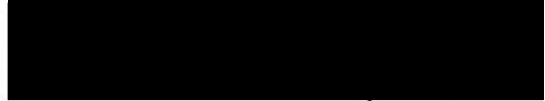




## City of Wanneroo - Coastal Asset

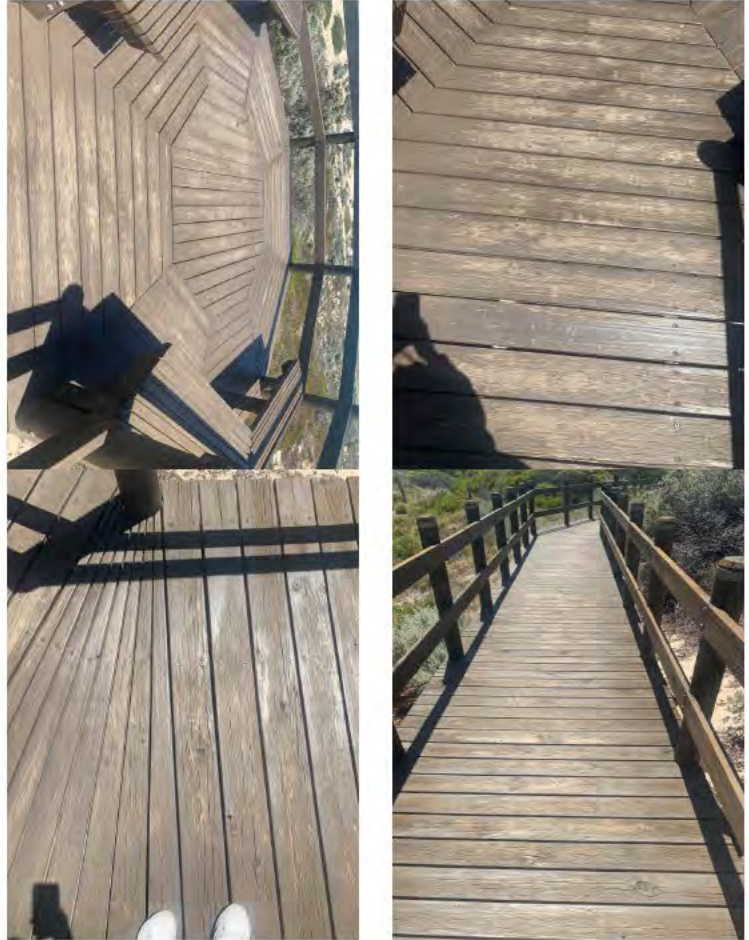
### Defect

<b>Site No.</b>	C4
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	11:48 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Boardwalk to elevated look out
<b>Element</b>	Decking
<b>Sub-element (Decking and Supports)</b>	Deck planks
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	General damage, Split timber
<b>Defect Description</b>	Minor damage and timber splitting was observed.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection
<b>Maintenance Timeframe</b>	Greater than 5 years



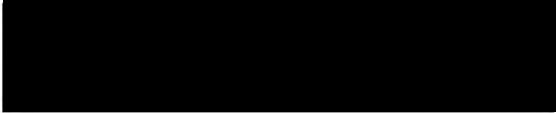
## City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Monitor at next inspection, oil at regular intervals



# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C4
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	11:31 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Boardwalk to elevated look out
<b>Element</b>	Decking
<b>Sub-element (Decking and Supports)</b>	Decking screws
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Minor surface corrosion to deck screws.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Replace heavily corroded screws.
<b>Maintenance Timeframe</b>	Within 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**



**Other Comments/Inspection Limitations**

Locally replace within 5 years



## City of Wanneroo - Coastal Asset

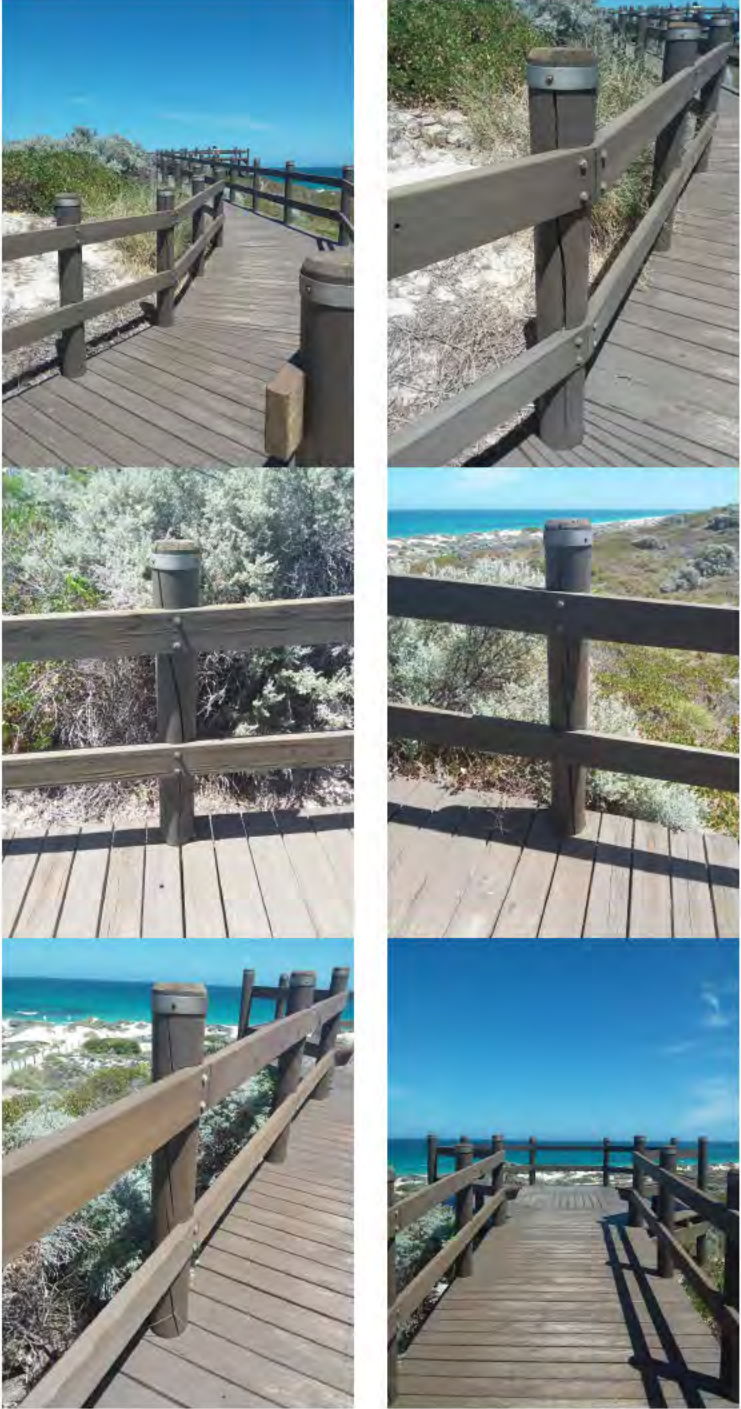
### Defect

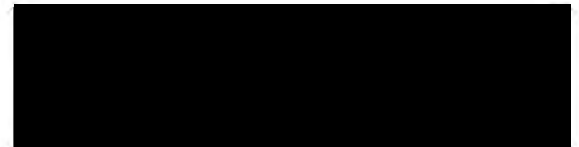
<b>Site No.</b>	C4
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	11:48 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Boardwalk to elevated look out
<b>Sub-element (Fencing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Split timber was observed to be typical throughout.
<b>Quantity of Defects</b>	45 posts
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

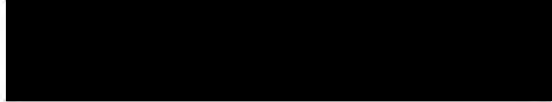
<b>Site No.</b>	C4
<b>Site Name/ Location</b>	North Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	11:50 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Boardwalk to elevated look out
<b>Sub-element</b>	post fasteners
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Other
<b>Defect Description</b>	Localised missing screws.
<b>Quantity of Defects</b>	45
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Reinstate missing screws.
<b>Maintenance Timeframe</b>	Within 5 years



## City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

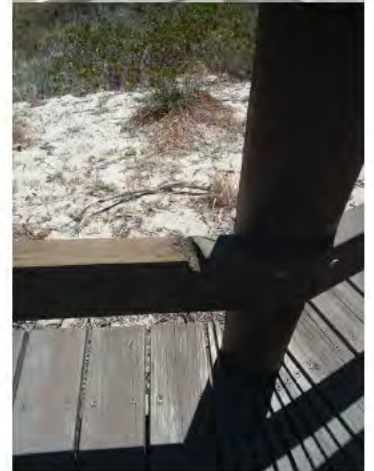
### Defect

Site No.	C4
Site Name/ Location	North Yanchep Foreshore
Date	25/02/2021
Time	11:53 (8 GMT)
Item Number	7
Costal Asset Type	Boardwalk to elevated look out
Sub-element	Rail
Material Type	Timber, Steel
2021 Observed Defects (Timber)	Split timber, General damage
2021 Observed Defects (Steel)	Surface corrosion
Defect Description	Damage was observed to the top rail at the elevated lookout. Typical coating deterioration, minor timber splitting and surface corrosion to connection bolts observed.
Quantity of Defects	140m
Condition Rating (0- 10)	6
Health and Safety Concern (Y/N)	No
Consequence of Failure	3
Likelihood of Failure within next 5 years	2
Risk Rating	6
Overall Rating (CR X RR)	36
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection.
Maintenance Timeframe	Greater than 5 years



## City of Wanneroo - Coastal Asset

### Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

Site No.	C4
Site Name/ Location	North Yanchep Foreshore
Date	25/02/2021
Time	11:59 (8 GMT)
Item Number	8
Costal Asset Type	Boardwalk to elevated look out
Element	Bench
Material Type	Timber
2021 Observed Defects (Timber)	General damage, Split timber
Quantity of Defects	2 benches, 5 posts, 2.5m per bench
Defect Description	Minor damage and timber splitting was observed.
Condition Rating (0- 10)	4
Health and Safety Concern (Y/N)	No
Consequence of Failure	2
Likelihood of Failure within next 5 years	1
Risk Rating	2
Overall Rating (CR X RR)	8
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection.
Maintenance Timeframe	Greater than 5 years



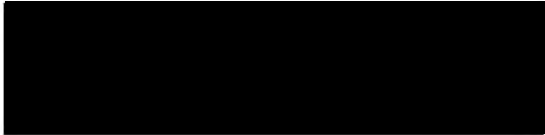
## City of Wanneroo - Coastal Asset

Multi Photo



# Appendix E

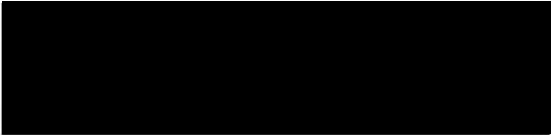
**Site C5 – Old Yanchep Surf Life Saving  
Club Defect Forms**



# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C5
<b>Site Name/ Location</b>	Old Yanchep Surf Life Saving Club
<b>Date</b>	25/02/2021
<b>Time</b>	14:15 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Beams
<b>Material Type</b>	Composite Material
<b>Defect Description</b>	No visible defects were observed.
<b>Quantity of Defects</b>	36m of FRP beams
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

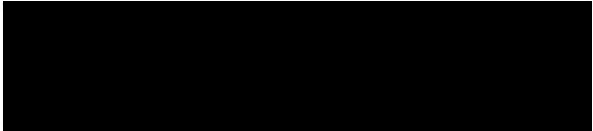




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C5
<b>Site Name/ Location</b>	Old Yanchep Surf Life Saving Club
<b>Date</b>	25/02/2021
<b>Time</b>	14:17 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Other
<b>Element</b>	Beam
<b>Sub-element</b>	Connections
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C5
<b>Site Name/ Location</b>	Old Yanchep Surf Life Saving Club
<b>Date</b>	25/02/2021
<b>Time</b>	14:06 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Decking
<b>Sub-element (Decking and Supports)</b>	Deck planks
<b>Material Type</b>	Composite Material
<b>Defect Description</b>	No visible defects were observed.
<b>Quantity of Defects</b>	20m2 decking
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

### Multi Photo





## City of Wanneroo - Coastal Asset

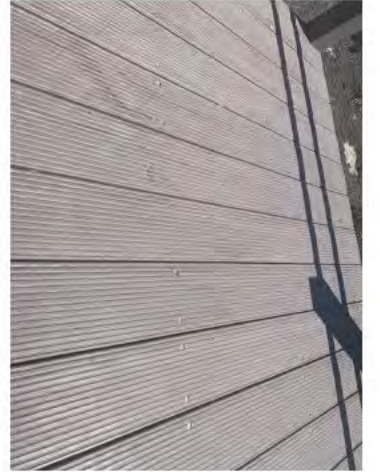
### Defect

<b>Site No.</b>	C5
<b>Site Name/ Location</b>	Old Yanchep Surf Life Saving Club
<b>Date</b>	25/02/2021
<b>Time</b>	14:08 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Decking
<b>Sub-element (Decking and Supports)</b>	Decking screws
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed.
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C5
<b>Site Name/ Location</b>	Old Yanchep Surf Life Saving Club
<b>Date</b>	25/02/2021
<b>Time</b>	14:09 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Handrails
<b>Sub-element</b>	Ballustrade post
<b>Material Type</b>	Composite Material
<b>Defect Description</b>	No visible defects were observed.
<b>Quantity of Defects</b>	8 posts 1m tall
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

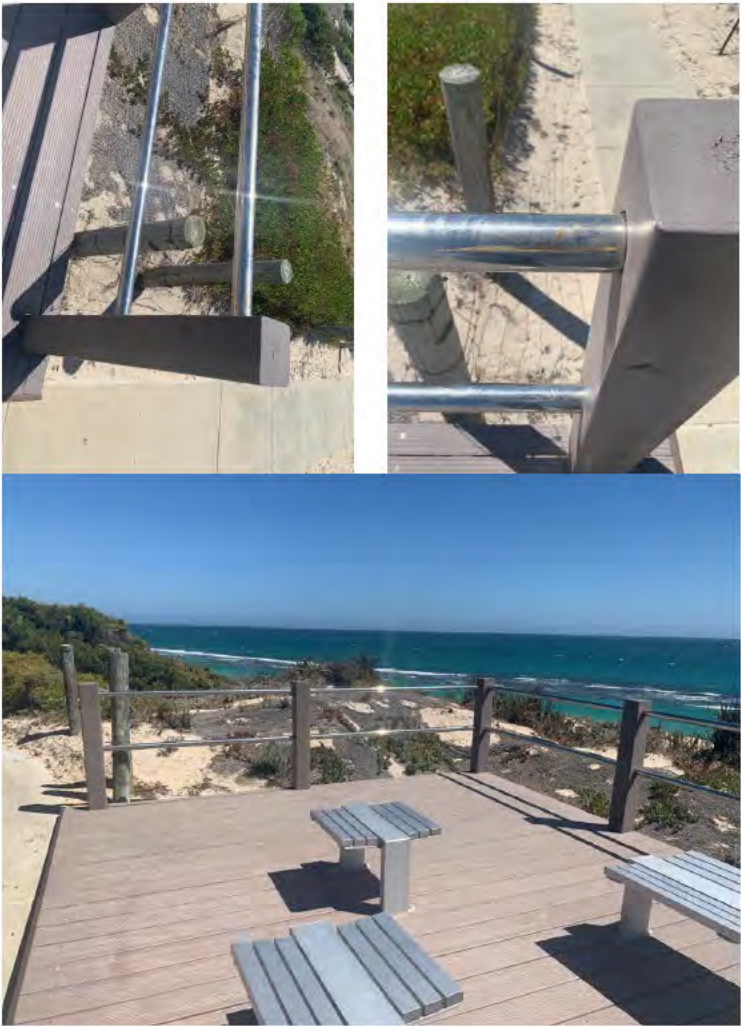
### Defect

<b>Site No.</b>	C5
<b>Site Name/ Location</b>	Old Yanchep Surf Life Saving Club
<b>Date</b>	25/02/2021
<b>Time</b>	14:11 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Handrails
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Tea staining
<b>Defect Description</b>	Minor tea staining observed.
<b>Quantity of Defects</b>	26m total
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo

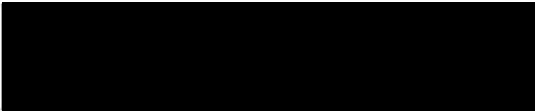




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C5
<b>Site Name/ Location</b>	Old Yanchep Surf Life Saving Club
<b>Date</b>	25/02/2021
<b>Time</b>	14:13 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Bench
<b>Material Type</b>	Composite Material, Stainless Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed.
<b>Quantity of Defects</b>	3 small, 1 long
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Plastic seats, SS connections

# Appendix F

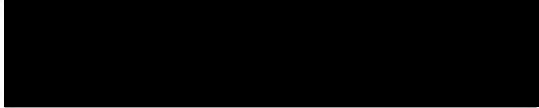
**Site C6 – Yanchep Surf Life Saving Club  
Defect Forms**



## City of Wanneroo - Coastal Asset

### Defect

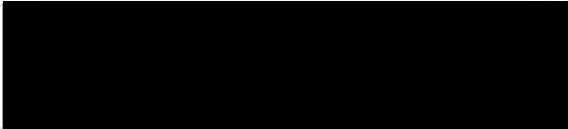
<b>Site No.</b>	C6
<b>Site Name/ Location</b>	Yanchep Surf Life Saving Club
<b>Date</b>	25/02/2021
<b>Time</b>	14:05 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Disabled Access Ramp
<b>Sub-element (Foundations)</b>	Base slab
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Crack, Noticeable prior concrete repairs
<b>Defect Description</b>	Surface cracks observed to be typical to surface slab. Prior concrete repairs to slab edge facing the ocean above the storage area.
<b>Quantity of Defects</b>	135m <sup>2</sup>
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C6
<b>Site Name/ Location</b>	Yanchep Surf Life Saving Club
<b>Date</b>	25/02/2021
<b>Time</b>	14:13 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Disabled Access Ramp
<b>Element</b>	Walls
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Noticeable prior concrete repairs, Erosion
<b>Defect Description</b>	Generally good condition. With noticeable prior concrete repairs to edge facing ocean above storage area. Some minor erosion at base near storage area observed.
<b>Quantity of Defects</b>	60m approx 3m max high along ramp
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





S



## City of Wanneroo - Coastal Asset

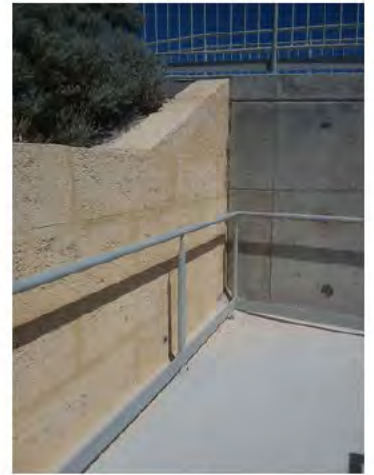
### Defect

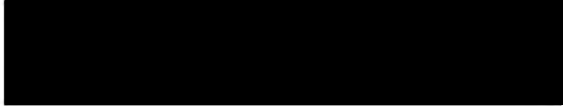
<b>Site No.</b>	C6
<b>Site Name/ Location</b>	Yanchep Surf Life Saving Club
<b>Date</b>	25/02/2021
<b>Time</b>	14:22 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Retaining wall
<b>Material Type</b>	Limestone
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo

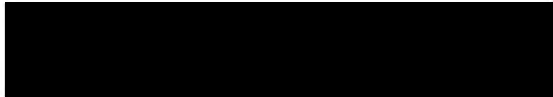




## City of Wanneroo - Coastal Asset

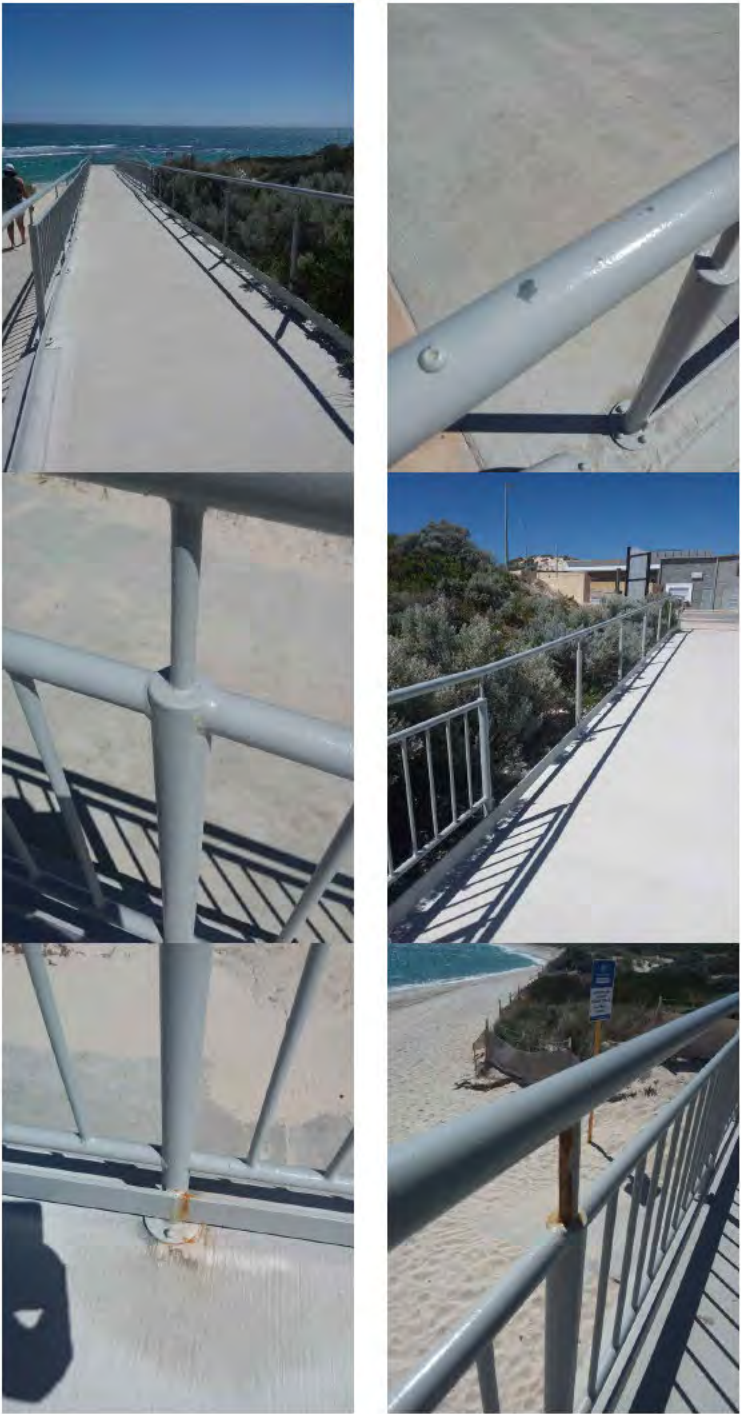
### Defect

Site No.	C6
Site Name/ Location	Yanchep Surf Life Saving Club
Date	25/02/2021
Time	14:16 (8 GMT)
Item Number	4
Costal Asset Type	Ramp disabled beach access
Element	Balustrade (All Components)
Material Type	Coated Steel
2021 Observed Defects (Steel)	Surface corrosion, Rust staining
Defect Description	Generally good condition. Vertical rails missing for 6 panels on Northern side, and 1 panel on Southern side at ramp entry. Local coating loss, surface corrosion and rust staining observed. Inconsistent fixings used with some screws being stainless steel and some general steel.
Quantity of Defects	170m
Condition Rating (0- 10)	5
Health and Safety Concern (Y/N)	No
Consequence of Failure	3
Likelihood of Failure within next 5 years	2
Risk Rating	6
Overall Rating (CR X RR)	30
Maintenance Recommendation	Localised abrasive cleaning and application of protective coating.
Maintenance Timeframe	Within 5 years



City of Wanneroo - Coastal Asset

Multi Photo

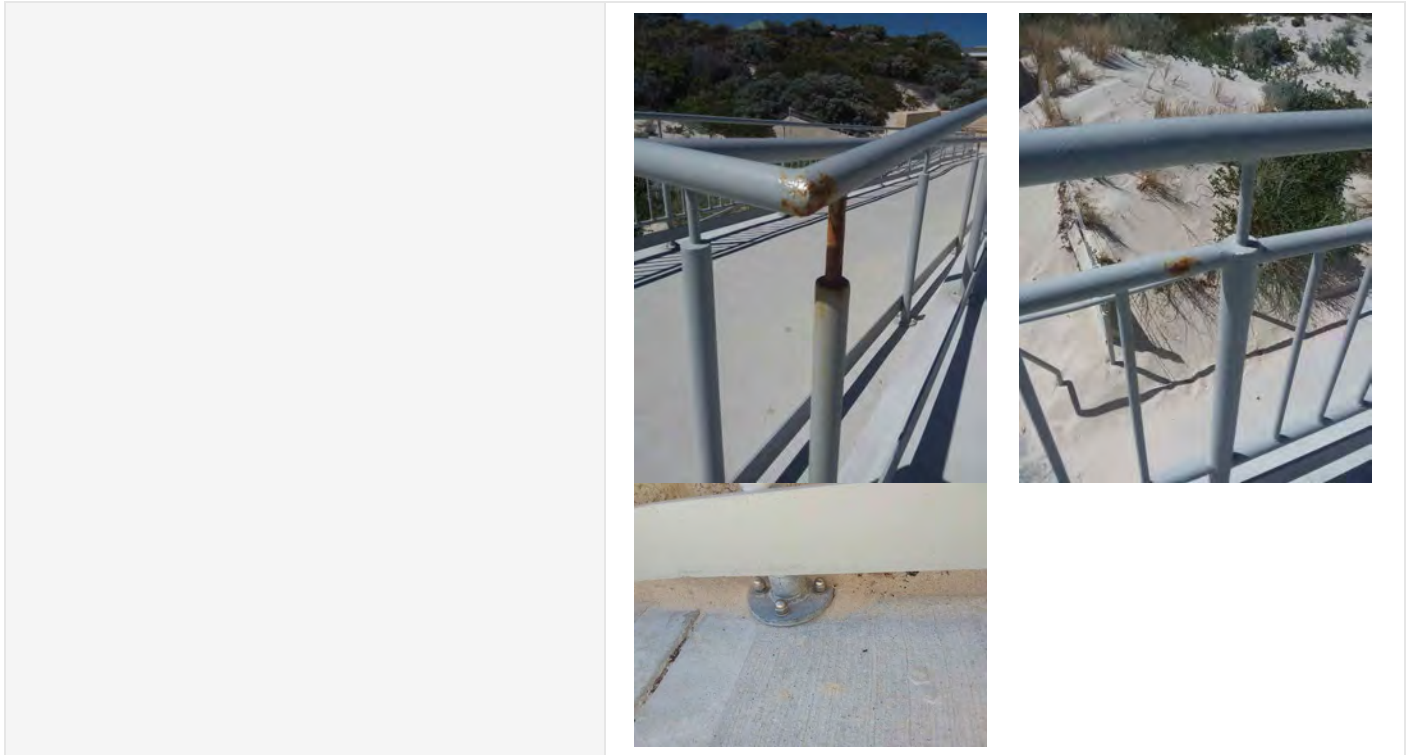


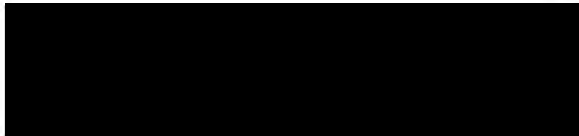


Date Submitted: 25/02/2021 18:59

S [REDACTED]

## City of Wanneroo - Coastal Asset





## City of Wanneroo - Coastal Asset

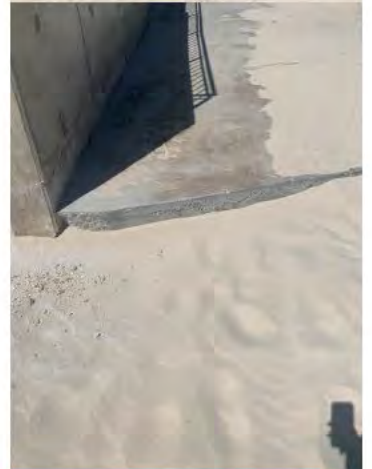
### Defect

<b>Site No.</b>	C6
<b>Site Name/ Location</b>	Yanchep Surf Life Saving Club
<b>Date</b>	25/02/2021
<b>Time</b>	14:23 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Concrete vehicle access ramp
<b>Element</b>	Surface
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Crack
<b>Defect Description</b>	Typical cracking in concrete.
<b>Quantity of Defects</b>	111m2 concrete
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



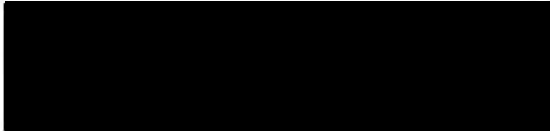
# City of Wanneroo - Coastal Asset

Multi Photo



# Appendix G

**Site C7 – Newman Park (North) Defect  
Forms**



# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C7
<b>Site Name/ Location</b>	Newman Park (North)
<b>Date</b>	25/02/2021
<b>Time</b>	14:37 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Stairs
<b>Material Type</b>	Limestone
<b>Defect Description</b>	Grout observed to be in good condition. Minor erosion on steps.
<b>Quantity of Defects</b>	14 step, 1m wide
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Within 5 years



City of Wanneroo - Coastal Asset

Multi Photo

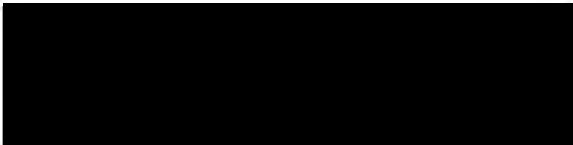




## City of Wanneroo - Coastal Asset

### Defect

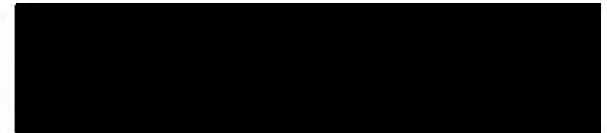
<b>Site No.</b>	C7
<b>Site Name/ Location</b>	Newman Park (North)
<b>Date</b>	25/02/2021
<b>Time</b>	14:39 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Retaining wall
<b>Material Type</b>	Limestone
<b>Defect Description</b>	Grout observed to be in good condition. Minor erosion to blocks.
<b>Quantity of Defects</b>	6m x avg 1m
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

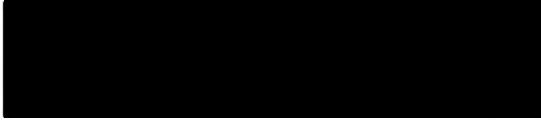




## City of Wanneroo - Coastal Asset

### Defect

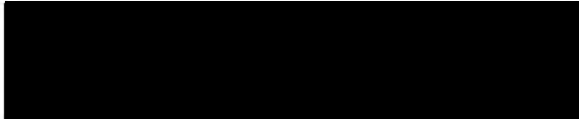
<b>Site No.</b>	C7
<b>Site Name/ Location</b>	Newman Park (North)
<b>Date</b>	25/02/2021
<b>Time</b>	14:41 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Minor timber splitting was observed to be typical throughout.
<b>Quantity of Defects</b>	8 posts
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C7
<b>Site Name/ Location</b>	Newman Park (North)
<b>Date</b>	25/02/2021
<b>Time</b>	14:44 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh, Strainer Wires and Staples
<b>Sub-element</b>	including strainer wires and staples
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Failed, Surface corrosion
<b>Defect Description</b>	A hole was found in the mesh. Surface corrosion to staples was observed to be typical.
<b>Quantity of Defects</b>	10m2
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	48
<b>Maintenance Recommendation</b>	Replace damaged mesh and heavily corroded staples.
<b>Maintenance Timeframe</b>	Within 1-2 years



## City of Wanneroo - Coastal Asset

### Multi Photo

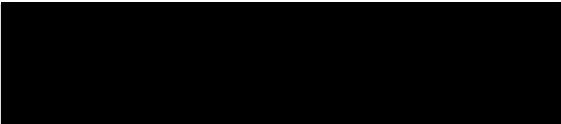




## City of Wanneroo - Coastal Asset

### Defect

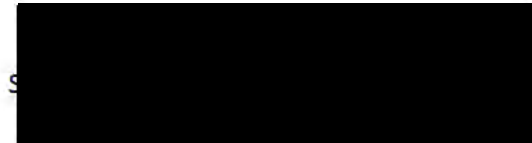
<b>Site No.</b>	C7
<b>Site Name/ Location</b>	Newman Park (North)
<b>Date</b>	25/02/2021
<b>Time</b>	14:47 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Bollards
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Minor coating loss and surface corrosion.
<b>Quantity of Defects</b>	2
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

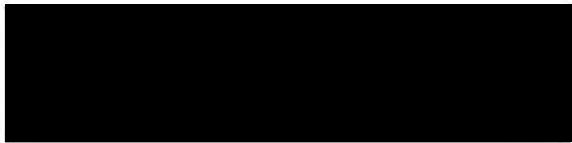




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C7
<b>Site Name/ Location</b>	Newman Park (North)
<b>Date</b>	25/02/2021
<b>Time</b>	14:54 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Tread Plates and Landings
<b>Material Type</b>	FRP
<b>2021 Observed Defects (FRP)</b>	No visible defects were observed
<b>Defect Description</b>	30m2
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

### Defect

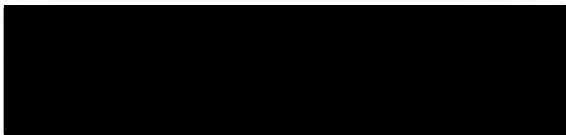
<b>Site No.</b>	C7
<b>Site Name/ Location</b>	Newman Park (North)
<b>Date</b>	25/02/2021
<b>Time</b>	14:56 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Stringers
<b>Sub-element</b>	Stair Stringers, Support Beams and Columns
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Noticeable build-up of debris, No visible defects
<b>Defect Description</b>	No visible defects were observed. Inspection limited due to debris build up on platform and surroundings.
<b>Quantity of Defects</b>	56m
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

### Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C7
<b>Site Name/ Location</b>	Newman Park (North)
<b>Date</b>	25/02/2021
<b>Time</b>	14:48 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Balustrade
<b>Material Type</b>	FRP
<b>2021 Observed Defects (FRP)</b>	Minor corrosion
<b>Defect Description</b>	Generally good condition. Minor corrosion to fasteners.
<b>Quantity of Defects</b>	56m
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**



# Appendix H

**Site C8 - South Yanchep Foreshore Defect  
Forms**



## City of Wanneroo - Coastal Asset

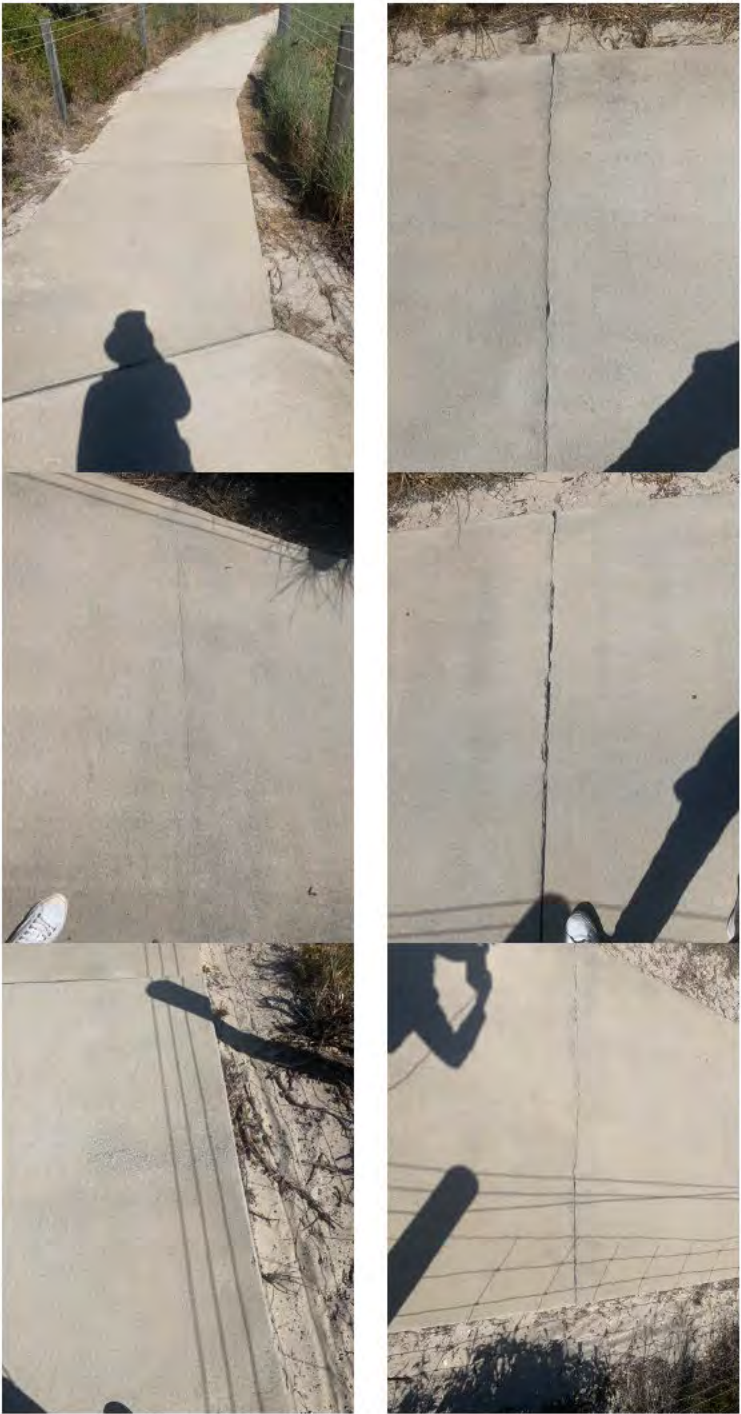
### Defect

<b>Site No.</b>	C8
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:25 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Concrete path
<b>Element</b>	Surface
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Spalling, Crack
<b>Defect Description</b>	Spalling/cracking with minor deterioration at joints were observed.
<b>Quantity of Defects</b>	140m <sup>2</sup>
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

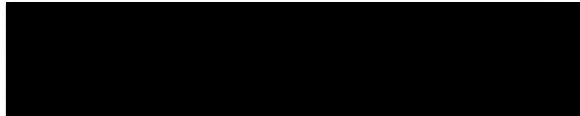
Multi Photo





## City of Wanneroo - Coastal Asset

<b>Other Comments/Inspection Limitations</b>	Monitor at next inspection repair if becomes a trip hazards



## City of Wanneroo - Coastal Asset

### Defect

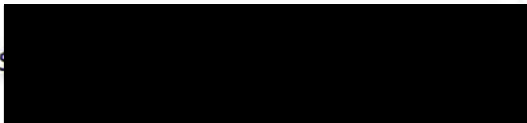
<b>Site No.</b>	C8
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:26 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Bollards / Gate
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Coating and reflective tape deterioration typica. Surface corrosion to fixings.
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	20
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

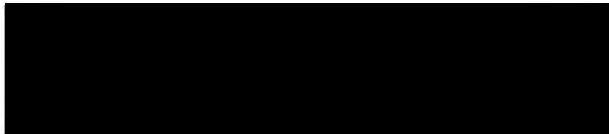




## City of Wanneroo - Coastal Asset

### Defect

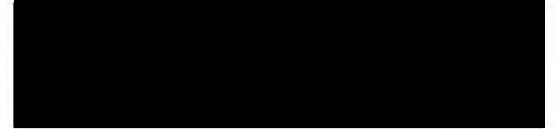
<b>Site No.</b>	C8
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:21 (8 GMT)
<b>Item Number</b>	3
<b>Coastal Asset Type</b>	Concrete Path
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber posts and railing
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Minor timber splitting was observed
<b>Quantity of Defects</b>	50. 16m of railing at each end bay
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C8
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:17 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Concrete path
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Sub-element</b>	Mesh and staples
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Corrosion with section loss observed to be typical throughout.
<b>Quantity of Defects</b>	140m x 0.5
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	40
<b>Maintenance Recommendation</b>	Replace heavily corroded sections of mesh or staples.
<b>Maintenance Timeframe</b>	Within 5 years



## City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

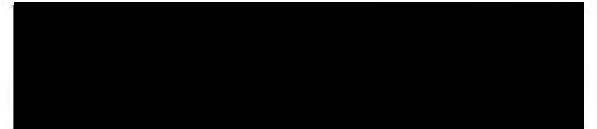
<b>Site No.</b>	C8
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:23 (8 GMT)
<b>Item Number</b>	13
<b>Costal Asset Type</b>	Concrete path
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh strainer wires
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>Quantity of Defects</b>	6x70m
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

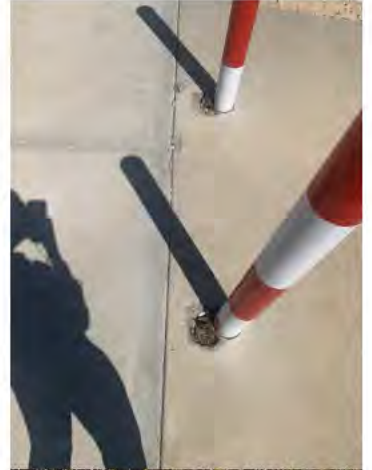
### Defect

<b>Site No.</b>	C8
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	14:38 (8 GMT)
<b>Item Number</b>	6
<b>Asset Type</b>	Stairs / lookout
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Footing
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	No visible defects were observed
<b>Quantity of Defects</b>	29 columns not all footings visible appear sound
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

Site No.	C8
Site Name/ Location	South Yanchep Foreshore
Date	25/02/2021
Time	14:50 (8 GMT)
Item Number	7
Costal Asset Type	Other
Asset Type	Stairs / lookout
Element	Supports
Sub-element	Columns
Material Type	Stainless Steel
2021 Observed Defects (Steel)	No visible defects were observed
Quantity of Defects	29 visible
Condition Rating (0- 10)	2
Health and Safety Concern (Y/N)	No
Consequence of Failure	3
Likelihood of Failure within next 5 years	1
Risk Rating	3
Overall Rating (CR X RR)	6
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection.
Maintenance Timeframe	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C8
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	14:58 (8 GMT)
<b>Item Number</b>	8
<b>Asset Type</b>	Stairs / lookout
<b>Element</b>	Supports
<b>Sub-element</b>	Grid mesh support beams
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>Quantity of Defects</b>	40x1.5 surface area for grid mesh (including stair planks)
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

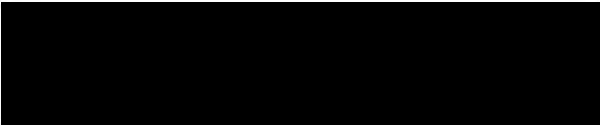




## City of Wanneroo - Coastal Asset

### Defect

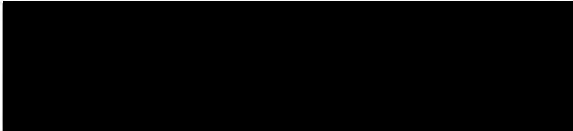
<b>Site No.</b>	C8
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:12 (8 GMT)
<b>Item Number</b>	9
<b>Asset Type</b>	Lookout / Stairs
<b>Element</b>	Supports
<b>Sub-element</b>	Support stair connections
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

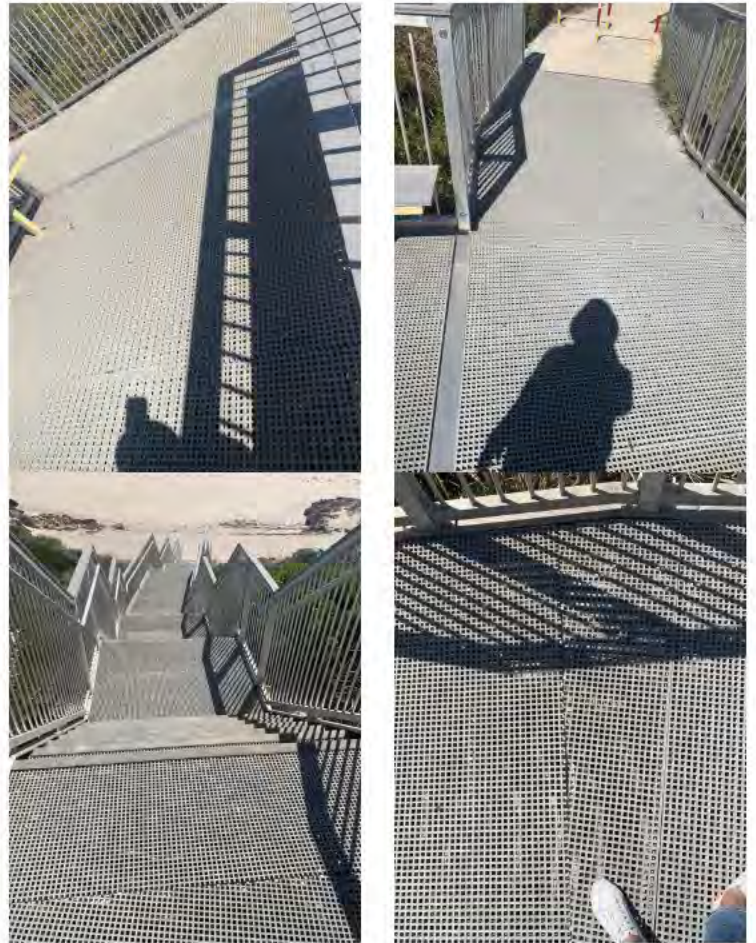
### Defect

<b>Site No.</b>	C8
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:03 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Other
<b>Asset Type</b>	Stairs / lookout
<b>Element</b>	Decking
<b>Sub-element</b>	FRP Gridmesh
<b>Material Type</b>	Composite Material
<b>Defects</b>	No visible defects were observed
<b>Quantity of Defects</b>	40x1.5 surface area for grid mesh (including stair planks)
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo

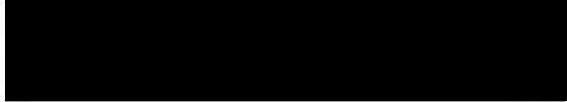




## City of Wanneroo - Coastal Asset

### Defect

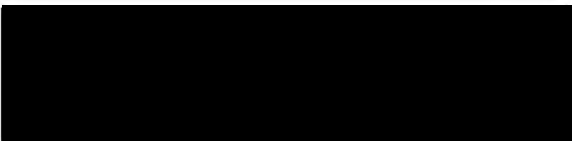
<b>Site No.</b>	C8
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	14:48 (8 GMT)
<b>Item Number</b>	11
<b>Costal Asset Type</b>	Other
<b>Asset Type</b>	Stairs / lookout
<b>Element</b>	Stair stringers
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>Quantity of Defects</b>	84 linear m
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

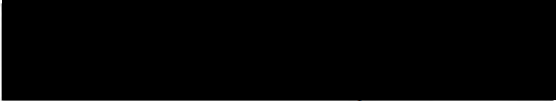




# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C8
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:14 (8 GMT)
<b>Item Number</b>	12
<b>Costal Asset Type</b>	Bench seats
<b>Material Type</b>	Coated Steel, Stainless Steel, Composite Material
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>Quantity of Defects</b>	6m U shaped bench
<b>Defect Location</b>	Connection SS, top composite, legs coated steel
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo

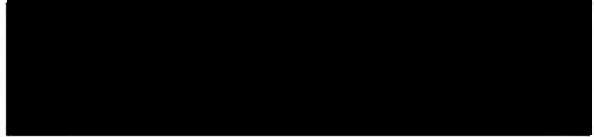




## City of Wanneroo - Coastal Asset

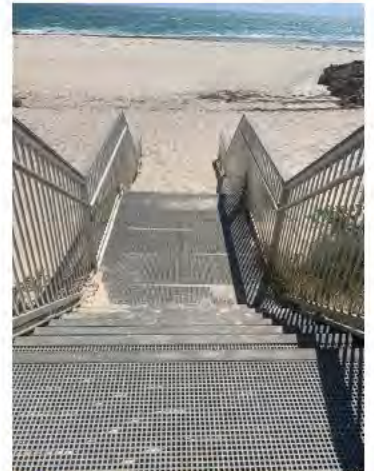
### Defect

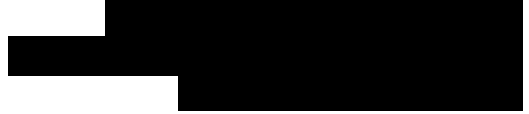
<b>Site No.</b>	C8
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	14:39 (8 GMT)
<b>Item Number</b>	13
<b>Asset Type</b>	Stairs / lookout
<b>Element</b>	Balustrade
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>Quantity of Defects</b>	84m x 1.2m high 42 posts
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

### Multi Photo





**City of Wanneroo - Coastal Asset**



## City of Wanneroo - Coastal Asset

### Defect

Site No.	C8
Site Name/ Location	South Yanchep Foreshore
Date	25/02/2021
Time	15:07 (8 GMT)
Item Number	14
Costal Asset Type	Other
Asset Type	Stair / lookout
Element	Handrails
Sub-element	Rail and connections
Material Type	Stainless Steel
2021 Observed Defects (Steel)	No visible defects were observed
Quantity of Defects	44 linear m
Condition Rating (0- 10)	2
Health and Safety Concern (Y/N)	No
Consequence of Failure	3
Likelihood of Failure within next 5 years	1
Risk Rating	3
Overall Rating (CR X RR)	6
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection.
Maintenance Timeframe	Greater than 5 years



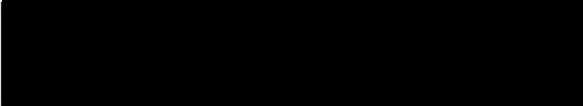
City of Wanneroo - Coastal Asset

Multi Photo



# Appendix I

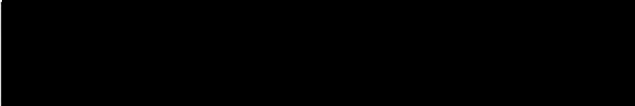
**Site C9 - South Yanchep Foreshore Defect  
Forms**



## City of Wanneroo - Coastal Asset

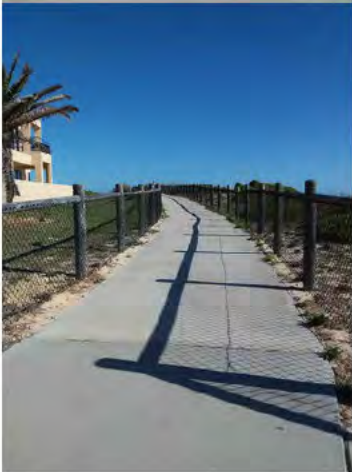
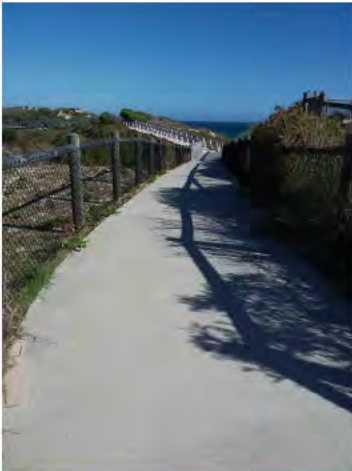
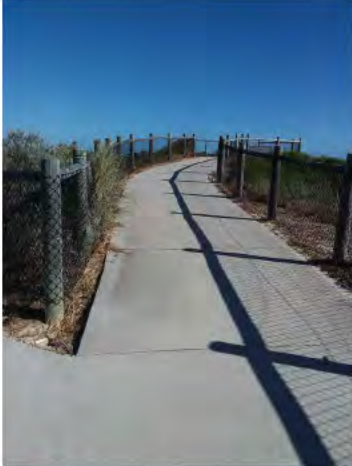
### Defect

<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	16:04 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Base slab
<b>Sub-element</b>	includes path all the way to alloy boardwalk
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Impact/mechanical damage, abrasion and erosion
<b>Defect Description</b>	Generally good condition, with local areas of minor impact damage and erosion.
<b>Quantity of Defects</b>	210m2
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo

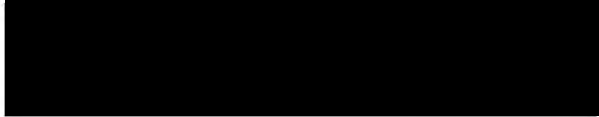




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	16:17 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Concrete path
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Minor timber splitting was observed to be typical throughout.
<b>Quantity of Defects</b>	1.2m high x 96 posts
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



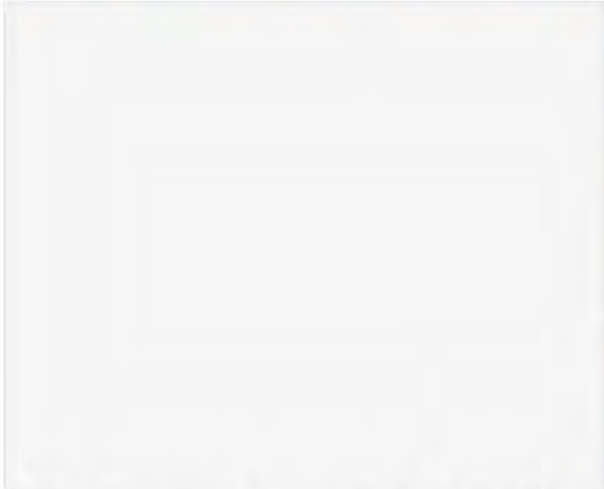
# City of Wanneroo - Coastal Asset

Multi Photo



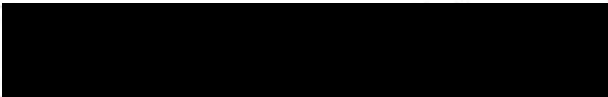


## City of Wanneroo - Coastal Asset



**Other Comments/Inspection Limitations**

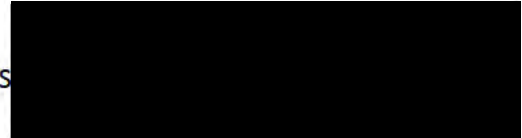
Monitor at next inspection



# City of Wanneroo - Coastal Asset

## Defect

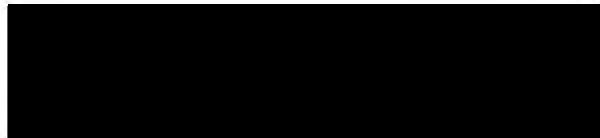
<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	16:12 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Coated Steel
<b>Defect Description</b>	Typically, good condition. Mesh observed to not be secured well to top rail at the lookout. Strainer wire in the same area is loose.
<b>Quantity of Defects</b>	210m2
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	30
<b>Maintenance Recommendation</b>	Fix mesh to the top rail.
<b>Maintenance Timeframe</b>	Within 1-2 years



## City of Wanneroo - Coastal Asset

Multi Photo

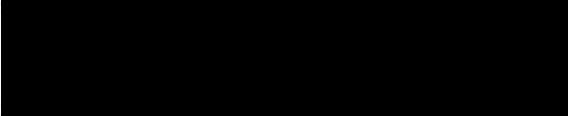




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	16:18 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh staples
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

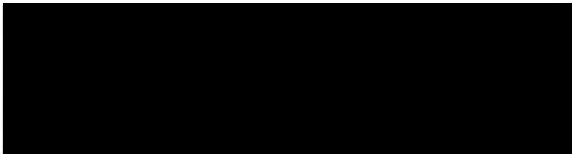




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	16:14 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Concrete path
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber rail
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber, General damage
<b>Defect Description</b>	Moderate timber splitting was observed to be typical throughout.
<b>Quantity of Defects</b>	210 linear m
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	48
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



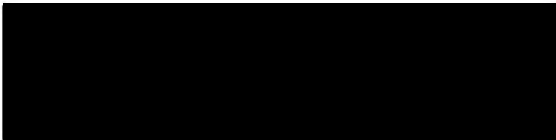
# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Locally replace



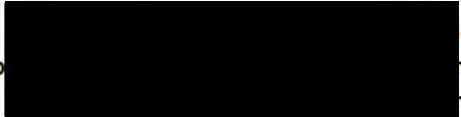
# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:55 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Alloy boardwalk
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Abutment
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	No visible defect
<b>Quantity of Defects</b>	6m2
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



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## City of Wanneroo - Coastal Asset

Multi Photo



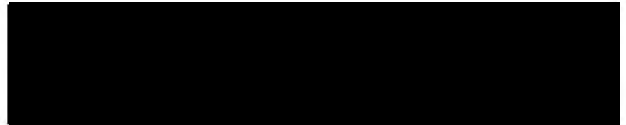


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## City of Wanneroo - Coastal Asset

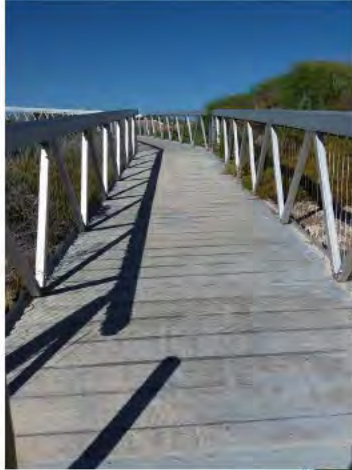
### Defect

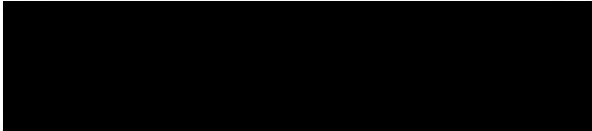
<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:46 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Alloy boardwalk
<b>Sub-element (Decking and Supports)</b>	Deck planks
<b>Material Type</b>	Aluminum
<b>2021 Observed Defects (Steel)</b>	Blistering/peeling, Noticeable build-up of debris
<b>Defect Description</b>	Cap plates are typically in good condition. Decking observed to contain some coating degradation and flaking.
<b>Quantity of Defects</b>	280m <sup>2</sup>
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo

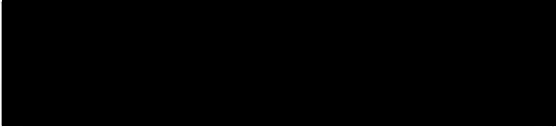




# City of Wanneroo - Coastal Asset

## Defect

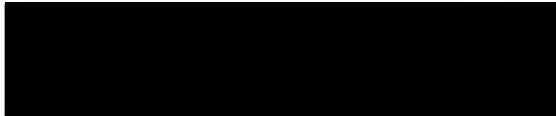
<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:48 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Bollards
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Some minor surface corrosion was observed on the bollards.
<b>Quantity of Defects</b>	2
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	1
<b>Overall Rating (CR X RR)</b>	2
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

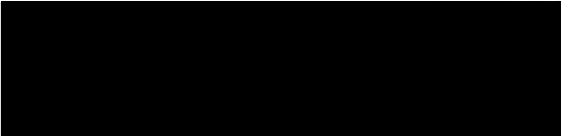




# City of Wanneroo - Coastal Asset

## Defect

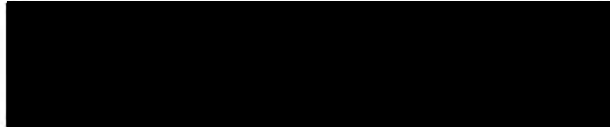
<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:42 (8 GMT)
<b>Item Number</b>	9
<b>Costal Asset Type</b>	Alloy boardwalk
<b>Sub-element</b>	Balustrade Cable
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects
<b>Defect Description</b>	Generally good condition. Some wires have been replaced.
<b>Quantity of Defects</b>	256m
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	1
<b>Overall Rating (CR X RR)</b>	3
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

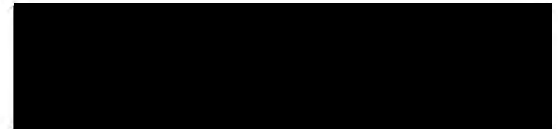
<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:40 (8 GMT)
<b>Item Number</b>	10
<b>Costal Asset Type</b>	Alloy boardwalk
<b>Sub-element</b>	Cable (Localised Failure)
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Cable has failed in localised area.
<b>Condition Rating (0- 10)</b>	9
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	5
<b>Risk Rating</b>	10
<b>Overall Rating (CR X RR)</b>	90
<b>Maintenance Recommendation</b>	Replace failed cable wires.
<b>Maintenance Timeframe</b>	Within 1-2 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

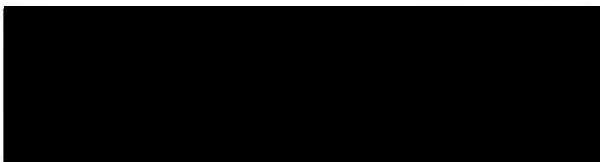
<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:45 (8 GMT)
<b>Item Number</b>	11
<b>Costal Asset Type</b>	Alloy boardwalk
<b>Sub-element (Handrails)</b>	Top rail and Bracing
<b>Material Type</b>	Aluminum
<b>2021 Observed Defects (Steel)</b>	Impact/mechanical damage
<b>Defect Description</b>	Localised impact damage, general wear and tear. One connection bolt missing, but not of concern.
<b>Quantity of Defects</b>	256m
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





# City of Wanneroo - Coastal Asset

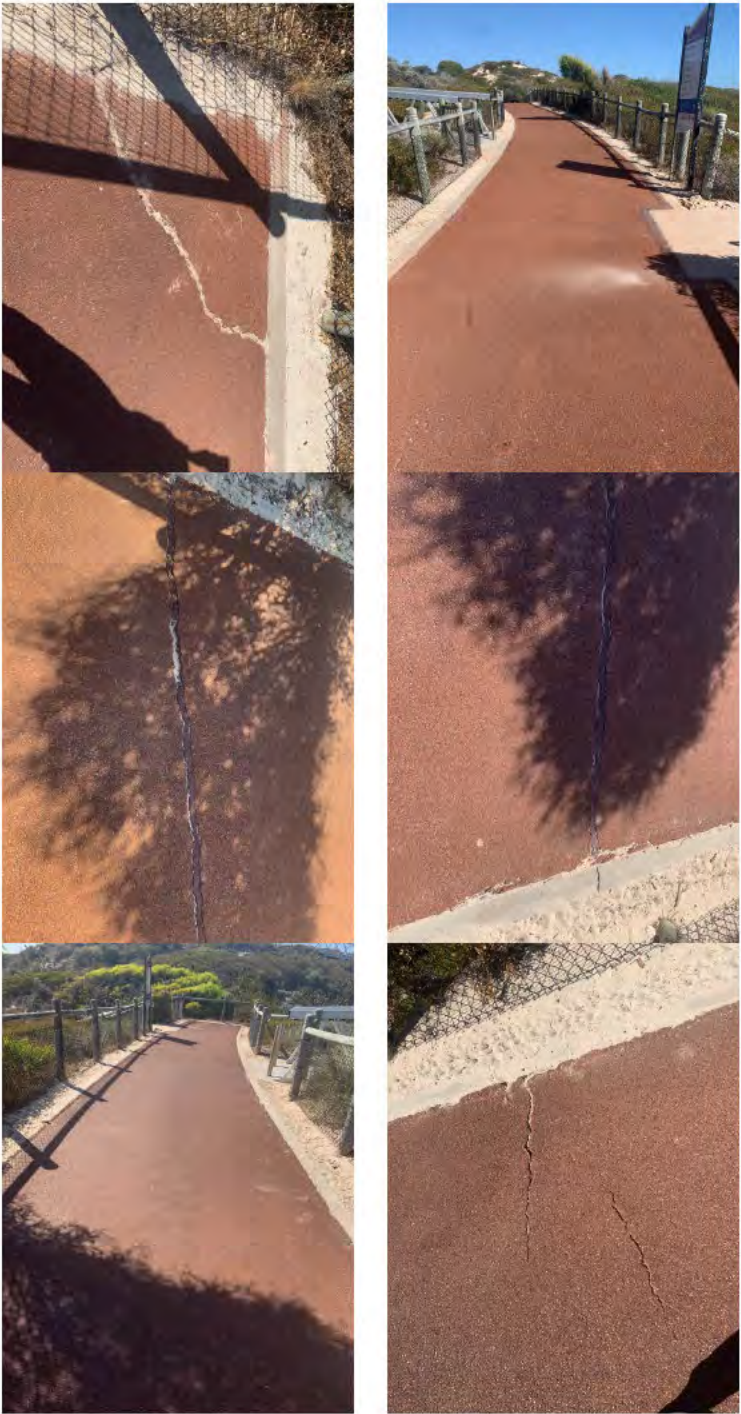
## Defect

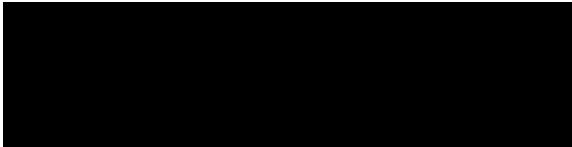
<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:40 (8 GMT)
<b>Item Number</b>	12
<b>Costal Asset Type</b>	Asphalt path
<b>Material Type</b>	Asphalt
<b>Defect Description</b>	Localised cracking observed
<b>Quantity of Defects</b>	3m x 108m
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	20
<b>Maintenance Recommendation</b>	Localised asphalt repairs at cracked areas
<b>Maintenance Timeframe</b>	Within 5 years



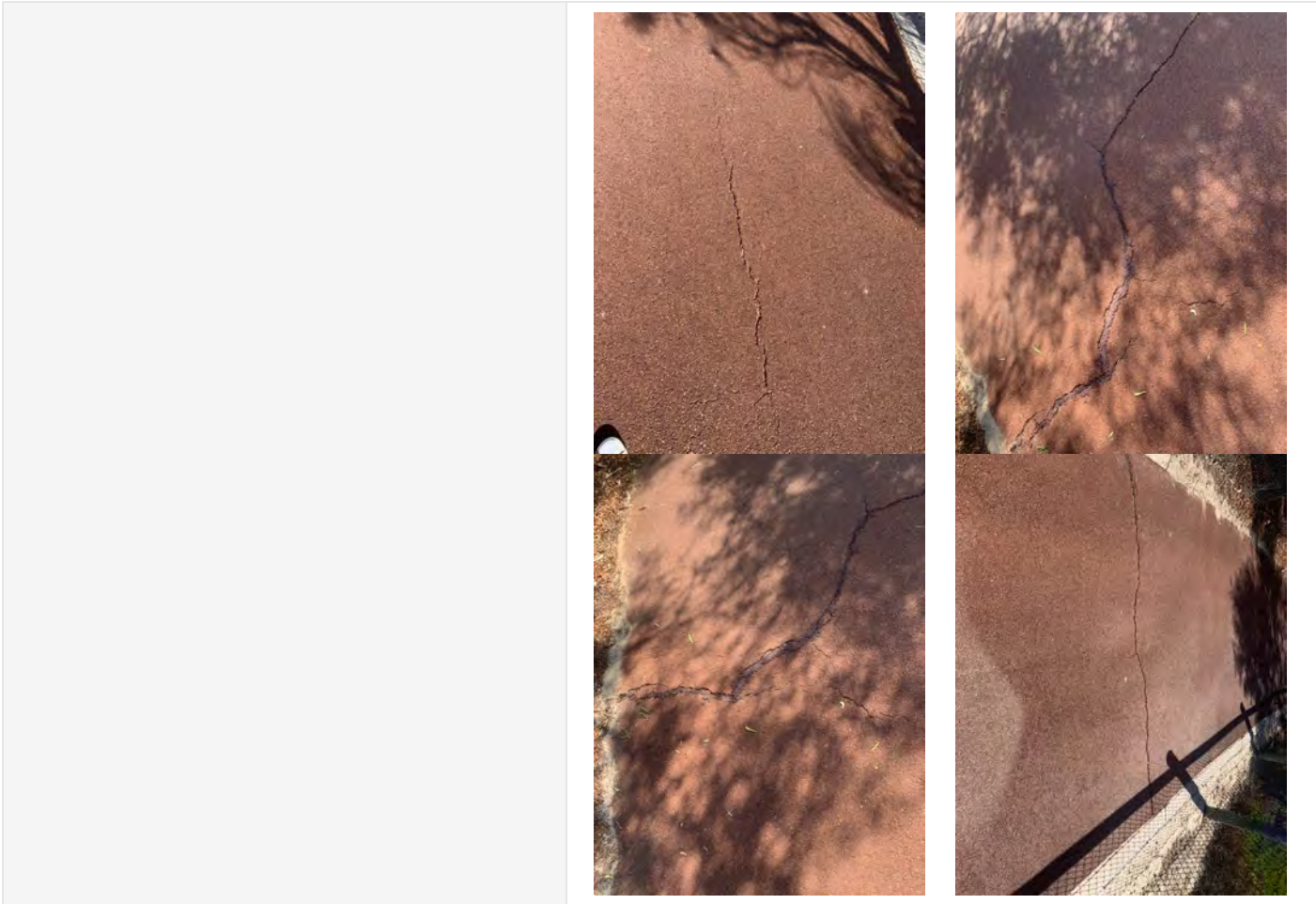
City of Wanneroo - Coastal Asset

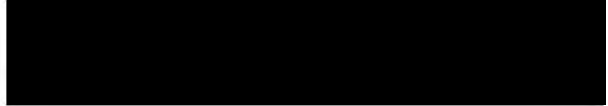
Multi Photo





City of Wanneroo - Coastal Asset





## City of Wanneroo - Coastal Asset

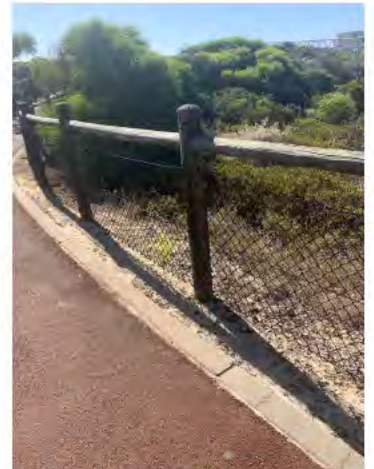
### Defect

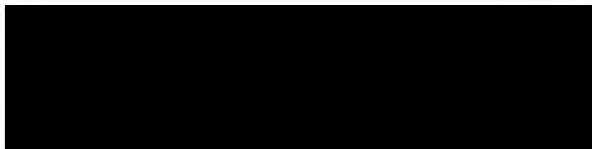
<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:50 (8 GMT)
<b>Item Number</b>	13
<b>Costal Asset Type</b>	Asphalt path
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Minor to moderate timber splitting was observed.
<b>Quantity of Defects</b>	89
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo





# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:44 (8 GMT)
<b>Item Number</b>	14
<b>Costal Asset Type</b>	Asphalt path
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Corrosion, loose mesh
<b>Defect Description</b>	Some corrosion observed on the staples. Mesh observed to be slightly loose.
<b>Quantity of Defects</b>	216 m2 total area
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Replace staples and tighten mesh.
<b>Maintenance Timeframe</b>	Within 5 years



City of Wanneroo - Coastal Asset

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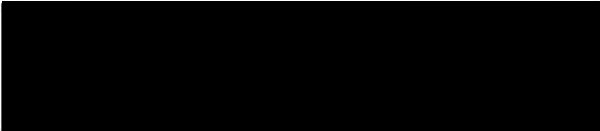




## City of Wanneroo - Coastal Asset

### Defect

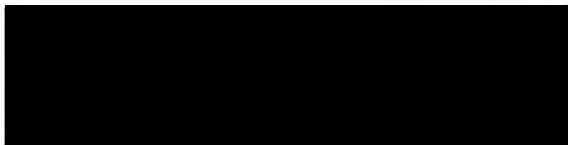
<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:53 (8 GMT)
<b>Item Number</b>	15
<b>Costal Asset Type</b>	Asphalt path
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber rail
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	General damage, Split timber, Rotted timber, Deformation
<b>Defect Description</b>	Localised warping of railing observed. Typical minor splits and rot in timber.
<b>Quantity of Defects</b>	216m of top rails
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Replace split, rotten, and deformed rails
<b>Maintenance Timeframe</b>	Within 5 years



# City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

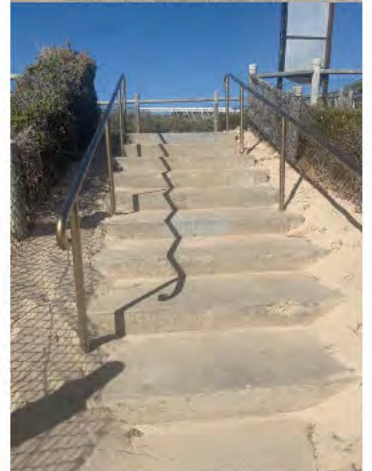
Site No.	C9
Site Name/ Location	South Yanchep Foreshore
Date	25/02/2021
Time	16:06 (8 GMT)
Item Number	16
Costal Asset Type	Stairs
Element	Stairs
Sub-element	Stairs and path
Material Type	Reinforced Concrete
2021 Observed Defects (Reinforced Concrete)	Generally good condition. Minor cracking and chipping observed.
Quantity of Defects	2m wide x 40m long
Condition Rating (0- 10)	4
Health and Safety Concern (Y/N)	No
Consequence of Failure	3
Likelihood of Failure within next 5 years	1
Risk Rating	3
Overall Rating (CR X RR)	12
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection.
Maintenance Timeframe	Greater than 5 years



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## City of Wanneroo - Coastal Asset

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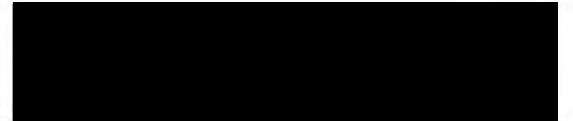




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	16:04 (8 GMT)
<b>Item Number</b>	17
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Minor timber splitting was observed to be typical throughout.
<b>Quantity of Defects</b>	38 posts
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	18
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



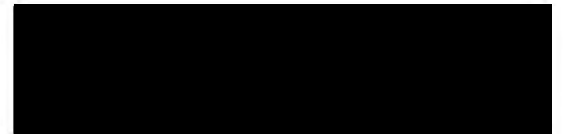
## City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

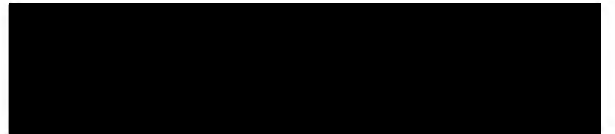
Monitor at next inspection



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	15:55 (8 GMT)
<b>Item Number</b>	18
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Sub-element</b>	Mesh and staples
<b>Material Type</b>	Coated Steel, Steel
<b>2021 Observed Defects (Steel)</b>	Corrosion with section loss, Other
<b>Defect Description</b>	Some areas of corrosion with section loss were observed. Mesh was not tight in some areas.
<b>Quantity of Defects</b>	40m x 4strainer wires x2
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Replace heavily corroded mesh areas or staples. Tighten loose mesh.

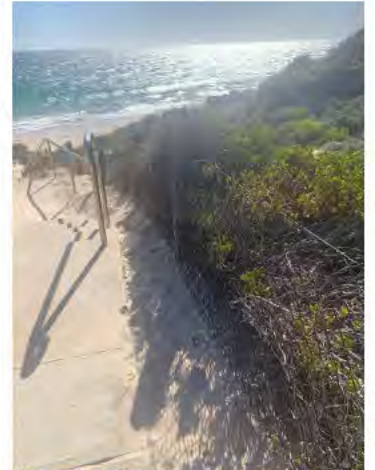


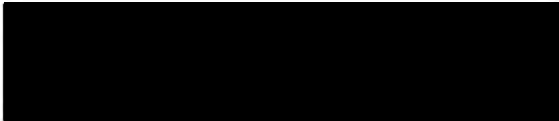
## City of Wanneroo - Coastal Asset

**Maintenance Timeframe**

Within 5 years

**Multi Photo**





## City of Wanneroo - Coastal Asset

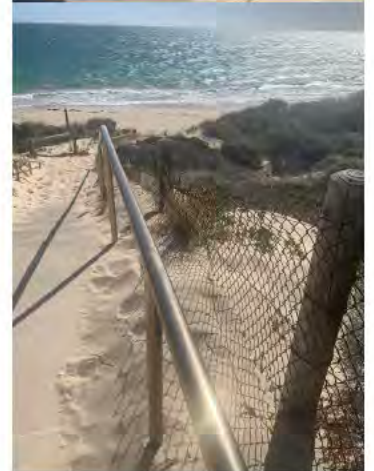
### Defect

<b>Site No.</b>	C9
<b>Site Name/ Location</b>	South Yanchep Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	16:02 (8 GMT)
<b>Item Number</b>	19
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Tea Staining
<b>Defect Description</b>	Minor tea staining was observed.
<b>Quantity of Defects</b>	16x2 + 28 = total liner m of handrail
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo

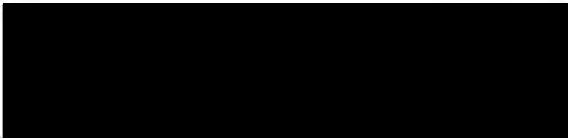


Other Comments/Inspection Limitations

Monitor at next inspection

# Appendix J

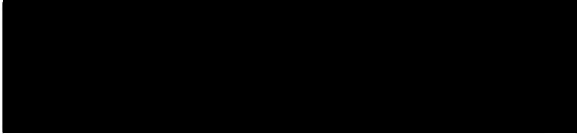
**Site C10 – Eglinton Foreshore Defect  
Forms**



# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C10
<b>Site Name/ Location</b>	Eglinton Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	13:03 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Vehicle access ramp
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Concrete Paver
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	No visible defects observed. Inspection limited as bottom of path buried in sand.
<b>Quantity of Defects</b>	Approx 4m wide x 80m long
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

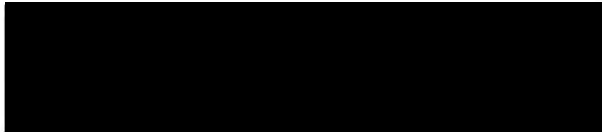
<b>Site No.</b>	C10
<b>Site Name/ Location</b>	Eglinton Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	13:07 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Bollards
<b>Element</b>	Bollards
<b>Sub-element (Bollards)</b>	Bollards
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Coating loss
<b>Defect Description</b>	Surface corrosion and coating loss observed to three bollards. Top north bollard observed to be in good condition.
<b>Quantity of Defects</b>	4 no bollards, top north bollard good condition
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	20
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C10
<b>Site Name/ Location</b>	Eglinton Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	13:02 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Concrete vehicle access ramp
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber members
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Timber splitting observed to be typical throughout
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



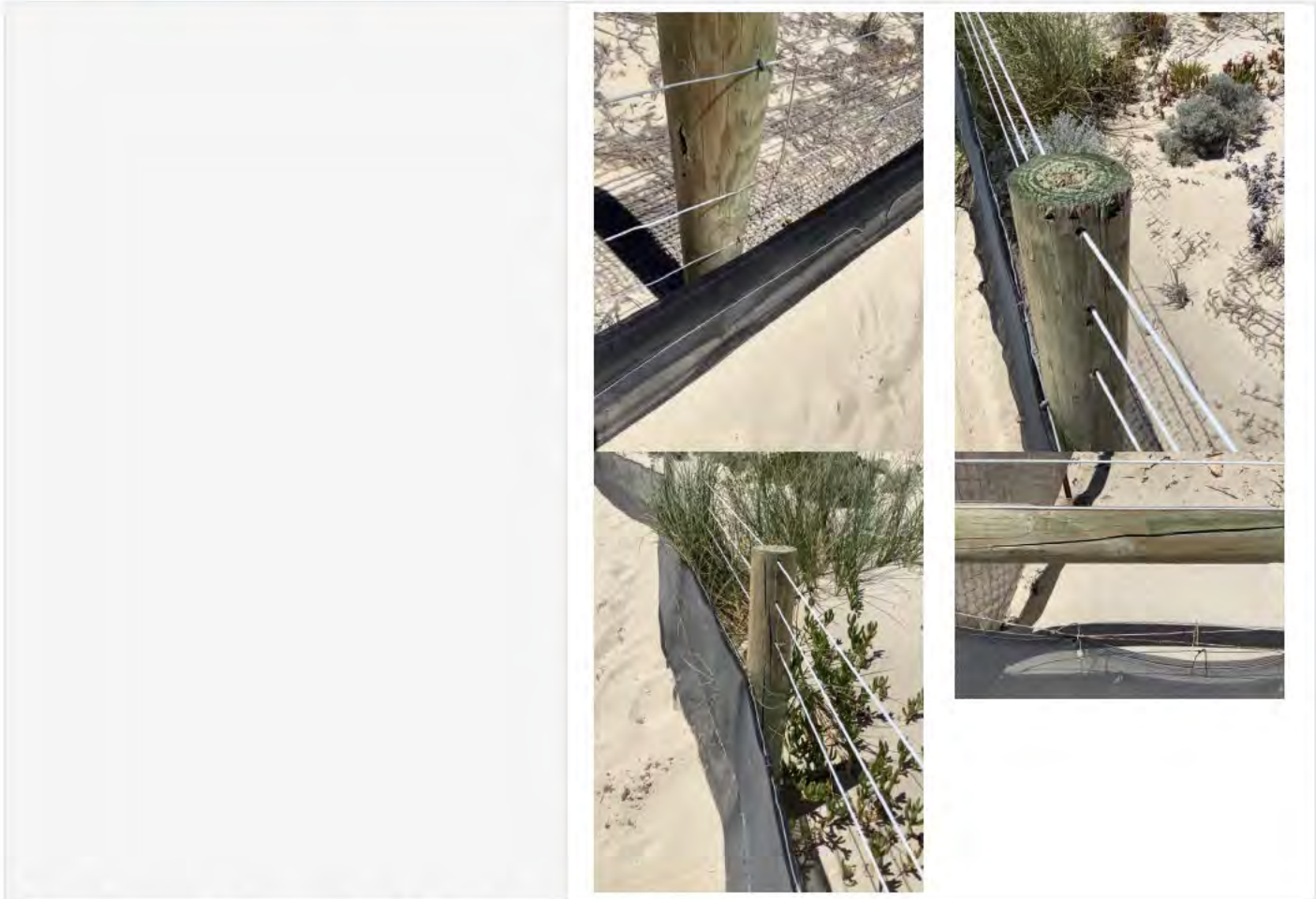
## City of Wanneroo - Coastal Asset

### Multi Photo



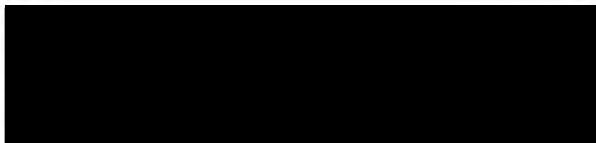


**City of Wanneroo - Coastal Asset**



**Other Comments/Inspection Limitations**

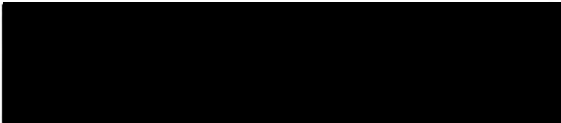
80m x 2



# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C10
<b>Site Name/ Location</b>	Eglinton Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	13:06 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Concrete vehicle access ramp
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Coating loss, Rust staining
<b>Defect Description</b>	Coating loss and rust staining observed to be typical throughout. Some areas of fence observed to be deformed.
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	20
<b>Maintenance Recommendation</b>	Replace heavily corroded or heavily deformed areas of fencing.
<b>Maintenance Timeframe</b>	Within 5 years



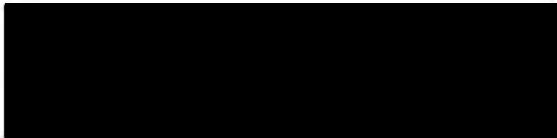
# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

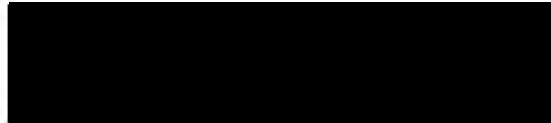
Mesh and staples



# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C10
<b>Site Name/ Location</b>	Eglinton Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	13:09 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Concrete vehicle access ramp
<b>Element</b>	Fencing
<b>Material Type (Other)</b>	Cloth
<b>Defect Description</b>	Some tears and disconnected areas observed.
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	20
<b>Maintenance Recommendation</b>	Replace/patch-up torn areas and reinstate disconnected areas.
<b>Maintenance Timeframe</b>	Within 5 years




## City of Wanneroo - Coastal Asset

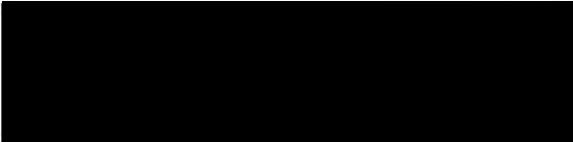
Multi Photo





**City of Wanneroo - Coastal Asset**

	
<p><b>Other Comments/Inspection Limitations</b></p>	<p>Mesh cloth</p>



# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C10
<b>Site Name/ Location</b>	Eglinton Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	13:09 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Strainer wires above mesh
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Generally good condition with minor surface corrosion on tensioners was observed.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo



# Appendix K

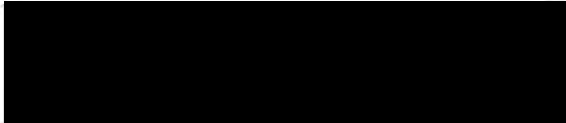
**Site C11 – Amberton Beach Foreshore  
South Defect Forms**



## City of Wanneroo - Coastal Asset

### Defect

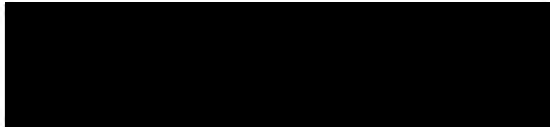
<b>Site No.</b>	C11
<b>Site Name/ Location</b>	Amberton Beach Foreshore South
<b>Date</b>	25/02/2021
<b>Time</b>	13:20 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Supports
<b>Sub-element</b>	Columns
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Coating loss, Rust staining
<b>Defect Description</b>	Coating loss and rust staining were observed to be typical. Inspection limited due to access.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

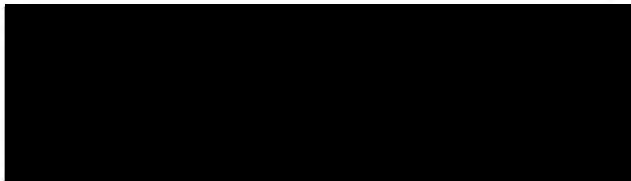




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C11
<b>Site Name/ Location</b>	Amberton Beach Foreshore South
<b>Date</b>	25/02/2021
<b>Time</b>	13:17 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Stringers and Supports
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Generally good condition with minor corrosion observed at welds.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



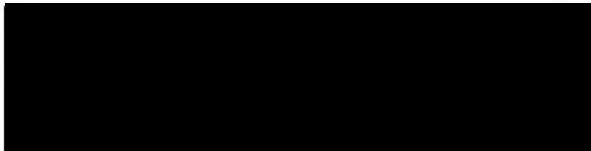
# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

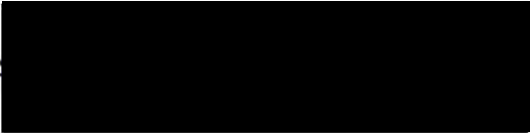
Inspected from top of stairs, no access to embankments



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C11
<b>Site Name/ Location</b>	Amberton Beach Foreshore South
<b>Date</b>	25/02/2021
<b>Time</b>	13:16 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Decking
<b>Material Type</b>	Composite Material
<b>Defect Description</b>	Some minor coating loss and one small crack observed.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

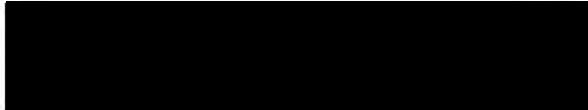




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C11
<b>Site Name/ Location</b>	Amberton Beach Foreshore South
<b>Date</b>	25/02/2021
<b>Time</b>	13:13 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Tea Staining
<b>Defect Description</b>	Generally good condition with tea staining observed to be typical throughout.
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



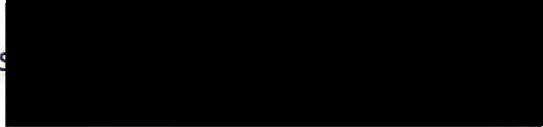
# City of Wanneroo - Coastal Asset

Multi Photo



# Appendix L

**Site C12 – Waterfront Park Defect Forms**



## City of Wanneroo - Coastal Asset

### Defect

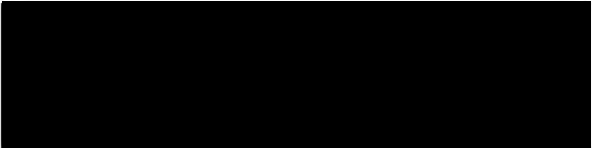
<b>Site No.</b>	C12
<b>Site Name/ Location</b>	Waterfront Park
<b>Date</b>	25/02/2021
<b>Time</b>	11:17 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Vehicle access ramp
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Base slab
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Crack, Spalling
<b>Defect Description</b>	Generally good condition with minor spalling and cracking observed at the joints.
<b>Quantity of Defects</b>	3m x 120
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

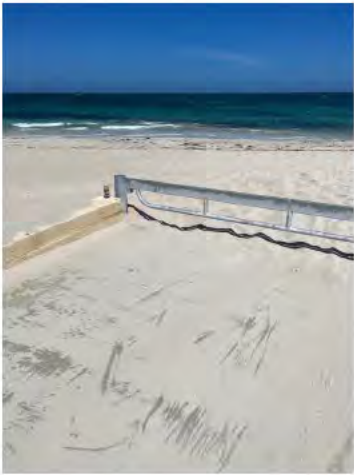
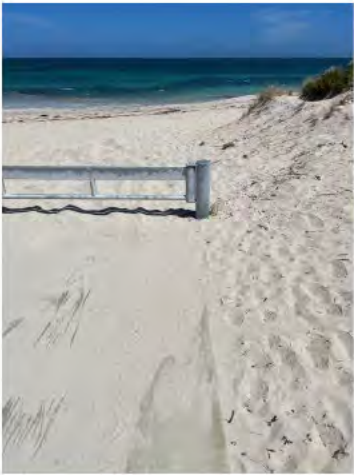
### Defect

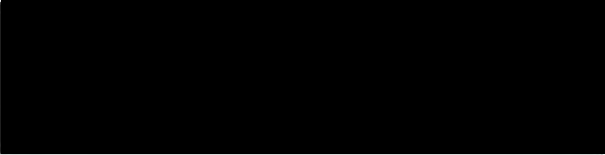
<b>Site No.</b>	C12
<b>Site Name/ Location</b>	Waterfront Park
<b>Date</b>	25/02/2021
<b>Time</b>	11:32 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Vehicle access ramp
<b>Element</b>	Boom gate
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Coating loss
<b>Defect Description</b>	Generally good condition with minor coating loss observed to be typical on the top and bottom of the gate.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

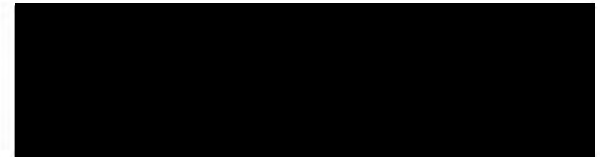
<b>Site No.</b>	C12
<b>Site Name/ Location</b>	Waterfront Park
<b>Date</b>	25/02/2021
<b>Time</b>	11:21 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Generally good condition with minor timber splitting observed.
<b>Quantity of Defects</b>	Approx 60 posts
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

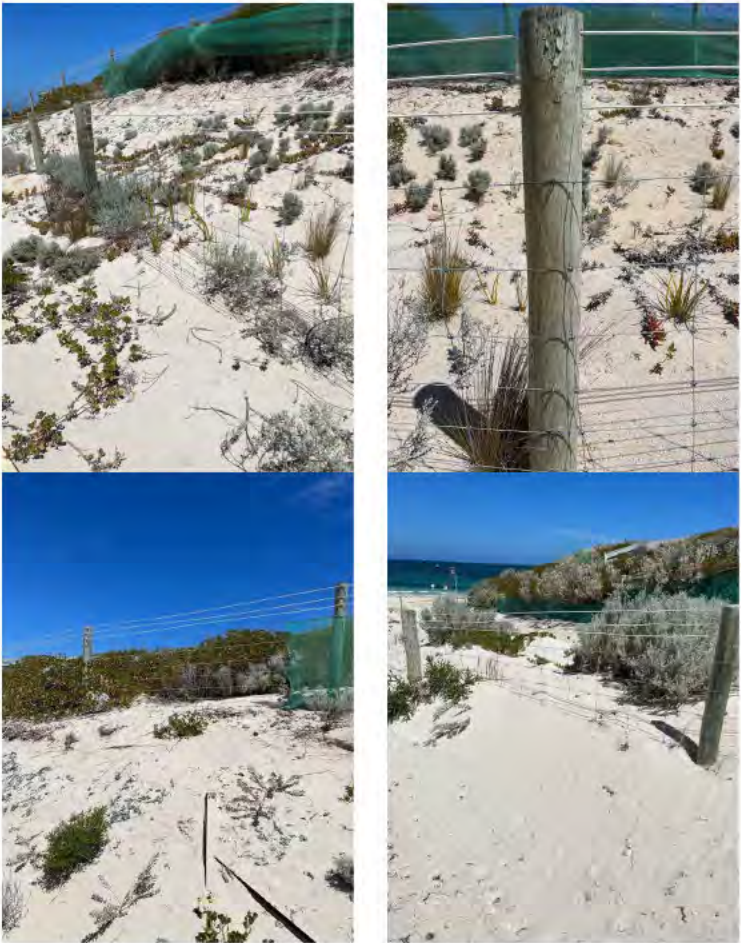
### Defect

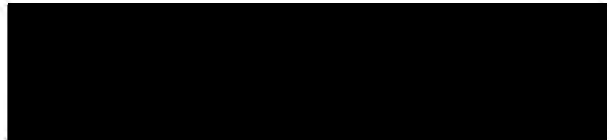
<b>Site No.</b>	C12
<b>Site Name/ Location</b>	Waterfront Park
<b>Date</b>	25/02/2021
<b>Time</b>	11:25 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh & Staples
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Generally good condition. Minor surface corrosion was observed at localised areas. The corrosion was observed to be more predominant on the northern fence. Deformation due to sand build up was also observed.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo

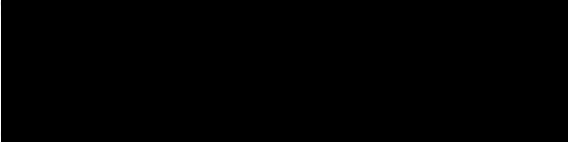




## City of Wanneroo - Coastal Asset

### Defect

Site No.	C12
Site Name/ Location	Waterfront Park
Date	25/02/2021
Time	11:30 (8 GMT)
Item Number	5
Costal Asset Type	Fencing
Element	Fencing
Sub-element (Fencing)	Windbreak fencing - Shade cloth
Material Type	Geofabric
Defect Description	Cloth observed to be deteriorated and failed at base of northern fence. Cloth noticed to be typically loose throughout.
Condition Rating (0- 10)	7
Health and Safety Concern (Y/N)	No
Consequence of Failure	2
Likelihood of Failure within next 5 years	4
Risk Rating	8
Overall Rating (CR X RR)	56
Maintenance Recommendation	Replace full length of cloth.
Maintenance Timeframe	Within 1-2 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C12
<b>Site Name/ Location</b>	Waterfront Park
<b>Date</b>	25/02/2021
<b>Time</b>	11:28 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Strainer wires above mesh
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Impact/mechanical damage
<b>Defect Description</b>	Generally good condition with localised areas of loose wire observed (most likely due to overgrown vegetation).
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

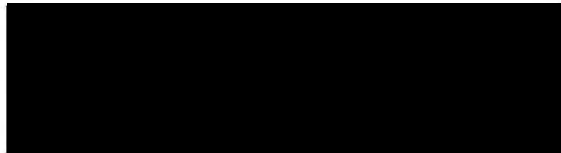




## City of Wanneroo - Coastal Asset

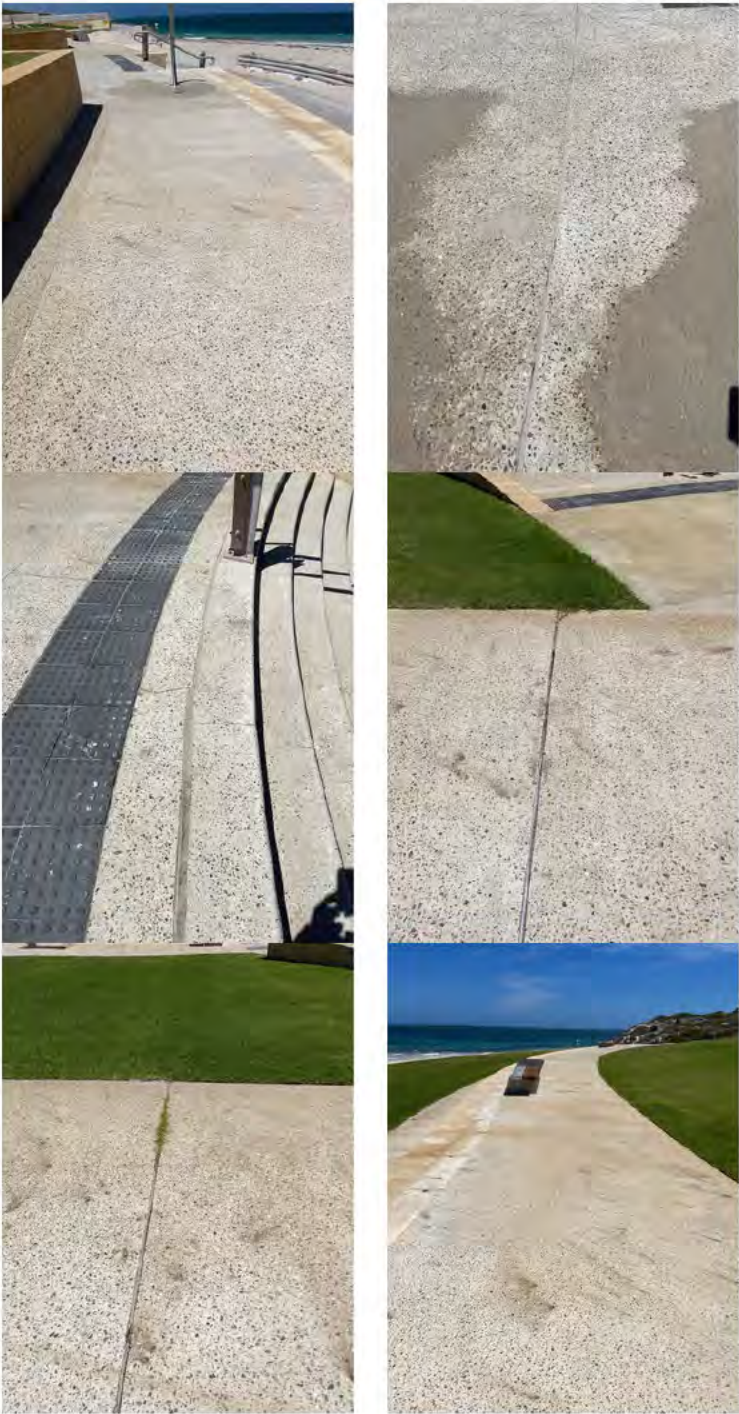
### Defect

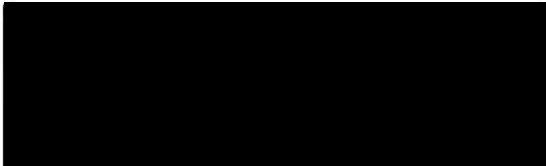
<b>Site No.</b>	C12
<b>Site Name/ Location</b>	Waterfront Park
<b>Date</b>	25/02/2021
<b>Time</b>	11:37 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Concrete path
<b>Element</b>	Path
<b>Sub-element</b>	Concrete path
<b>Material Type (Other)</b>	Concrete (Exposed aggregate concrete finish)
<b>Defect Description</b>	Generally good condition. Minor deterioration of joint sealant at wall interface was observed to be typical along with some localised areas of join sealant failure. Minor cracking at southern most staircase was also observed.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

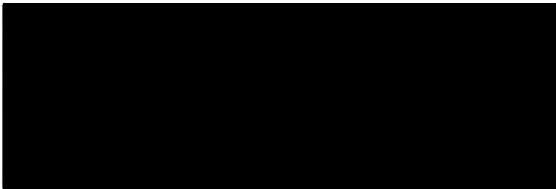




## City of Wanneroo - Coastal Asset

### Defect

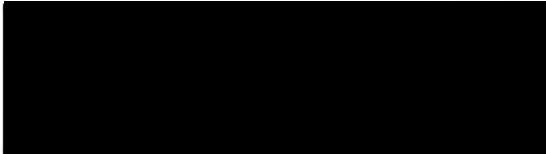
Site No.	C12
Site Name/ Location	Waterfront Park
Date	25/02/2021
Time	11:44 (8 GMT)
Item Number	8
Costal Asset Type	Concrete path
Element	Path
Material Type (Other)	Concrete
Defect Description	Heavy crack on adjacent southern most bench on level three was observed.
Quantity of Defects	2m long crack by 10mm wide
Defect Location	South end of path lv3 North end lv3
Condition Rating (0- 10)	7
Health and Safety Concern (Y/N)	No
Consequence of Failure	2
Likelihood of Failure within next 5 years	4
Risk Rating	8
Overall Rating (CR X RR)	56
Maintenance Recommendation	Conventional concrete repair
Maintenance Timeframe	Within 1-2 years



City of Wanneroo - Coastal Asset

Multi Photo

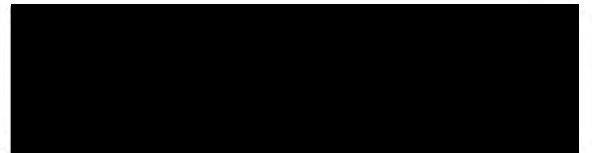




## City of Wanneroo - Coastal Asset

### Defect

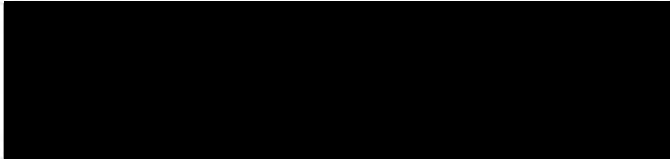
Site No.	C12
Site Name/ Location	Waterfront Park
Date	25/02/2021
Time	11:40 (8 GMT)
Item Number	9
Costal Asset Type	Stairs
Element	Staircase
Material Type (Other)	Exposed aggregate finished concrete
Defect Description	Generally good condition. The south side stairwell was observed to possess some discoloration, minor cracking and one small chip.
Condition Rating (0- 10)	2
Health and Safety Concern (Y/N)	No
Consequence of Failure	3
Likelihood of Failure within next 5 years	2
Risk Rating	6
Overall Rating (CR X RR)	12
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection.
Maintenance Timeframe	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo

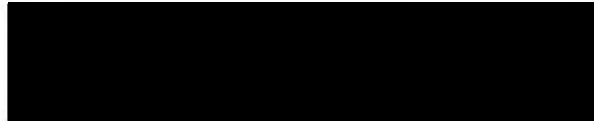




## City of Wanneroo - Coastal Asset

### Defect

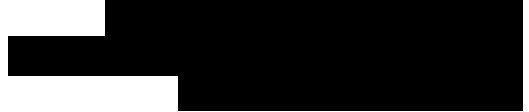
<b>Site No.</b>	C12
<b>Site Name/ Location</b>	Waterfront Park
<b>Date</b>	25/02/2021
<b>Time</b>	11:30 (8 GMT)
<b>Item Number</b>	10
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Posts
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Coating loss, Rust staining, Surface corrosion
<b>Defect Description</b>	Surface corrosion, coating loss and rust staining were typical throughout on posts and connections. These were observed to be more prominent on the ocean side of the posts.
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	56
<b>Maintenance Recommendation</b>	Replace heavily corroded posts and fixings.
<b>Maintenance Timeframe</b>	Within 5 years



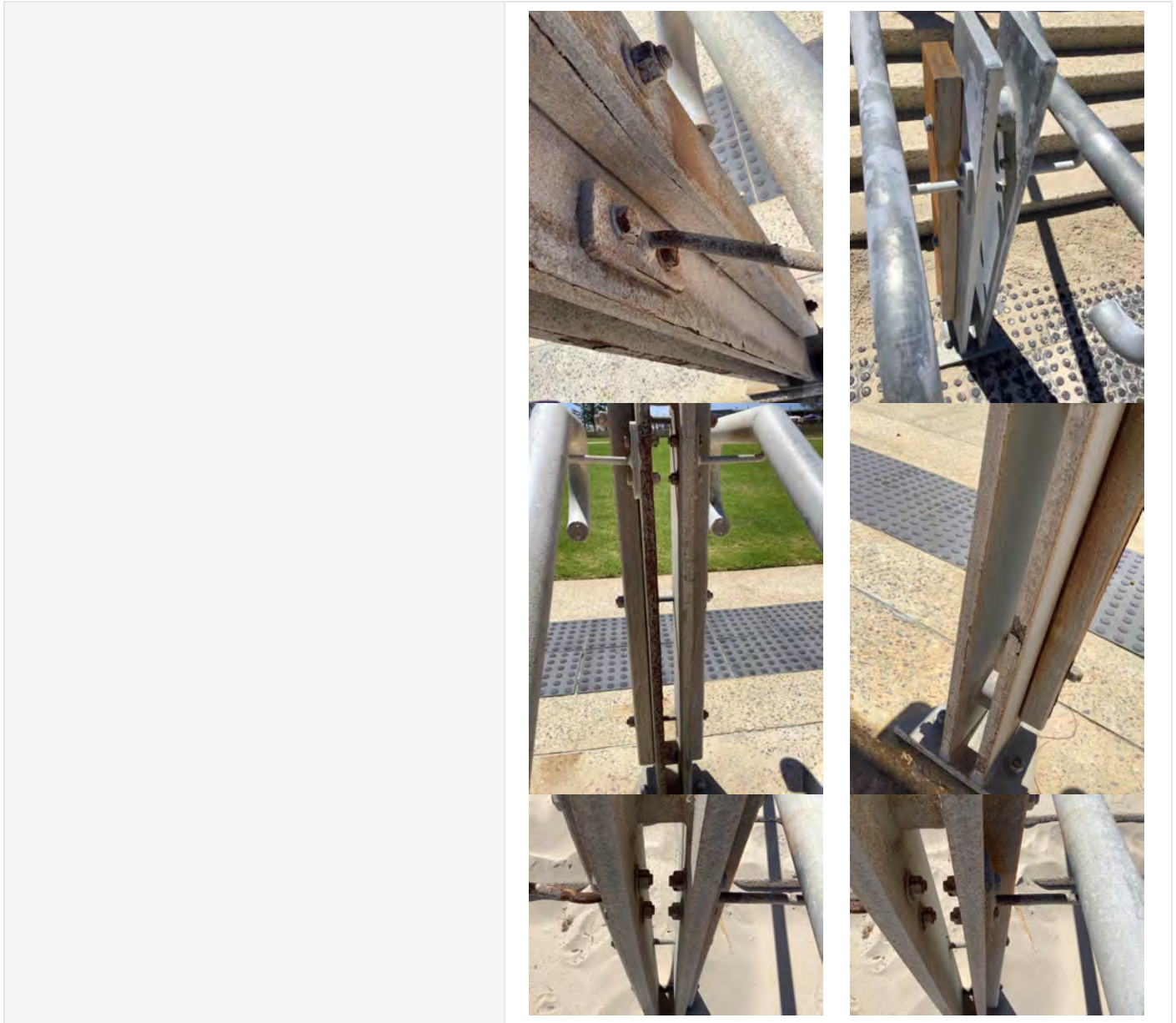
## City of Wanneroo - Coastal Asset

Multi Photo






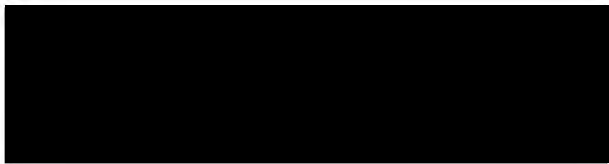
## City of Wanneroo - Coastal Asset





**City of Wanneroo - Coastal Asset**

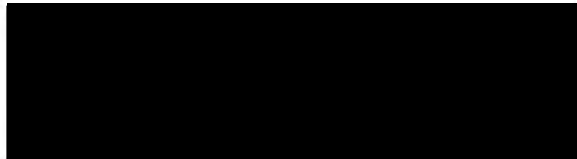
	
<b>Other Comments/Inspection Limitations</b>	All c12 steel posts and connections



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C12
<b>Site Name/ Location</b>	Waterfront Park
<b>Date</b>	25/02/2021
<b>Time</b>	11:26 (8 GMT)
<b>Item Number</b>	11
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Sub-element (Fencing)</b>	Timber members
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Generally good condition. Coating loss was observed to be typical throughout. Some members were also observed to contain split timber.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





**City of Wanneroo - Coastal Asset**

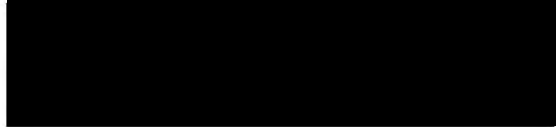
	 A close-up photograph of a metal handrail assembly. The handrail is a cylindrical metal pipe. It is supported by a vertical post that is bolted to a concrete structure. The metal shows signs of weathering and rust. The background is a light-colored, textured concrete wall.
<p><b>Other Comments/Inspection Limitations</b></p>	<p>Handrails for all c12</p>



## City of Wanneroo - Coastal Asset

### Defect

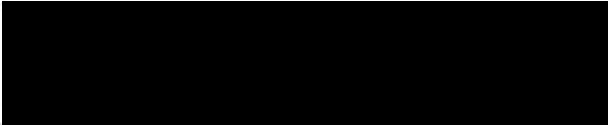
<b>Site No.</b>	C12
<b>Site Name/ Location</b>	Waterfront Park
<b>Date</b>	25/02/2021
<b>Time</b>	11:35 (8 GMT)
<b>Item Number</b>	12
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Handrail
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Rust staining
<b>Defect Description</b>	White rust observed to be typical to handrails. Some areas with minor corrosion were also observed.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

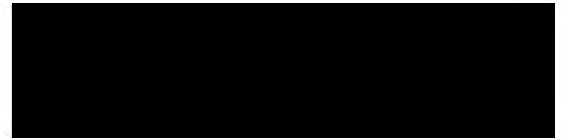
<b>Site No.</b>	C12
<b>Site Name/ Location</b>	Waterfront Park
<b>Date</b>	25/02/2021
<b>Time</b>	11:34 (8 GMT)
<b>Item Number</b>	13
<b>Costal Asset Type</b>	Sign
<b>Element</b>	Sign
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Corrosion with section loss
<b>Defect Description</b>	Heavy corrosion with sections loss observed on the signpost at the base of the vehicle access ramp.
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	9
<b>Overall Rating (CR X RR)</b>	63
<b>Maintenance Recommendation</b>	Replace signpost.
<b>Maintenance Timeframe</b>	Within 1-2 years



## City of Wanneroo - Coastal Asset

Multi Photo





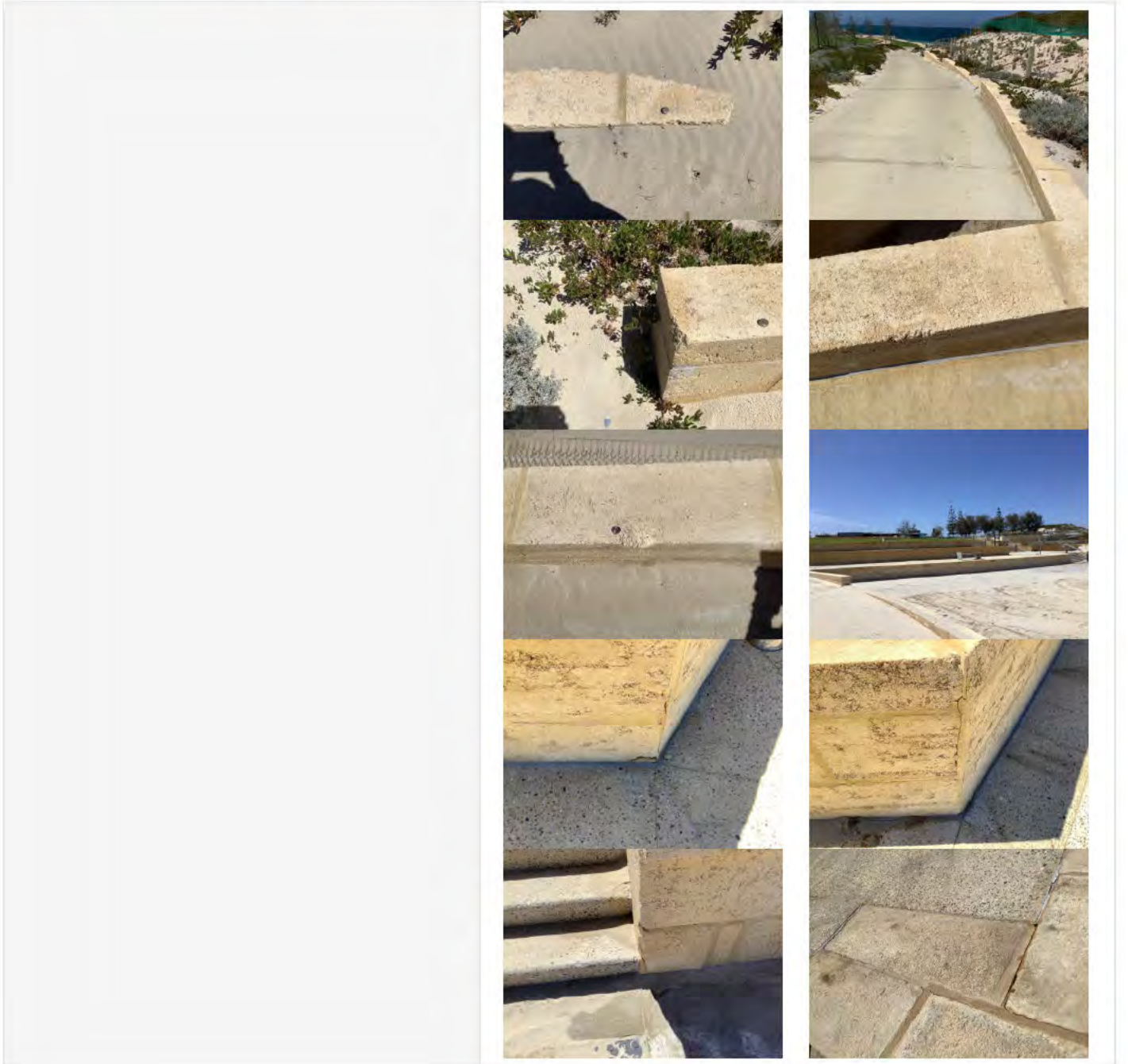
## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C12
<b>Site Name/ Location</b>	Waterfront Park
<b>Date</b>	25/02/2021
<b>Time</b>	11:16 (8 GMT)
<b>Item Number</b>	14
<b>Costal Asset Type</b>	Concrete vehicle access ramp
<b>Element</b>	Retaining Walls
<b>Material Type</b>	Limestone
<b>Defect Description</b>	Generally good condition with minor erosion on the retaining walls, specifically those closest to the water.
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years

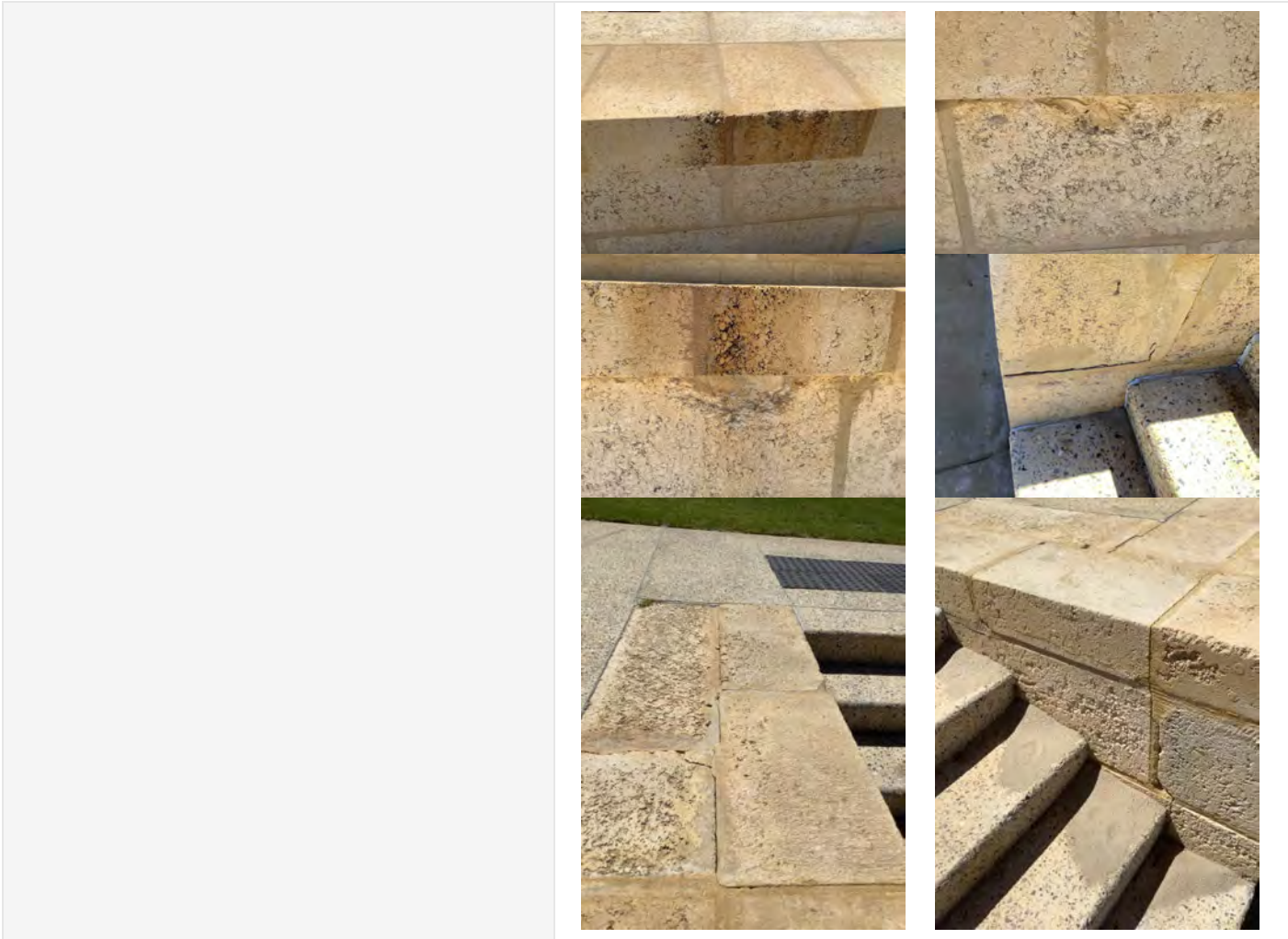


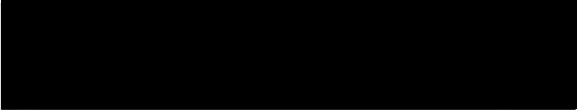
## City of Wanneroo - Coastal Asset






City of Wanneroo - Coastal Asset





**City of Wanneroo - Coastal Asset**

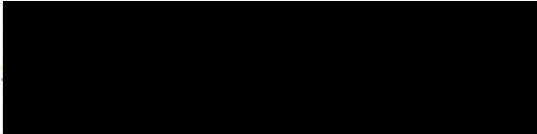
	
<p><b>Other Comments/Inspection Limitations</b></p>	<p>Retaining walls across all c12</p>



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C12
<b>Site Name/ Location</b>	Waterfront Park
<b>Date</b>	25/02/2021
<b>Time</b>	11:48 (8 GMT)
<b>Item Number</b>	15
<b>Costal Asset Type</b>	Bench seats
<b>Element</b>	Bench
<b>Sub-element (Bench)</b>	Steel frame and base plates
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Failed
<b>Defect Description</b>	One failed bench, marked with danger tape. The rest of the benches observed to be in good condition.
<b>Quantity of Defects</b>	1 no seat
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	Yes
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	9
<b>Overall Rating (CR X RR)</b>	63
<b>Maintenance Recommendation</b>	Make failed bench safe, be replacing or fixing damage. Other benches to be monitored and reinspected at next scheduled inspection.
<b>Maintenance Timeframe</b>	Immediately



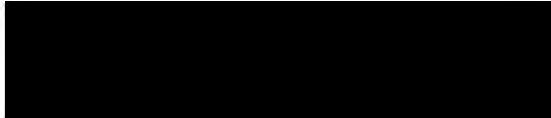
### City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Remaining benches generally in good condition



# City of Wanneroo - Coastal Asset

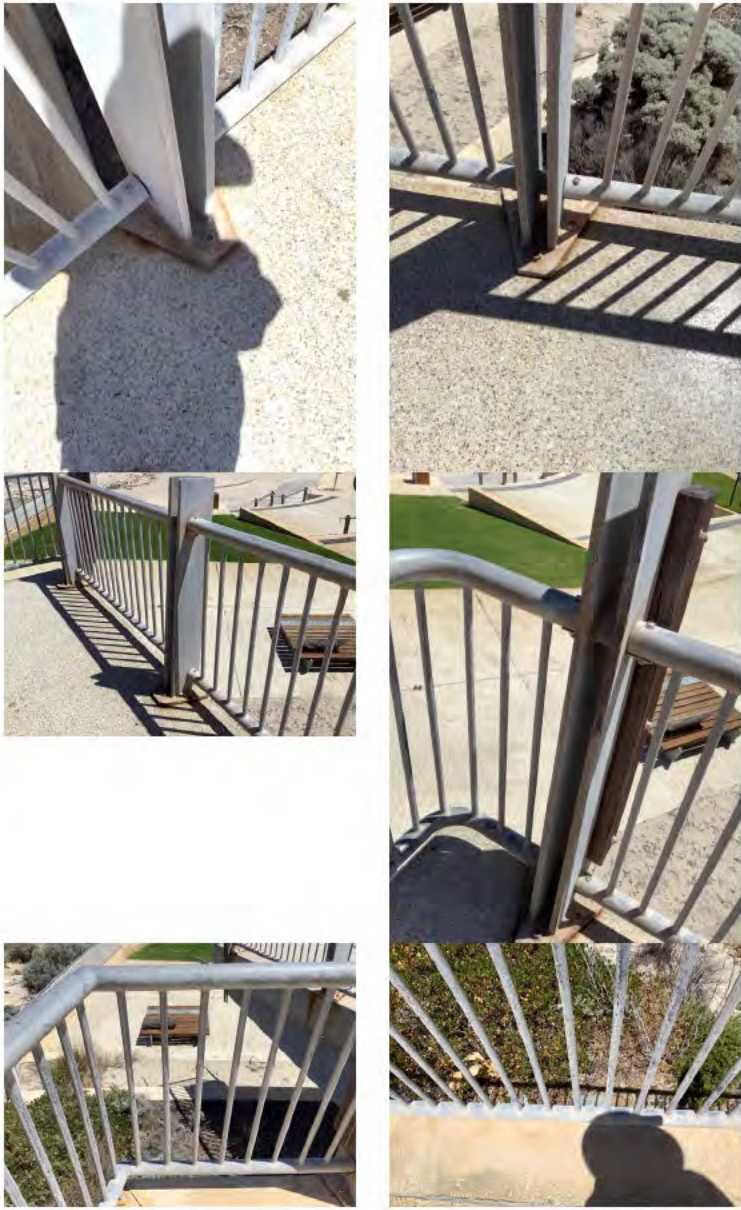
## Defect

<b>Site No.</b>	C12
<b>Site Name/ Location</b>	Waterfront Park
<b>Date</b>	25/02/2021
<b>Time</b>	11:54 (8 GMT)
<b>Item Number</b>	16
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Handrails
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Coating loss
<b>Defect Description</b>	Generally good condition with minor surface corrosion and coating loss observed to be typical throughout.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	18
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



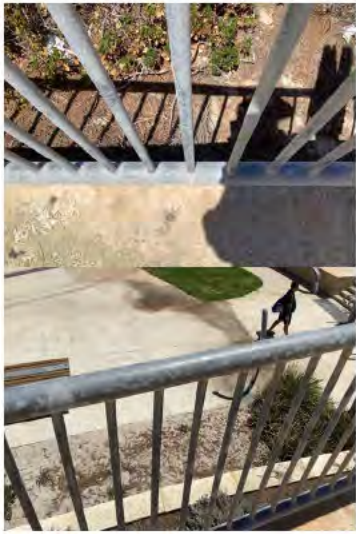
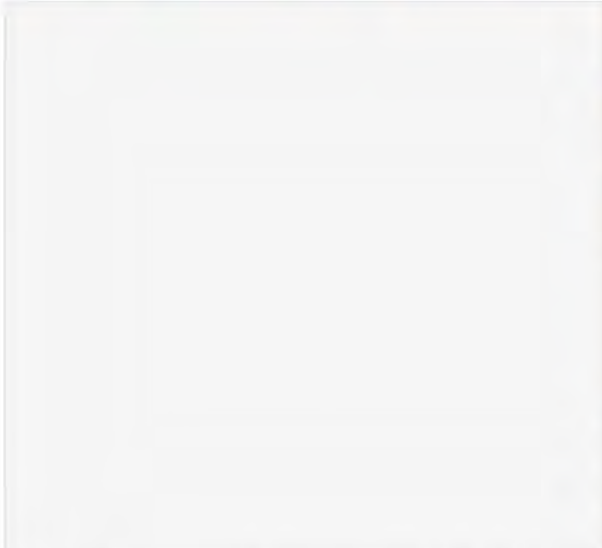
City of Wanneroo - Coastal Asset

Multi Photo





**City of Wanneroo - Coastal Asset**



**Other Comments/Inspection Limitations**

**Rails and Balustrades**

# Appendix M

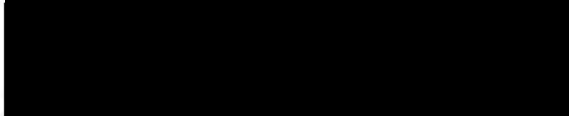
**Site C13 – Alkimos Beach Defect Forms**



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:14 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Vehicle access ramp
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Base slab
<b>Material Type</b>	Asphalt
<b>Defect Description</b>	An asphalt pothole was observed (1.8 m from bottom of ramp)
<b>Defect Location</b>	18m from base of ramp
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	Yes
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	12
<b>Overall Rating (CR X RR)</b>	60
<b>Maintenance Recommendation</b>	Fill in pothole.
<b>Maintenance Timeframe</b>	Immediately



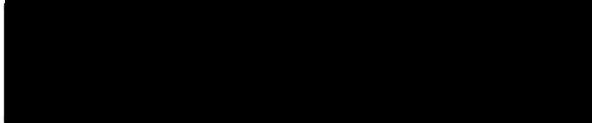
**City of Wanneroo - Coastal Asset**

**Multi Photo**



**Other Comments/Inspection Limitations**

Pothole trip hazard



## City of Wanneroo - Coastal Asset

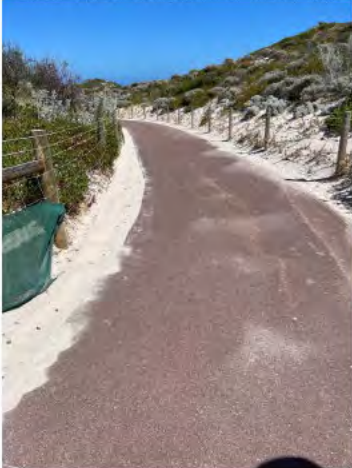
### Defect

<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:17 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Vehicle access ramp
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Base slab
<b>Material Type</b>	Asphalt
<b>Defect Description</b>	Generally good condition with some cracking observed adjacent to the footpath.
<b>Quantity of Defects</b>	3m x approx 180m
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo





Date Submitted: 25/02/2021 19:06



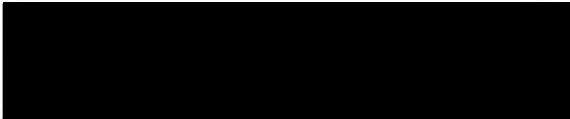
## City of Wanneroo - Coastal Asset



## City of Wanneroo - Coastal Asset

### Defect

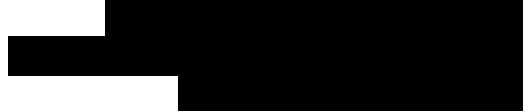
<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:13 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Concrete vehicle access ramp
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Salt kill, Split timber
<b>Defect Description</b>	Salt kill and split timber was observed to be typical throughout.
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	15
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



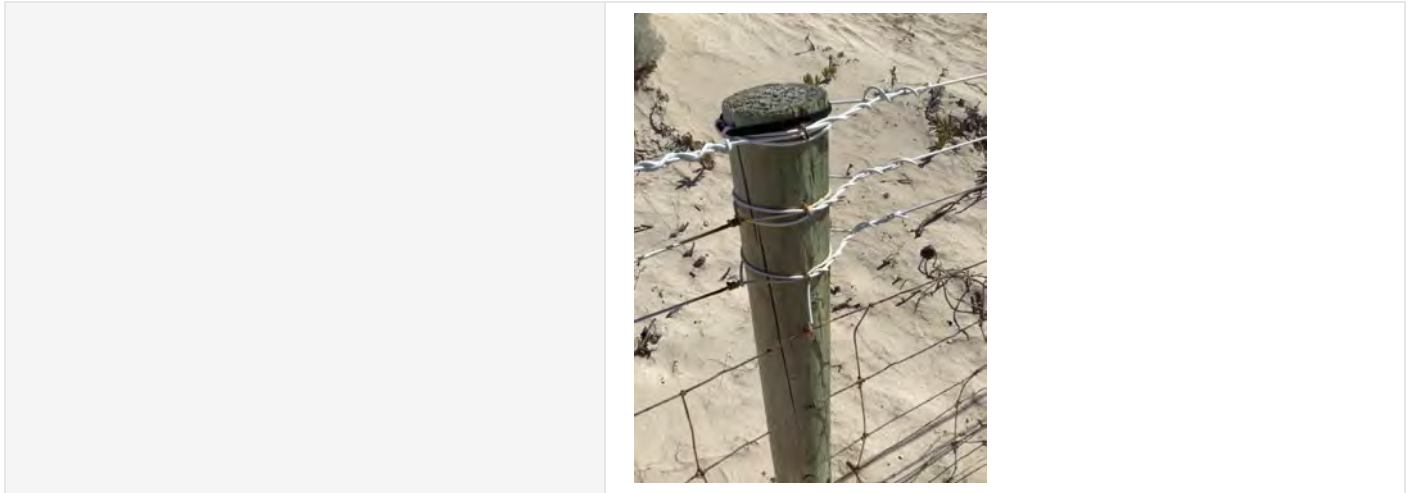
City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

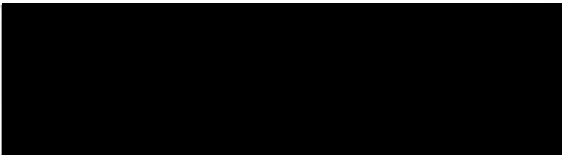




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:16 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Concrete vehicle access ramp
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Localised impact damage, typical widespread corrosion.
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	15
<b>Maintenance Recommendation</b>	Replace damaged and heavily rusted sections
<b>Maintenance Timeframe</b>	Within 5 years



# City of Wanneroo - Coastal Asset

Multi Photo





# City of Wanneroo - Coastal Asset

## Defect

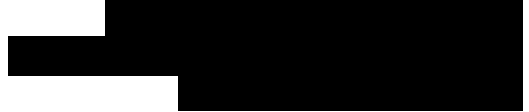
<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:18 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Concrete vehicle access ramp
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh staples
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Rust staining, Coating loss
<b>Defect Description</b>	Typical surface corrosion. A number of loose and missing staples were also observed.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Replace Missing, and heavily rusted staples
<b>Maintenance Timeframe</b>	Within 5 years



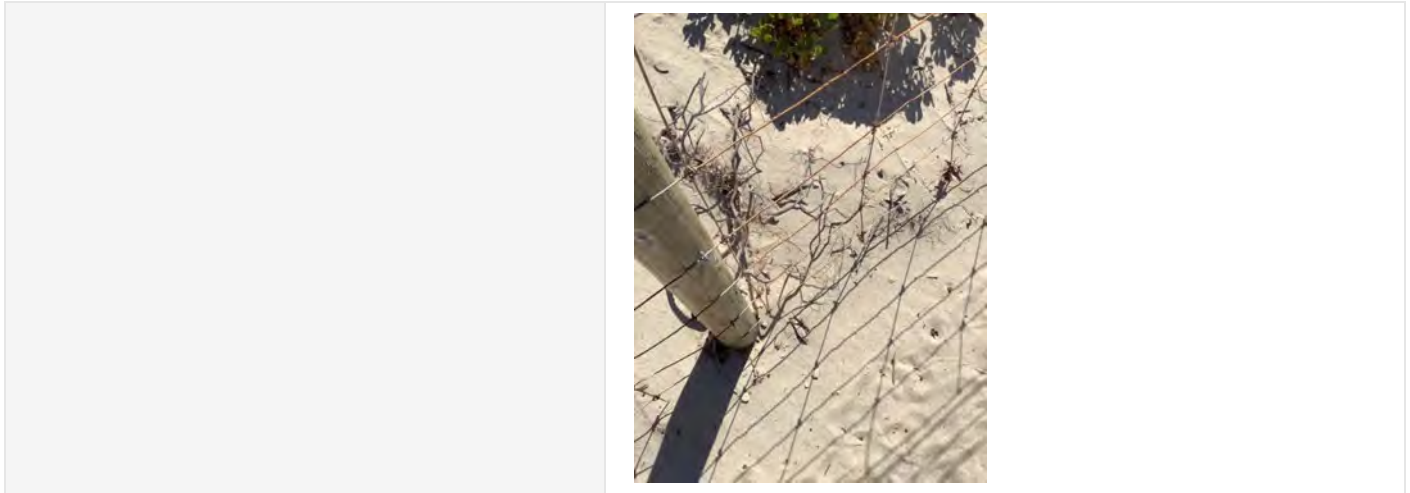
City of Wanneroo - Coastal Asset

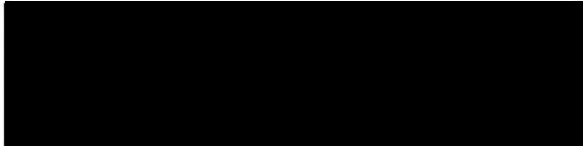
Multi Photo





## City of Wanneroo - Coastal Asset

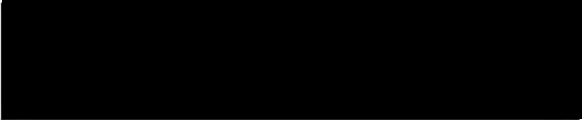




## City of Wanneroo - Coastal Asset

### Defect

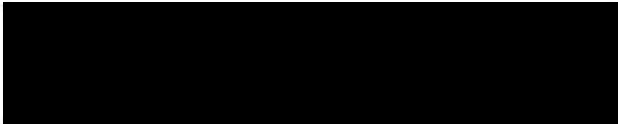
<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:27 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Vehicle access ramp
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Strainer wires above mesh
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Generally good condition with some minor corrosion observed at localised areas. A loose wire was also observed on the north side halfway down the ramp (due to missing staples).
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

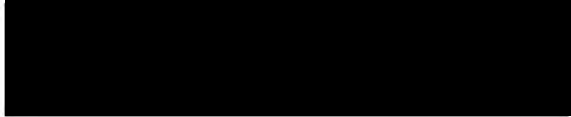




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:22 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Vehicle access ramp
<b>Element</b>	Bollards
<b>Sub-element (Bollards)</b>	Bollards
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Surface corrosion was observed around the lock bracket. The bollard was observed to be missing its lock.
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	10
<b>Maintenance Recommendation</b>	Replace lock if required by COW
<b>Maintenance Timeframe</b>	Immediately



# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

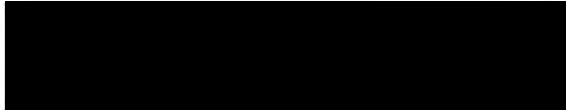
Replace lock if required by cow



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:25 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Vehicle access ramp
<b>Element</b>	Sign
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Corrosion with section loss
<b>Defect Description</b>	Some surface corrosion with apparent section loss to the signs at the top of the ramp was observed
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	9
<b>Overall Rating (CR X RR)</b>	54
<b>Maintenance Recommendation</b>	Blast clean heavily corroded areas. Add coating if over areas with section loss after blast cleaning.
<b>Maintenance Timeframe</b>	Within 1-2 years



# City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

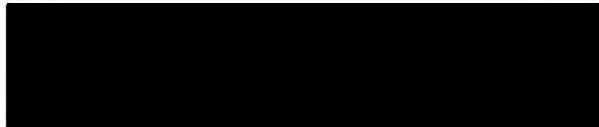
<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:31 (8 GMT)
<b>Item Number</b>	9
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Stair treads
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	No visible defects were observed
<b>Defect Description</b>	Concrete beach stairs, with steel brackets
<b>Quantity of Defects</b>	55 treads approx 1m long
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:34 (8 GMT)
<b>Item Number</b>	10
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Base slab
<b>Material Type</b>	Concrete
<b>Observed Defects</b>	No visible defects were observed
<b>Defect Description</b>	Concrete path from access ramp stair to look stairs
<b>Quantity of Defects</b>	Approx 15m <sup>2</sup>
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

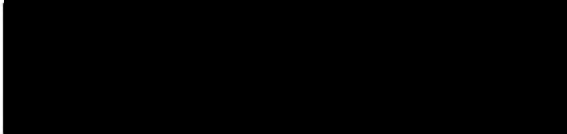




## City of Wanneroo - Coastal Asset

### Defect

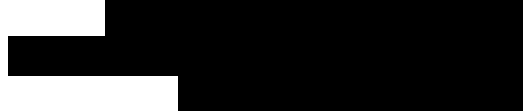
<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:28 (8 GMT)
<b>Item Number</b>	11
<b>Costal Asset Type</b>	Stairs and Lookout
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Posts and Railing
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Timber splitting was noticed to be typical throughout (Observed to be more common to railing than posts.)
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	15
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



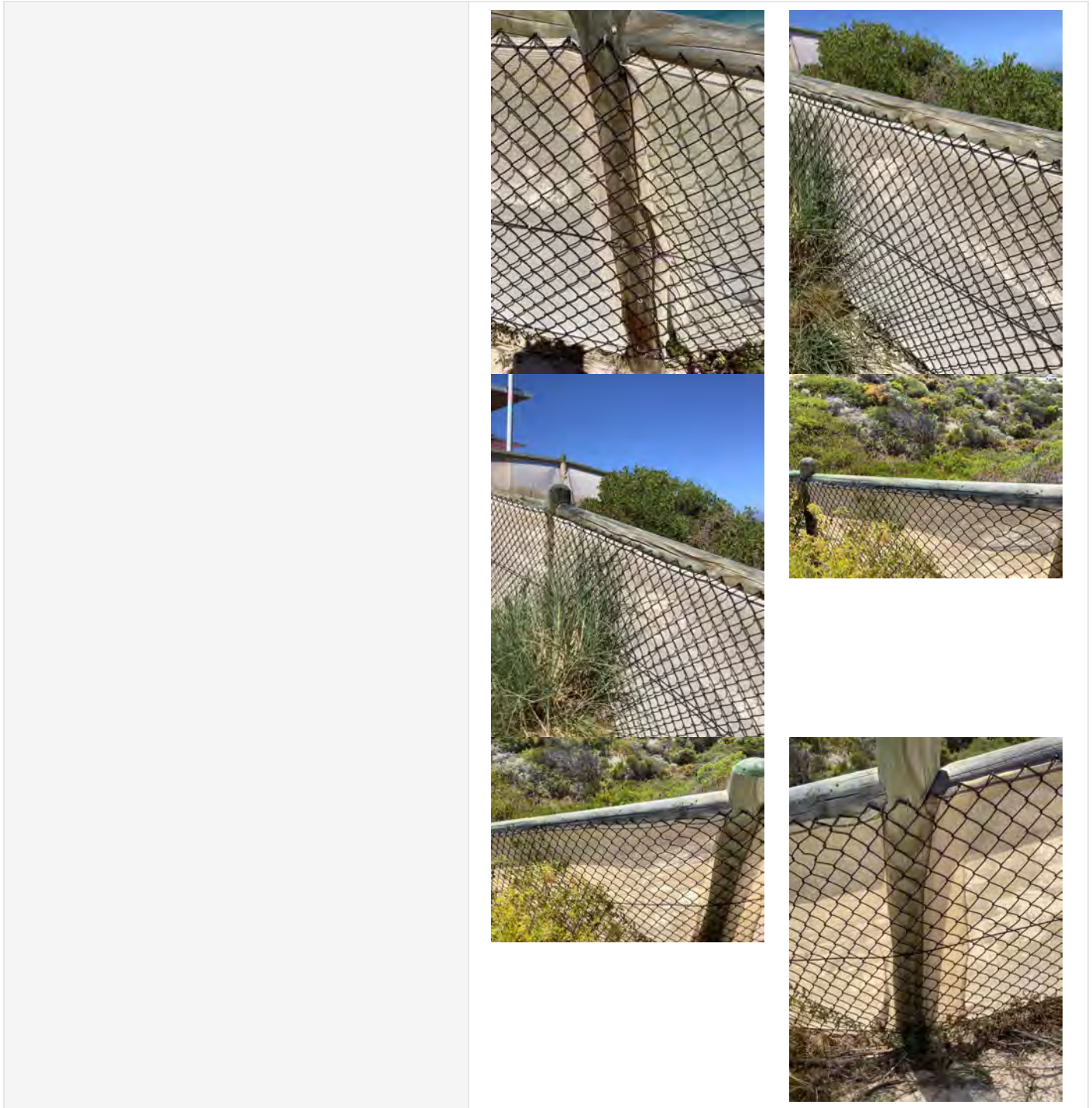
City of Wanneroo - Coastal Asset

Multi Photo



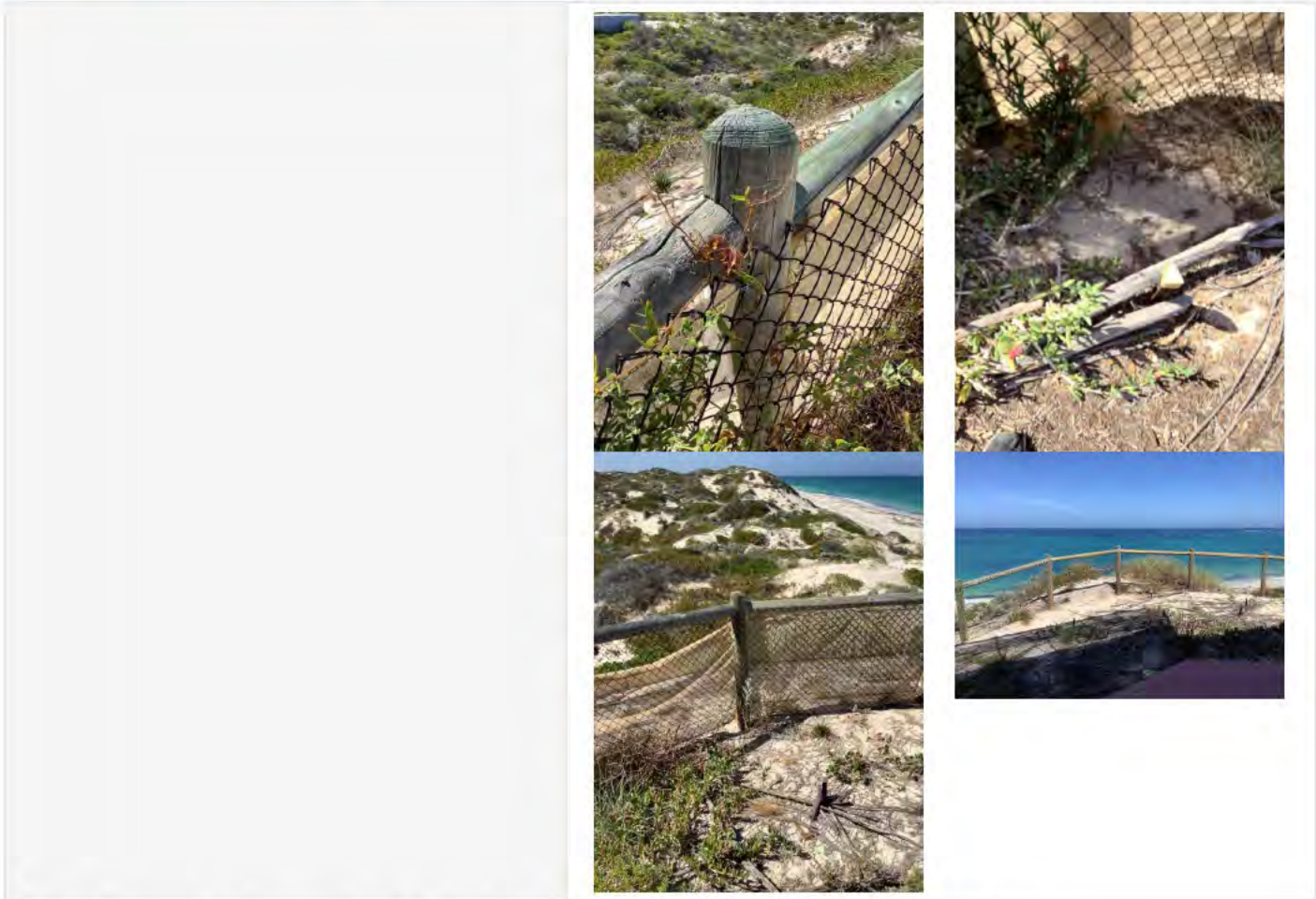


## City of Wanneroo - Coastal Asset



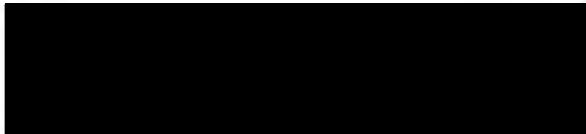


**City of Wanneroo - Coastal Asset**



**Other Comments/Inspection Limitations**

Fence for lookout and stairs and sand path



## City of Wanneroo - Coastal Asset

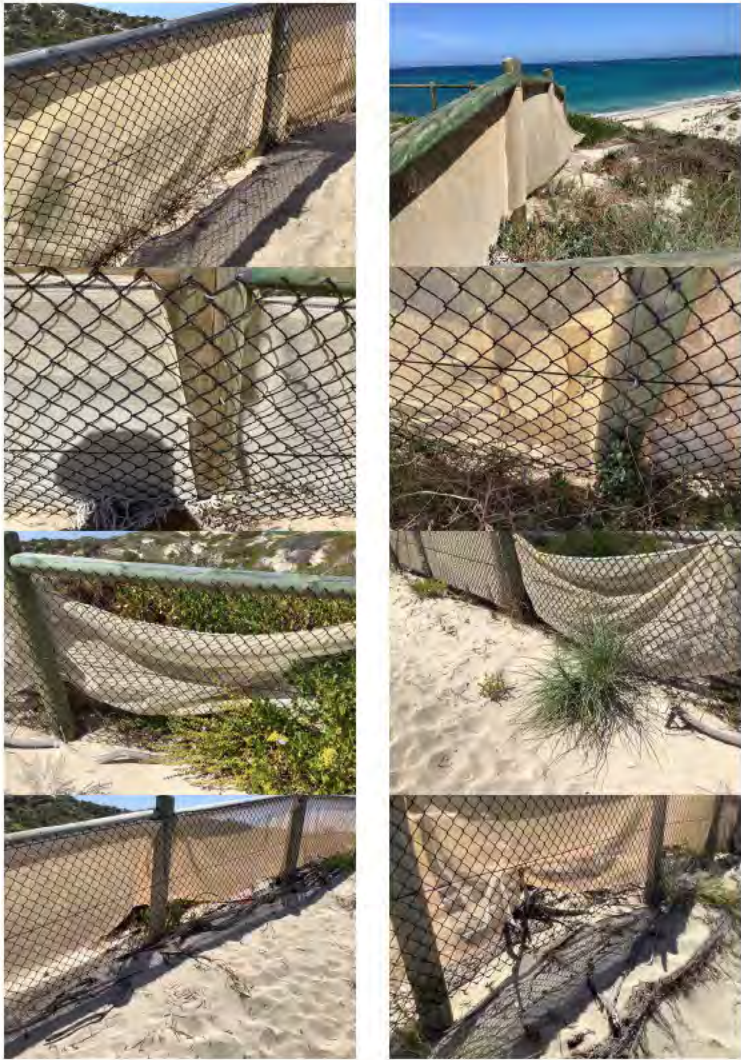
### Defect

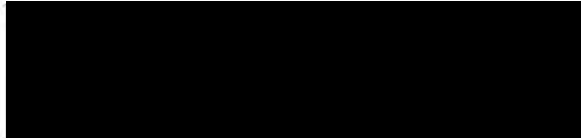
<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:32 (8 GMT)
<b>Item Number</b>	12
<b>Costal Asset Type</b>	Stairs and Lookout
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Windbreak fencing - Shade cloth
<b>Material Type (Other)</b>	Fabric
<b>Defect Description</b>	Some areas with holes and tears were noticed. There were observed to be parts with detached or loose sections (this was more common on the sand path leading to the carpark from the lookout)
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	5
<b>Risk Rating</b>	5
<b>Overall Rating (CR X RR)</b>	30
<b>Maintenance Recommendation</b>	Replace or reinstate torn and detached sections.
<b>Maintenance Timeframe</b>	Within 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:37 (8 GMT)
<b>Item Number</b>	13
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**



**Other Comments/Inspection Limitations**

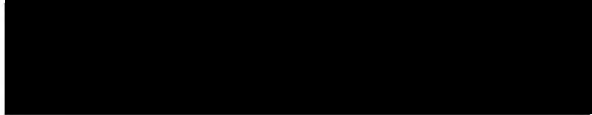
Mesh and staples



## City of Wanneroo - Coastal Asset

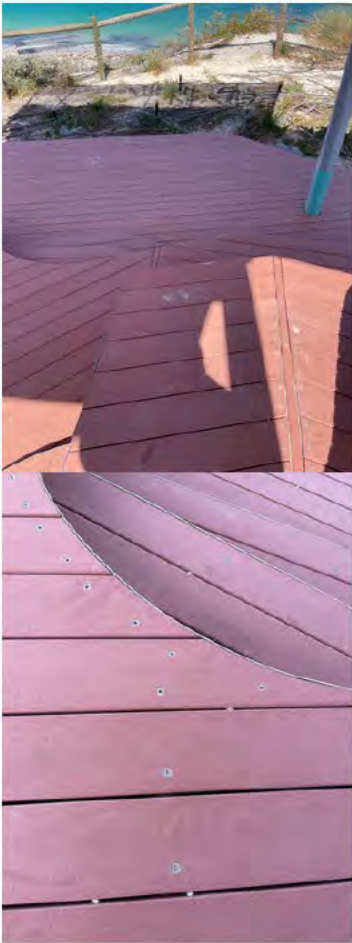
### Defect

<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:39 (8 GMT)
<b>Item Number</b>	14
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Decking
<b>Sub-element (Decking and Supports)</b>	Deck planks
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	No visible defects were observed
<b>Defect Description</b>	Pertains to deck planks and connections
<b>Quantity of Defects</b>	Approx 70m2
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

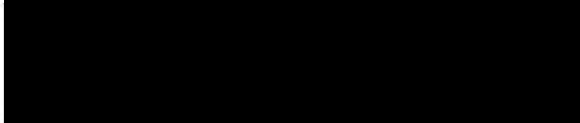




## City of Wanneroo - Coastal Asset

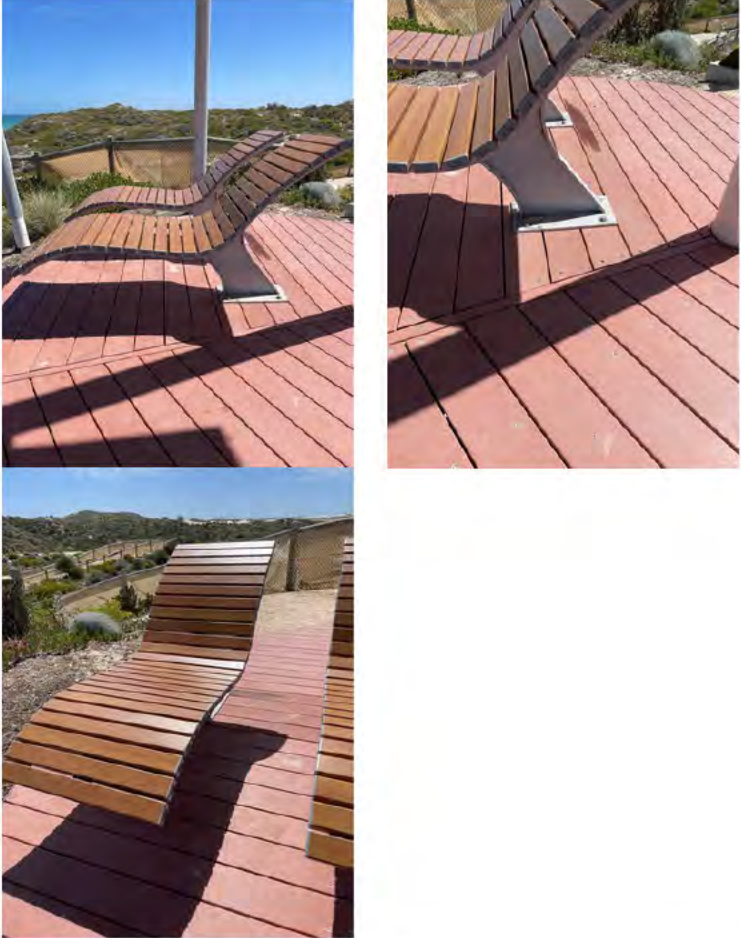
### Defect

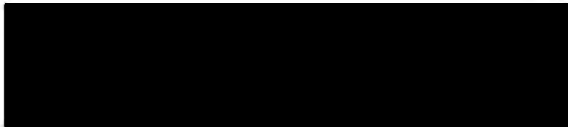
<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:41 (8 GMT)
<b>Item Number</b>	15
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Deck Chairs
<b>Sub-element (Bench)</b>	Steel frame and base plates
<b>Material Type</b>	Timber, Steel
<b>2021 Observed Defects (Timber)</b>	No visible defects were observed
<b>2021 Observed Defects (Steel)</b>	Coating loss
<b>Defect Description</b>	No visible defects were observed on timber sections. Minor coating loss was observed to steel base plates
<b>Quantity of Defects</b>	2 no chairs
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

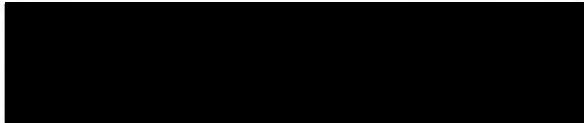
<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:43 (8 GMT)
<b>Item Number</b>	16
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Supports
<b>Sub-element</b>	Columns
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Generally good condition with some minor surface corrosion to the base plates observed, and minor surface corrosion and white rust to the columns also observed.
<b>Quantity of Defects</b>	6 columns approx 2.5m tall
<b>Defect Location</b>	Base plates, towards roof
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

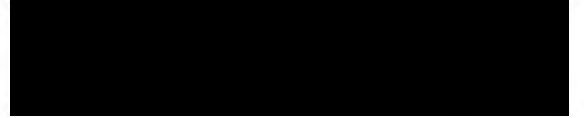




# City of Wanneroo - Coastal Asset

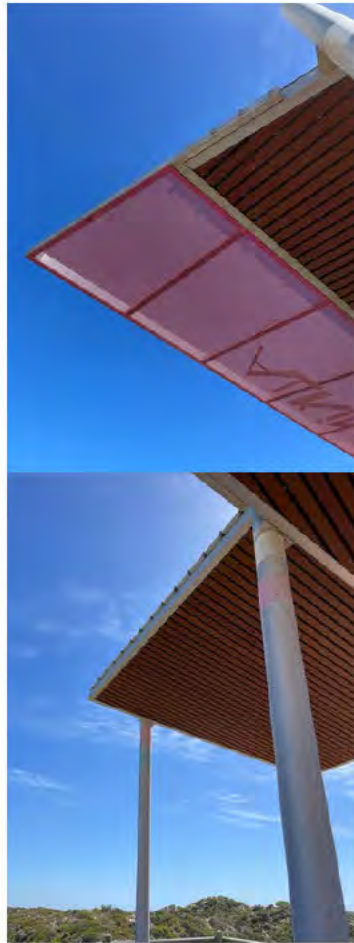
## Defect

<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:48 (8 GMT)
<b>Item Number</b>	17
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Supports
<b>Sub-element (Decking and Supports)</b>	Support beams
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>Defect Description</b>	Generally good condition
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



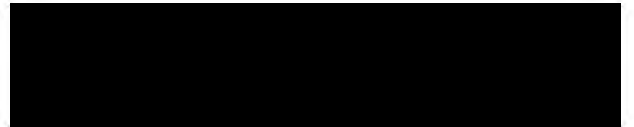
## City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Inspected from lookout ground level, roof sheeting not inspected



## City of Wanneroo - Coastal Asset

### Defect

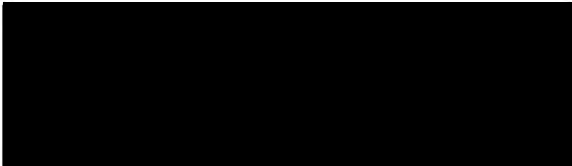
<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:46 (8 GMT)
<b>Item Number</b>	18
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Supports
<b>Sub-element (Decking and Supports)</b>	Steel support bolts
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>Defect Description</b>	Generally good condition, no corrosion identified approx 4 bolts a column
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

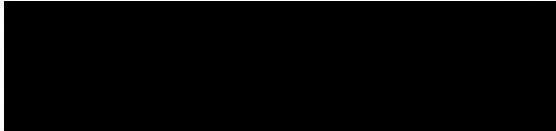




# City of Wanneroo - Coastal Asset

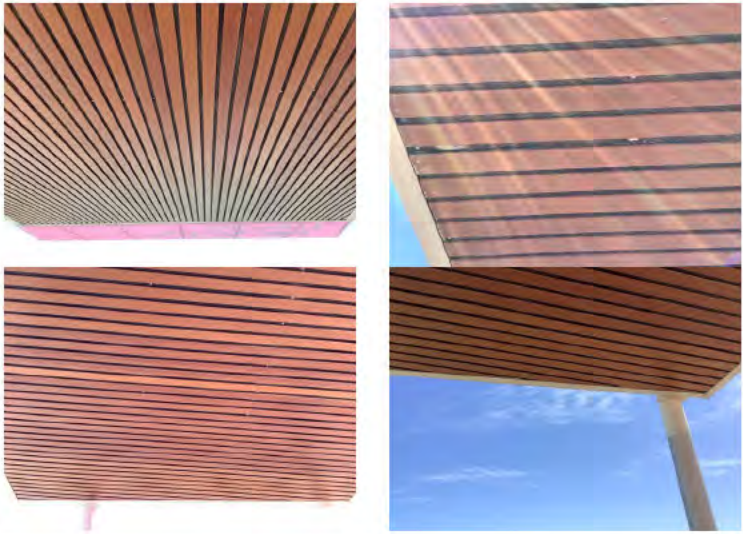
## Defect

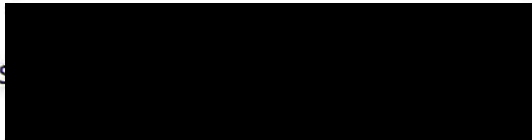
<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:45 (8 GMT)
<b>Item Number</b>	19
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Timber roofing
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Crack
<b>Defect Description</b>	One section of the roof contains a small crack No other visible defects were observed
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	18
<b>Maintenance Recommendation</b>	Monitor at next inspection
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C13
<b>Site Name/ Location</b>	Alkimos Beach
<b>Date</b>	25/02/2021
<b>Time</b>	10:48 (8 GMT)
<b>Item Number</b>	20
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	FRP roofing
<b>Material Type</b>	FRP
<b>2021 Observed Defects (FRP)</b>	No visible defects were observed
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



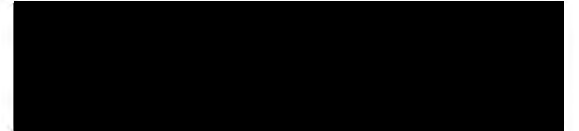
## City of Wanneroo - Coastal Asset

Multi Photo



# Appendix N

**Site C14 – Jindalee Foreshore Carpark  
Defect Forms**



## City of Wanneroo - Coastal Asset

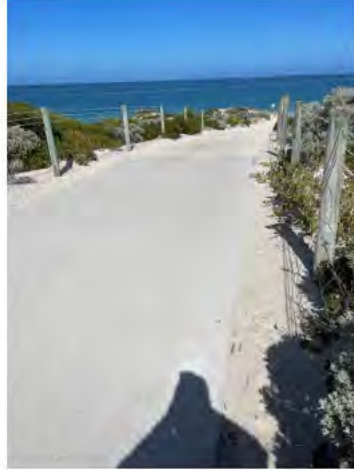
### Defect

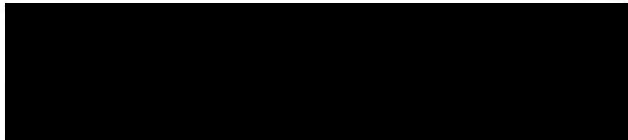
<b>Site No.</b>	C14
<b>Site Name/ Location</b>	Jindalee Foreshore Carpark
<b>Date</b>	25/02/2021
<b>Time</b>	09:41 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Vehicle access ramp
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Base slab
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	No visible defects were observed
<b>Quantity of Defects</b>	12m long x 2.5m wide refurbished slab in good condition
<b>Defect Location</b>	Top of access way
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

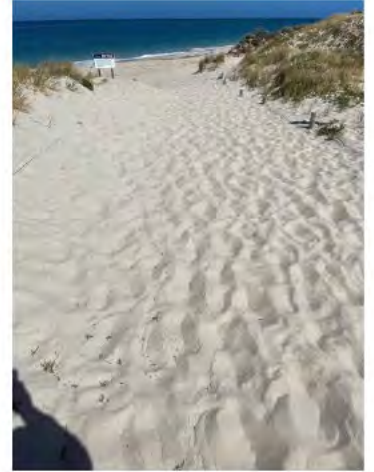
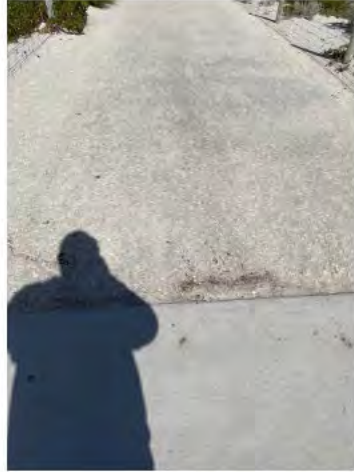
### Defect

<b>Site No.</b>	C14
<b>Site Name/ Location</b>	Jindalee Foreshore Carpark
<b>Date</b>	25/02/2021
<b>Time</b>	09:43 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Vehicle access ramp
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Base slab
<b>Material Type (Other)</b>	Exposed Aggregate Concrete
<b>Defect Description</b>	No Visible defects were observed. Inspection limited as bottom 20 m of base buried.
<b>Quantity of Defects</b>	Approx 60m by 2.5m wide
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

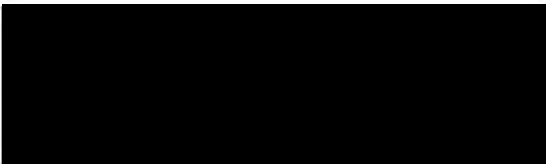
Site No.	C14
Site Name/ Location	Jindalee Foreshore Carpark
Date	25/02/2021
Time	09:36 (8 GMT)
Item Number	3
Costal Asset Type	Concrete vehicle access ramp
Element	Fencing
Sub-element (Fencing)	Timber posts
Material Type	Timber
2021 Observed Defects (Timber)	Split timber, Salt kill
Defect Description	Generally good condition with some timber splitting and salt kill observed.
Condition Rating (0- 10)	3
Health and Safety Concern (Y/N)	No
Consequence of Failure	2
Likelihood of Failure within next 5 years	1
Risk Rating	2
Overall Rating (CR X RR)	8
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection.
Maintenance Timeframe	Greater than 5 years



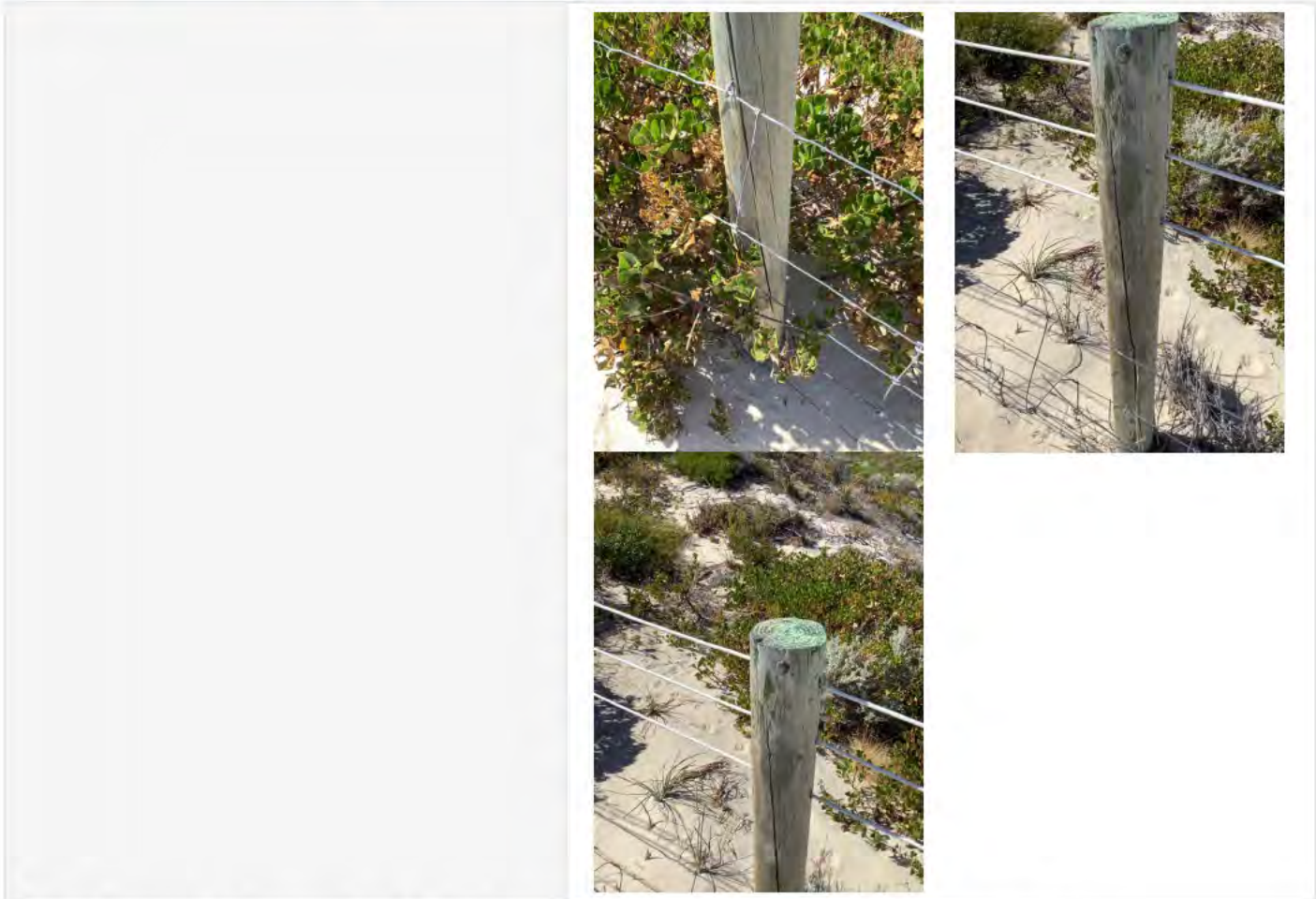
## City of Wanneroo - Coastal Asset

Multi Photo





City of Wanneroo - Coastal Asset



**Other Comments/Inspection Limitations**

42 posts. Some are hidden as sand has risen



## City of Wanneroo - Coastal Asset

### Defect

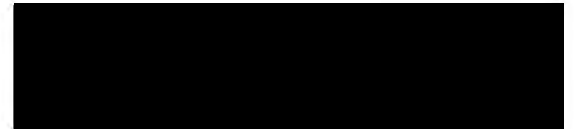
<b>Site No.</b>	C14
<b>Site Name/ Location</b>	Jindalee Foreshore Carpark
<b>Date</b>	25/02/2021
<b>Time</b>	09:54 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Concrete vehicle access ramp
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Failed
<b>Defect Description</b>	Fence torn apart
<b>Defect Location</b>	Torn Fence observed outside the ramp area to the north near the benches.
<b>Condition Rating (0- 10)</b>	9
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	5
<b>Risk Rating</b>	5
<b>Overall Rating (CR X RR)</b>	50
<b>Maintenance Recommendation</b>	Replace damaged section of fencing.
<b>Maintenance Timeframe</b>	Within 1-2 years



# City of Wanneroo - Coastal Asset

Multi Photo

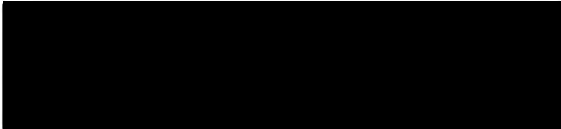




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C14
<b>Site Name/ Location</b>	Jindalee Foreshore Carpark
<b>Date</b>	25/02/2021
<b>Time</b>	09:46 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Coating loss, impact/mechanical damage
<b>Defect Description</b>	Surface corrosion and coating loss was observed to be typical throughout. Many areas of the fence were observed to be deformed due to impact damage.
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	5
<b>Risk Rating</b>	5
<b>Overall Rating (CR X RR)</b>	35
<b>Maintenance Recommendation</b>	Replace or fix heavily damaged fence sections.
<b>Maintenance Timeframe</b>	Within 5 years



# City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C14
<b>Site Name/ Location</b>	Jindalee Foreshore Carpark
<b>Date</b>	25/02/2021
<b>Time</b>	09:43 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Concrete vehicle access ramp
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh staples
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Surface corrosion was observed to be typical throughout. A number of loose and missing staples were observed.
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Replace missing and loose staples.
<b>Maintenance Timeframe</b>	Within 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

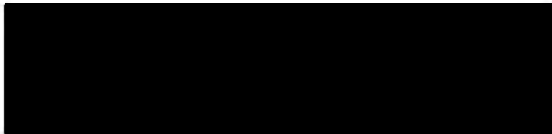
<b>Site No.</b>	C14
<b>Site Name/ Location</b>	Jindalee Foreshore Carpark
<b>Date</b>	25/02/2021
<b>Time</b>	09:47 (8 GMT)
<b>Item Number</b>	7
<b>Sub-element (Fencing)</b>	Strainer wires above mesh
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Impact/mechanical damage, Rust staining, Coating loss
<b>Defect Description</b>	Damaged and loose wire observed on the north side (Approx 30 m from bottom of path). Corroded and rusted tension wire observed on the south site (approx. 10 and 15 m from top of access ramp).
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	56
<b>Maintenance Recommendation</b>	Replaced damaged strainer wires.
<b>Maintenance Timeframe</b>	Within 5 years



# City of Wanneroo - Coastal Asset

Multi Photo

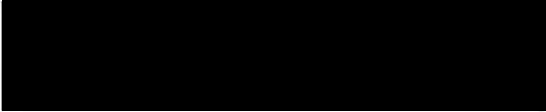




# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C14
<b>Site Name/ Location</b>	Jindalee Foreshore Carpark
<b>Date</b>	25/02/2021
<b>Time</b>	09:39 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Vehicle access ramp
<b>Element</b>	Bollards
<b>Sub-element (Bollards)</b>	Bollards
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Minor surface corrosion was observed to the lock brackets. The bollards were observed to have no padlocks.
<b>Quantity of Defects</b>	2 no bollards
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	10
<b>Maintenance Recommendation</b>	Install missing padlocks.
<b>Maintenance Timeframe</b>	Immediately



### City of Wanneroo - Coastal Asset

Multi Photo

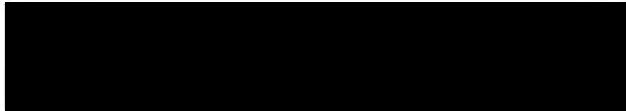


Other Comments/Inspection Limitations

Install locks of requires

# Appendix O

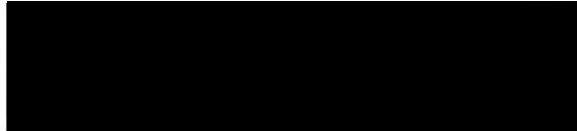
**Site C15 – Jindalee Foreshore Defect  
Forms**



## City of Wanneroo - Coastal Asset

### Defect

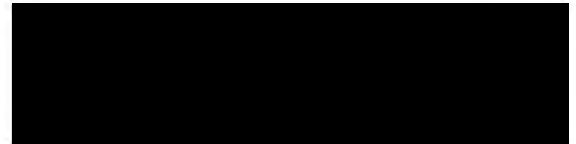
<b>Site No.</b>	C15
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:01 (8 GMT)
<b>Item Number</b>	1
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Footing
<b>Material Type</b>	Limestone, Concrete
<b>Defect Description</b>	Number of supports founded on eroding limestone
<b>Quantity of Defects</b>	Typical for the whole embankment
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	12
<b>Overall Rating (CR X RR)</b>	84
<b>Maintenance Recommendation</b>	Further detailed investigation including geotechnical / structural review of structure.
<b>Maintenance Timeframe</b>	Within 6 Months



## City of Wanneroo - Coastal Asset

Multi Photo






## City of Wanneroo - Coastal Asset

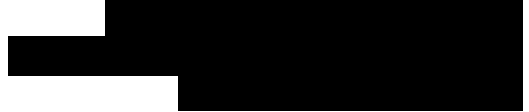
### Defect

<b>Site No.</b>	C15
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:04 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Retaining wall
<b>Element</b>	Retaining Walls
<b>Sub-element (Walls)</b>	Wall
<b>Material Type</b>	Timber, Steel
<b>2021 Observed Defects (Timber)</b>	General damage, Salt kill
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>2021 Observed Defects (General)</b>	Subsidence, sinking, rotation, Foundation damage, Loss of contact with underlying ground surface
<b>Defect Description</b>	Subsidence, sinking, rotation, Foundation damage, Loss of contact with underlying ground surface were all observed. Timber retaining walls have begun to slip and are no longer retaining soil, connections attached are risk of failing. Some corrosion was also noticed on steel sections.
<b>Quantity of Defects</b>	2 no approx 4m long
<b>Defect Location</b>	Below stairs
<b>Condition Rating (0- 10)</b>	8
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	4

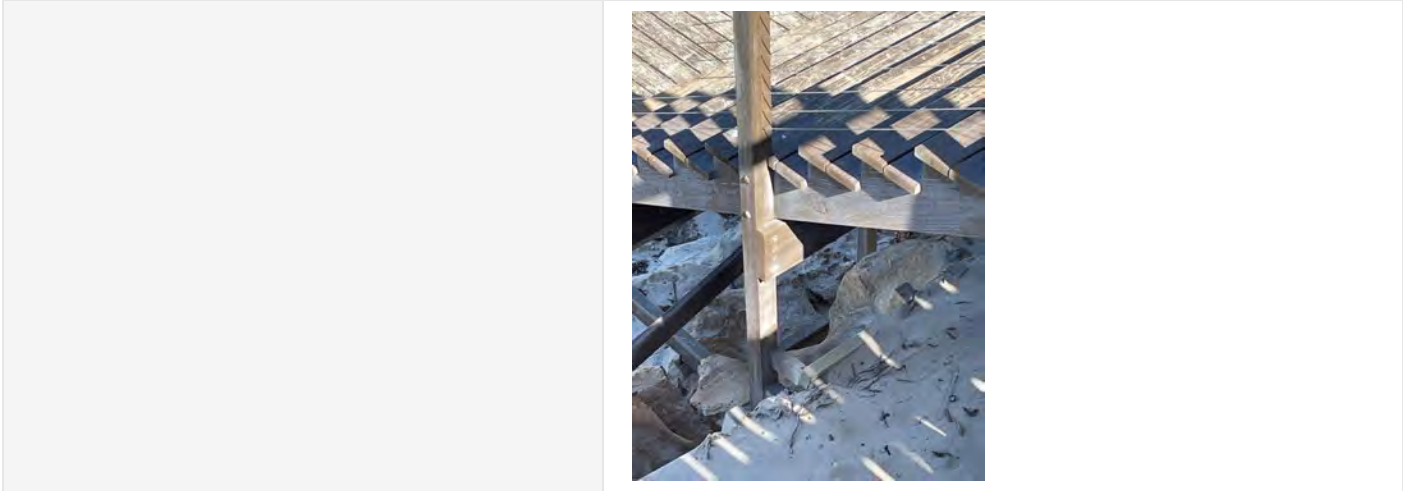


### City of Wanneroo - Coastal Asset

<b>Risk Rating</b>	12
<b>Overall Rating (CR X RR)</b>	96
<b>Maintenance Recommendation</b>	Replace retaining walls.
<b>Maintenance Timeframe</b>	Within 1-2 years
<b>Multi Photo</b>	



**City of Wanneroo - Coastal Asset**

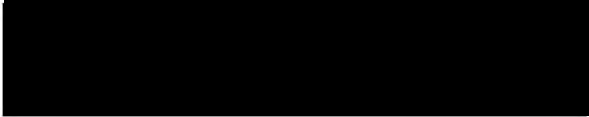




## City of Wanneroo - Coastal Asset

### Defect

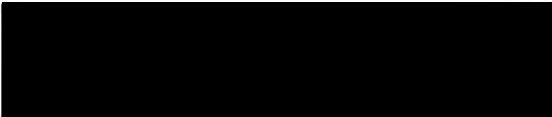
<b>Site No.</b>	C15
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:11 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Salt kill, fungi attack, and timber splitting were observed to be typical to 5 of the posts, affecting mostly their bases.
<b>Defect Description</b>	Deterioration to base of 5 posts at bottom of stairs
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	30
<b>Maintenance Recommendation</b>	Re-coat the 5 damaged timber posts.
<b>Maintenance Timeframe</b>	Within 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C15
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:07 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Supports
<b>Sub-element (Decking and Supports)</b>	Support beams
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Corrosion with section loss, Surface corrosion, Rust staining
<b>Defect Description</b>	Corrosion with section loss, rust staining and surface corrosion were all observed. Corrosion to support beams observed to be mainly on the northern end.
<b>Quantity of Defects</b>	1linear m total approx 10m
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	9
<b>Overall Rating (CR X RR)</b>	63
<b>Maintenance Recommendation</b>	Abrasive blast clean and apply protective coating. If section loss has occurred replacement of support beams maybe required.
<b>Maintenance Timeframe</b>	Within 1-2 years



City of Wanneroo - Coastal Asset

Multi Photo

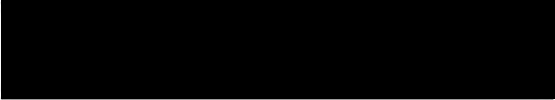




## City of Wanneroo - Coastal Asset

### Defect

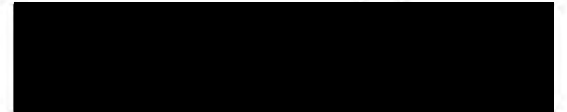
<b>Site No.</b>	C15
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:12 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Stairs
<b>Sub-element (Decking and Supports)</b>	Support beams
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Generally good condition with minor split timber and deterioration observed. Note: Pertains to timber beams and joists
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo

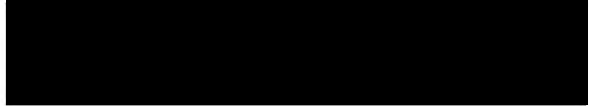




## City of Wanneroo - Coastal Asset

### Defect

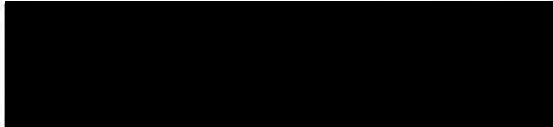
<b>Site No.</b>	C15
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:09 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Support bolts
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Moderate to heavy corrosion typical to connection bolts.
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Replace heavily corroded bolts.
<b>Maintenance Timeframe</b>	Within 5 years



City of Wanneroo - Coastal Asset

Multi Photo

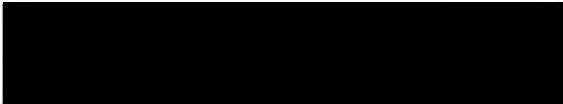




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C15
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:15 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Stringers
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	No visible defects
<b>Defect Description</b>	No visible defects were observed. Note: Inspected from safe vantage points and above stair treads
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

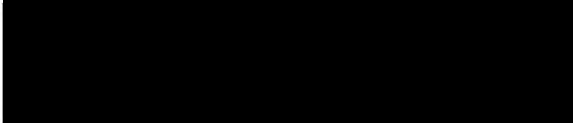




## City of Wanneroo - Coastal Asset

### Defect

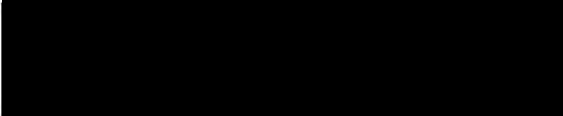
<b>Site No.</b>	C15
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:18 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Stringer bolts
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Moderate to heavy corrosion to the bottom staircase stringer bolts.
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Replace heavily corroded bolts.
<b>Maintenance Timeframe</b>	Within 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

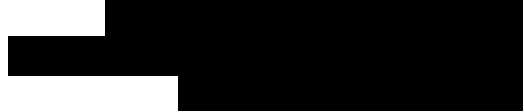
<b>Site No.</b>	C15
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:56 (8 GMT)
<b>Item Number</b>	9
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Decking
<b>Sub Element</b>	Deck Planks
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber, Salt kill
<b>Defect Description</b>	Generally good condition with some minor timber splitting and salt kill observed
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	9
<b>Overall Rating (CR X RR)</b>	54
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



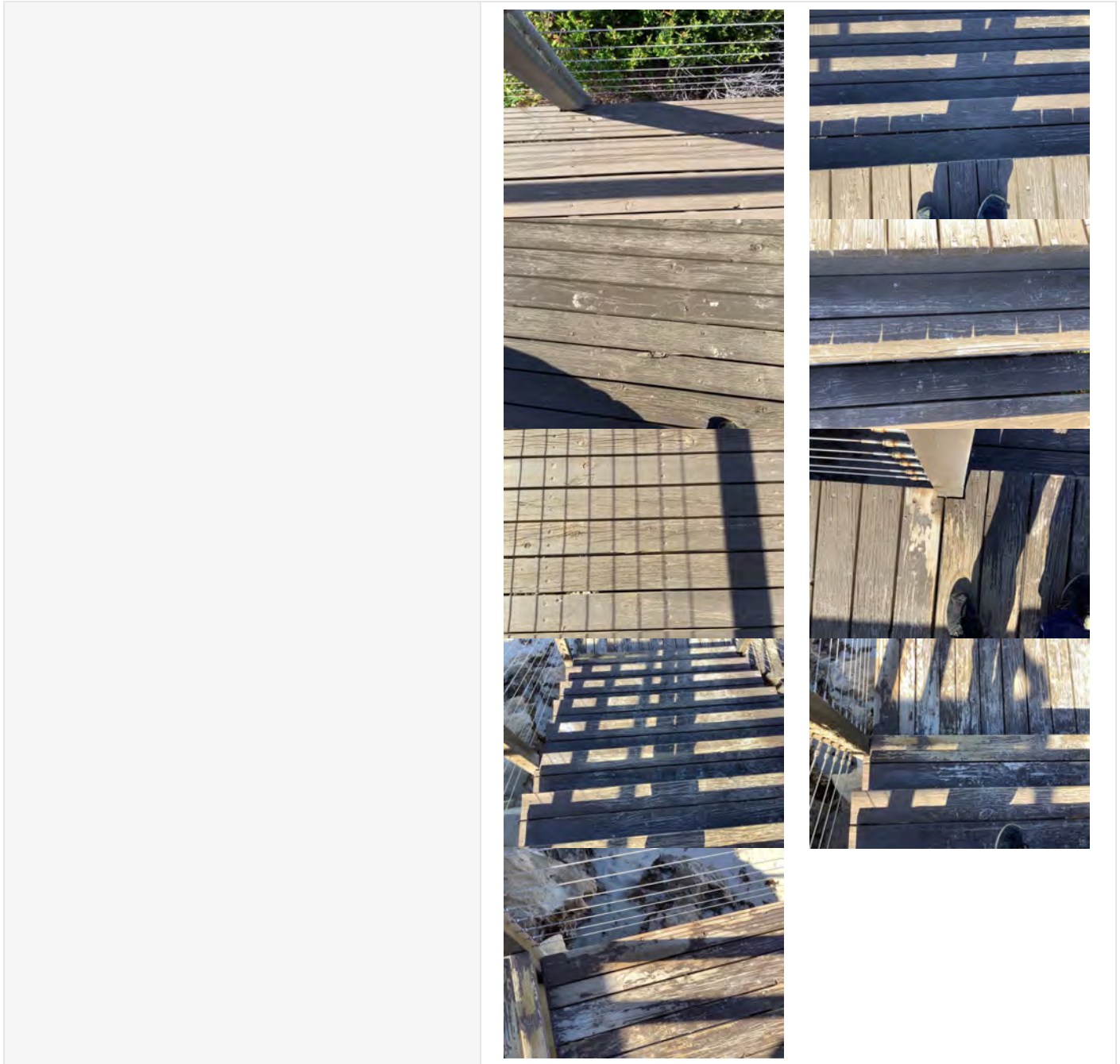
# City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C15
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:01 (8 GMT)
<b>Item Number</b>	10
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Decking Connections
<b>Sub-element (Decking and Supports)</b>	Nails to deck planks
<b>Material Type</b>	Galvanized Steel
<b>2021 Observed Defects (Steel)</b>	Generally good condition with some minor rust staining observed.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

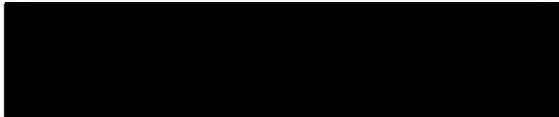




## City of Wanneroo - Coastal Asset

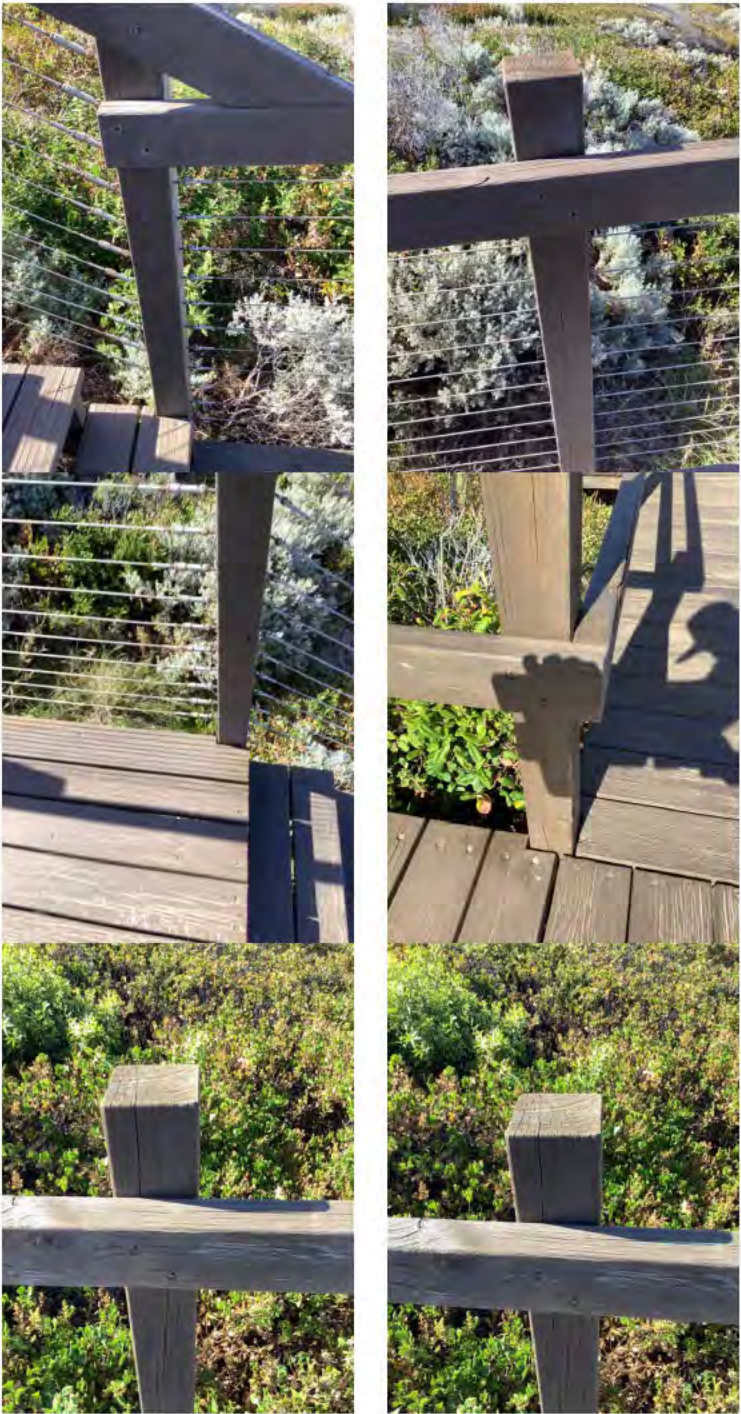
### Defect

<b>Site No.</b>	C15
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:06 (8 GMT)
<b>Item Number</b>	11
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Generally good condition with some minor timber splitting observed.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

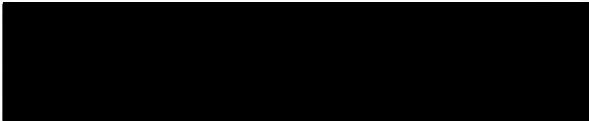




Date Submitted: 25/02/2021 19:59



## City of Wanneroo - Coastal Asset



# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C15
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:09 (8 GMT)
<b>Item Number</b>	12
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Connections
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Generally good condition with some minor rust staining observed.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo

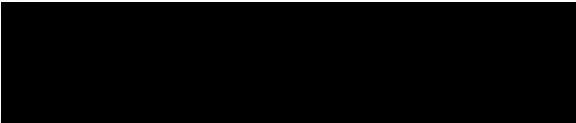




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C15
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:11 (8 GMT)
<b>Item Number</b>	13
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Mesh strainer wires
<b>Sub-element</b>	Tensioned wires
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Rust staining
<b>Defect Description</b>	Minor rust staining was observed to be typical to the ends of the wires. One loose and one missing were also observed.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Install missing wire and replace or tighten loosened wire. Monitor and reinspect the remaining at the next scheduled inspection.



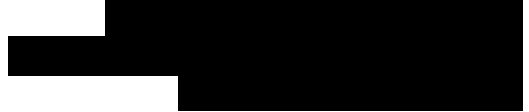
# City of Wanneroo - Coastal Asset

Maintenance Timeframe

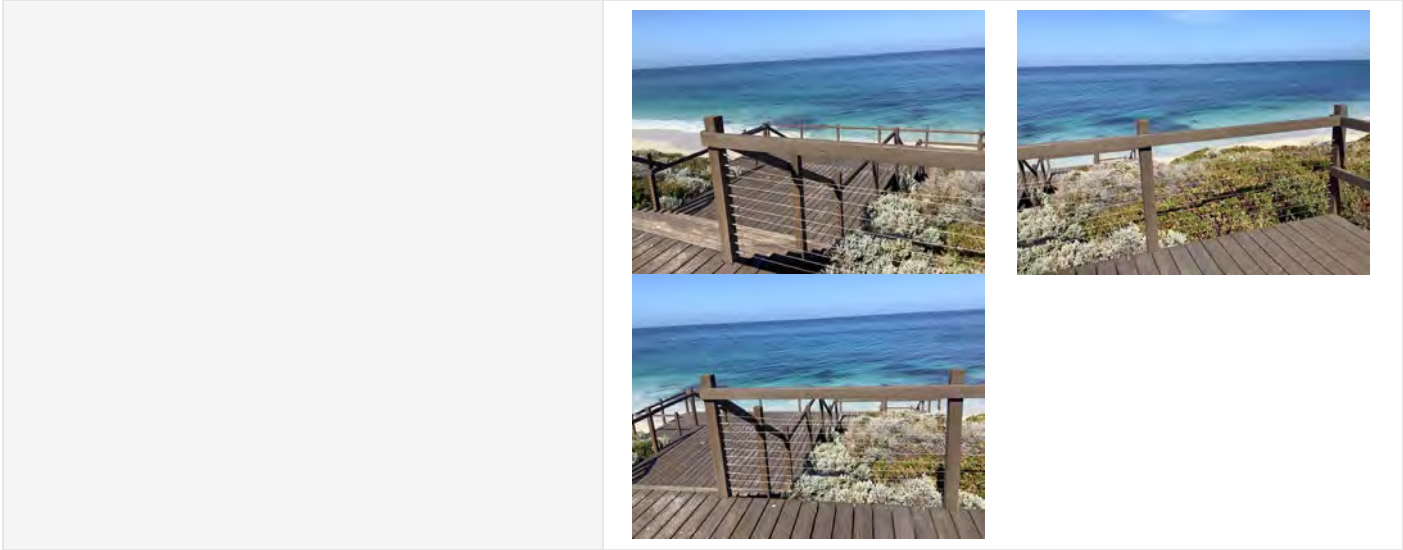
Within 5 years

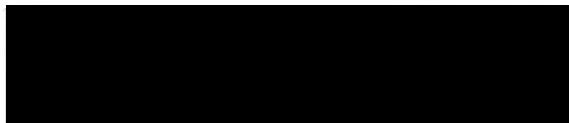
Multi Photo





**City of Wanneroo - Coastal Asset**

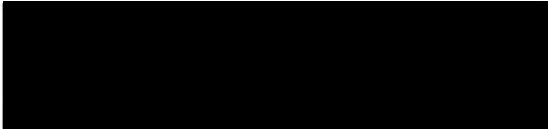




## City of Wanneroo - Coastal Asset

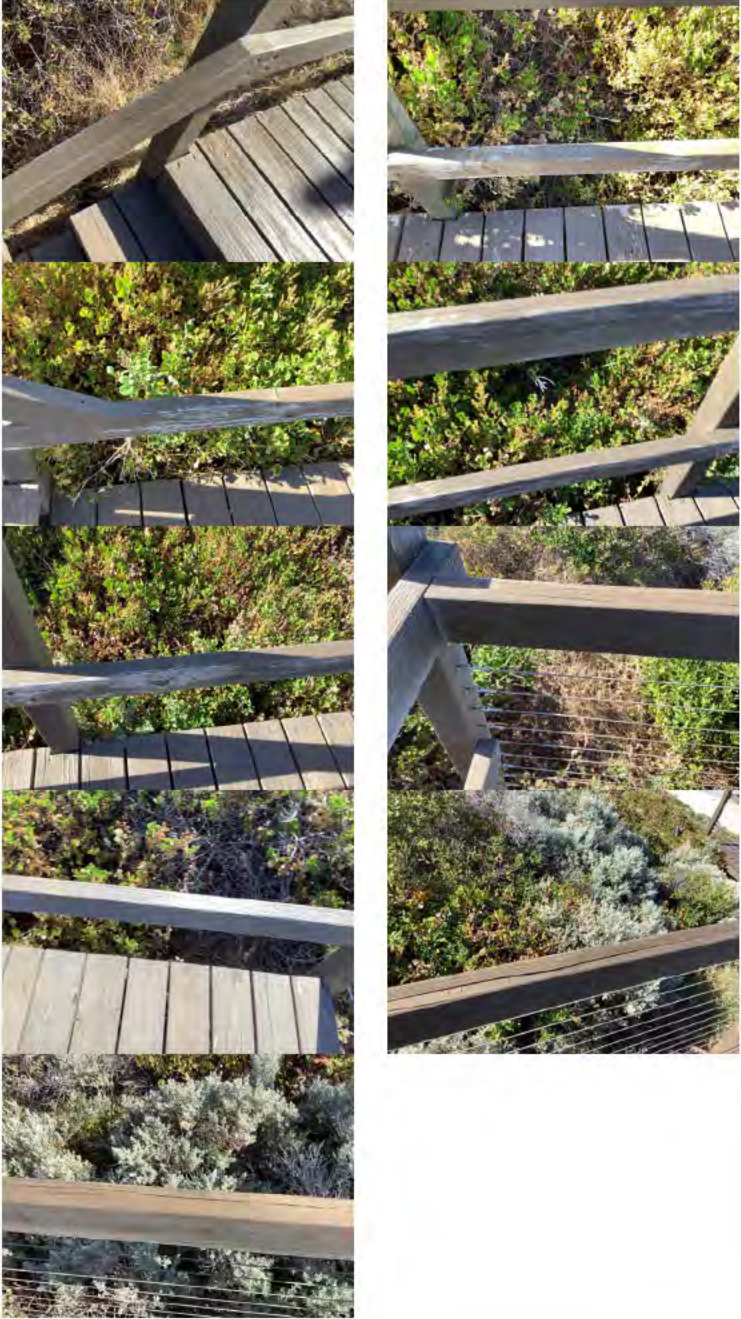
### Defect

<b>Site No.</b>	C15
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	09:04 (8 GMT)
<b>Item Number</b>	14
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Railing
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber, Salt Kill
<b>Defect Description</b>	Generally good condition. Moderate timber splitting and salt kill in localised areas.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo



# Appendix P

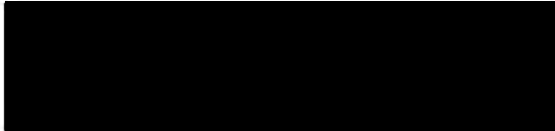
**Site C16 – Jindalee Foreshore Defect  
Forms**



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C16
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:42 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Lookout
<b>Sub-element (Decking and Supports)</b>	Support beams
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Generally good condition with some minor timber splitting observed. Note: Inspected from above only - no access to underside of structure Note: Pertains to timber supports including joists and beams
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



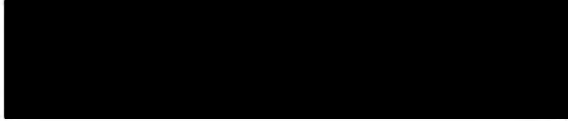
# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Inspected from above only - no access to underside of structure



# City of Wanneroo - Coastal Asset

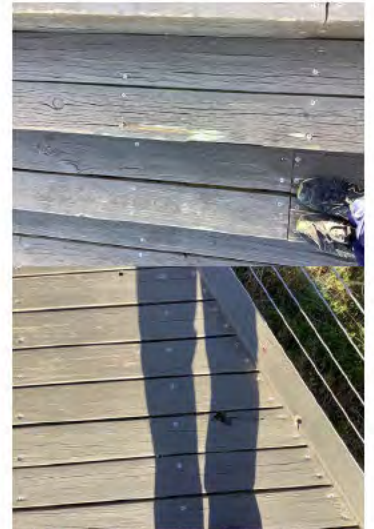
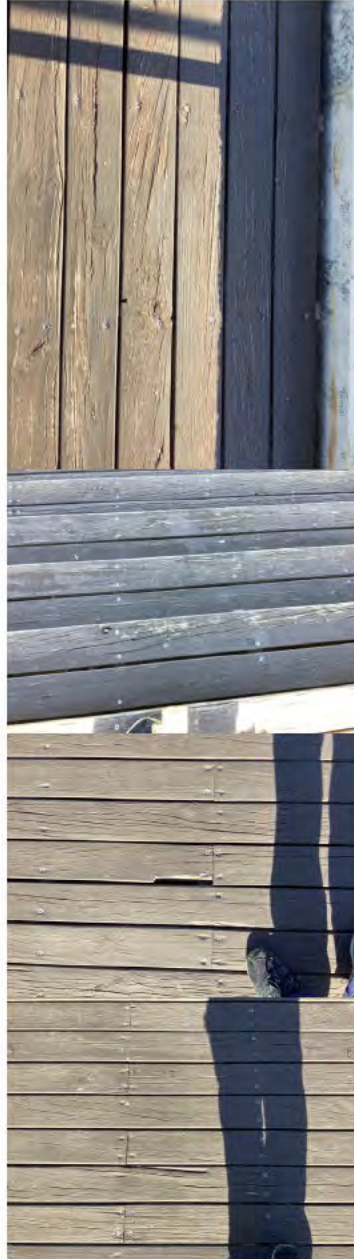
## Defect

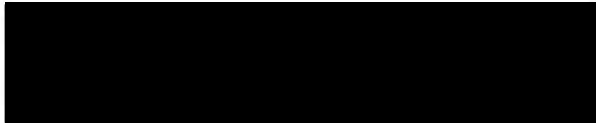
<b>Site No.</b>	C16
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:33 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Decking
<b>Sub Element</b>	Deck Planks
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Generally good condition with only minor timber splitting was observed to be typical throughout. Minor chipping on the edges of the stair planks were observed. 8th row from west end has a large crack in it that goes through the connections.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Replace damaged plank.
<b>Maintenance Timeframe</b>	Within 6 months



## City of Wanneroo - Coastal Asset

### Multi Photo

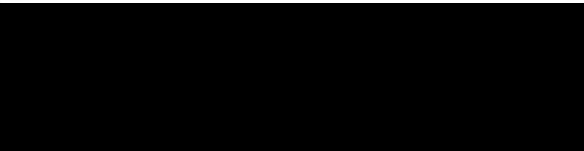




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C16
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:41 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Decking
<b>Sub-element (Decking and Supports)</b>	Nails to deck planks
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects observed
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C16
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:35 (8 GMT)
<b>Item Number</b>	4
<b>Element</b>	Limestone Stair Treads
<b>Sub-element (Stairs and Landing)</b>	Stair treads
<b>Material Type</b>	Limestone
<b>Defect Description</b>	Generally good condition. Minor impact damage to end of treads observed. Minor grout loss and deterioration found to be typical. Debris build up on edges was also observed.  Note: previous repairs noted
<b>Quantity of Defects</b>	7 treads approx 0.5'm x 13 m long
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

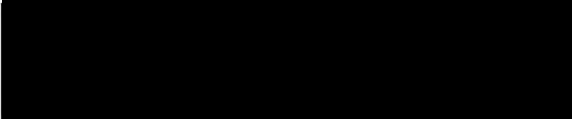
No access to foundations assumed to be in good condition



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C16
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:40 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Retaining Walls
<b>Sub-element (Walls)</b>	Wall
<b>Material Type</b>	Limestone
<b>Defect Description</b>	No visible defects observed. Pertains to northern retaining wall
<b>Quantity of Defects</b>	3m high x 10m long
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

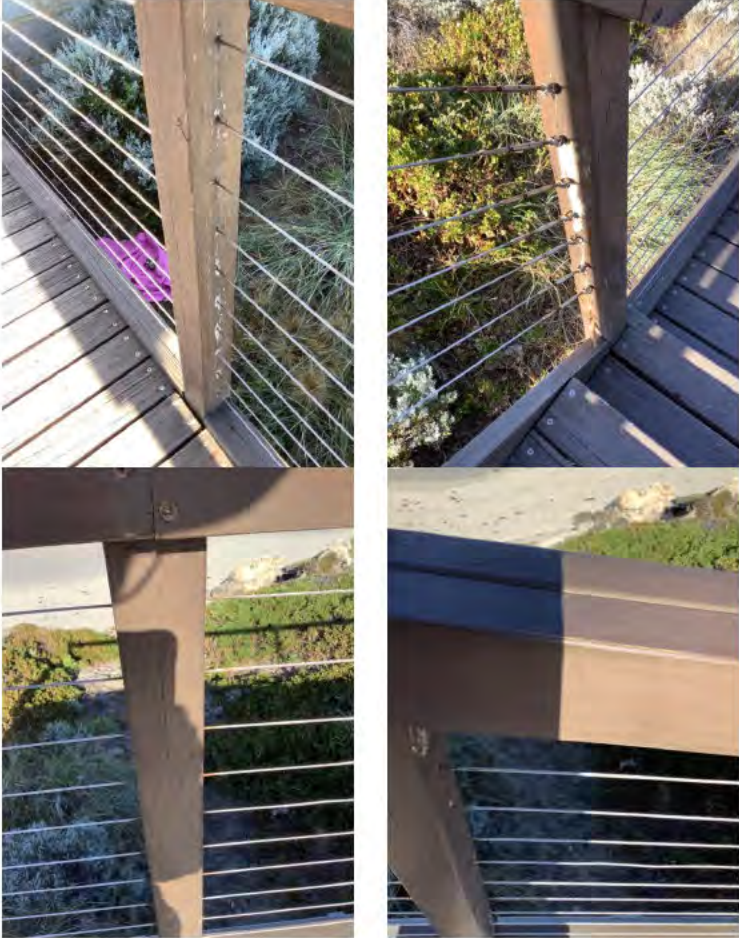
### Defect

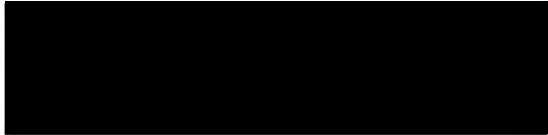
<b>Site No.</b>	C16
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:39 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Timber splitting was observed to be typical throughout.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

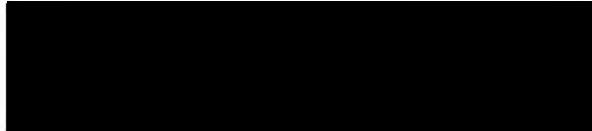




## City of Wanneroo - Coastal Asset

### Defect

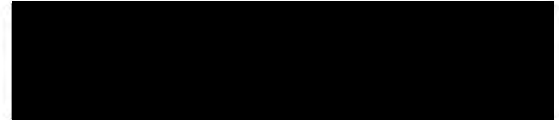
<b>Site No.</b>	C16
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:47 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Connections
<b>Material Type</b>	Galvnised Steel
<b>2021 Observed Defects (Steel)</b>	Generally good condition with minor rust staining observed to be typical throughout.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

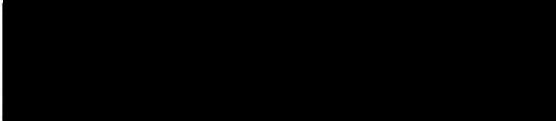




## City of Wanneroo - Coastal Asset

### Defect

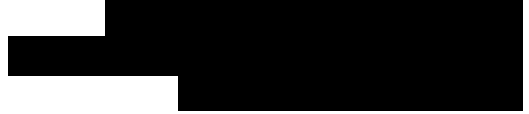
<b>Site No.</b>	C16
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:43 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Mesh strainer wires
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Rust staining, Failed
<b>Defect Description</b>	Generally good condition with minor rust staining observed to be typical on ends. Two wires have failed on one side and one wire is slightly deformed, most likely due to impact damage.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Replace damaged and failed wires. Monitor and reinspect the rest at next scheduled inspection.
<b>Maintenance Timeframe</b>	Within 5 years



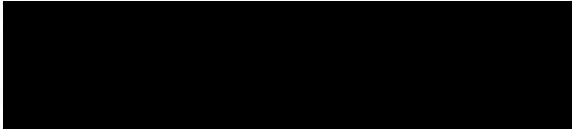
City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset



## City of Wanneroo - Coastal Asset

### Defect

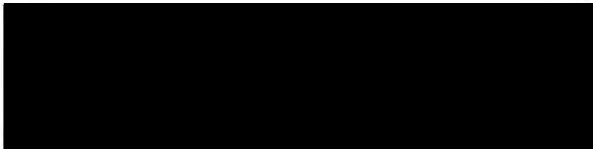
<b>Site No.</b>	C16
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:37 (8 GMT)
<b>Item Number</b>	9
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Handrail
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Minor timber splitting was observed to be typical throughout.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	18
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

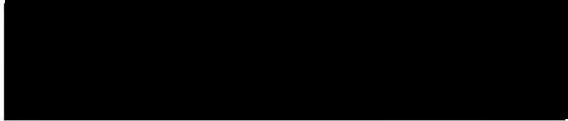




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C16
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:38 (8 GMT)
<b>Item Number</b>	10
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Handrail
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Rust staining
<b>Defect Description</b>	Generally good condition with some minor tea staining observed.
<b>Quantity of Defects</b>	2m handrail length
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**



# Appendix Q

**Site C17 – Jindalee Foreshore Defect  
Forms**



## City of Wanneroo - Coastal Asset

### Defect

Site No.	C17
Site Name/ Location	Jindalee Foreshore
Date	25/02/2021
Time	08:19 (8 GMT)
Item Number	1
Costal Asset Type	Other
Asset Type	Boardwalk
Element	Supports
Sub-element	Columns
Material Type	Galvanised Steel
2021 Observed Defects (Steel)	Surface corrosion
Defect Description	Minor white rust was observed to be typical throughout
Condition Rating (0- 10)	4
Health and Safety Concern (Y/N)	No
Consequence of Failure	4
Likelihood of Failure within next 5 years	1
Risk Rating	4
Overall Rating (CR X RR)	16
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection.
Maintenance Timeframe	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**



**Other Comments/Inspection Limitations**

Inspected from safe vantage point on boardwalk



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C17
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:17 (8 GMT)
<b>Item Number</b>	2
<b>Asset Type</b>	Boardwalk
<b>Element</b>	Supports
<b>Sub-element (Decking and Supports)</b>	Support beams
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Minor white rust was observed.
<b>Quantity of Defects</b>	Beams spaced approx 2m apart along boardwalk
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**



**Other Comments/Inspection Limitations**

Inspected from safe access point on boardwalk



## City of Wanneroo - Coastal Asset

### Defect

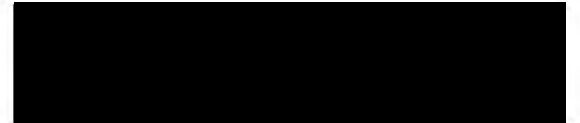
<b>Site No.</b>	C17
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:08 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Retaining wall
<b>Element</b>	Wall
<b>Material Type</b>	Limestone
<b>Defect Description</b>	Minor impact damage observed on the corner. Generally good condition. Pertains to southern most retaining wall
<b>Quantity of Defects</b>	20m long 0.5 high 1m wide
<b>Defect Location</b>	Northern corner
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Repair grout on damaged corner
<b>Maintenance Timeframe</b>	Within 5 years



## City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C17
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:11 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Retaining wall
<b>Element</b>	Walls
<b>Sub-element (Walls)</b>	Wall
<b>Material Type</b>	Limestone
<b>Defect Description</b>	No visible defects observed. Pertains to the two walls on the northern end on top of boardwalk
<b>Quantity of Defects</b>	8m long x 1m wide x 0.5 high
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	5
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo

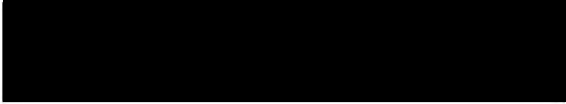




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C17
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:14 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Retaining wall
<b>Material Type</b>	Limestone
<b>Defect Description</b>	No visible Defects were observed Pertains to large retaining walls
<b>Quantity of Defects</b>	4m x length of boardwalk
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Inspected from boardwalk no access for close inspection



## City of Wanneroo - Coastal Asset

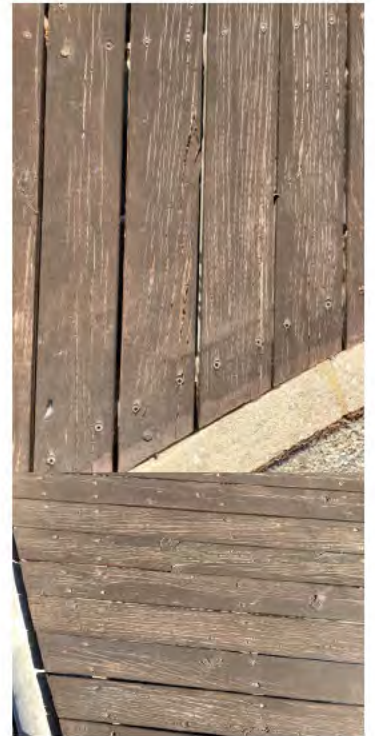
### Defect

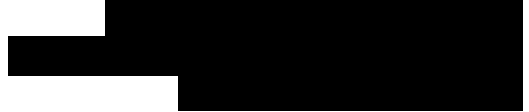
<b>Site No.</b>	C17
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:04 (8 GMT)
<b>Item Number</b>	6
<b>Asset Type</b>	Boardwalk
<b>Element</b>	Decking
<b>Sub Element</b>	Deck Planks
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Timber splitting, loose planks.
<b>Defect Description</b>	Minor timber splitting was observed. A number of loose planks due to loosened bolts also observed.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	32
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



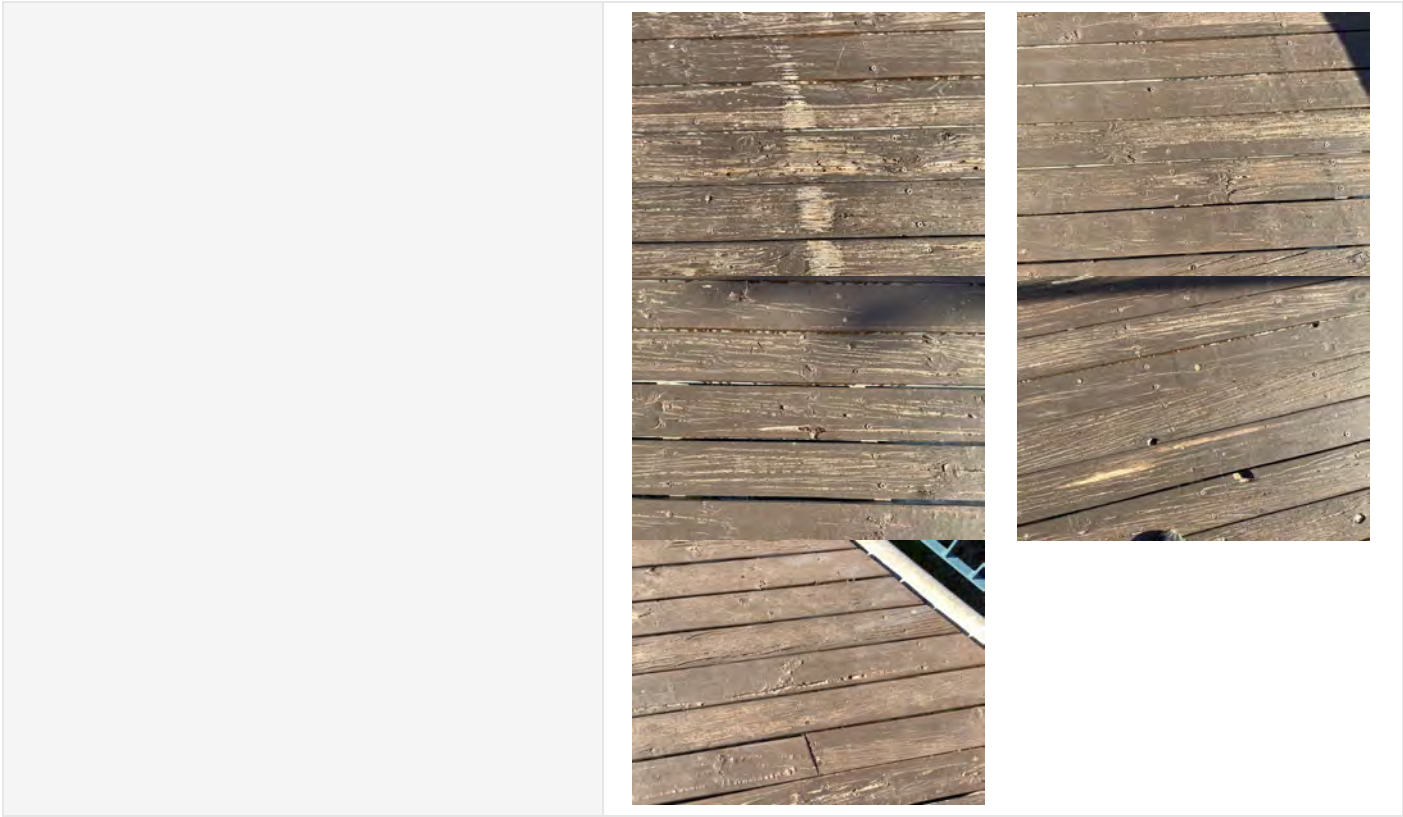
## City of Wanneroo - Coastal Asset

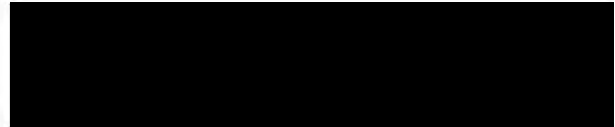
### Multi Photo





City of Wanneroo - Coastal Asset

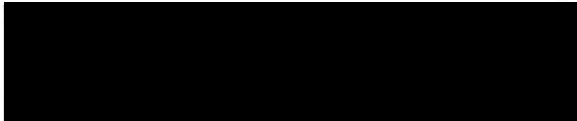




## City of Wanneroo - Coastal Asset

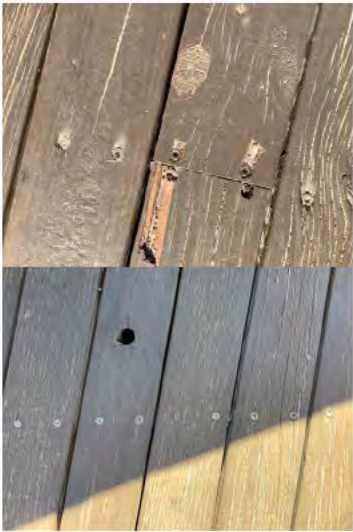
### Defect

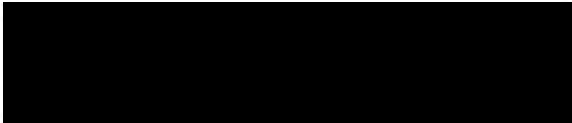
<b>Site No.</b>	C17
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:11 (8 GMT)
<b>Item Number</b>	7
<b>Asset Type</b>	Boardwalk
<b>Element</b>	Decking
<b>Sub-element (Stairs and Landing)</b>	Connections
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Rust staining
<b>Defect Description</b>	Generally good condition. With minor rust Staining observed to be typical. A couple loose bolts observed (causing loose planks). A small hole was observed to be patched with a metal square.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Reinstate loosened bolts. And monitor and reinspect the rest at next scheduled inspection.
<b>Maintenance Timeframe</b>	Within 5 years



City of Wanneroo - Coastal Asset

Multi Photo





# City of Wanneroo - Coastal Asset

## Defect

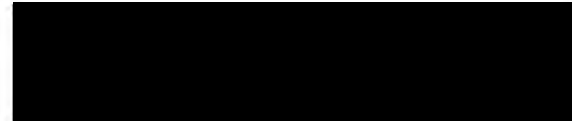
<b>Site No.</b>	C17
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:31 (8 GMT)
<b>Item Number</b>	8
<b>Asset Type</b>	Boardwalk
<b>Element</b>	Water Fountain Decking
<b>Material Type</b>	Timber
<b>Defect Description</b>	Heavy moss growth on deck around water fountain was observed.
<b>Condition Rating (0- 10)</b>	8
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	16
<b>Overall Rating (CR X RR)</b>	128
<b>Maintenance Recommendation</b>	Clean surrounding moss and replace timber planks if rotten.
<b>Maintenance Timeframe</b>	Within 6 months



**City of Wanneroo - Coastal Asset**

**Multi Photo**

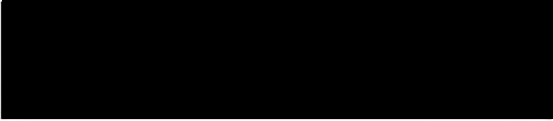




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C17
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:21 (8 GMT)
<b>Item Number</b>	9
<b>Asset Type</b>	Boardwalk
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Posts
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Rust staining
<b>Defect Description</b>	Rust staining observed to be typical throughout
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

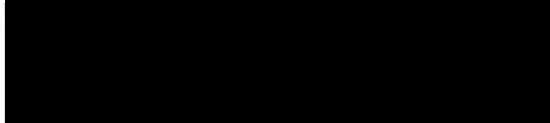




## City of Wanneroo - Coastal Asset

### Defect

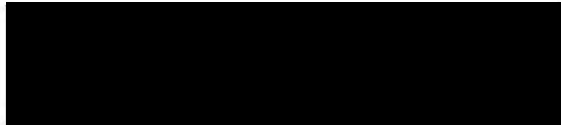
<b>Site No.</b>	C17
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:23 (8 GMT)
<b>Item Number</b>	10
<b>Asset Type</b>	Boardwalk
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Bottom rail
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Coating loss
<b>Defect Description</b>	Minor surface corrosion was observed to be typical throughout.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C17
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:24 (8 GMT)
<b>Item Number</b>	11
<b>Asset Type</b>	Boardwalk
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Connections
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Rust staining
<b>Defect Description</b>	Minor rust staining observed to be typical throughout.
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo

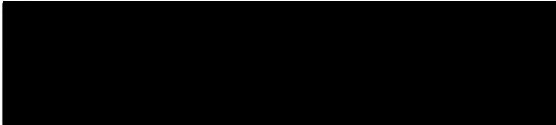




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C17
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	08:16 (8 GMT)
<b>Item Number</b>	12
<b>Asset Type</b>	Boardwalk
<b>Sub-element (Handrails)</b>	Handrail
<b>Sub-element</b>	Handrail and fencing
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Rust staining
<b>Defect Description</b>	Some rust staining observed mostly on galvanised steel sections
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



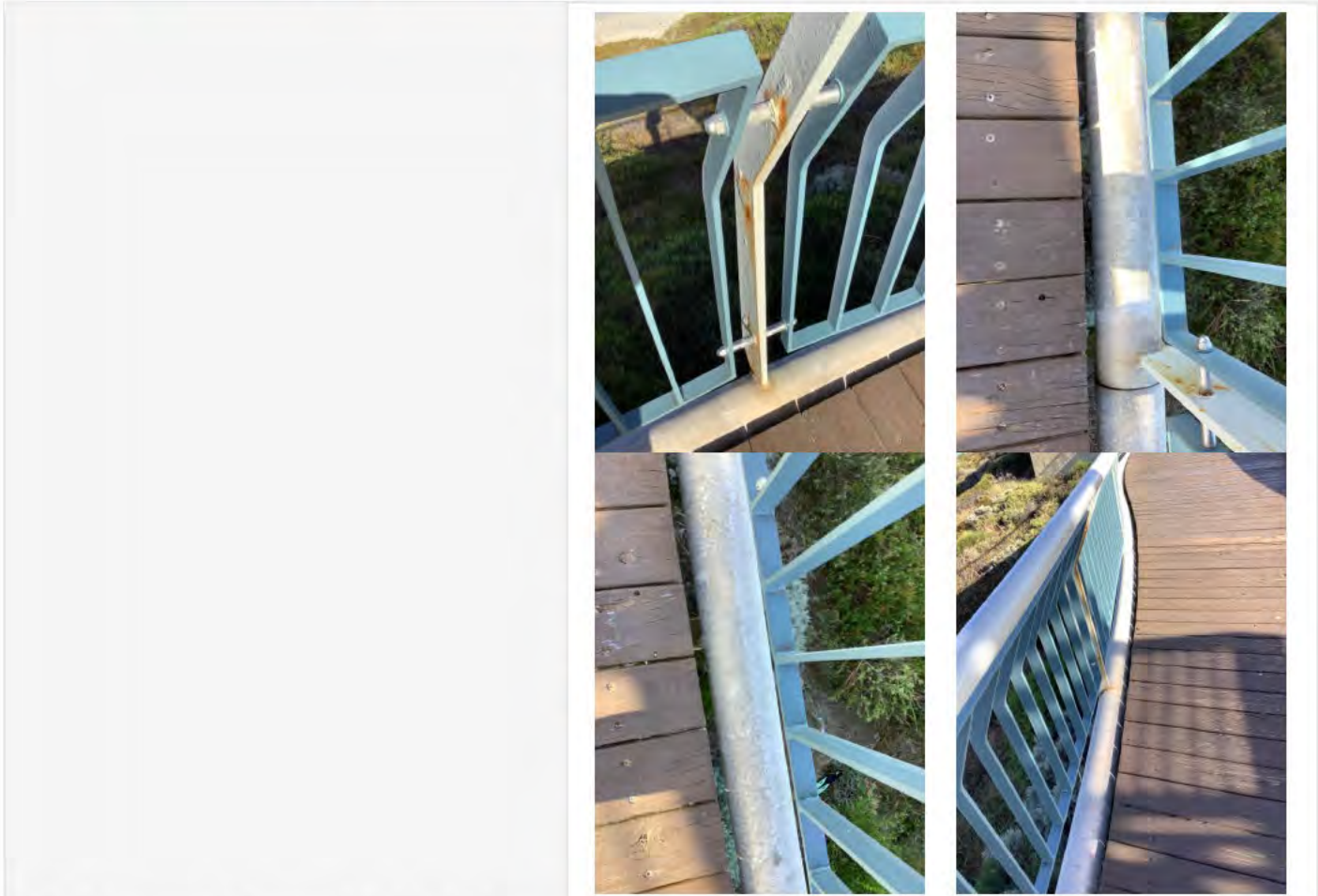
City of Wanneroo - Coastal Asset

Multi Photo





City of Wanneroo - Coastal Asset

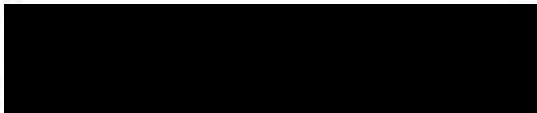


**Other Comments/Inspection Limitations**

This fencing and handrail consists of a galvanized steel bottom with coated steel posts and rails. The galvanized steel is rusting and so are the posts but not the fencing or the handrail top

# Appendix R

**Site C18 – Jindalee Foreshore Defect  
Forms**



# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C18
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	07:37 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Footing
<b>Material Type</b>	Limestone
<b>2021 Observed Defects (General)</b>	Foundation damage and loss of contact with underlying ground surface was observed to be typical across the whole embankment
<b>Defect Description</b>	Stairs are founded on limestone which is eroding,
<b>Quantity of Defects</b>	Typical to entire embankment approx 3m high x 20m
<b>Defect Location</b>	Typical embankment
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	16
<b>Overall Rating (CR X RR)</b>	112
<b>Maintenance Recommendation</b>	Further detailed investigation including geotechnical / structural review of structure.
<b>Maintenance Timeframe</b>	Within 6 Months



City of Wanneroo - Coastal Asset

Multi Photo

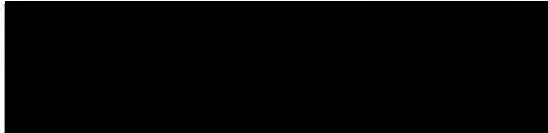




## City of Wanneroo - Coastal Asset

### Defect

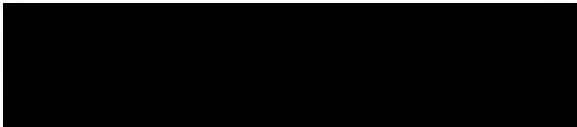
<b>Site No.</b>	C18
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	07:46 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Supports
<b>Sub-element (Stairs and Landing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Minor timber splitting was observed
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

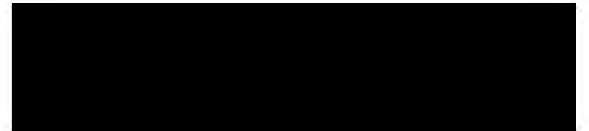
<b>Site No.</b>	C18
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	07:40 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Supports
<b>Sub-element (Decking and Supports)</b>	Support beams
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	No visible defects observed
<b>Defect Description</b>	Support beams generally in good condition
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

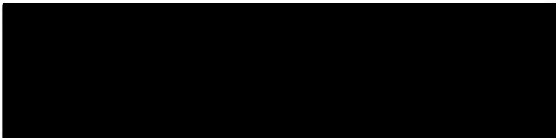




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C18
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	07:52 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Supports
<b>Sub-element (Decking and Supports)</b>	Support beams (Steel)
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Coating loss
<b>Defect Description</b>	Surface corrosion and coating loss was observed. (Pertains to steel support at base of stairs)
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Abrasive blast clean and apply protective coating.
<b>Maintenance Timeframe</b>	Within 5 years



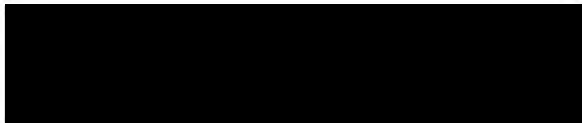
# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

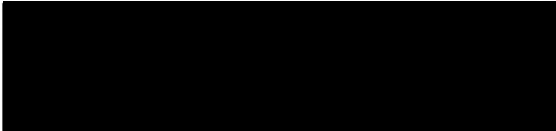
Typical corrosion to bolts similar to timber support portion of stairs



# City of Wanneroo - Coastal Asset

## Defect

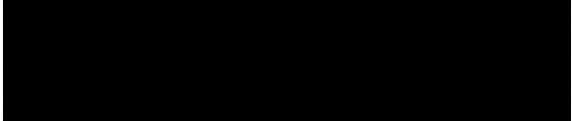
<b>Site No.</b>	C18
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	07:44 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Supports
<b>Sub-element (Decking and Supports)</b>	Steel support bolts
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Rust staining
<b>Defect Description</b>	Surface corrosion was observed to be typical across all connection bolts and screws
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	9
<b>Overall Rating (CR X RR)</b>	54
<b>Maintenance Recommendation</b>	Replace heavily corroded bolts and screws.
<b>Maintenance Timeframe</b>	Within 5 years



City of Wanneroo - Coastal Asset

Multi Photo





# City of Wanneroo - Coastal Asset

## Defect

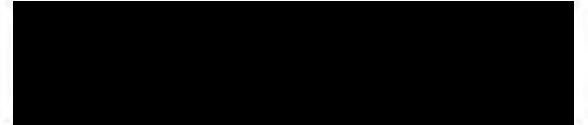
<b>Site No.</b>	C18
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	07:49 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Supports
<b>Sub-element (Decking and Supports)</b>	Support beam brackets
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Coating loss
<b>Defect Description</b>	Some corrosion has been observed. (pertains to support brackets embedded within limestone, limestone has eroded, and exposed steel is now corroding)
<b>Quantity of Defects</b>	Approx 10 locations
<b>Defect Location</b>	Towards base of stairs
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	12
<b>Overall Rating (CR X RR)</b>	72
<b>Maintenance Recommendation</b>	Abrasive blast clean and apply protective coating.
<b>Maintenance Timeframe</b>	Within 1-2 years



City of Wanneroo - Coastal Asset

Multi Photo

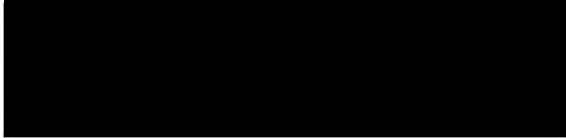




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C18
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	07:48 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element (Decking and Supports)</b>	Joist
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Minor timber splitting was observed
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



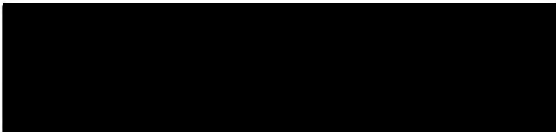
# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

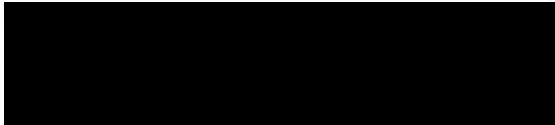
Appears percentage is pine and ther is jarrah



## City of Wanneroo - Coastal Asset

### Defect

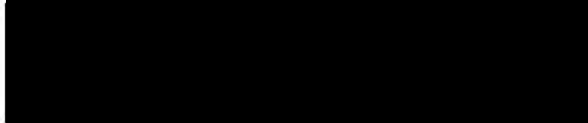
<b>Site No.</b>	C18
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	07:42 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Supports
<b>Sub-element (Stairs and Landing)</b>	Stringers
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Minor timber splitting was observed
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

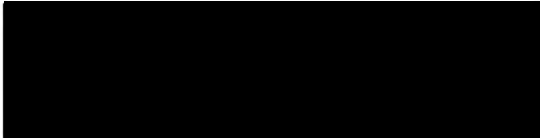




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C18
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	07:21 (8 GMT)
<b>Item Number</b>	9
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Decking
<b>Sub Element</b>	Deck Planks
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Split timber was observed to be typical across the whole landing. A couple of chips were observed on the staircase planks
<b>Defect Location</b>	Landing and stairs
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	32
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

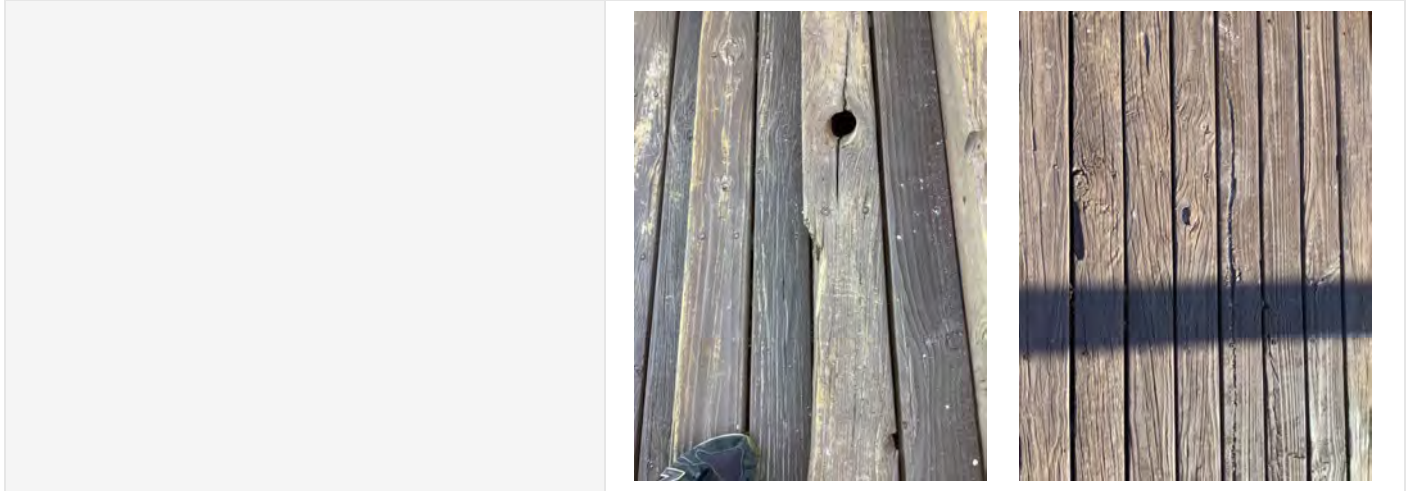




Date Submitted: 25/02/2021 20:04



## City of Wanneroo - Coastal Asset





# City of Wanneroo - Coastal Asset

## Defect

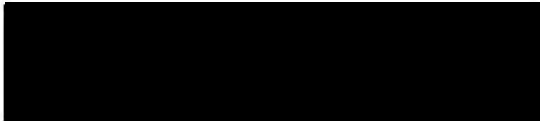
<b>Site No.</b>	C18
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	07:49 (8 GMT)
<b>Item Number</b>	10
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Decking
<b>Sub-element (Stairs and Landing)</b>	Connections
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Rust staining
<b>Defect Description</b>	Rust staining was observed to be typical throughout One nail observed to be protruding out on the edge of the deck plank. A couple loose connections were also observed
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Within 5 years



City of Wanneroo - Coastal Asset

Multi Photo





# City of Wanneroo - Coastal Asset

## Defect

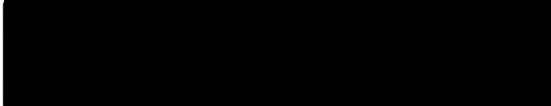
<b>Site No.</b>	C18
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	07:52 (8 GMT)
<b>Item Number</b>	11
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Decking
<b>Sub-element</b>	Decking edges
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Minor timber splitting was observed to be typical.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C18
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	07:40 (8 GMT)
<b>Item Number</b>	12
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Sub-element (Fencing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Minor timber splitting was observed to be typical.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	1
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C18
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	07:43 (8 GMT)
<b>Item Number</b>	13
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Sub-element</b>	Tensioned wires
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Rust staining, Coating loss
<b>Defect Description</b>	Rust staining and coating loss was observed to be typical to the ends of the wires. There were a couple sagging wires observed
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	30
<b>Maintenance Recommendation</b>	Tighten or replace sagging wires. Monitor and reinspect the rest at the next scheduled inspection.
<b>Maintenance Timeframe</b>	Within 5 years



# City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C18
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	07:35 (8 GMT)
<b>Item Number</b>	14
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Sub-element (Fencing)</b>	Timber rail
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Split timber was observed to by typical throughout One slightly loose plank was noticed
<b>Quantity of Defects</b>	1 loose plank
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Replace or fix the loosened plank
<b>Maintenance Timeframe</b>	Within 5 years



## City of Wanneroo - Coastal Asset

### Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C18
<b>Site Name/ Location</b>	Jindalee Foreshore
<b>Date</b>	25/02/2021
<b>Time</b>	07:47 (8 GMT)
<b>Item Number</b>	15
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Connections
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Rust staining
<b>Defect Description</b>	Minor rust staining was observed to be typical to handrail connections.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo



# Appendix S

**Site C19 – North Quinns Rocks Foreshore  
Defect Forms**



## City of Wanneroo - Coastal Asset

### Defect

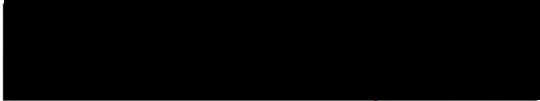
<b>Site No.</b>	C19
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	09:32 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Concrete path
<b>Element</b>	Surface
<b>Sub-element (Surface)</b>	Concrete paver
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Impact/mechanical damage, abrasion and erosion
<b>Defect Description</b>	Generally in good condition with the exception of localised impact damage. The top sealant material has deteriorated and typical debris build-up on joints was observed.
<b>Defect location</b>	60 x 1.5m total
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo

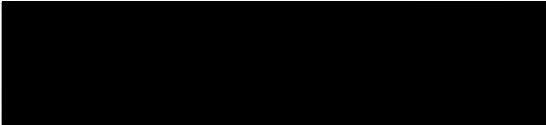




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C19
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	09:45 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Bollards
<b>Element</b>	Bollards
<b>Sub-element (Bollards)</b>	Bollards
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>Quantity of Defects</b>	1 no
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C19
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	09:40 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Timber splitting observed to be typical throughout.
<b>Quantity of Defects</b>	36 total posts
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

**Multi Photo**



**Comments**

Includes 2 sections of railing



## City of Wanneroo - Coastal Asset

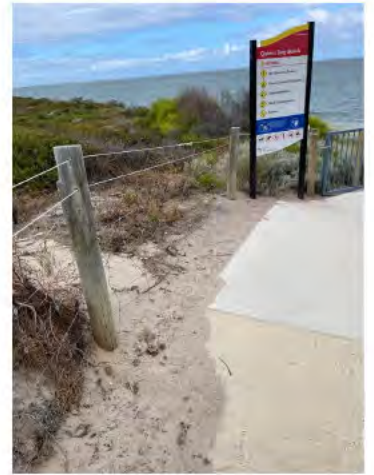
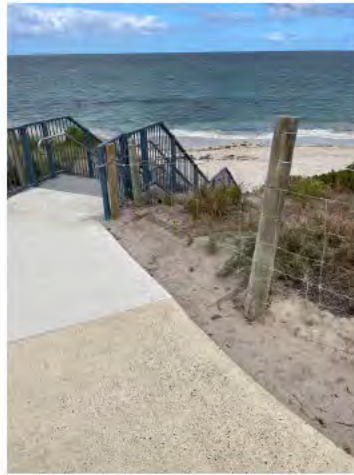
### Defect

<b>Site No.</b>	C19
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	09:35 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Buckling/deformation
<b>Defect Description</b>	Deformation observed to be more significant on the bottom 5 m of the path.
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	56
<b>Maintenance Recommendation</b>	Replace damaged fence areas
<b>Maintenance Timeframe</b>	Within 1-2 years



## City of Wanneroo - Coastal Asset

Multi Photo

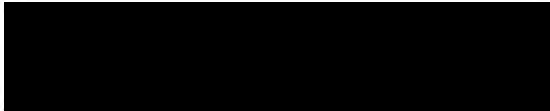




## City of Wanneroo - Coastal Asset

### Defect

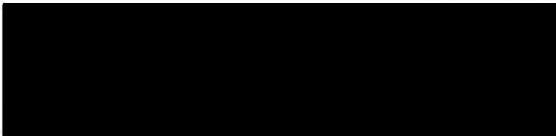
<b>Site No.</b>	C19
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	09:37 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	White rust on mesh and stapes observed to be typical. Impact damage on mesh causing deformation observed to be typical.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





# City of Wanneroo - Coastal Asset

## Defect

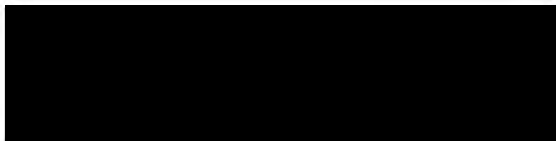
<b>Site No.</b>	C19
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	09:42 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Sign
<b>Element</b>	Sign
<b>Sub-element (Sign)</b>	Sign
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>Quantity of Defects</b>	1 no sign
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo

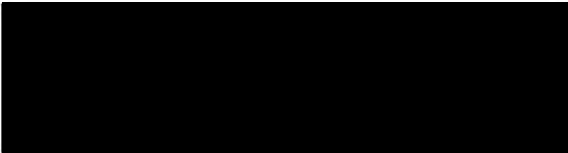




## City of Wanneroo - Coastal Asset

### Defect

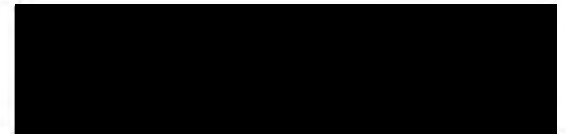
<b>Site No.</b>	C19
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	09:41 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Pedestals
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Corrosion with section loss
<b>Defect Description</b>	Moderate to heavy corrosion on pedestals. Signs of exfoliation corrosion and potential section loss.
<b>Quantity of Defects</b>	6
<b>Condition Rating (0- 10)</b>	8
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	12
<b>Overall Rating (CR X RR)</b>	96
<b>Maintenance Recommendation</b>	Blast clean and re-coat all pedestals
<b>Maintenance Timeframe</b>	Within 6 months



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C19
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	09:36 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Supports
<b>Sub-element (Stairs and Landing)</b>	Stair support stubs
<b>Sub-element</b>	stair support stubs and stringers
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Generally good condition. With some minor surface corrosion at connection points.
<b>Quantity of Defects</b>	40m (both sides included)
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

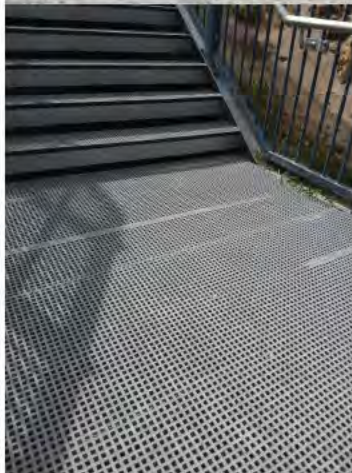
### Defect

<b>Site No.</b>	C19
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	09:29 (8 GMT)
<b>Item Number</b>	9
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Tread plate, landing platforms and clip connections
<b>Material Type</b>	FRP
<b>2021 Observed Defects (FRP)</b>	No visible defects
<b>Defect Description</b>	No visible defects observed. Inspection limited due to bottom section buried in sand.
<b>Quantity of Defects</b>	52 steps, 3m wide. 20m <sup>2</sup> landing
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

### Multi Photo

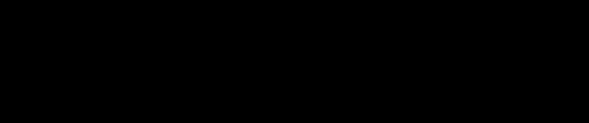




## City of Wanneroo - Coastal Asset

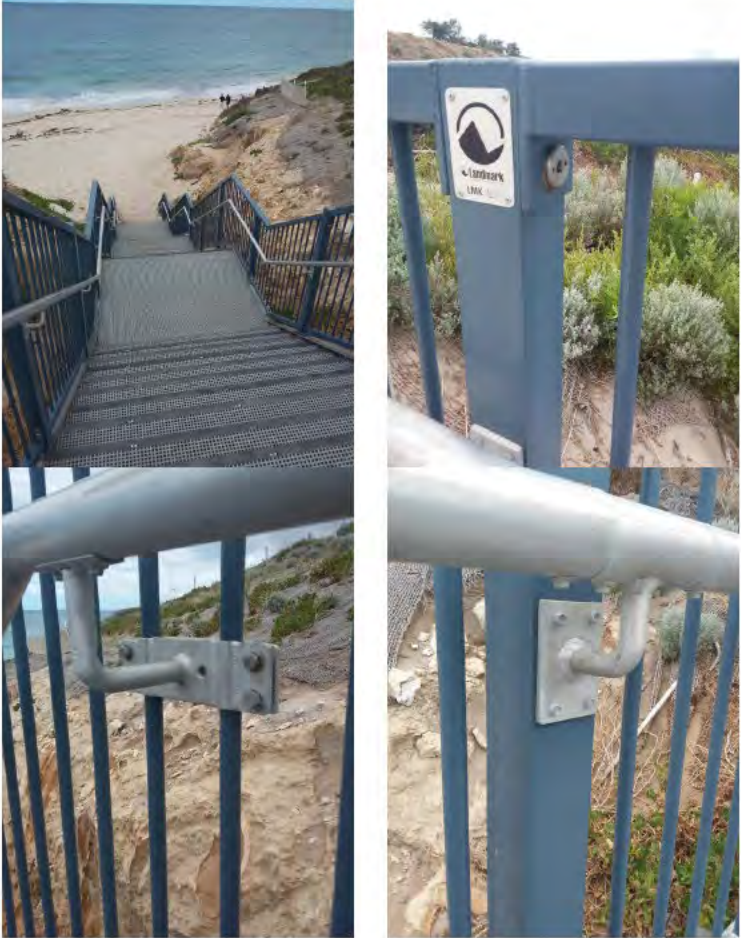
### Defect

<b>Site No.</b>	C19
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	09:45 (8 GMT)
<b>Item Number</b>	10
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Balustrade
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Noticeable build-up of debris, Surface corrosion
<b>Defect Description</b>	Minor surface corrosion at connections, and minor graffiti to paintwork. Bottom of stairs buried in sand.
<b>Quantity of Defects</b>	40m x 1.2 high
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	18
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

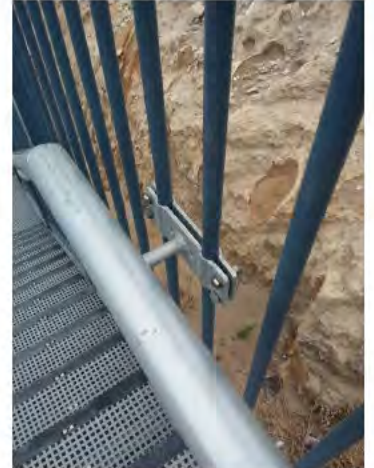
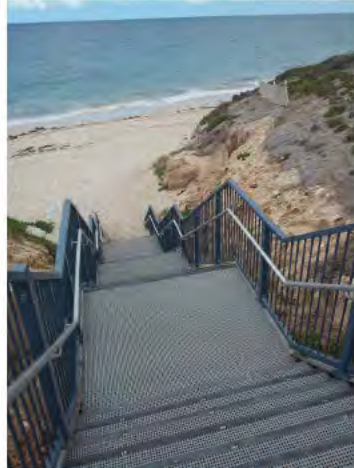
### Defect

Site No.	C19
Site Name/ Location	North Quinns Rocks Foreshore
Date	09/02/2021
Time	09:50 (8 GMT)
Item Number	11
Costal Asset Type	Stairs
Element	Handrails
Material Type	Galvanised Steel
2021 Observed Defects (Steel)	Surface corrosion
Defect Description	Generally good condition. With some minor surface corrosion at bolts on connections.
Quantity of Defects	40m
Condition Rating (0- 10)	3
Health and Safety Concern (Y/N)	No
Consequence of Failure	2
Likelihood of Failure within next 5 years	2
Risk Rating	4
Overall Rating (CR X RR)	12
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection.
Maintenance Timeframe	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo

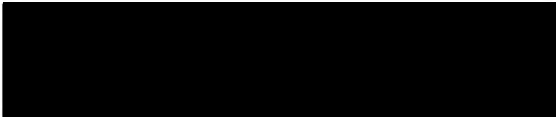




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C19
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	09:52 (8 GMT)
<b>Item Number</b>	12
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element</b>	Gate
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects
<b>Defect Description</b>	No visible defects observed to gate. Corrosion on chain attaching gate to post found. Some minor graffiti observed.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo

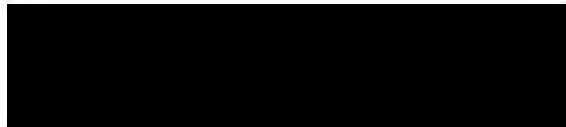


Other Comments/Inspection Limitations

Corrosion on chain attaching gate to post

# Appendix T

**Site C20 – North Quinns Rocks Foreshore  
Defect Forms**



## City of Wanneroo - Coastal Asset

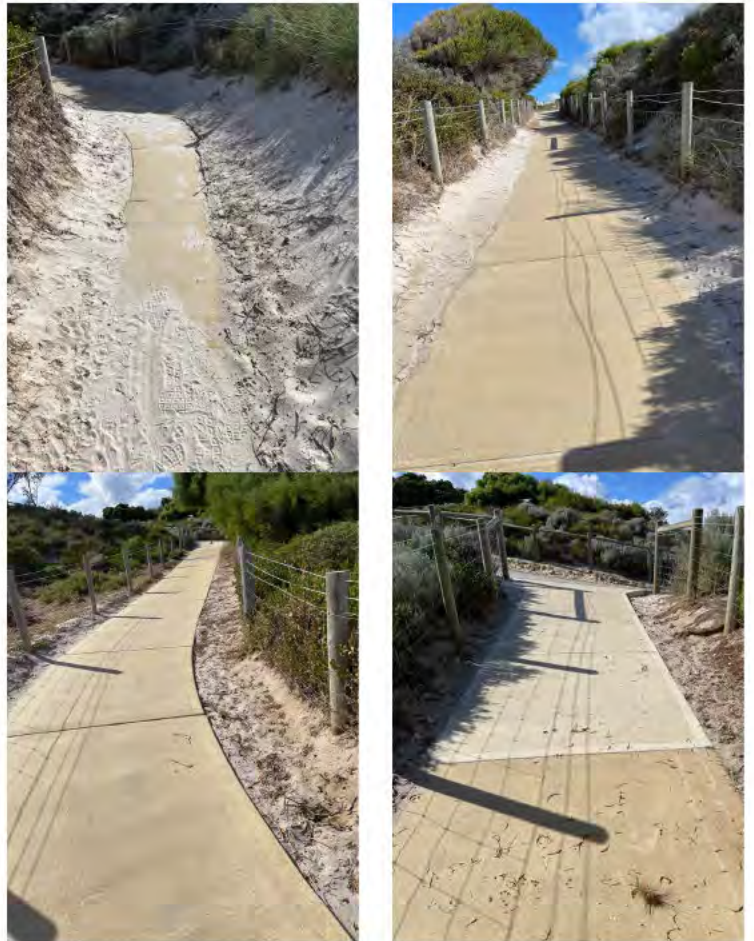
### Defect

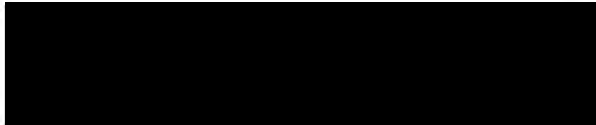
<b>Site No.</b>	C20
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	08:57 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Concrete path
<b>Element</b>	Surface
<b>Sub-element (Surface)</b>	Concrete paver
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	No visible defects were observed
<b>Defect Description</b>	Total 1.5m x 80, no visible defects
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo

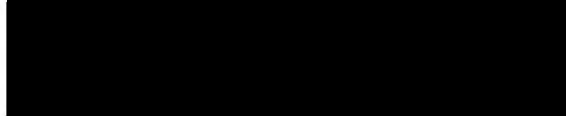




## City of Wanneroo - Coastal Asset

### Defect

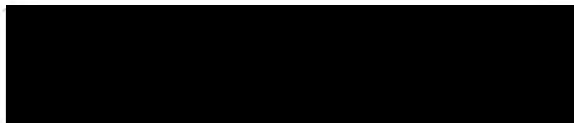
<b>Site No.</b>	C20
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	09:08 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Minor timber splitting observed to be typical throughout.
<b>Quantity of Defects</b>	71 posts
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect (1)

Site No.	C20
Site Name/ Location	North Quinns Rocks Foreshore
Date	09/02/2021
Time	09:06 (8 GMT)
Item Number	3
Costal Asset Type	Fencing
Element	Fencing East
Sub-element (Fencing)	Mesh
Material Type	Galvanised Steel
2021 Observed Defects (Steel)	Surface corrosion, Buckling/deformation
Defect Description	White rust was observed to be typical throughout. Turnbuckles observed to have corroded. Localised areas of red rust breakthrough were found. Top tension wire is corroded. Nylon wires appear in good condition.
Condition Rating (0- 10)	5
Health and Safety Concern (Y/N)	No
Consequence of Failure	2
Likelihood of Failure within next 5 years	2
Risk Rating	4
Overall Rating (CR X RR)	20
Maintenance Recommendation	Replace heavily corroded and rusted areas. Re-tension wires.
Maintenance Timeframe	Within 5 years



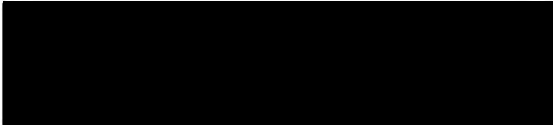
# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Pertains to east fence



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C20
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	09:12 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing West
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Coated Steel, Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Buckling/deformation
<b>Defect Description</b>	Bucking and deformation were observed to be typical throughout. With loose and corroded mesh also typical.
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	42
<b>Maintenance Recommendation</b>	Replace damaged mesh. Re-tension wires.
<b>Maintenance Timeframe</b>	Within 1-2 years



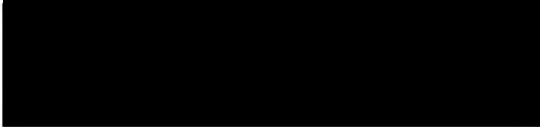
# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Replace and re-tension. Remainder of mesh similar to east side



# City of Wanneroo - Coastal Asset

## Defect

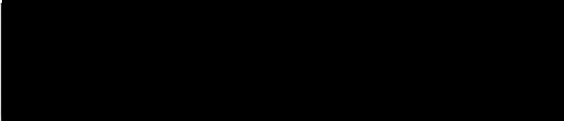
<b>Site No.</b>	C20
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	08:55 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Supports
<b>Sub-element (Stairs and Landing)</b>	Stringers and Stubs
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Other, Rust staining
<b>Defect Description</b>	Localised coating loss, and white rust on stubs.
<b>Quantity of Defects</b>	20m stringers. 8 stubs
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Re-coat rusted areas.
<b>Maintenance Timeframe</b>	Within 1-2 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

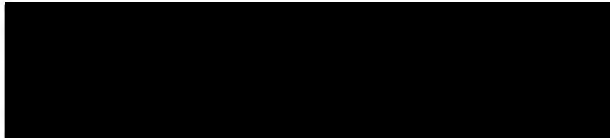
<b>Site No.</b>	C20
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	08:35 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Tread plate
<b>Material Type</b>	FRP
<b>2021 Observed Defects (FRP)</b>	No Visible defects were observed. Noticeable build-up of debris.
<b>Defect Description</b>	No Visible defects were observed. The bottom of the treads is buried in sand.
<b>Quantity of Defects</b>	13 treads visible, 2m wide
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo

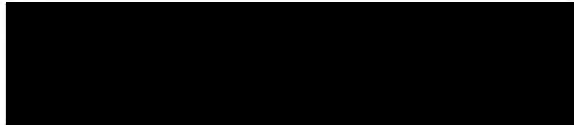




## City of Wanneroo - Coastal Asset

### Defect

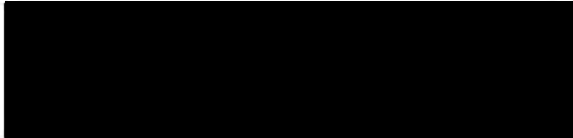
<b>Site No.</b>	C20
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	08:39 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element</b>	landing
<b>Material Type</b>	FRP
<b>2021 Observed Defects (FRP)</b>	No visible defects, Noticeable build-up of debris
<b>Defect Description</b>	No Visible defects were observed. Inspection limited as half the landing buried in sand.
<b>Quantity of Defects</b>	10m2
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

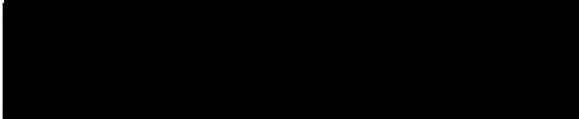




# City of Wanneroo - Coastal Asset

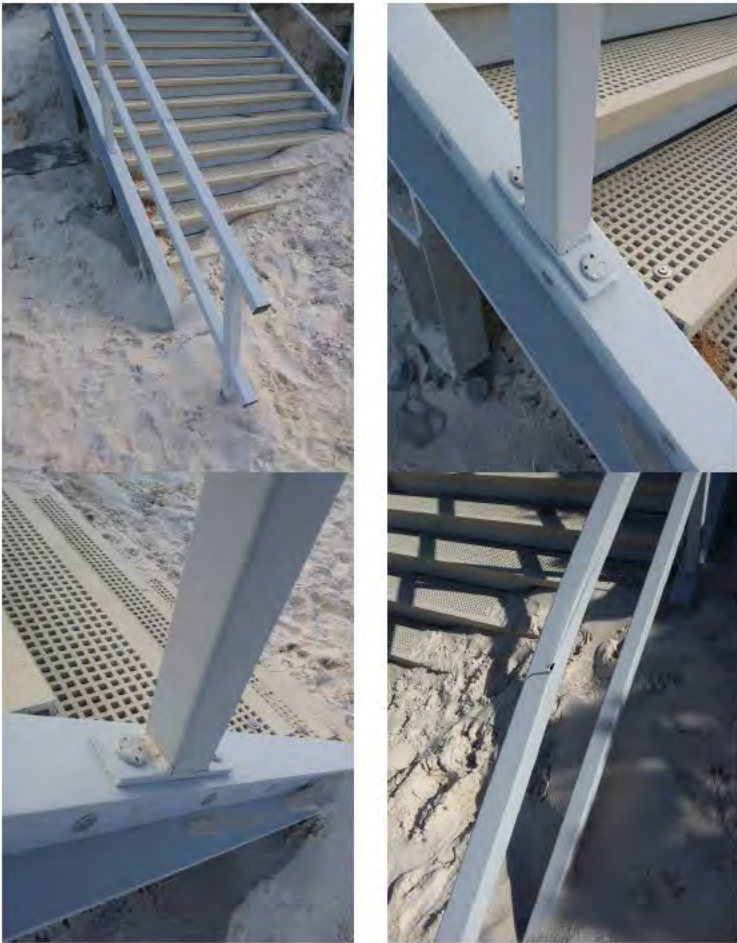
## Defect

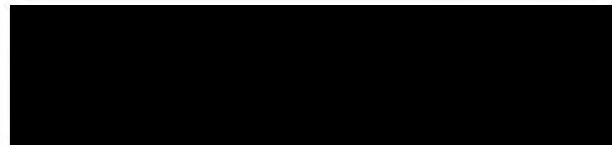
<b>Site No.</b>	C20
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	08:43 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails Localised
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Impact/mechanical damage, Cracking or other signs of distress at welds
<b>Defect Description</b>	Localised impact damage has caused weld to split, localised hole on rail. Areas covered by sand not inspected.
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	9
<b>Overall Rating (CR X RR)</b>	63
<b>Maintenance Recommendation</b>	Replace damaged sections.
<b>Maintenance Timeframe</b>	Within 1-2 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

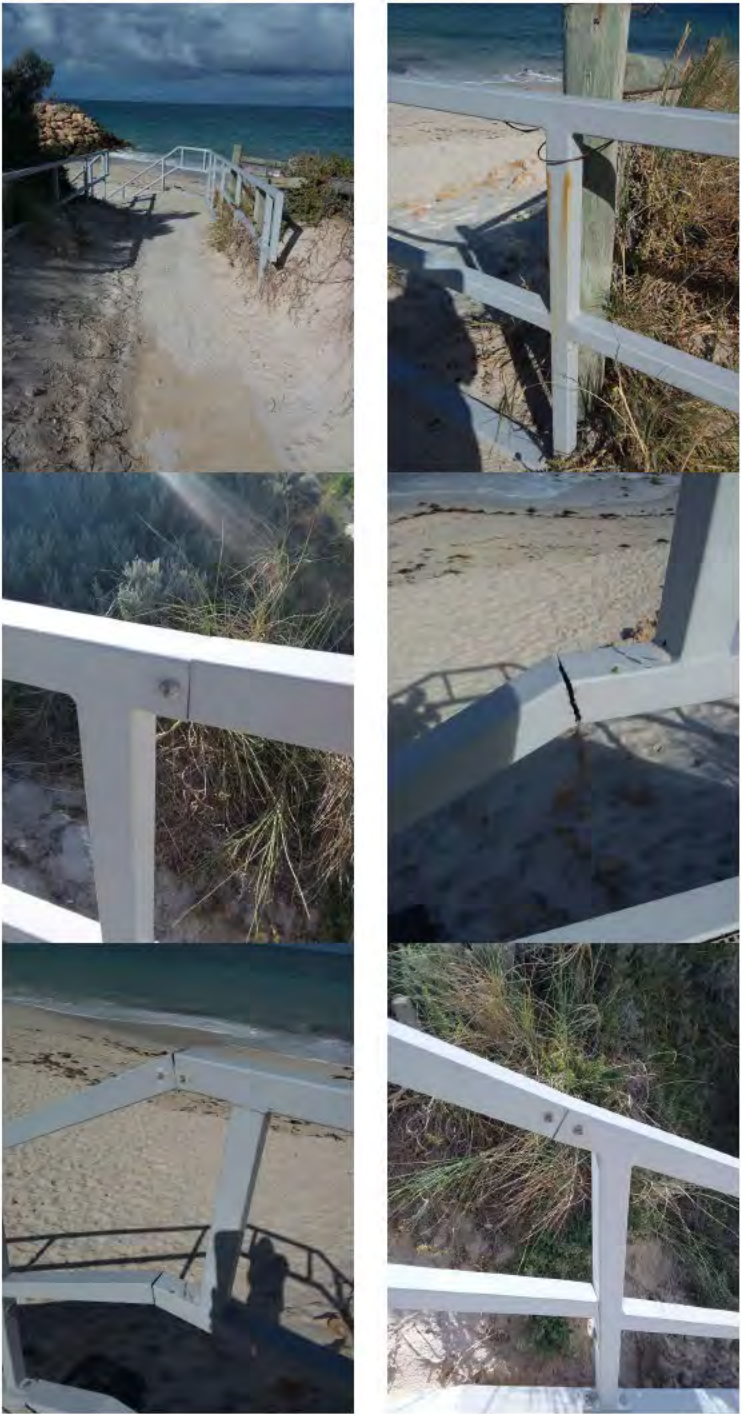
### Defect

Site No.	C20
Site Name/ Location	North Quinns Rocks Foreshore
Date	09/02/2021
Time	08:47 (8 GMT)
Item Number	9
Costal Asset Type	Stairs
Element	Handrails
Material Type	Coated Steel
2021 Observed Defects (Steel)	Surface corrosion, Rust staining
Defect Description	Generally good condition. Signs of surface corrosion at connections, as well as rust staining at connection to mesh strainer wire. Top section on southern side observed to be buried in sand up to middle rail. Connection point to stairs is not welded closed, which could lead to water ingress.
Quantity of Defects	20m
Condition Rating (0- 10)	6
Health and Safety Concern (Y/N)	No
Consequence of Failure	3
Likelihood of Failure within next 5 years	2
Risk Rating	6
Overall Rating (CR X RR)	36
Maintenance Recommendation	Re-coat corroded and coating lost areas of the handrail. Re-weld separated joint.
Maintenance Timeframe	Within 5 years



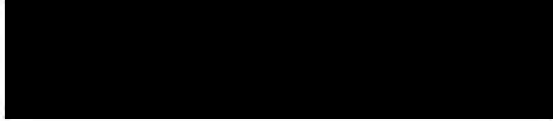
# City of Wanneroo - Coastal Asset

Multi Photo



# Appendix U

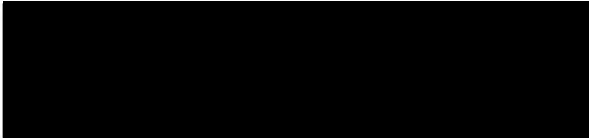
**Site C21 – North Quinns Rocks Foreshore  
Defect Forms**



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C21
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	08:26 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Concrete vehicle access ramp
<b>Element</b>	Surface
<b>Sub-element (Surface)</b>	Concrete paver
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Crack, Spalling
<b>Defect Description</b>	Total area 5m x 120m
<b>Quantity of Defects</b>	Localised spall at joints, Localised horizontal cracks typical full width. Drain blocked with sand requires cleaning
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Clear sand from drains
<b>Maintenance Timeframe</b>	Within 1 -2 years



City of Wanneroo - Coastal Asset

Multi Photo

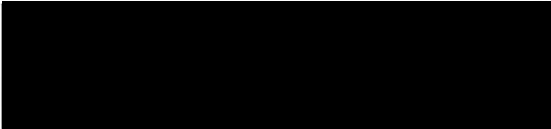




## City of Wanneroo - Coastal Asset

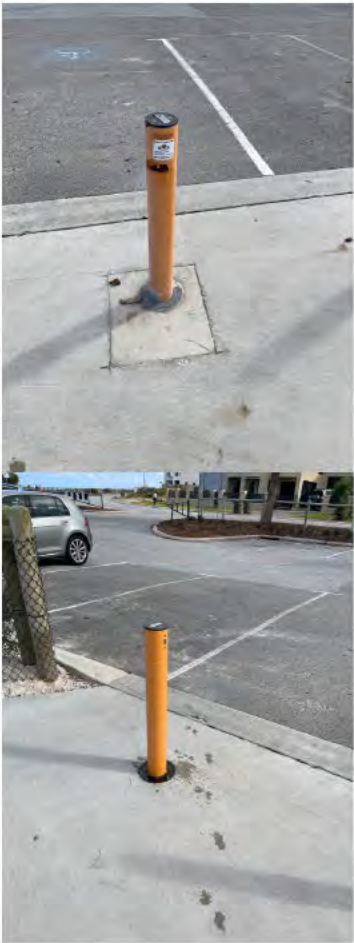
### Defect

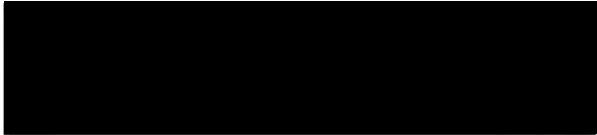
<b>Site No.</b>	C21
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	08:31 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Bollards
<b>Element</b>	Bollards
<b>Sub-element (Bollards)</b>	Bollards
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Corrosion with section loss, Coating loss
<b>Quantity of Defects</b>	One bollard was observed to be new. The other two bollards contain coating loss and are corroding with some section loss. One of these is also missing its base plate.
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	9
<b>Overall Rating (CR X RR)</b>	63
<b>Maintenance Recommendation</b>	Replace heavily corroded bollards. Reinstate the missing base plate.
<b>Maintenance Timeframe</b>	Within 1-2 years



City of Wanneroo - Coastal Asset

Multi Photo

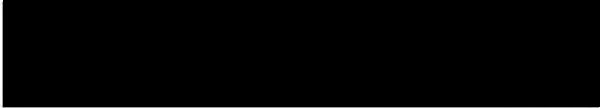




## City of Wanneroo - Coastal Asset

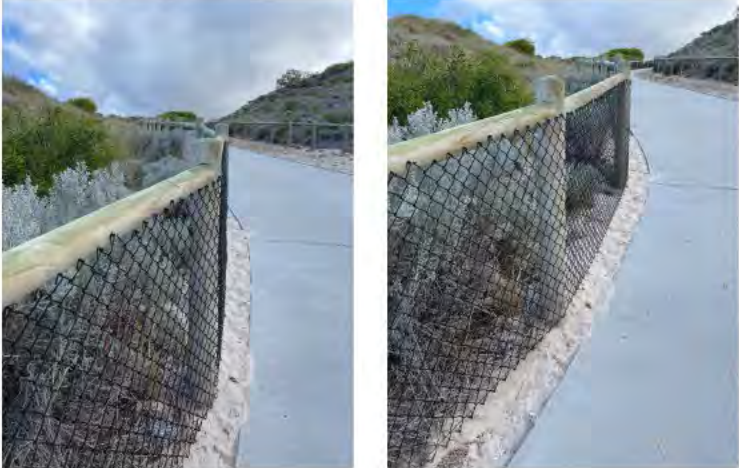
### Defect

<b>Site No.</b>	C21
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	08:44 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing North Side
<b>Sub-element (Fencing)</b>	Timber posts and Rails
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Minor timber splitting was observed to be typical throughout.
<b>Quantity of Defects</b>	1 post per 2m of railing
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



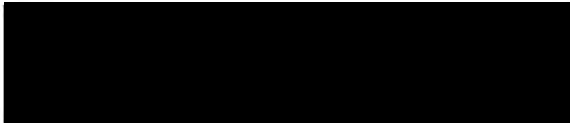
**City of Wanneroo - Coastal Asset**

**Multi Photo**



**Other Comments/Inspection Limitations**

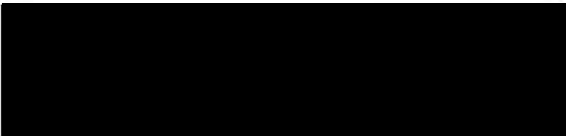
North fencing



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C21
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	08:46 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing South Side
<b>Sub-element (Fencing)</b>	Timber Posts and Rails
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Minor timber splitting was observed to be typical throughout. Inspection of the bottom 10 m limited due to fence buried in sand.
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



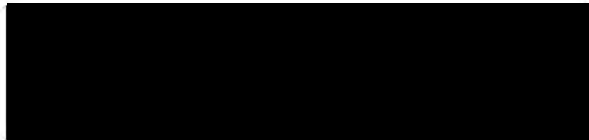
# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Pertains to south side fencing, approx 80% of bottom 10m not inspected due to sand buildup



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C21
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	08:48 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh and Staples
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects
<b>Defect Description</b>	Generally good condition. Some minor white rust observed on the staples.
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

Site No.	C21
Site Name/ Location	North Quinns Rocks Foreshore
Date	09/02/2021
Time	08:40 (8 GMT)
Item Number	6
Costal Asset Type	Fencing
Element	Fencing
Sub-element (Fencing)	Mesh Localised
Material Type	Coated Steel
2021 Observed Defects (Steel)	Impact/mechanical damage
Defect Description	Impact damage at the top of the ramp was noticed, the extent of the damage is approximately 500 mm. Localised corrosion to turnbuckle.
Quantity of Defects	North side fencing
Defect Location	Top of ramp
Condition Rating (0- 10)	4
Health and Safety Concern (Y/N)	No
Consequence of Failure	2
Likelihood of Failure within next 5 years	3
Risk Rating	6
Overall Rating (CR X RR)	24
Maintenance Recommendation	Replace or fix damaged fence section. Replace corroded turnbuckle
Maintenance Timeframe	Within 5 years



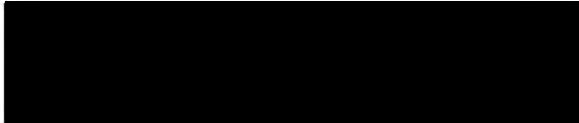
**City of Wanneroo - Coastal Asset**

**Multi Photo**



# Appendix V

**Site C22 – North Quinns Rocks Foreshore  
Defect Forms**



# City of Wanneroo - Coastal Asset

## Defect

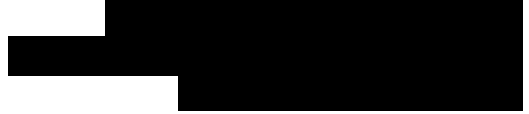
<b>Site No.</b>	C22
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	10:33 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Concrete path
<b>Element</b>	Surface
<b>Sub-element (Surface)</b>	Concrete paver
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Spalling
<b>Defect Description</b>	Localised spalling was observed at the joints, the joint material at the larger joints was also found to be deteriorated
<b>Defect Location</b>	spalls at joints 87 x 3m
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



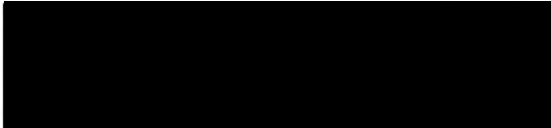
City of Wanneroo - Coastal Asset

Multi Photo





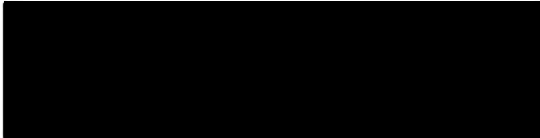
**City of Wanneroo - Coastal Asset**



## City of Wanneroo - Coastal Asset

### Defect

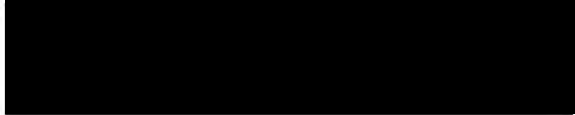
<b>Site No.</b>	C22
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	10:39 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Bollards
<b>Element</b>	Bollards
<b>Sub-element (Bollards)</b>	Bollards
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>Defect Description</b>	3 no new bollards
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**






## City of Wanneroo - Coastal Asset

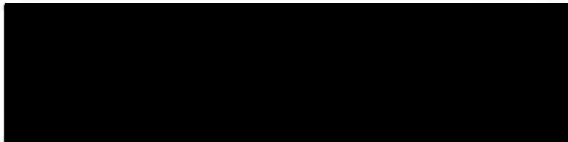
### Defect

Site No.	C22
Site Name/ Location	North Quinns Rocks Foreshore
Date	09/02/2021
Time	10:51 (8 GMT)
Item Number	3
Costal Asset Type	Fencing
Element	Fencing
Sub-element (Fencing)	Timber posts
Material Type	Timber
2021 Observed Defects (Timber)	Rotted timber, Split timber, General damage
Defect Description	Heavy timber splitting and rotting was observed to three posts including: 4 <sup>th</sup> post on the northern side from the bottom of the path, 5 <sup>th</sup> post on the southern side from the bottom of the path, and 10 <sup>th</sup> post on the southern side from the top of the path.
Quantity of Defects	3 no, 84 total posts
Defect Location	4th post northern end from bottom of path 5th post south end from bottom of path 10th post south end from top of path
Condition Rating (0- 10)	7
Health and Safety Concern (Y/N)	No
Consequence of Failure	2
Likelihood of Failure within next 5 years	4
Risk Rating	8
Overall Rating (CR X RR)	56



## City of Wanneroo - Coastal Asset

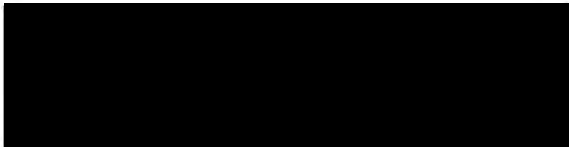
<b>Maintenance Recommendation</b>	Replace damaged timber posts
<b>Maintenance Timeframe</b>	Within 1-2 years
<b>Multi Photo</b>	



# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C22
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	10:34 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Rust staining, Coating loss, Impact/mechanical damage
<b>Defect Description</b>	<p>Generally in good condition. With the exception of the following defects:</p> <p>North Side: Impact damage at end of path, hole at base 10m from bottom of path, not secured to top rail at approx 35m from bottom of path , mesh stretched locally at 8m from top.</p> <p>South side: coating loss and corrosion 1m from top of path, mesh not secure at base midway of path, mesh not secure to posts at midheight typical along length, localised stretching at post 40m along length, not secured to top rail well (4m) approx 25m from bottom of path.</p> <p>Typical : Vegetation growth = at ocean end mesh including strainer wire and staples</p>
<b>Quantity of Defects</b>	174m (fence and strainer wire)
<b>Condition Rating (0- 10)</b>	5



### City of Wanneroo - Coastal Asset

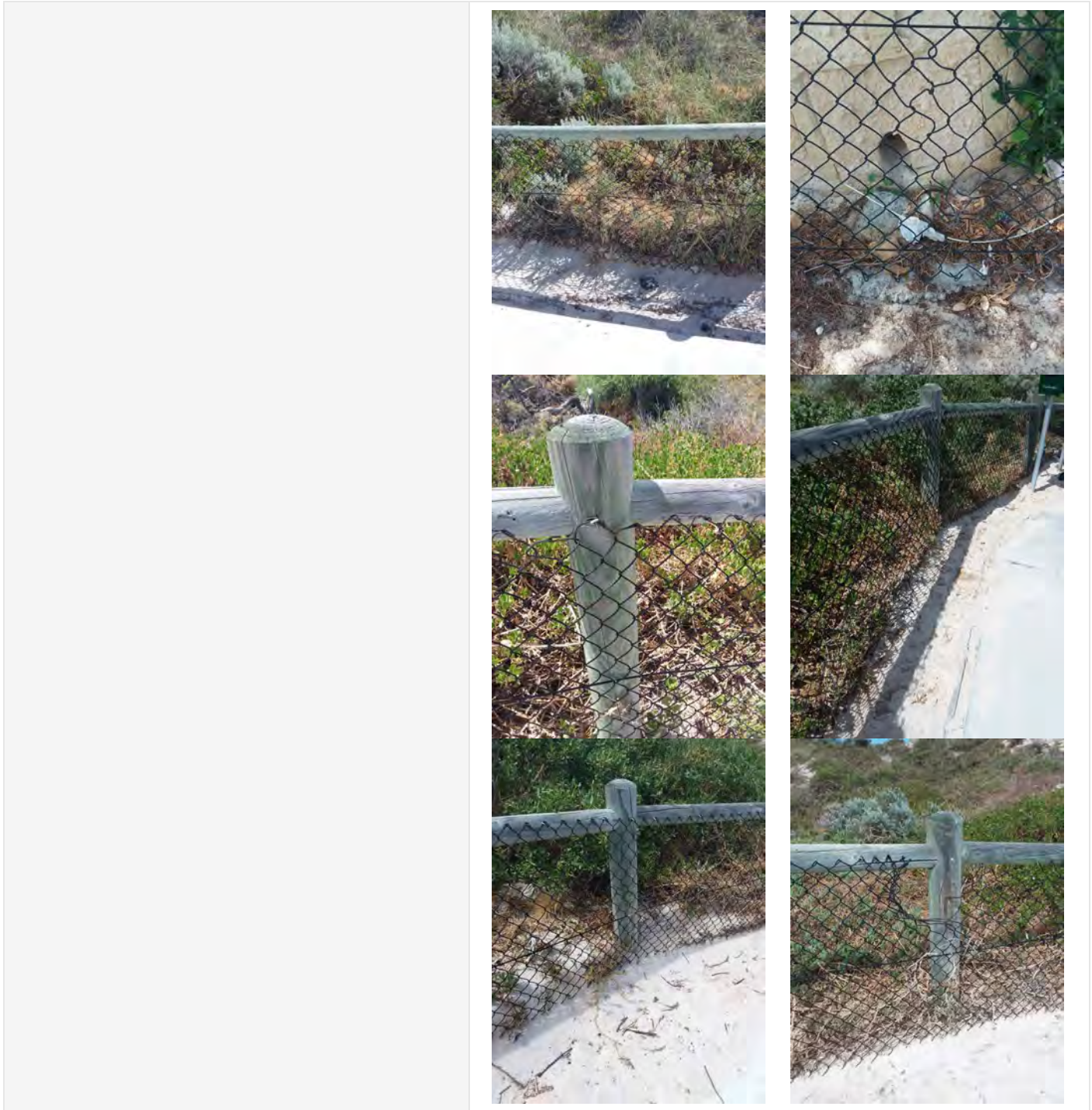
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	30
<b>Maintenance Recommendation</b>	Replace damaged areas of the mesh
<b>Maintenance Timeframe</b>	Within 5 years

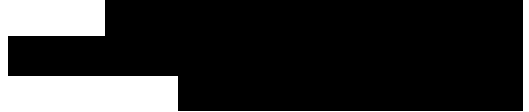
**Multi Photo**





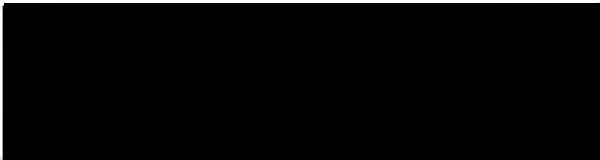
## City of Wanneroo - Coastal Asset





## City of Wanneroo - Coastal Asset

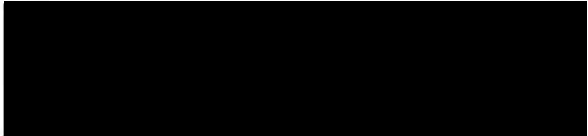




## City of Wanneroo - Coastal Asset

### Defect

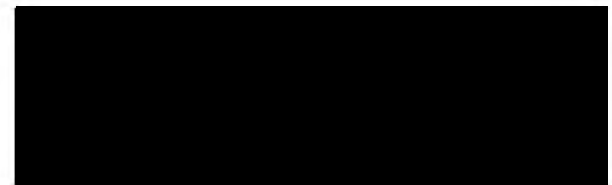
Site No.	C22
Site Name/ Location	North Quinns Rocks Foreshore
Date	09/02/2021
Time	10:48 (8 GMT)
Item Number	5
Costal Asset Type	Fencing
Element	Fencing
Sub-element (Fencing)	Mesh
Material Type	Coated Steel
2021 Observed Defects (Steel)	Buckling/deformation
Defect Description	A 2 m section midway along the path was observed to show deformation and also found not to be secured to the top rail.
Quantity of Defects	2m
Condition Rating (0- 10)	8
Health and Safety Concern (Y/N)	No
Consequence of Failure	2
Likelihood of Failure within next 5 years	4
Risk Rating	8
Overall Rating (CR X RR)	64
Maintenance Recommendation	Replace damaged mesh area
Maintenance Timeframe	Within 1-2 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

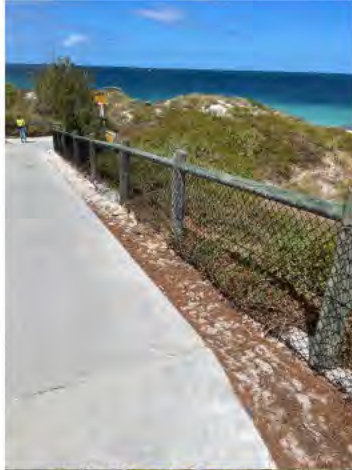
### Defect

<b>Site No.</b>	C22
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	10:46 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber Railing
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber, Rotted timber
<b>Defect Description</b>	Minor timber splitting was observed to be typical throughout, with heavier splitting on the western and eastern sides of the fencing.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Replace timber which contain heavy splitting.
<b>Maintenance Timeframe</b>	Within 5 years



## City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

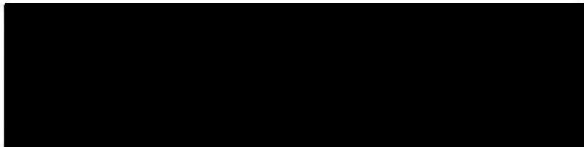
<b>Site No.</b>	C22
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	10:49 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber rail
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber, Rotted timber
<b>Defect Description</b>	Heavy timber splitting was observed between post 5 and 6 from the base of the pathway on the south side fence.
<b>Quantity of Defects</b>	1 no
<b>Defect Location</b>	Between 5th and 6th post from base of pathway, on southern fence
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	56
<b>Maintenance Recommendation</b>	Replace locally damaged timber rail
<b>Maintenance Timeframe</b>	Within 1-2 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

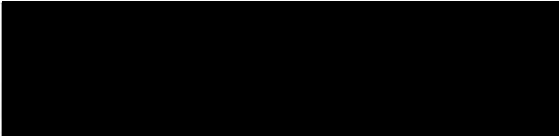




## City of Wanneroo - Coastal Asset

### Defect

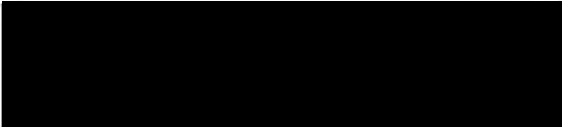
<b>Site No.</b>	C22
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	10:40 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Sign
<b>Element</b>	Sign
<b>Sub-element (Sign)</b>	Sign
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Coating loss
<b>Defect Description</b>	Coating loss and corrosion was observed on the signposts.
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Abrasive blast clean and apply protective coating
<b>Maintenance Timeframe</b>	Within 5 years



# City of Wanneroo - Coastal Asset

## Multi Photo

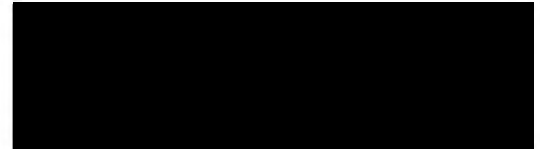




# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C22
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	10:42 (8 GMT)
<b>Item Number</b>	9
<b>Costal Asset Type</b>	Shower
<b>Material Type</b>	Stainless Steel, Limestone
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	The fountain was observed to be wrapped in danger tape and marked with an out of order sign. Corrosion was observed on the shower base. The limestone walls and base slab were in good condition.
<b>Quantity of Defects</b>	2 x 4 m
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Replace or fix damaged fountain, blast clean and recoat the shower base.
<b>Maintenance Timeframe</b>	Within 6 months



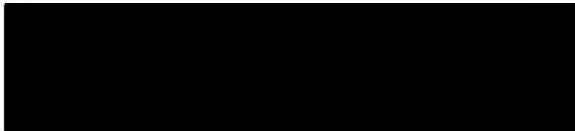
## City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

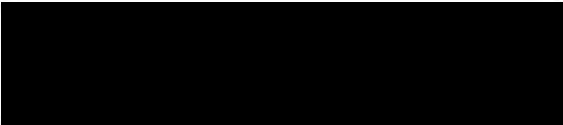
Replace drink fountain



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C22
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	10:42 (8 GMT)
<b>Item Number</b>	10
<b>Costal Asset Type</b>	Shower
<b>Sub Element</b>	Wall
<b>Material Type</b>	Limestone
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	The limestone walls and base slab were in good condition.
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo



# Appendix W

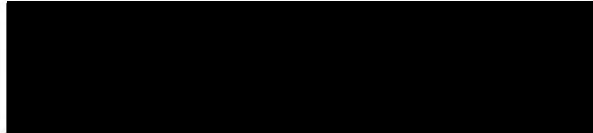
**Site C23 – North Quinns Rocks Foreshore  
Defect Forms**



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:30 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Covered look out
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Piles
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	No visible defects
<b>Defect Description</b>	Generally good condition. Connection bolts observed to be typically corroded.
<b>Quantity of Defects</b>	5 no total
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Inspected from stair case due to restricted access



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:17 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Covered look out
<b>Element</b>	Supports
<b>Sub-element</b>	Timber column
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Minor timber splitting observed to be typical throughout
<b>Defect Location</b>	4 no columns
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo





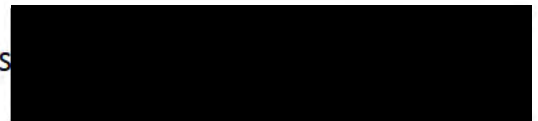
## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:19 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Covered look out
<b>Element</b>	Supports
<b>Sub-element</b>	connections
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Corrosion with section loss
<b>Defect Description</b>	Heavy corrosion to connections on columns was observed.
<b>Quantity of Defects</b>	32 bolts, 4 right angle base plates
<b>Condition Rating (0- 10)</b>	8
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	12
<b>Overall Rating (CR X RR)</b>	96
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 6 months



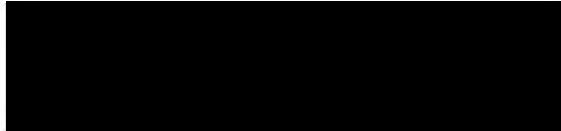
S



## City of Wanneroo - Coastal Asset

Multi Photo

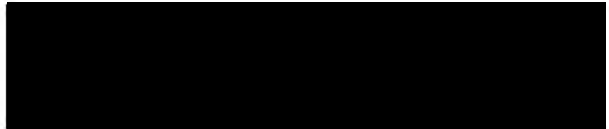




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:33 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Covered look out
<b>Element</b>	Supports
<b>Sub-element (Stairs and Landing)</b>	Bracing
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	No visible defects
<b>Defect Description</b>	Generally good condition with some corrosion to connection bolts
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



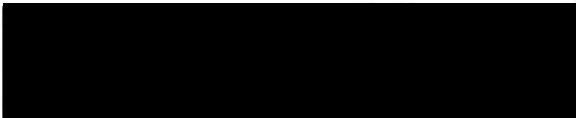
## City of Wanneroo - Coastal Asset

**Multi Photo**



**Other Comments/Inspection Limitations**

Inspected from staircase, due to restricted access



# City of Wanneroo - Coastal Asset

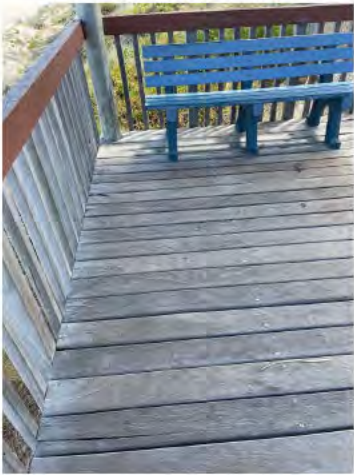
## Defect

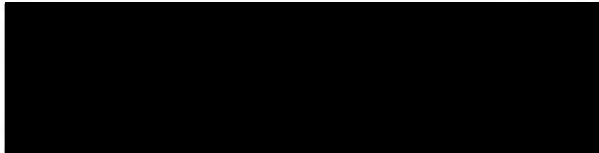
<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:15 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Covered look out
<b>Element</b>	Decking
<b>Sub-element (Decking and Supports)</b>	Deck planks and fixings
<b>Material Type</b>	Timber, Galvanised Steel
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>2021 Observed Defects (Steel)</b>	No visible defects
<b>Defect Description</b>	Generally good condition with minor timber splitting observed. No visible defects on fixings.
<b>Quantity of Defects</b>	2 x 4m
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

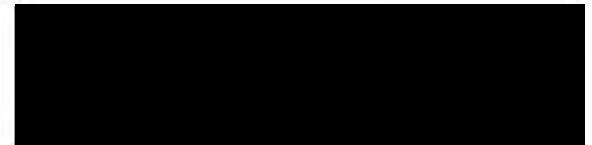
<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:35 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing
<b>Sub-element</b>	Balustrade Panel
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Coating loss
<b>Defect Description</b>	Coating loss to steel fence under lookout
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	20
<b>Maintenance Recommendation</b>	Replace with permanent fencing.
<b>Maintenance Timeframe</b>	Within 5 years



## City of Wanneroo - Coastal Asset

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## City of Wanneroo - Coastal Asset

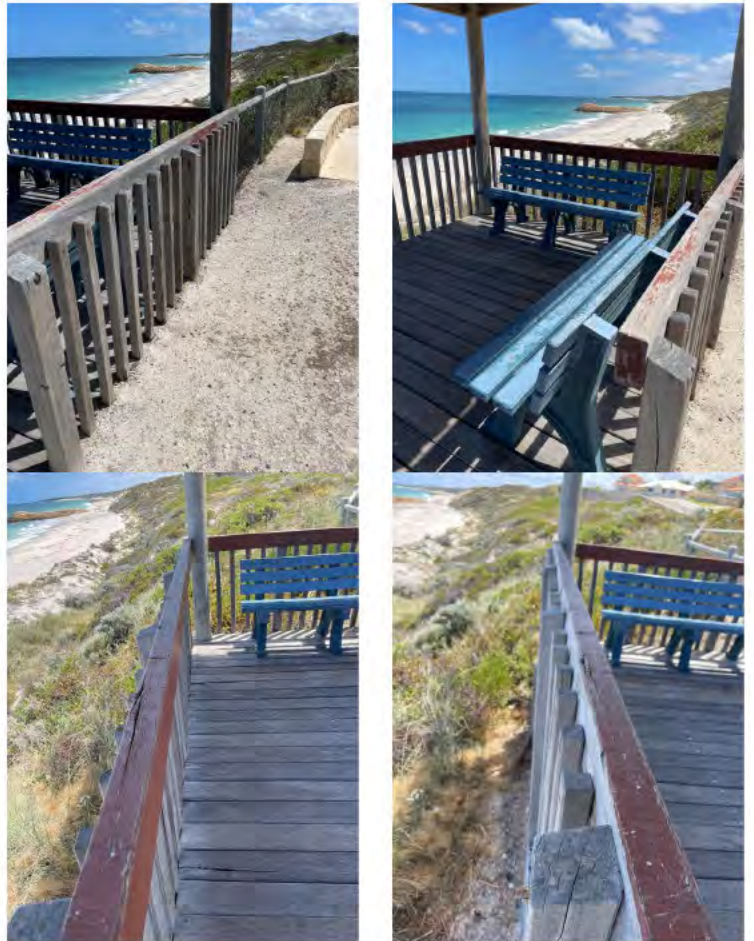
### Defect

<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:28 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Covered look out
<b>Element</b>	Balustrade
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Minor timber splitting and coating loss were observed. Surface corrosion to bolts also observed.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

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Other Comments/Inspection Limitations

Pertains to rails, posts and balustrades

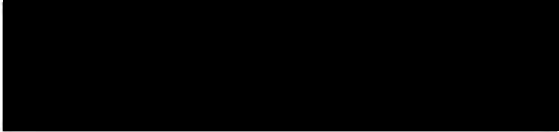


S

## City of Wanneroo - Coastal Asset

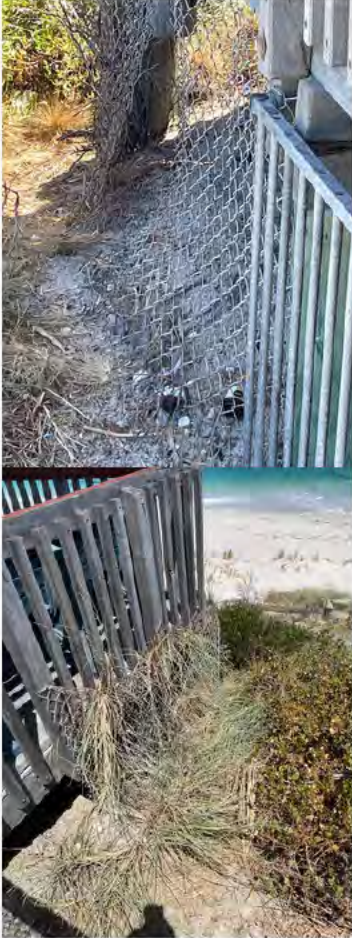
### Defect

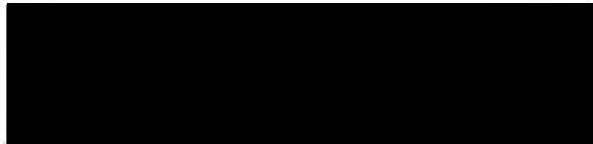
<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:37 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Failed
<b>Defect Description</b>	Generally good condition. Minor surface corrosion and localised section of failed mesh under the covered lookout was observed.
<b>Condition Rating (0- 10)</b>	8
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	64
<b>Maintenance Recommendation</b>	Replace with permanent fencing.
<b>Maintenance Timeframe</b>	Within 6 months



**City of Wanneroo - Coastal Asset**

**Multi Photo**

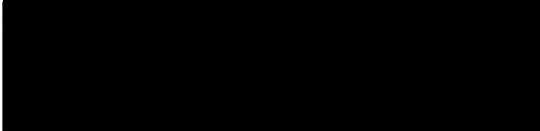




## City of Wanneroo - Coastal Asset

### Defect

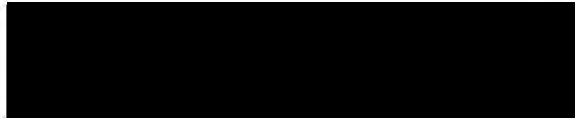
<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:26 (8 GMT)
<b>Item Number</b>	9
<b>Costal Asset Type</b>	Covered look out
<b>Element</b>	Bench
<b>Sub-element</b>	Timber bench
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	General damage
<b>Defect Description</b>	Coating loss and minor impact damage were observed.
<b>Quantity of Defects</b>	2 no bench seats
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

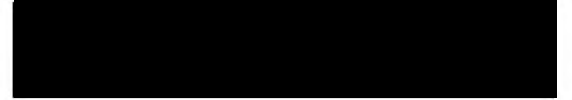




## City of Wanneroo - Coastal Asset

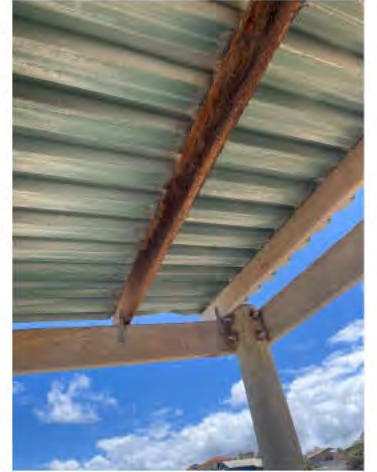
### Defect

<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:21 (8 GMT)
<b>Item Number</b>	10
<b>Costal Asset Type</b>	Covered look out
<b>Element</b>	Supports
<b>Sub-element</b>	Rafters and purlins
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Rotted timber, Salt kill
<b>Defect Description</b>	Heavy timber rot observed, predominantly on the 4 <sup>th</sup> rafter from the seaward end.
<b>Quantity of Defects</b>	5 4m long rafters 6 purlins
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	12
<b>Overall Rating (CR X RR)</b>	84
<b>Maintenance Recommendation</b>	Replace heavily rotted timber rafters and purlins
<b>Maintenance Timeframe</b>	Within 1-2 years



## City of Wanneroo - Coastal Asset

Multi Photo

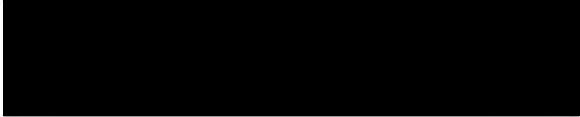




## City of Wanneroo - Coastal Asset

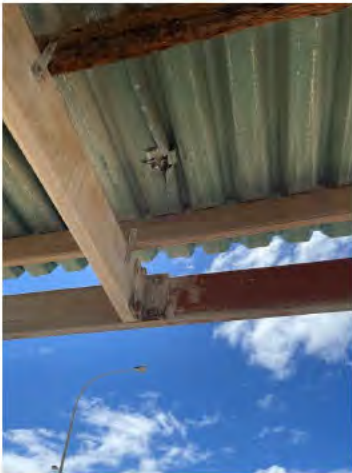
### Defect

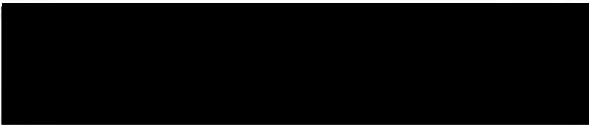
<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:24 (8 GMT)
<b>Item Number</b>	11
<b>Costal Asset Type</b>	Covered look out
<b>Element</b>	Roof sheeting
<b>Material Type</b>	Other
<b>Material Type (Other)</b>	Colourbond
<b>Defect Description</b>	Underside typically in good condition. One localised area of damage observed. Inspection limited to underside.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

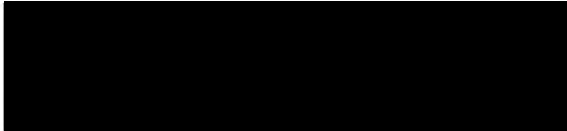




## City of Wanneroo - Coastal Asset

### Defect

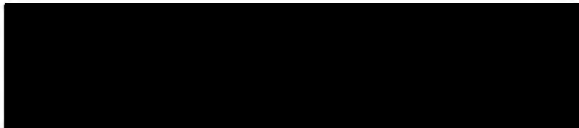
<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:28 (8 GMT)
<b>Item Number</b>	12
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Piles
<b>Material Type</b>	Timber, Steel
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>2021 Observed Defects (Steel)</b>	Corrosion with section loss
<b>Defect Description</b>	Timber members observed to contain splitting. Steel bolts observed to contain corrosion with potential section loss on washer plates.
<b>Quantity of Defects</b>	6 x 300m diameter
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	40
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect (5)

<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:33 (8 GMT)
<b>Item Number</b>	13
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Supports
<b>Sub-element (Stairs and Landing)</b>	Timber sleepers
<b>Material Type</b>	Steel, Timber
<b>2021 Observed Defects (Timber)</b>	No visible defects
<b>2021 Observed Defects (Steel)</b>	Corrosion with section loss
<b>Defect Description</b>	Timber members generally in good condition. Corrosion and section loss to connections observed.
<b>Quantity of Defects</b>	20m
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	12
<b>Overall Rating (CR X RR)</b>	72
<b>Maintenance Recommendation</b>	Replace corroded connections
<b>Maintenance Timeframe</b>	Within 1-2 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

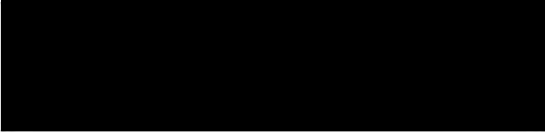




## City of Wanneroo - Coastal Asset

### Defect

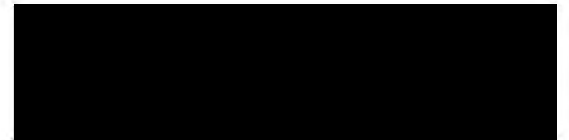
<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:22 (8 GMT)
<b>Item Number</b>	14
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Supports
<b>Sub-element (Stairs and Landing)</b>	Stair support stubs
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	No visible defects observed.
<b>Defect Description</b>	New support stub added to structure at top on south side. surface corrosion to bolts. Remaining stubs in good condition.
<b>Quantity of Defects</b>	1
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

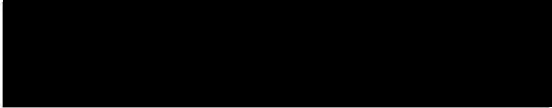
<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:25 (8 GMT)
<b>Item Number</b>	15
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Tie rods
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Corrosion with section loss
<b>Defect Description</b>	Severe corrosion with potential section loss observed.
<b>Quantity of Defects</b>	6 x 2m
<b>Condition Rating (0- 10)</b>	8
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	12
<b>Overall Rating (CR X RR)</b>	96
<b>Maintenance Recommendation</b>	Replace heavily corroded sections.
<b>Maintenance Timeframe</b>	Within 1-2 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

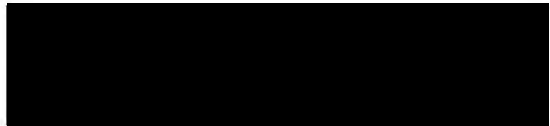




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:14 (8 GMT)
<b>Item Number</b>	16
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Supports
<b>Sub-element (Stairs and Landing)</b>	Stringers
<b>Material Type</b>	Timber, Steel
<b>2021 Observed Defects (Timber)</b>	Split timber, Corrosion of fasteners and connections, General damage
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Rust staining
<b>Defect Description</b>	Timber splitting observed to be typical throughout, with corrosion of fasteners and connections. North side at the top showing heavy splits in timber. South side shows additional unstable support and contains an angle section bolted under timber stringer.
<b>Quantity of Defects</b>	28m
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	12
<b>Overall Rating (CR X RR)</b>	84



### City of Wanneroo - Coastal Asset

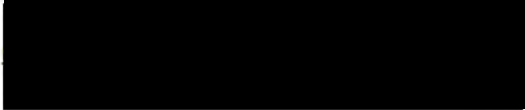
<b>Maintenance Recommendation</b>	Replace damaged, split and corroded sections.
<b>Maintenance Timeframe</b>	Within 1-2 years
<b>Multi Photo</b>	



## City of Wanneroo - Coastal Asset

### Defect

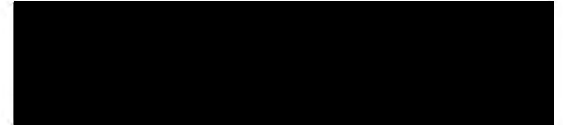
<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:08 (8 GMT)
<b>Item Number</b>	17
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Stair treads
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber, Other
<b>Defect Description</b>	Localised rotting and timber splitting observed. Paint observed to be completely deteriorated
<b>Quantity of Defects</b>	37 treads total including landings
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	12
<b>Overall Rating (CR X RR)</b>	60
<b>Maintenance Recommendation</b>	Replace heavily split or rotted sections
<b>Maintenance Timeframe</b>	Within 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:12 (8 GMT)
<b>Item Number</b>	18
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Stair tread nails
<b>Material Type</b>	Steel
<b>Defect Description</b>	Some nails observed to be protruding, causing a safety hazard.
<b>Condition Rating (0- 10)</b>	79
<b>Health and Safety Concern (Y/N)</b>	Yes
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	54
<b>Maintenance Recommendation</b>	Replace protruding nails
<b>Maintenance Timeframe</b>	Immediately



## City of Wanneroo - Coastal Asset

Multi Photo

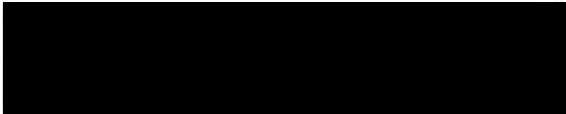




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C23
<b>Site Name/ Location</b>	North Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:07 (8 GMT)
<b>Item Number</b>	19
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Paint observed to have completely deteriorated. Splitting timber and corrosion around the bolts observed to be typical throughout. Inspection limited due to buried base.
<b>Quantity of Defects</b>	28m
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	9
<b>Overall Rating (CR X RR)</b>	45
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

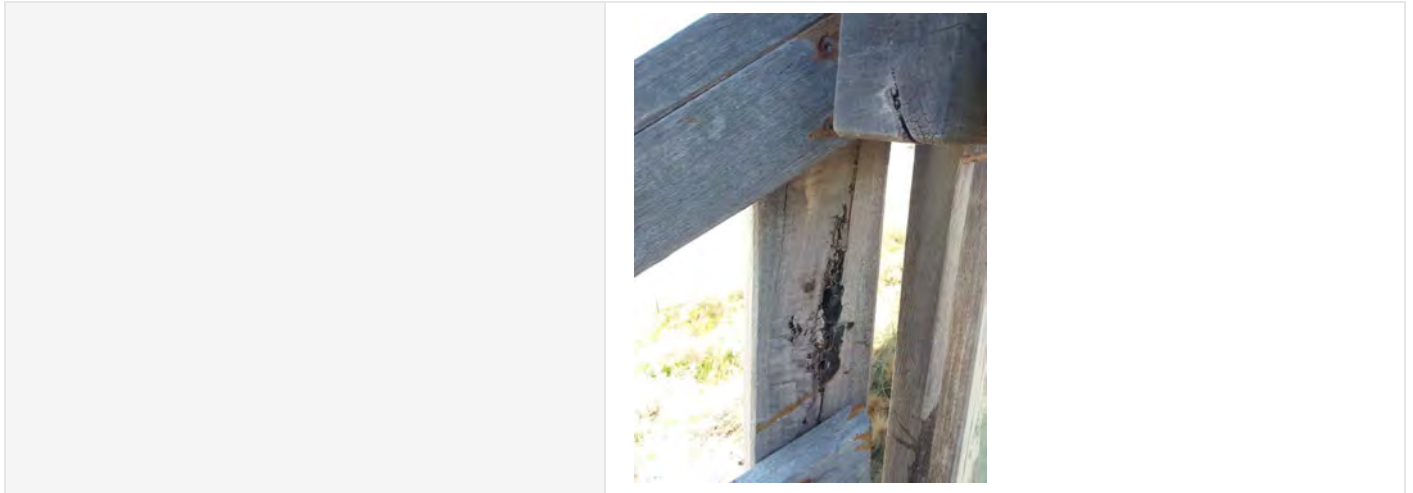




Date Submitted: 09/02/2021 14:25

Su [REDACTED]

## City of Wanneroo - Coastal Asset



# Appendix X

**Site C24 – Jindalee Foreshore Defect  
Forms**



Su


## City of Wanneroo - Coastal Asset

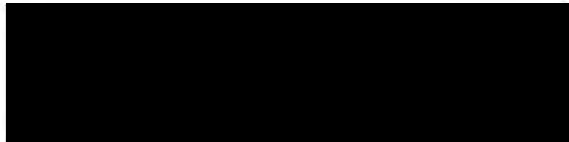
### Defect

<b>Site No.</b>	C24
<b>Site Name/ Location</b>	Quinns Rocks Beach Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:49 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Stair treads
<b>Material Type</b>	Other, Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Grout Deterioration
<b>Material Type (Other)</b>	Brick
<b>Defect Description</b>	Generally good condition. Some grout deterioration observed between brick courses. Inspection limited due to sand
<b>Quantity of Defects</b>	36 stairs visible approx 1 x 40m Approx 6 covered with sand
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	30
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.



**City of Wanneroo - Coastal Asset**

<b>Maintenance Timeframe</b>	Greater than 5 years
<b>Multi Photo</b>	



## City of Wanneroo - Coastal Asset

### Defect

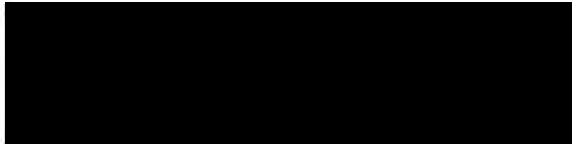
<b>Site No.</b>	C24
<b>Site Name/ Location</b>	Quinns Rocks Beach Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:47 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Stairs
<b>Sub-element (Handrails)</b>	Steel
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Blistering/peeling
<b>Defect Description</b>	Widespread surface corrosion and coating loss.
<b>Defect Location</b>	handrail on north side only
<b>Quantity of Defects</b>	11m
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	9
<b>Overall Rating (CR X RR)</b>	54
<b>Maintenance Recommendation</b>	Abrasive blast clean and apply protective coating
<b>Maintenance Timeframe</b>	Within 1-2 years



City of Wanneroo - Coastal Asset

Multi Photo

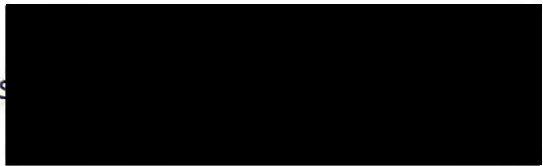




# City of Wanneroo - Coastal Asset

## Defect

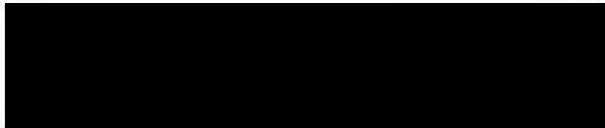
<b>Site No.</b>	C24
<b>Site Name/ Location</b>	Quinns Rocks Beach Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	11:55 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Stairs
<b>Sub-element (Walls)</b>	Wall
<b>Material Type</b>	Grouted rock
<b>Defect Description</b>	Localised grout loss on top of wall, however does not appear to affect functionality of wall.
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	30
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





# City of Wanneroo - Coastal Asset

## Defect

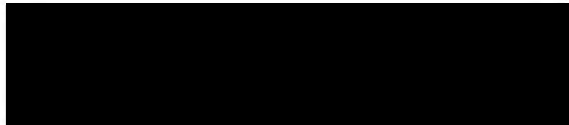
Site No.	C24
Site Name/ Location	Quinns Rocks Beach Foreshore
Date	09/02/2021
Time	11:52 (8 GMT)
Item Number	4
Costal Asset Type	Sign
Element	Sign
Material Type	Galvanised Steel
2021 Observed Defects (Steel)	Surface corrosion
Defect Description	Generally good condition. Surface corrosion to bolts as well as minor flaking of paint on east side were observed.
Quantity of Defects	1
Condition Rating (0- 10)	4
Health and Safety Concern (Y/N)	No
Consequence of Failure	2
Likelihood of Failure within next 5 years	2
Risk Rating	4
Overall Rating (CR X RR)	16
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection.
Maintenance Timeframe	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

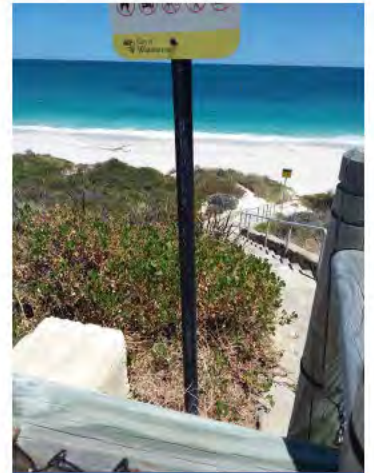
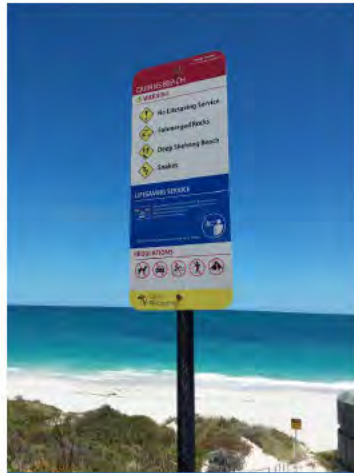
### Defect (2)

Site No.	C24
Site Name/ Location	Quinns Rocks Beach Foreshore
Date	09/02/2021
Time	11:54 (8 GMT)
Item Number	5
Costal Asset Type	Sign
Material Type	Galvanised Steel, Coated Steel
2021 Observed Defects (Steel)	Surface corrosion
Defect Description	Generally good condition. Some corrosion observed on the Quinns beach sign to the CHS
Condition Rating (0- 10)	4
Health and Safety Concern (Y/N)	No
Consequence of Failure	2
Likelihood of Failure within next 5 years	2
Risk Rating	4
Overall Rating (CR X RR)	16
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection.
Maintenance Timeframe	Greater than 5 years



## City of Wanneroo - Coastal Asset

### Multi Photo



# Appendix Y

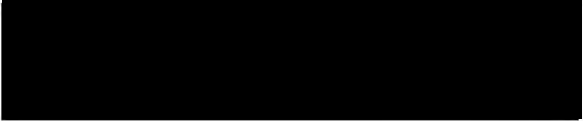
**Site C25 – Quinns Rocks Beach Foreshore  
Defect Forms**



## City of Wanneroo - Coastal Asset

### Defect

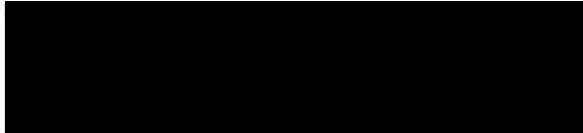
<b>Site No.</b>	C25
<b>Site Name/ Location</b>	Quinns Rocks Beach Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	12:25 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Piles
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Corrosion with section loss
<b>Defect Description</b>	Heavy corrosion with apparent section loss.
<b>Quantity of Defects</b>	8 piles - 6m total
<b>Condition Rating (0- 10)</b>	9
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	12
<b>Overall Rating (CR X RR)</b>	108
<b>Maintenance Recommendation</b>	Abrasive blast clean and apply protective coating, weld a structural plate if section loss justifies
<b>Maintenance Timeframe</b>	Within 6 months



**City of Wanneroo - Coastal Asset**

**Multi Photo**

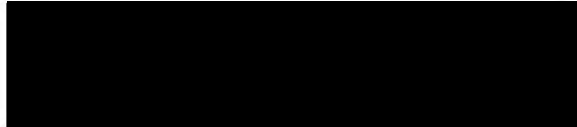




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C25
<b>Site Name/ Location</b>	Quinns Rocks Beach Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	12:20 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Stringers
<b>Sub-element</b>	Support Steelwork
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Rust staining
<b>Defect Description</b>	generally good condition. rust staining at connections on stringers
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

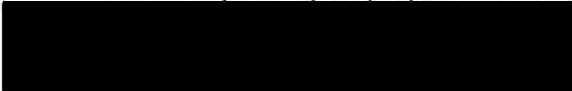




## City of Wanneroo - Coastal Asset

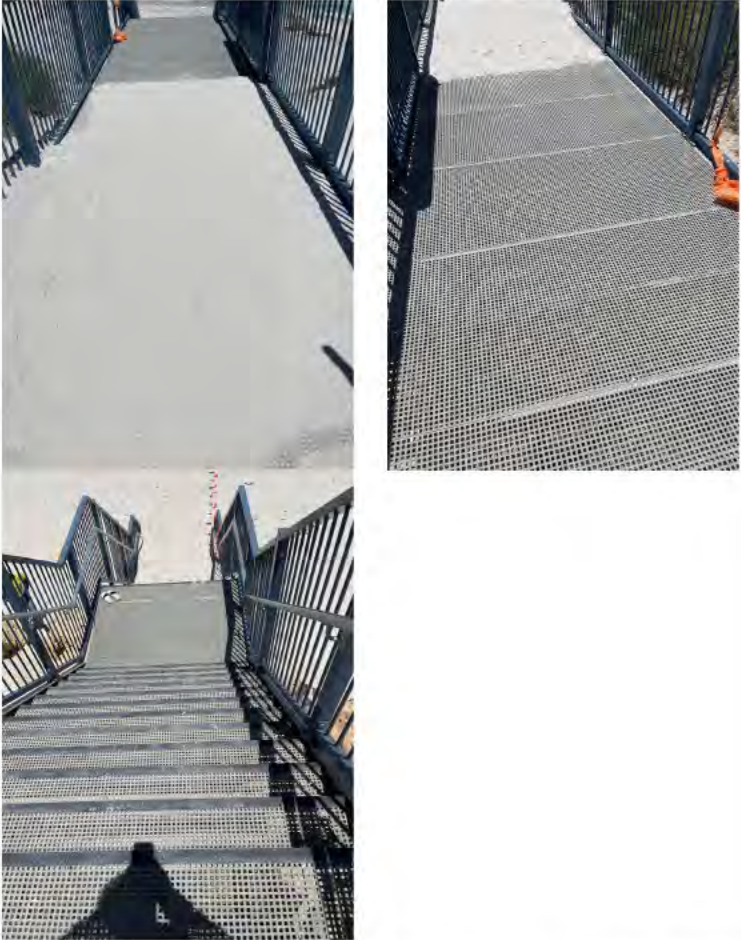
### Defect

<b>Site No.</b>	C25
<b>Site Name/ Location</b>	Quinns Rocks Beach Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	12:20 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Stair treads
<b>Material Type</b>	FRP
<b>2021 Observed Defects (FRP)</b>	No visible defects observed
<b>Quantity of Defects</b>	Approx 35m including landings 24 treads
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



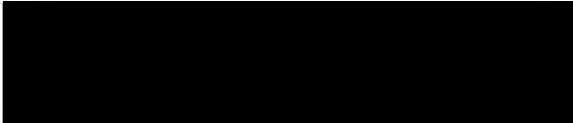
# City of Wanneroo - Coastal Asset

## Multi Photo



## Other Comments/Inspection Limitations

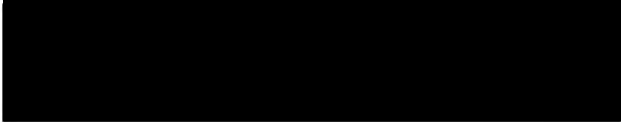
Top and bottom landing partially obstructed by sand and not inspected



## City of Wanneroo - Coastal Asset

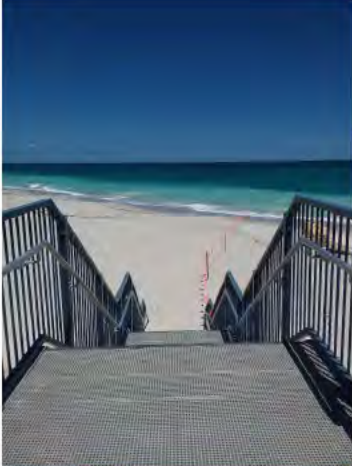
### Defect

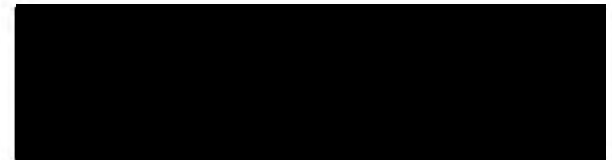
Site No.	C25
Site Name/ Location	Quinns Rocks Beach Foreshore
Date	09/02/2021
Time	12:13 (8 GMT)
Item Number	4
Costal Asset Type	Stairs
Element	Balustrade
Material Type	Coated Steel
2021 Observed Defects (Steel)	Impact/mechanical damage, Surface corrosion
Defect Description	Generally good condition. Missing member on south side at second incline from bottom. Minor surface corrosion observed at connections. Inspection limited due to bottom section being buried.
Quantity of Defects	26m
Condition Rating (0- 10)	4
Health and Safety Concern (Y/N)	No
Consequence of Failure	3
Likelihood of Failure within next 5 years	2
Risk Rating	6
Overall Rating (CR X RR)	24
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection.
Maintenance Timeframe	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

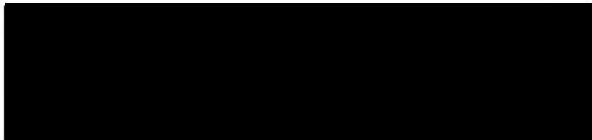




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C25
<b>Site Name/ Location</b>	Quinns Rocks Beach Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	12:14 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Balustrade Localised
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Impact/mechanical damage
<b>Defect Description</b>	A number of south side balustrade members missing
<b>Condition Rating (0- 10)</b>	9
<b>Health and Safety Concern (Y/N)</b>	Yes
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	5
<b>Risk Rating</b>	15
<b>Overall Rating (CR X RR)</b>	135
<b>Maintenance Recommendation</b>	Replace missing members
<b>Maintenance Timeframe</b>	Immediately



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C25
<b>Site Name/ Location</b>	Quinns Rocks Beach Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	12:31 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Railing
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Connections Localised
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Failed
<b>Defect Description</b>	Failed connection at base of staircase.
<b>Condition Rating (0- 10)</b>	10
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	5
<b>Risk Rating</b>	10
<b>Overall Rating (CR X RR)</b>	100
<b>Maintenance Recommendation</b>	Replace failed connections.
<b>Maintenance Timeframe</b>	Within 6 months



**City of Wanneroo - Coastal Asset**

**Multi Photo**



**Other Comments/Inspection Limitations**

Refix



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C25
<b>Site Name/ Location</b>	Quinns Rocks Beach Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	12:19 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Railing
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Connections
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects observed
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

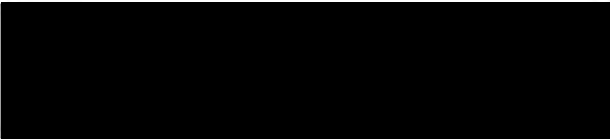




## City of Wanneroo - Coastal Asset

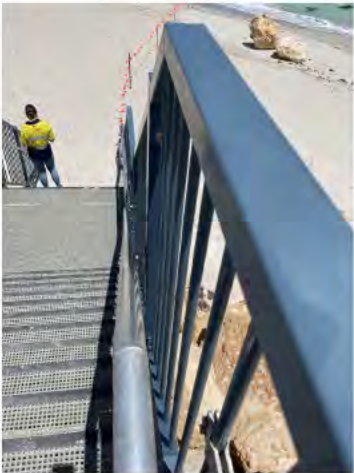
### Defect

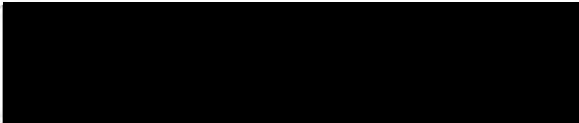
<b>Site No.</b>	C25
<b>Site Name/ Location</b>	Quinns Rocks Beach Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	12:17 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Railing
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Top rail
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects observed
<b>Quantity of Defects</b>	Approx 25m
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C25
<b>Site Name/ Location</b>	Quinns Rocks Beach Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	12:15 (8 GMT)
<b>Item Number</b>	9
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Gate
<b>Sub-element</b>	Gate
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects
<b>Defect Description</b>	No visible defects were observed on the gate. Minor white rust noticed on the chain.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



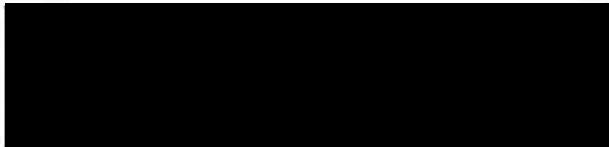
City of Wanneroo - Coastal Asset

Multi Photo



# Appendix Z

**Site C26 – South Quinns Rocks Foreshore  
Defect Forms**



## City of Wanneroo - Coastal Asset

### Defect

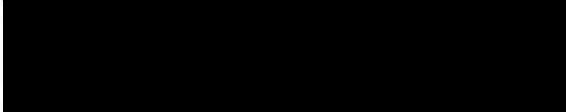
<b>Site No.</b>	C26
<b>Site Name/ Location</b>	South Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	12:58 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Concrete path
<b>Element</b>	Foundation
<b>Sub-element (Surface)</b>	Base Slab
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Crack
<b>Defect Description</b>	Minor cracks and damage were observed at the joints.
<b>Quantity of Defects</b>	44 x 1.5m
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	9
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C26
<b>Site Name/ Location</b>	South Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	13:03 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber Posts and Rails
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Minor splits, pertains to posts and rails
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	18
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

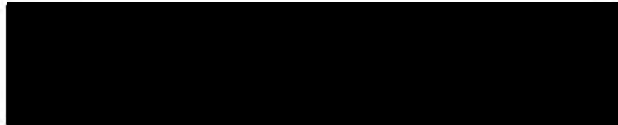
Bottom 10m covered with sand and not inspected



## City of Wanneroo - Coastal Asset

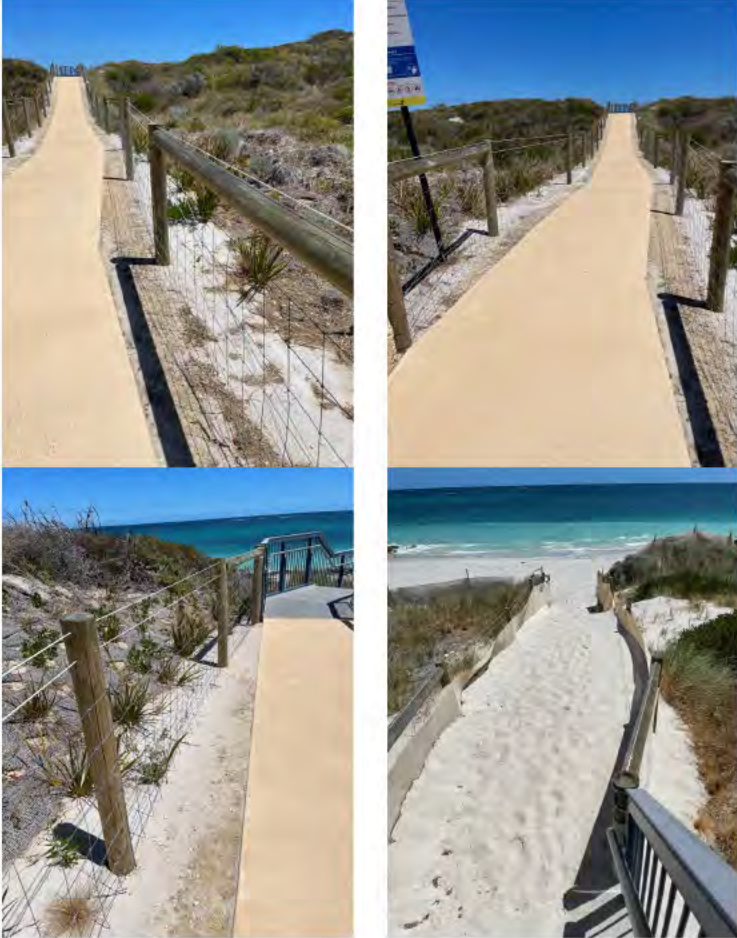
### Defect

<b>Site No.</b>	C26
<b>Site Name/ Location</b>	South Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	13:00 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh, Cloth Strainer Wire and Staples
<b>Material Type</b>	Galvanised Steel, Coated Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>Defect Description</b>	Generally good condition. Sand cloth at base of fence has come loose and requires re-fixing
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



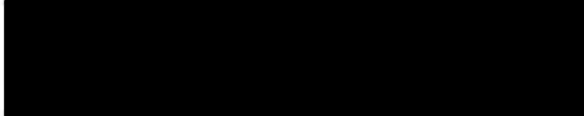
# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Bottom 10m portion of fencing covers with sand



## City of Wanneroo - Coastal Asset

### Defect

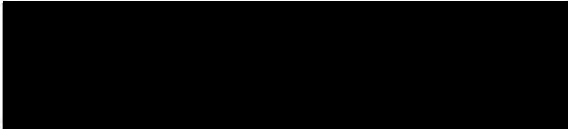
<b>Site No.</b>	C26
<b>Site Name/ Location</b>	South Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	13:08 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Piles
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	No visible defects were observed
<b>Defect Description</b>	6 no concrete piles with corrugated wrapping
<b>Quantity of Defects</b>	6 no , approx 400mm visible
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

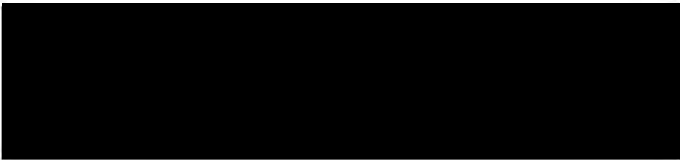
Site No.	C26
Site Name/ Location	South Quinns Rocks Foreshore
Date	09/02/2021
Time	13:08 (8 GMT)
Item Number	5
Costal Asset Type	Stairs
Element	Supports
Sub-element	stringers and support beams
Material Type	FRP, Coated Steel, Steel
2021 Observed Defects (Steel)	Rust staining, No visible defects
2021 Observed Defects (FRP)	No visible defects
Defect Description	Generally good condition. Minor rust staining was observed to unpainted steelwork supporting treads and connection plates.
Condition Rating (0- 10)	2
Health and Safety Concern (Y/N)	No
Consequence of Failure	4
Likelihood of Failure within next 5 years	1
Risk Rating	4
Overall Rating (CR X RR)	8
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection.
Maintenance Timeframe	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo

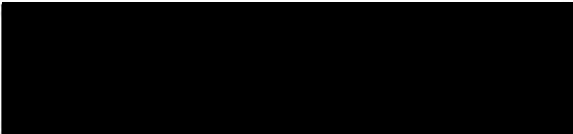




## City of Wanneroo - Coastal Asset

### Defect

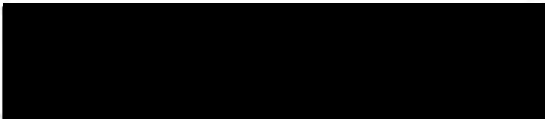
<b>Site No.</b>	C26
<b>Site Name/ Location</b>	South Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	13:04 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Tread plate
<b>Sub-element</b>	tread and landing
<b>Material Type</b>	FRP
<b>2021 Observed Defects (FRP)</b>	No visible defects were observed
<b>Defect Description</b>	some non slip grips on treads loose. sand build up. kick plate in good condition.
<b>Quantity of Defects</b>	20 treads, 1.5m wide. 5 landings 2x1.2m
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

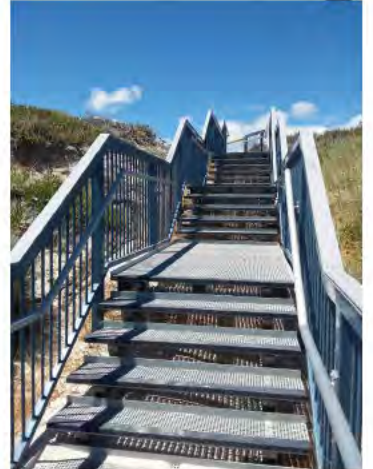
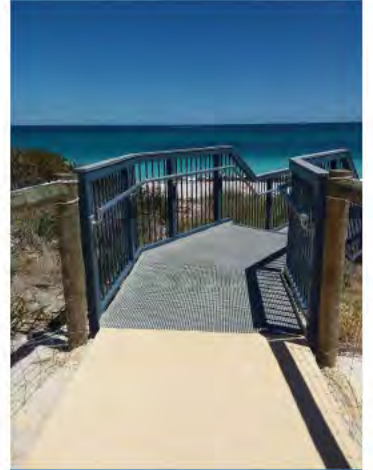
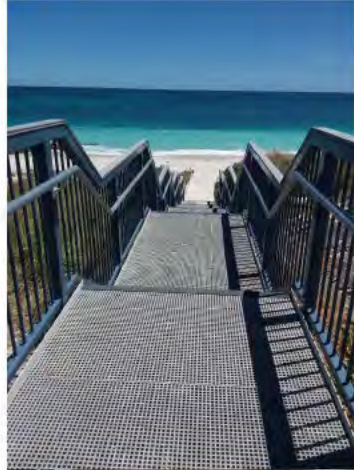
### Defect

<b>Site No.</b>	C26
<b>Site Name/ Location</b>	South Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	12:57 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Balustrade
<b>Material Type</b>	FRP, Coated Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>2021 Observed Defects (FRP)</b>	No visible defects were observed
<b>Defect Description</b>	frp veneer on top good condition - general wear and tear. steel in good condition
<b>Quantity of Defects</b>	35m
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo

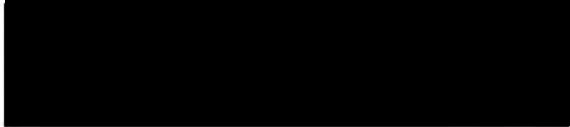




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C26
<b>Site Name/ Location</b>	South Quinns Rocks Foreshore
<b>Date</b>	09/02/2021
<b>Time</b>	13:02 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Stairs
<b>Sub-element (Handrails)</b>	Steel CHS
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Minor surface corrosion.
<b>Quantity of Defects</b>	35m
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**



# Appendix AA

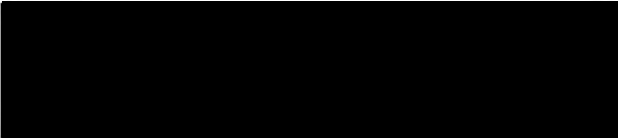
**Site C27 – South Quinns Rock Foreshore  
Defect Forms**



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C27
<b>Site Name/ Location</b>	South Quinns Rocks Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	11:07 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Vehicle access ramp
<b>Element</b>	Vehicle access ramp asphalt
<b>Sub-element (Surface)</b>	Bitumen base
<b>Material Type</b>	Asphalt
<b>Defect Description</b>	Localised minor potholes in surface.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**



**Other Comments/Inspection Limitations**

50% covered with sand



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C27
<b>Site Name/ Location</b>	South Quinns Rocks Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	11:14 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Fencing
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Minor timber splitting observed
<b>Defect Description</b>	10 posts
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

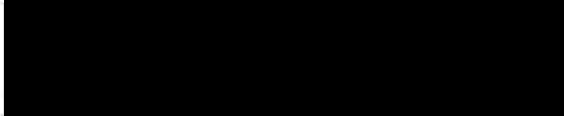
Partially buried on western side



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C27
<b>Site Name/ Location</b>	South Quinns Rocks Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	11:12 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Vehicle access ramp
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber rail
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber, Missing element
<b>Defect Description</b>	Timber splitting observed to be typical throughout. One rail was observed to be missing at the base of the ramp.
<b>Quantity of Defects</b>	1 rail missing at base of ramp
<b>Defect Location</b>	Base of ramp
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Replace heavily split railing and reinstate missing rail.
<b>Maintenance Timeframe</b>	Within 5 years



# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

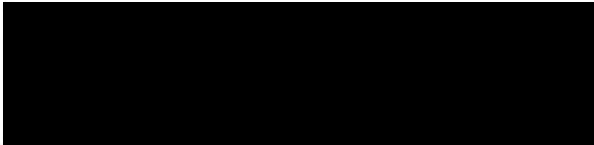
Appears bottom rail removed intentionally



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C27
<b>Site Name/ Location</b>	South Quinns Rocks Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	11:06 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh North
<b>Material Type</b>	steel mesh with Geofabric mesh
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Failure
<b>Defect Description</b>	Northern fence has buckled and failed in areas. Surface corrosion observed to be typical throughout.
<b>Defect quantity</b>	10m steel mesh with Geofabric mesh on top. Northern side of fence. Good condition
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	48
<b>Maintenance Recommendation</b>	Replace damaged, corroded, and failed mesh.
<b>Maintenance Timeframe</b>	Within 1-2 years



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C27
<b>Site Name/ Location</b>	South Quinns Rocks Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	11:15 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh South
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Failed
<b>Defect Description</b>	Generally good condition. Inspection limited due to portion of mesh being buried in sand.
<b>Quantity of Defects</b>	34m
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	18
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C27
<b>Site Name/ Location</b>	South Quinns Rocks Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	11:16 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Vehicle access ramp
<b>Element</b>	Sign
<b>Sub-element (Sign)</b>	Sign
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Coating loss
<b>Defect Description</b>	Coating loss and surface corrosion was observed on one of the three signs.
<b>Quantity of Defects</b>	3 signs, 1 with coating loss and surface corrosion
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Abrasive blast clean and apply protective coating
<b>Maintenance Timeframe</b>	Within 5 years



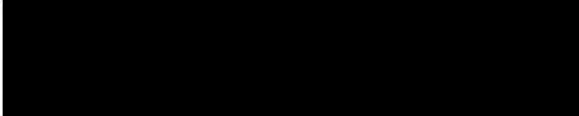
## City of Wanneroo - Coastal Asset

### Multi Photo



# Appendix BB

**Site C28 – North Mindarie Foreshore  
Defect Forms**



## City of Wanneroo - Coastal Asset

### Defect

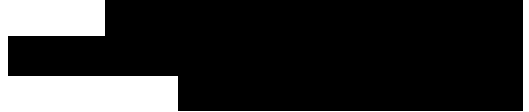
<b>Site No.</b>	C28
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	10:00 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Ramp disabled beach access
<b>Sub-element (Foundations)</b>	Base slab
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Crack, Apparent delamination
<b>Defect Description</b>	Minor cracking typical on top surface. Sealant deterioration typical. Large cracks at corner panels of wall beneath slab. Delamination at end of adjacent stairs
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Conventional concrete repair
<b>Maintenance Timeframe</b>	Within 1-2 years



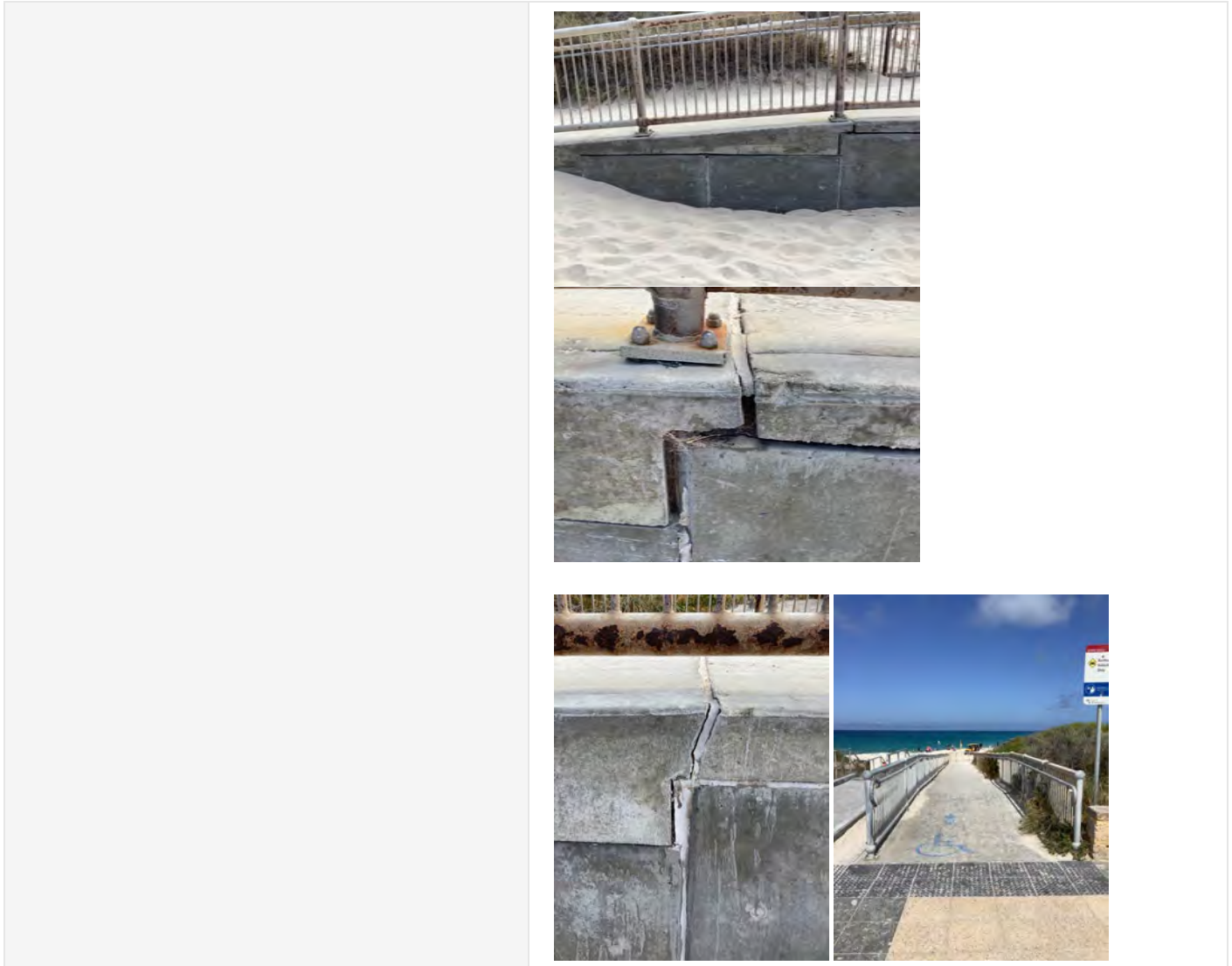
# City of Wanneroo - Coastal Asset

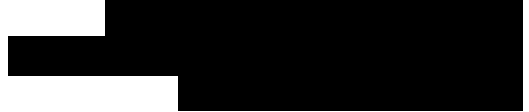
## Defect Photo



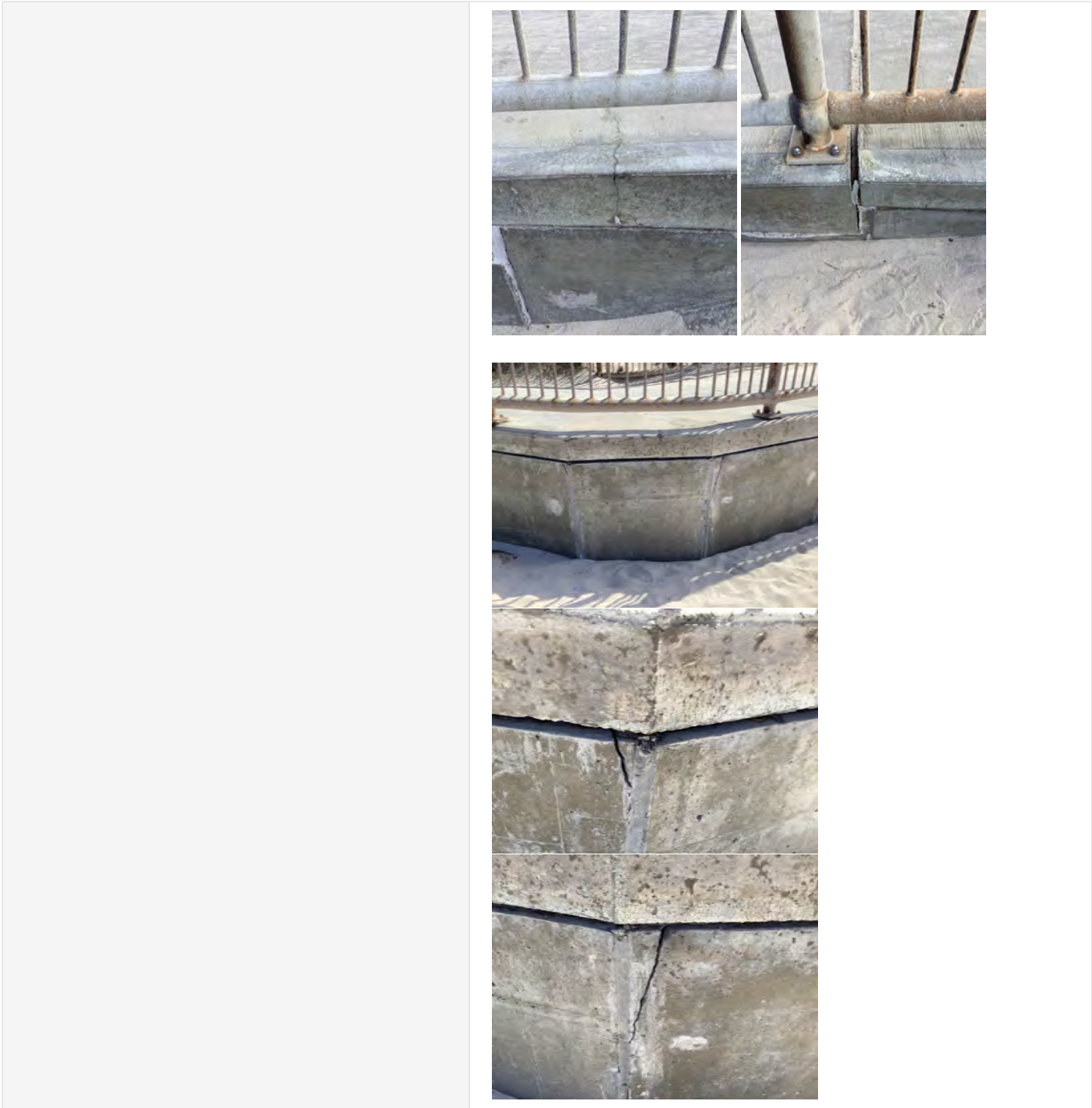


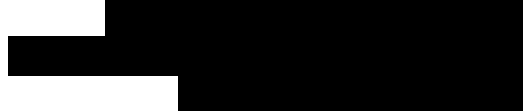
## City of Wanneroo - Coastal Asset



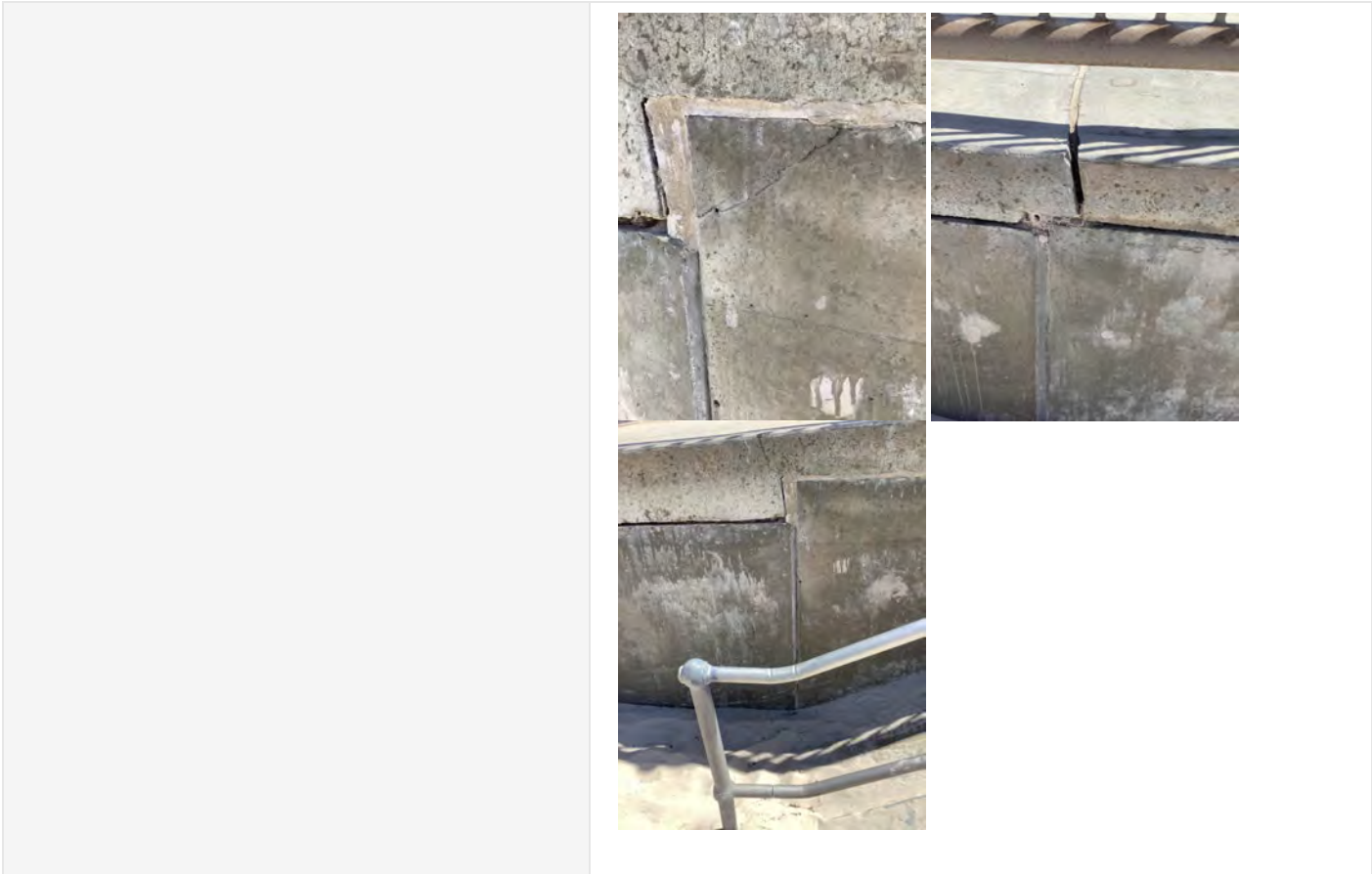


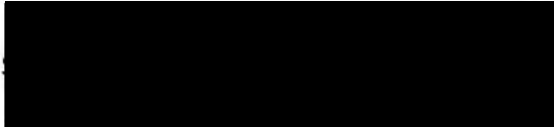
City of Wanneroo - Coastal Asset





City of Wanneroo - Coastal Asset

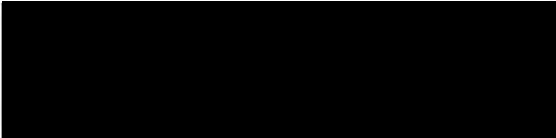




## City of Wanneroo - Coastal Asset

### Defect

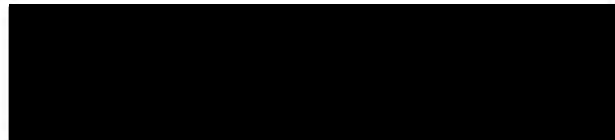
<b>Site No.</b>	C28
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	10:54 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Ramp disabled beach access
<b>Sub-element</b>	Plastic ramp
<b>Material Type</b>	FRP
<b>2021 Observed Defects (FRP)</b>	No visible defects, Noticeable build-up of debris
<b>Defect Description</b>	Good condition. Covered in sand
<b>Quantity of Defects</b>	4m long, 3m wide
<b>Condition Rating (0- 10)</b>	1
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	2
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**

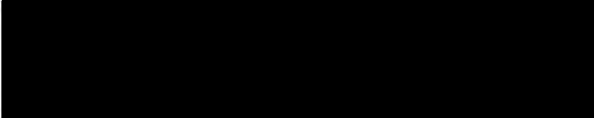




## City of Wanneroo - Coastal Asset

### Defect

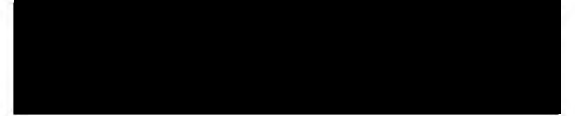
<b>Site No.</b>	C28
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	10:44 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Ramp disabled beach access
<b>Sub-element (Handrails)</b>	Connections
<b>Sub-element</b>	Connections at base of balustrade.
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Deterioration of grout typical exposing bolts. Surface corrosion to base plate typical. Missing bolt top on one connection. Base plates on eastern side covered in sand and not inspected.
<b>Quantity of Defects</b>	84m of fence with posts at every 2.5m
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	9
<b>Overall Rating (CR X RR)</b>	63
<b>Maintenance Recommendation</b>	Replace missing connections. Re-instate missing grout. Abrasive clean and apply protective coating to base plate.
<b>Maintenance Timeframe</b>	Within 1-2 years



# City of Wanneroo - Coastal Asset

## Defect Photo





## City of Wanneroo - Coastal Asset

### Defect

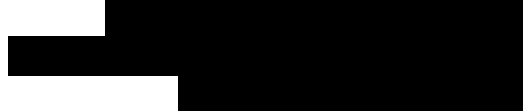
<b>Site No.</b>	C28
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	10:36 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Ramp disabled beach access
<b>Sub-element (Handrails)</b>	Posts
<b>Sub-element</b>	Balustrade
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Rust staining
<b>Defect Description</b>	Minor to moderate widespread corrosion.
<b>Quantity of Defects</b>	84m of fence
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	9
<b>Overall Rating (CR X RR)</b>	63
<b>Maintenance Recommendation</b>	Abrasive blast clean and apply protective coating.
<b>Maintenance Timeframe</b>	Within 1-2 years



## City of Wanneroo - Coastal Asset

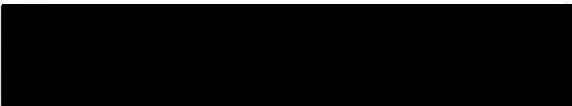
### Defect Photo





**City of Wanneroo - Coastal Asset**





# City of Wanneroo - Coastal Asset

## Defect

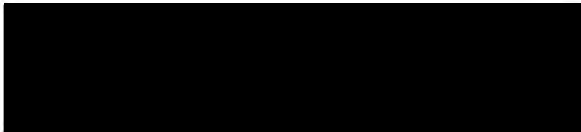
<b>Site No.</b>	C28
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	10:31 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Ramp disabled beach access
<b>Sub-element (Handrails)</b>	Posts
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Impact/mechanical damage, Coating loss, Surface corrosion
<b>Defect Description</b>	Impact damage to bottom balustrade panel 2m
<b>Quantity of Defects</b>	2m
<b>Condition Rating (0- 10)</b>	8
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	64
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 1-2 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**

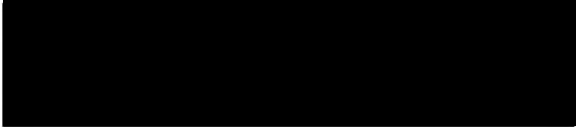




# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C28
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	10:47 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Ramp disabled beach access
<b>Element</b>	Handrails
<b>Sub-element (Handrails)</b>	Top rail
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Coating loss, Rust staining
<b>Defect Description</b>	Heavy surface corrosion, coating loss and rust staining observed to be typical. Approximately 30% requires repair.
<b>Quantity of Defects</b>	84m total handrail 30% requires repair
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	9
<b>Overall Rating (CR X RR)</b>	63
<b>Maintenance Recommendation</b>	Abrasive blast clean and apply protective coating.
<b>Maintenance Timeframe</b>	Within 1-2 years



City of Wanneroo - Coastal Asset

Multi Photo

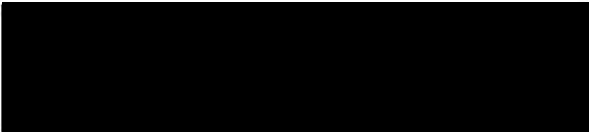




Date Submitted: 21/01/2021 08:42

Sub [REDACTED]

## City of Wanneroo - Coastal Asset



## City of Wanneroo - Coastal Asset

### Defect

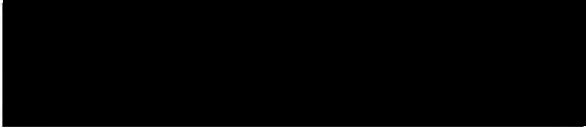
<b>Site No.</b>	C28
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	10:54 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Ramp disabled beach access
<b>Element</b>	Sign
<b>Sub-element (Sign)</b>	Sign
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Rust staining, Coating loss
<b>Defect Description</b>	Generally good condition. Minor surface corrosion, rust staining and coating loss was observed.
<b>Quantity of Defects</b>	2 no signs.
<b>Defect Location</b>	Top of ramp
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo

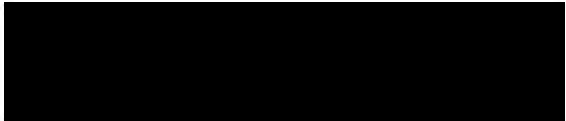




# City of Wanneroo - Coastal Asset

## Defect

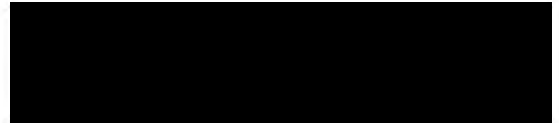
<b>Site No.</b>	C28
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	10:43 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Stair treads
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	No visible defect
<b>Defect Description</b>	No visible defects were observed. Inspection limited due to approximately 30% covered in sand
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**






## City of Wanneroo - Coastal Asset

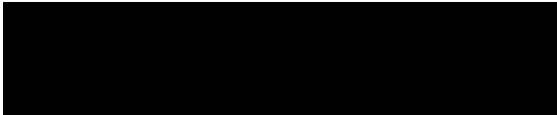
### Defect

<b>Site No.</b>	C28
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	10:29 (8 GMT)
<b>Item Number</b>	9
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Walls
<b>Sub-element (Walls)</b>	Wall
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Crack, Exposed reinforcement, Impact/mechanical damage, abrasion and erosion
<b>Defect Description</b>	Vertical cracks up to 0.3 mm at each balustrade post were observed (typically self-healed). Exposed reinforcement was observed locally after the midpoint of the stairs, towards the ocean.
<b>Quantity of Defects</b>	Exposed reinforcement 600 x 200 30 no cracks
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24

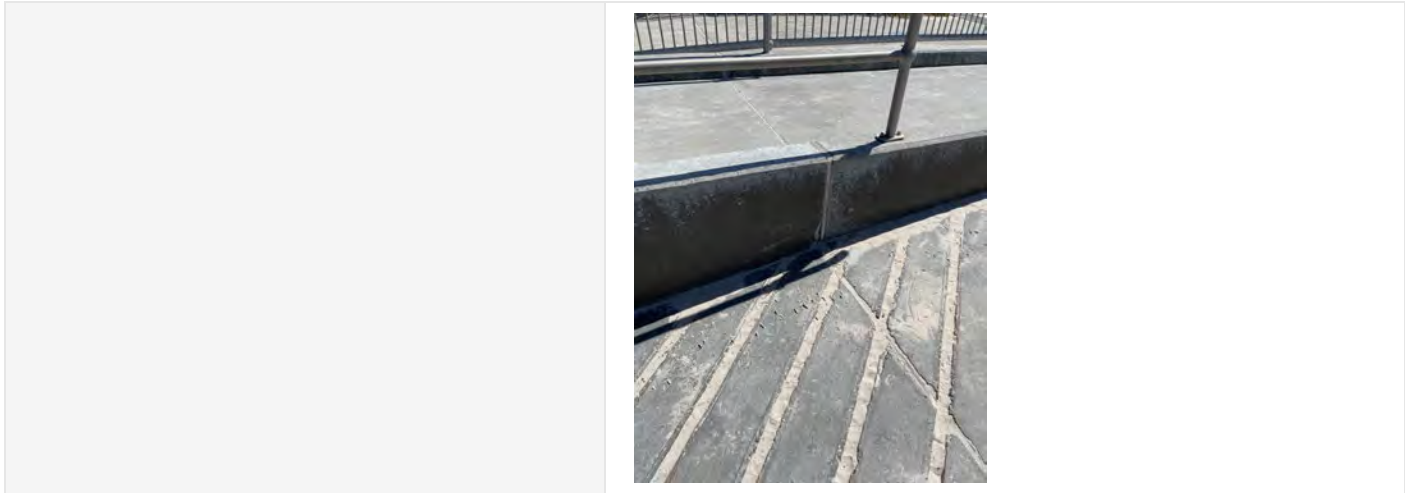


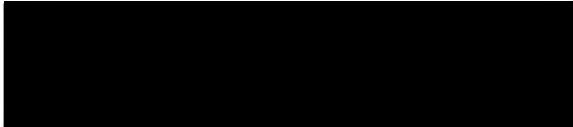
### City of Wanneroo - Coastal Asset

<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years
<b>Multi Photo</b>	



**City of Wanneroo - Coastal Asset**

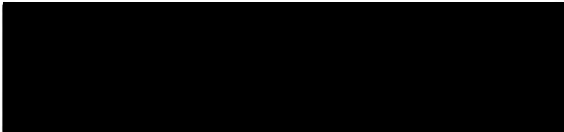




# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C28
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	10:39 (8 GMT)
<b>Item Number</b>	10
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Walls
<b>Sub-element (Walls)</b>	Wall
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Exposed reinforcement
<b>Defect Description</b>	Exposed reinforcement was observed locally after the midpoint of the stairs, towards the ocean.
<b>Defect Location</b>	Towards ocean
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	18
<b>Maintenance Recommendation</b>	Conventional concrete repair
<b>Maintenance Timeframe</b>	Within 1-2 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

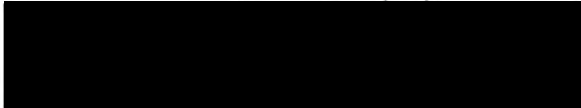




# City of Wanneroo - Coastal Asset

## Defect

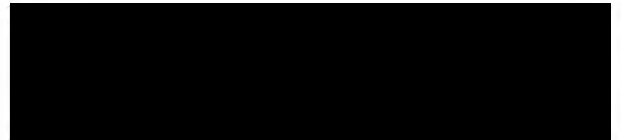
<b>Site No.</b>	C28
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	10:37 (8 GMT)
<b>Item Number</b>	11
<b>Costal Asset Type</b>	Stairs
<b>Element</b>	Handrails
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	18
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Multi Photo





## City of Wanneroo - Coastal Asset

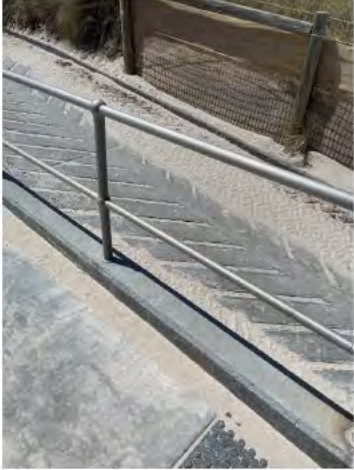
### Defect

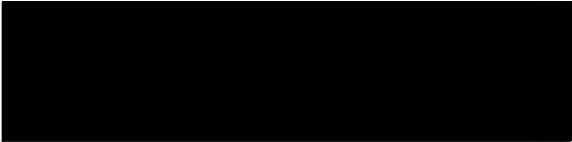
Site No.	C28
Site Name/ Location	North Mindarie Foreshore
Date	20/01/2021
Time	10:33 (8 GMT)
Item Number	12
Costal Asset Type	Stairs
Element	Handrails
Material Type	Steel
2021 Observed Defects (Steel)	Impact/mechanical damage, Other
Defect Description	Localised damage to the base of balustrade 6 from the top, resulting in loose section was observed.
Quantity of Defects	1
Defect Location	6th balustrade on lhs looking towards ocean
Condition Rating (0- 10)	7
Health and Safety Concern (Y/N)	No
Consequence of Failure	3
Likelihood of Failure within next 5 years	3
Risk Rating	9
Overall Rating (CR X RR)	63
Maintenance Recommendation	Replace damaged balustrade.
Maintenance Timeframe	Within 6 months



**City of Wanneroo - Coastal Asset**

**Multi Photo**

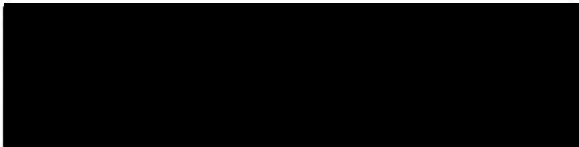




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C28
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	10:04 (8 GMT)
<b>Item Number</b>	13
<b>Costal Asset Type</b>	Vehicle access ramp
<b>Element</b>	Foundation
<b>Sub-element (Surface)</b>	Base Slab
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Noticeable build-up of debris
<b>Defect Description</b>	No visible defects observed. Inspection limited due to 40% of the paver being covered in sand.
<b>Quantity of Defects</b>	2m wide x 30 m long
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



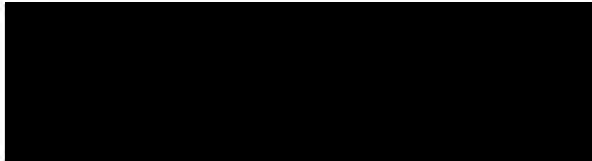
# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Kerbing similar condition



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C28
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	10:09 (8 GMT)
<b>Item Number</b>	14
<b>Costal Asset Type</b>	Concrete vehicle access ramp
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Split timber was observed to be typical throughout
<b>Quantity of Defects</b>	7 posts
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

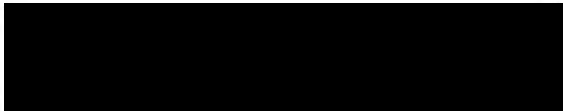




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C28
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	10:13 (8 GMT)
<b>Item Number</b>	15
<b>Costal Asset Type</b>	Vehicle access ramp
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Impact/mechanical damage
<b>Defect Description</b>	Surface corrosion and impact damage were observed towards seaward edge.
<b>Quantity of Defects</b>	60m2
<b>Defect Location</b>	Towards seaward edge
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	18
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



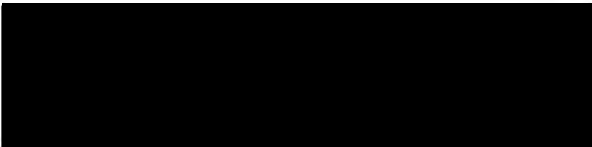
**City of Wanneroo - Coastal Asset**

**Multi Photo**



**Other Comments/Inspection Limitations**

Geofabric behind in good condition



# City of Wanneroo - Coastal Asset

## Defect

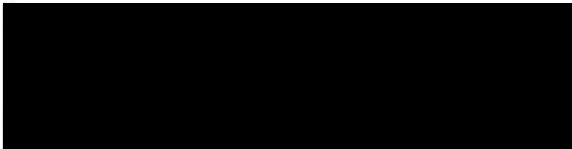
<b>Site No.</b>	C28
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	10:12 (8 GMT)
<b>Item Number</b>	16
<b>Costal Asset Type</b>	Concrete vehicle access ramp
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber rail
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Minor timber splitting was observed.
<b>Quantity of Defects</b>	3 rails
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

Multi Photo

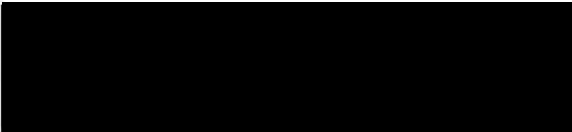




# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C28
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	10:16 (8 GMT)
<b>Item Number</b>	17
<b>Costal Asset Type</b>	Concrete vehicle access ramp
<b>Element</b>	Sign
<b>Sub-element (Sign)</b>	Sign
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Coating loss
<b>Defect Description</b>	Coating loss observed to be typical across signs.
<b>Quantity of Defects</b>	4 signs
<b>Defect Location</b>	At top of ramp
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Abrasive clean and apply protective coating.
<b>Maintenance Timeframe</b>	Within 5 years



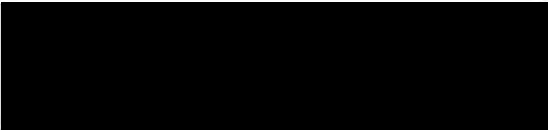
# City of Wanneroo - Coastal Asset

Multi Photo



# Appendix CC

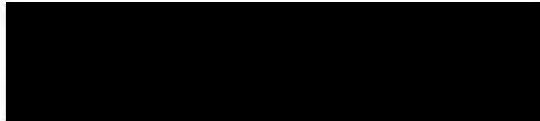
**Site C29 – North Mindarie Coastal Walk  
Defect Forms**



# City of Wanneroo - Coastal Asset

## Defect

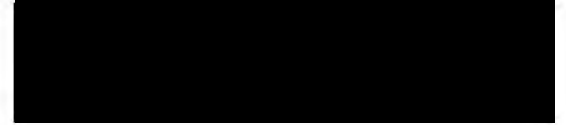
<b>Site No.</b>	C29
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:40 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Concrete Pad
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Crack
<b>Defect Description</b>	Good condition typically. Apparent drainage hole on north west corner.
<b>Quantity of Defects</b>	9m2
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

Defect Photo

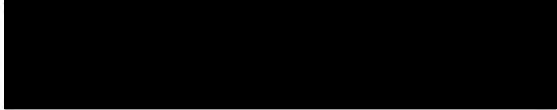




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C29
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:44 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber posts
<b>Sub-element</b>	Railing
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Minor vertical timber splitting was observed.
<b>Quantity of Defects</b>	5 posts
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



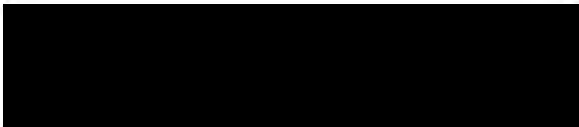
**City of Wanneroo - Coastal Asset**

**Multi Photo**



**Other Comments/Inspection Limitations**

Timber railing similar



# City of Wanneroo - Coastal Asset

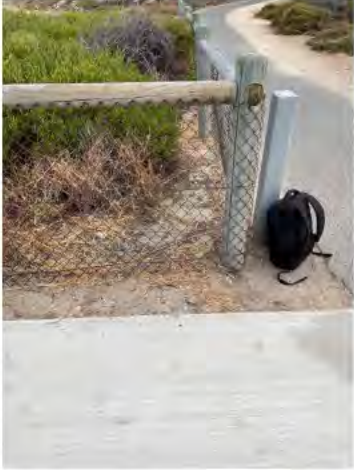
## Defect

<b>Site No.</b>	C29
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:41 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>Quantity of Defects</b>	9m of fencing
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	6
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

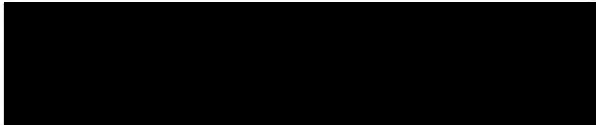




## City of Wanneroo - Coastal Asset

### Defect

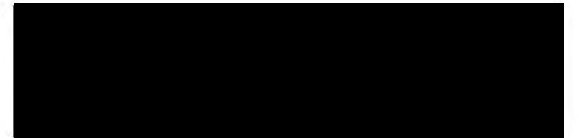
<b>Site No.</b>	C29
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:47 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh staples
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Minor surface corrosion was observed
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	18
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



City of Wanneroo - Coastal Asset

Multi Photo

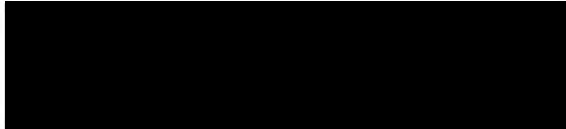




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C29
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:48 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Sign
<b>Material Type</b>	FRP
<b>2021 Observed Defects (FRP)</b>	No visible defects
<b>Defect Description</b>	QR code post. Good condition
<b>Condition Rating (0- 10)</b>	1
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	2
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



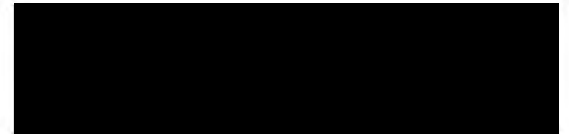
**City of Wanneroo - Coastal Asset**

**Defect Photo**



# Appendix DD

**Site C30 – North Mindarie Coastal Walk  
Defect Forms**



## City of Wanneroo - Coastal Asset

### Defect

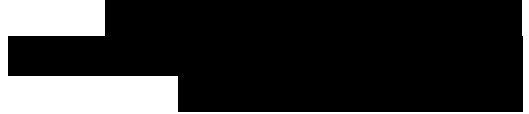
<b>Site No.</b>	C30
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:12 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Concrete Pad
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Other
<b>Defect Description</b>	Concrete in good condition. Minor scouring to southern edge.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



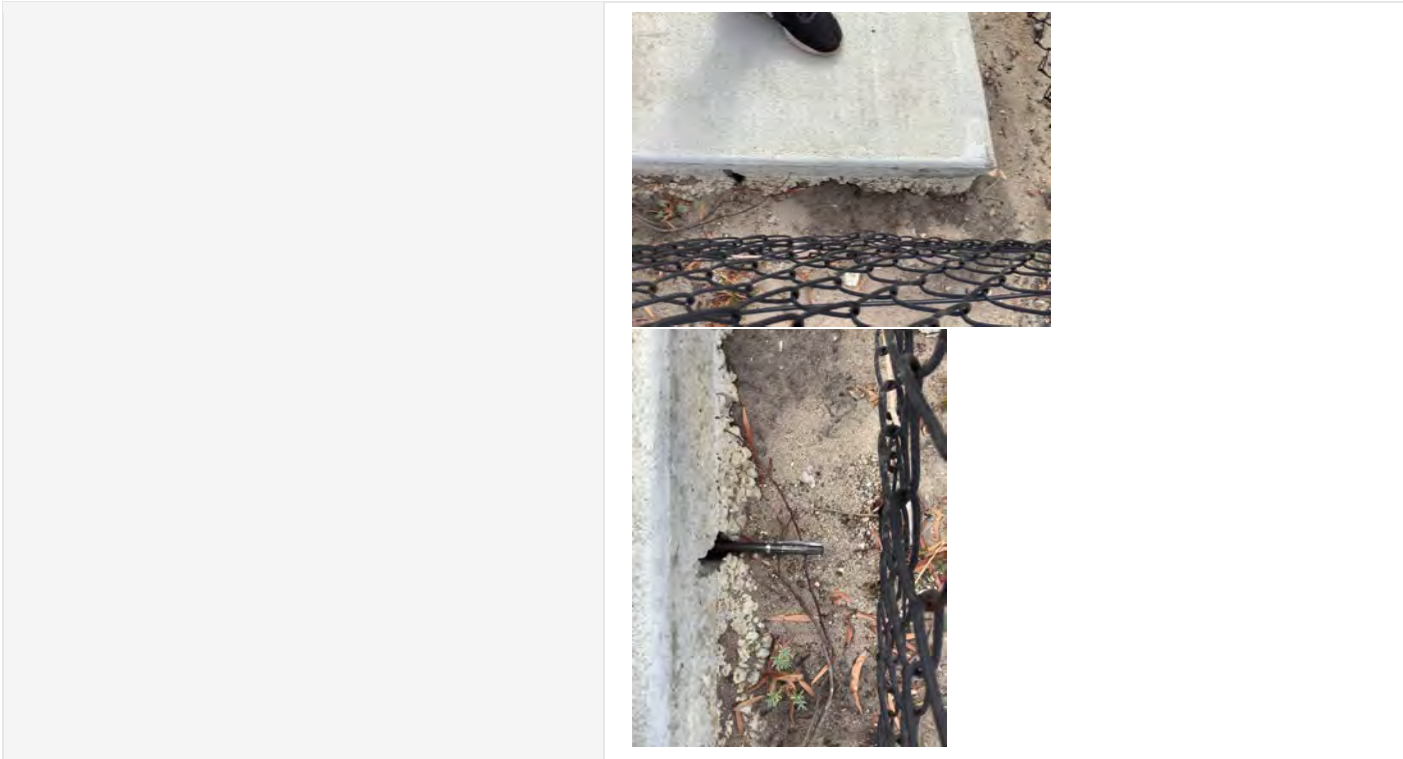
# City of Wanneroo - Coastal Asset

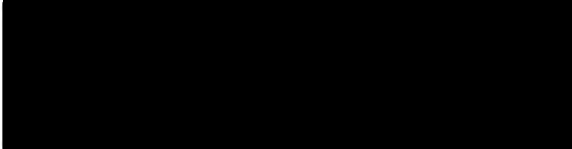
## Defect Photo





City of Wanneroo - Coastal Asset





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C30
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:30 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Posts and railing
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Typical good condition with splitting.
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	18
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**

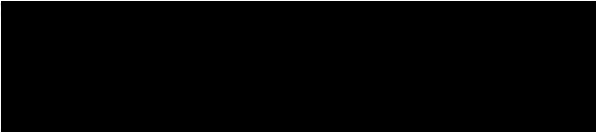




## City of Wanneroo - Coastal Asset

### Defect

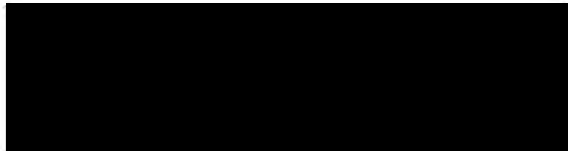
<b>Site No.</b>	C30
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:20 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Coating loss, Surface corrosion
<b>Defect Description</b>	Typical good condition with minor coating loss at staples. Not connected to middle strainer wire on western and southern sides.
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

## Defect Photo





## City of Wanneroo - Coastal Asset

### Defect

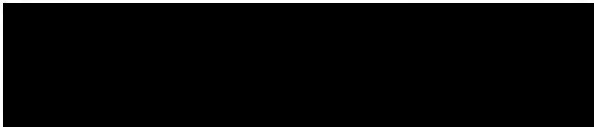
<b>Site No.</b>	C30
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:32 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh staples
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Typical good condition with surface corrosion. Some have been replaced. 12m of fence
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**

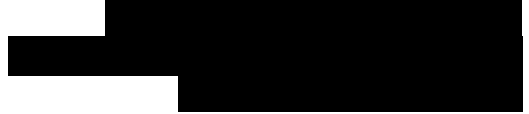




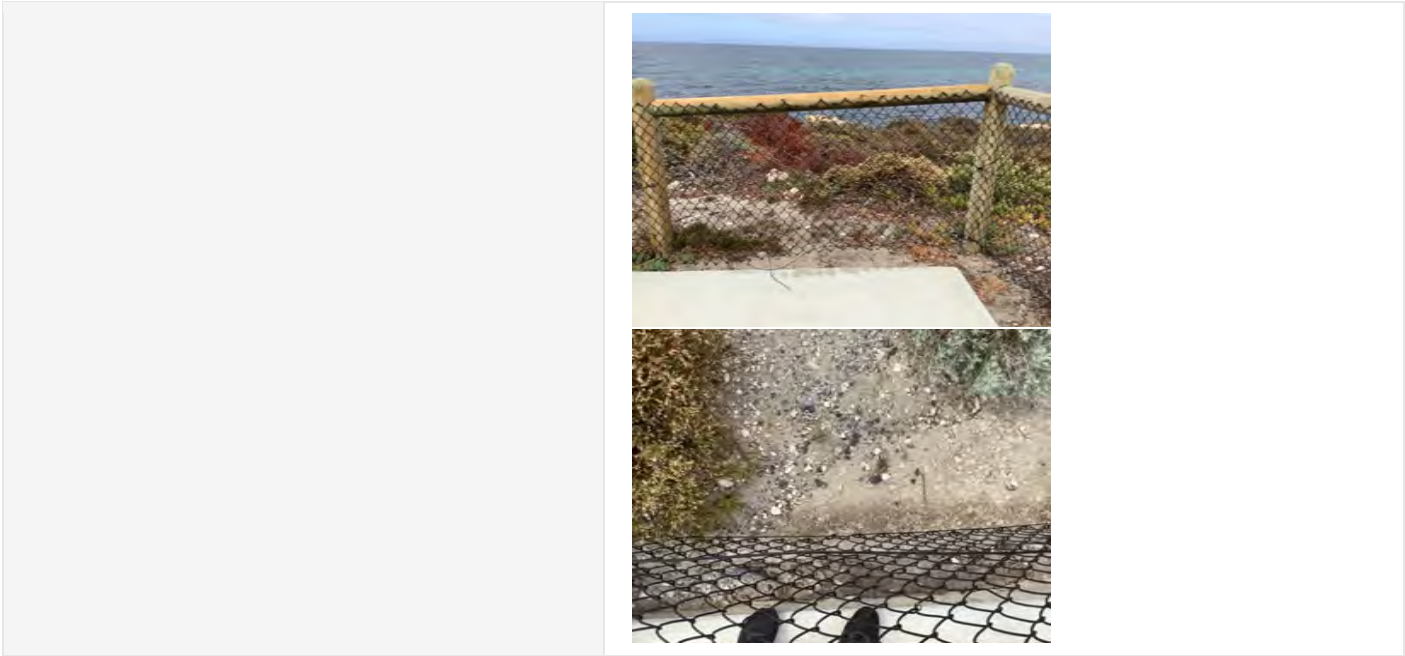
# City of Wanneroo - Coastal Asset

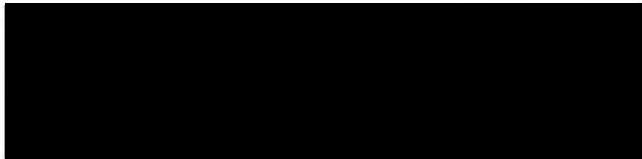
## Defect

<b>Site No.</b>	C30
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:25 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh strainer wires
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Failed
<b>Defect Description</b>	Strainer wire broken on western side of fence.
<b>Condition Rating (0- 10)</b>	8
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	5
<b>Risk Rating</b>	10
<b>Overall Rating (CR X RR)</b>	80
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 6 months
<b>Defect Photo</b>	



City of Wanneroo - Coastal Asset





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C30
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:34 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Sign
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Coating loss
<b>Defect Description</b>	Coating loss to steel pole. Can't see footing due to shrubbery. Minor graffiti scratches to sign
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Abrasive clean and apply protective coating.
<b>Maintenance Timeframe</b>	Within 1-2 years



# City of Wanneroo - Coastal Asset

## Defect Photo



# Appendix EE

**Site C31 – North Mindarie Coastal Walk  
Defect Forms**



# City of Wanneroo - Coastal Asset

## Defect

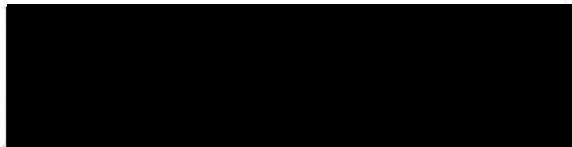
<b>Site No.</b>	C31
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:11 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Foundation
<b>Sub-element (Foundations)</b>	Concrete Pad
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	No visible defect
<b>Quantity of Defects</b>	8m <sup>2</sup>
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

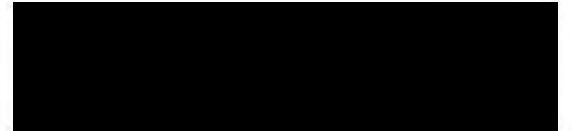
<b>Site No.</b>	C31
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:18 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Generally good condition. Minor timber splitting was observed.
<b>Quantity of Defects</b>	5 no posts
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C31
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:13 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



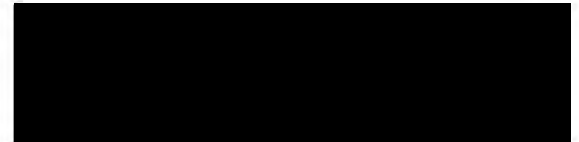
# City of Wanneroo - Coastal Asset

Multi Photo



Other Comments/Inspection Limitations

Localised areas where fencing is loose



## City of Wanneroo - Coastal Asset

### Defect

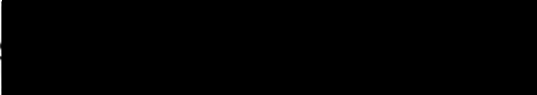
<b>Site No.</b>	C31
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:19 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh staples
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Surface corrosion was observed to be typical throughout.
<b>Defect Location</b>	Located on vertical posts
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	20
<b>Maintenance Recommendation</b>	Replace mesh staples
<b>Maintenance Timeframe</b>	Within 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C31
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:23 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh strainer wires
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



Su



## City of Wanneroo - Coastal Asset

Multi Photo





S

## City of Wanneroo - Coastal Asset

### Defect

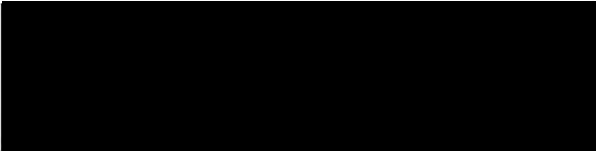
<b>Site No.</b>	C31
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:16 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber rail
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Generally in good condition. Minor timber splitting was observed.
<b>Quantity of Defects</b>	6m of rail
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Multi Photo**

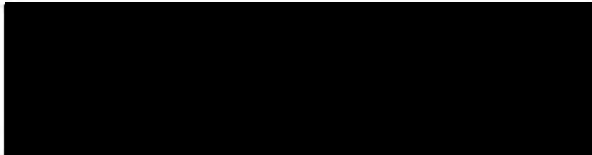




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C31
<b>Site Name/ Location</b>	North Mindarie Coastal Walk
<b>Date</b>	20/01/2021
<b>Time</b>	09:21 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Lookout
<b>Element</b>	Bench
<b>Material Type</b>	Aluminum
<b>2021 Observed Defects (Steel)</b>	No visible defects were observed
<b>Condition Rating (0- 10)</b>	1
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	2
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 Years



**City of Wanneroo - Coastal Asset**

**Multi Photo**



# Appendix FF

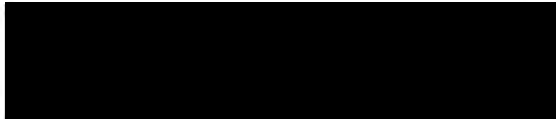
**Site C32 – North Mindarie Foreshore  
Defect Forms**



## City of Wanneroo - Coastal Asset

### Defect

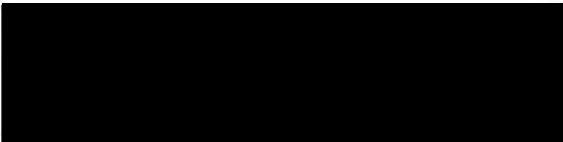
<b>Site No.</b>	C32
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	08:13 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Asphalt path
<b>Sub-element (Surface)</b>	Bitumen base
<b>Material Type</b>	Asphalt
<b>Defect Description</b>	Towards seaward face asphalt deteriorated near fence post on western side.
<b>Quantity of Defects</b>	400 x 15 mm
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	9
<b>Overall Rating (CR X RR)</b>	45
<b>Maintenance Recommendation</b>	Patch deteriorated asphalt around post.
<b>Maintenance Timeframe</b>	Within 6 months



**City of Wanneroo - Coastal Asset**

**Defect Photo**

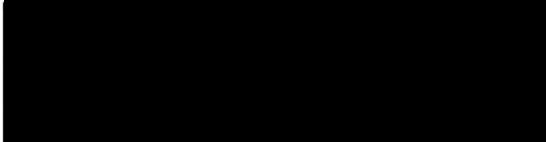




## City of Wanneroo - Coastal Asset

### Defect

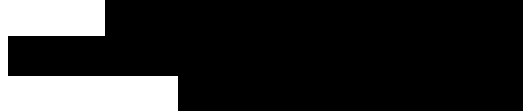
Site No.	C32
Site Name/ Location	North Mindarie Foreshore
Date	20/01/2021
Time	08:21 (8 GMT)
Item Number	2
Costal Asset Type	Asphalt path
Sub-element (Surface)	Bitumen base
Material Type	Asphalt
Defect Description	Generally good condition. 50m2. Some cracks towards stair ends. Minor deterioration in sections
Condition Rating (0- 10)	3
Health and Safety Concern (Y/N)	No
Consequence of Failure	3
Likelihood of Failure within next 5 years	2
Risk Rating	6
Overall Rating (CR X RR)	18
Maintenance Recommendation	Monitor and reinspect at next scheduled inspection.
Maintenance Timeframe	Greater than 5 years



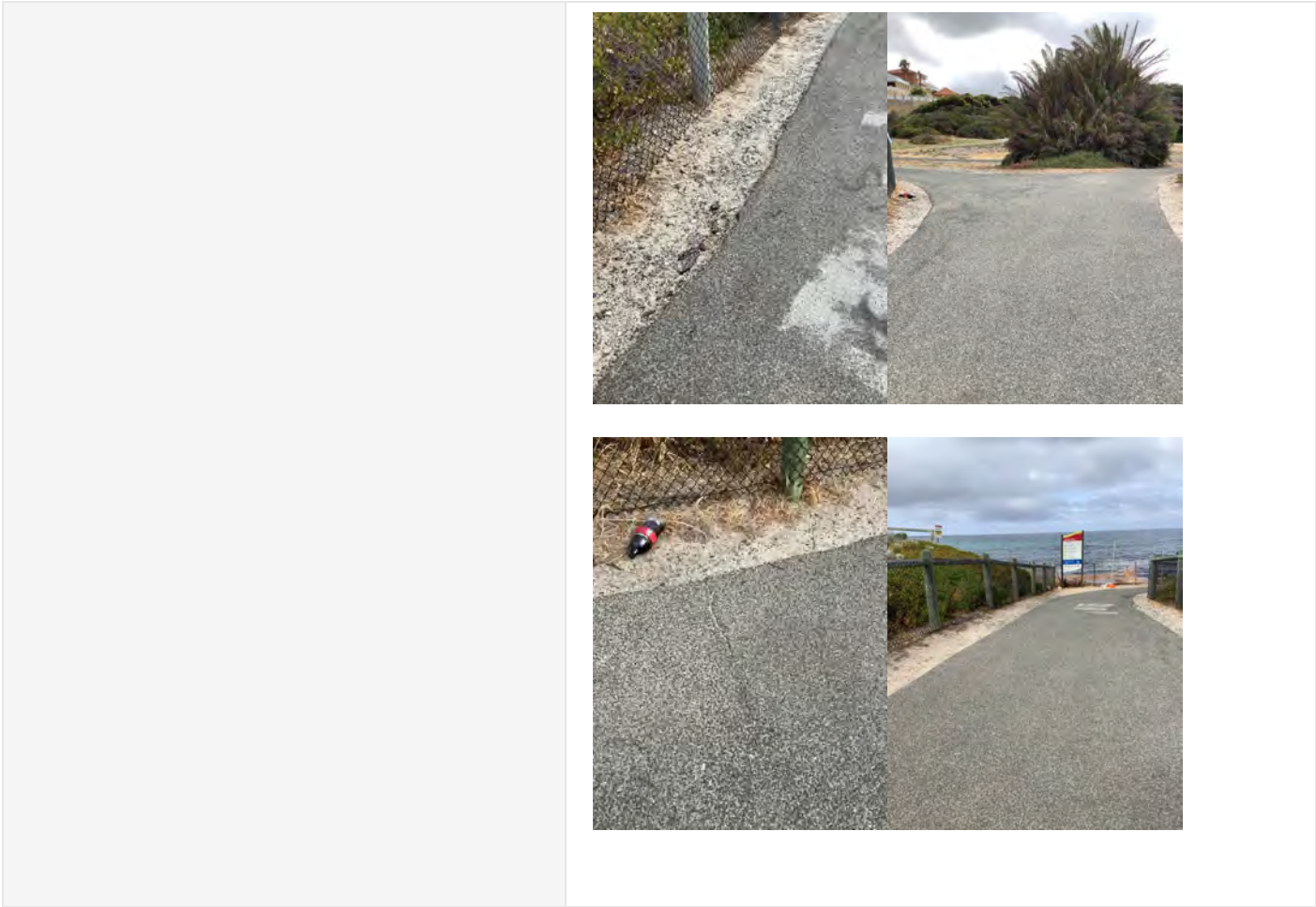
# City of Wanneroo - Coastal Asset

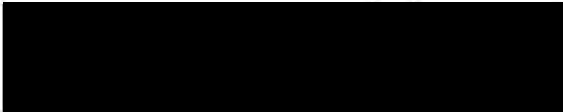
## Defect Photo





City of Wanneroo - Coastal Asset

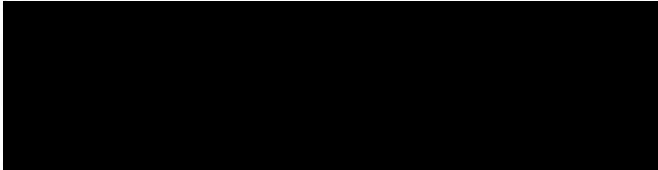




# City of Wanneroo - Coastal Asset

## Defect

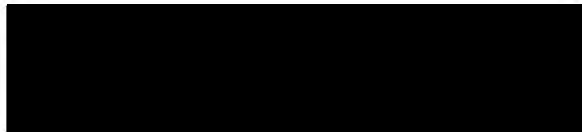
<b>Site No.</b>	C32
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	08:09 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Stairs
<b>Sub-element (Foundations)</b>	Footing
<b>Material Type</b>	Limestone
<b>Defect Description</b>	Evidence of scour next to stairs.
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	12
<b>Overall Rating (CR X RR)</b>	60
<b>Maintenance Recommendation</b>	Investigate cause of scour and locally repair.
<b>Maintenance Timeframe</b>	Within 5 years



# City of Wanneroo - Coastal Asset

## Defect Photo

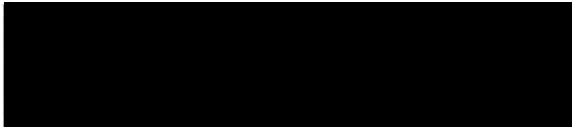




## City of Wanneroo - Coastal Asset

### Defect

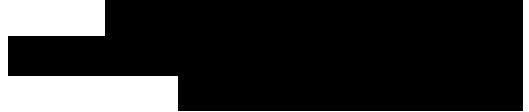
<b>Site No.</b>	C32
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	07:59 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Stairs
<b>Material Type</b>	Limestone
<b>Defect Description</b>	Limestone block steps to concrete path. 10 steps - 2m wide. Impact damage to 3 steps up to 50mm loss in areas. Deteriorated grout typical. No handrail either side
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	12
<b>Overall Rating (CR X RR)</b>	84
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 6 months



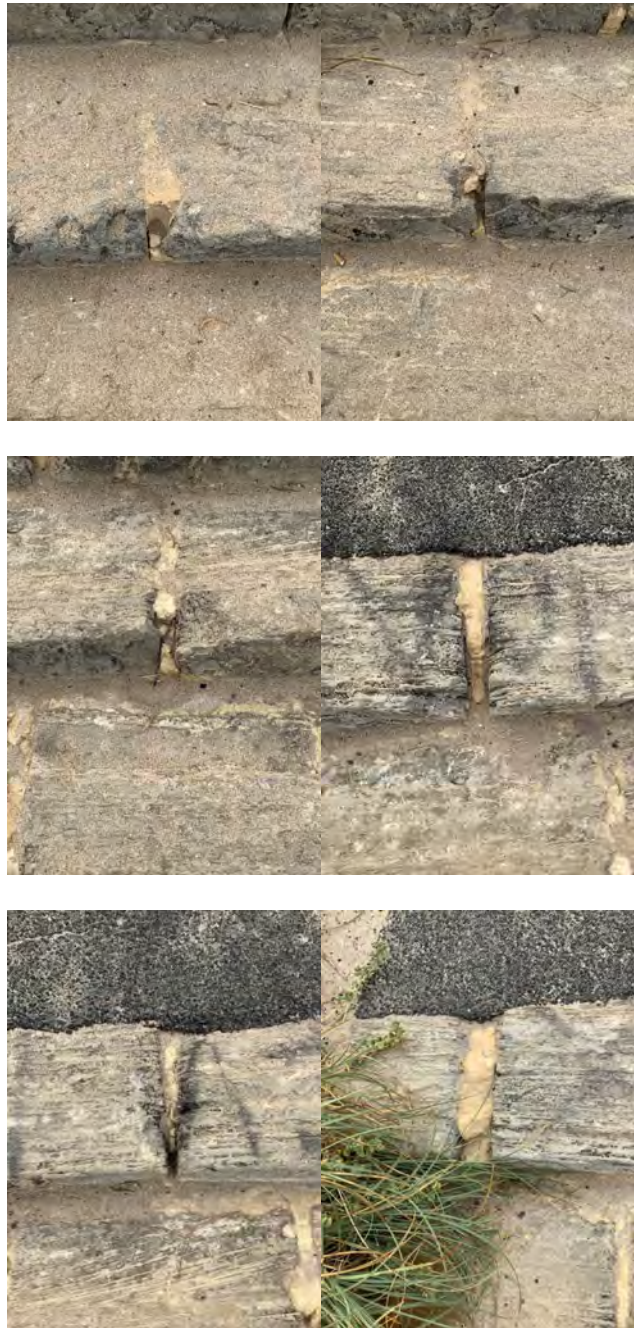
# City of Wanneroo - Coastal Asset

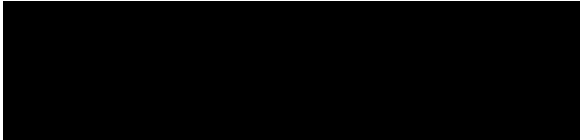
## Defect Photo



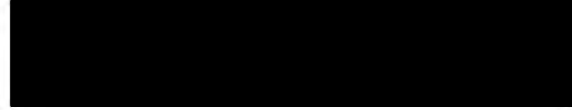


## City of Wanneroo - Coastal Asset





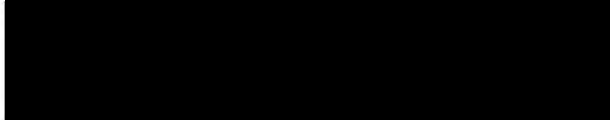
**City of Wanneroo - Coastal Asset**



## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C32
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	08:45 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Timber members
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Fungi attack, Split timber
<b>Defect Description</b>	22 posts. 50m worth of railing Split timber typical on posts and rails. Minor fungi attack to posts closest to sea on mesh side of posts. Minor staining typical
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**

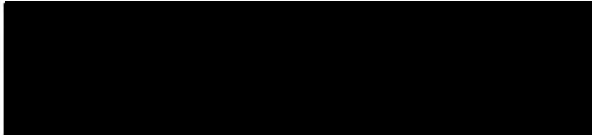




## City of Wanneroo - Coastal Asset

### Defect

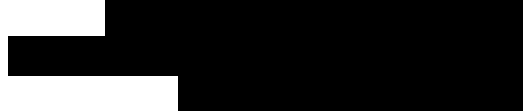
<b>Site No.</b>	C32
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	08:25 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Coating loss
<b>Defect Description</b>	Mesh has become unfixed on western side for entire section. Temporary fence installed. Minor Debris build up in sections typical. Pulled away from top rail on southern face at one section. 50m2 mesh
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



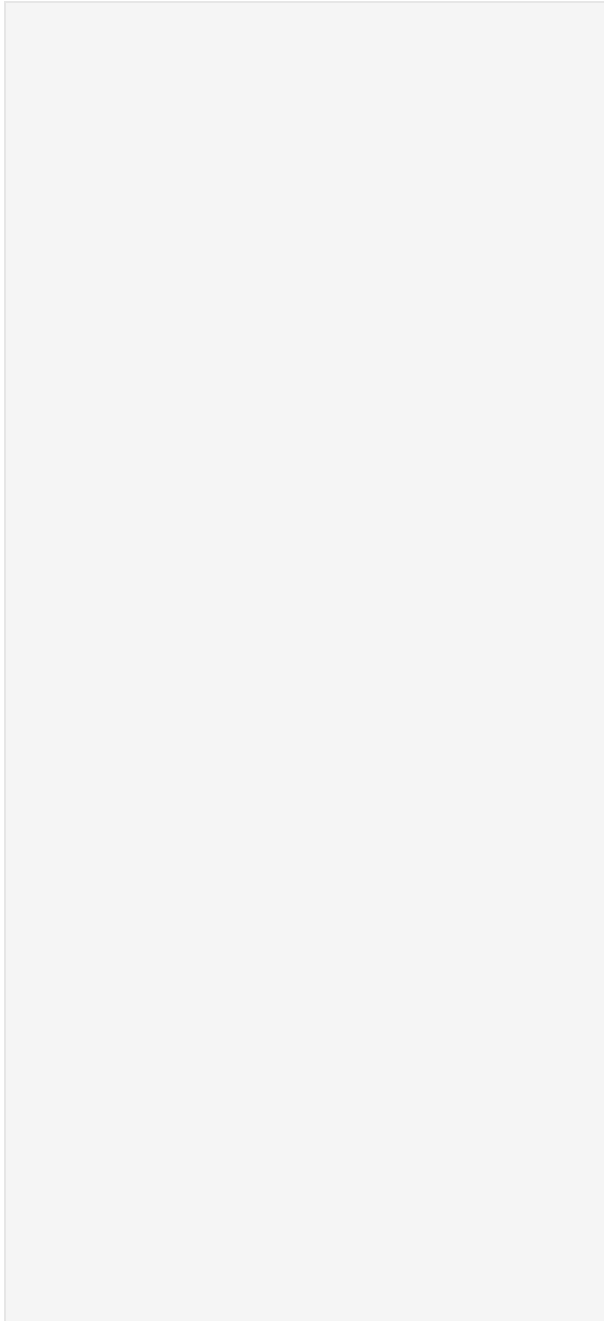
**City of Wanneroo - Coastal Asset**

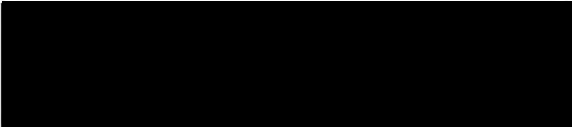
**Defect Photo**





## City of Wanneroo - Coastal Asset





# City of Wanneroo - Coastal Asset

## Defect

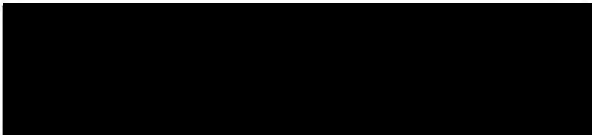
<b>Site No.</b>	C32
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	08:37 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh staples
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Corroded typical . 50m worth of fencing
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C32
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	08:40 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Fencing
<b>Sub-element (Fencing)</b>	Mesh strainer wires
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Good condition typical. Western fence broken. 100m of wire
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

### Defect Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C32
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	08:51 (8 GMT)
<b>Item Number</b>	9
<b>Costal Asset Type</b>	Bench seats
<b>Material Type</b>	Aluminum
<b>2021 Observed Defects (Steel)</b>	Coating loss
<b>Defect Description</b>	Minor coating loss to base plate on northern side. Good condition. Minor cracking to footing
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4
<b>Maintenance Recommendation</b>	Monitor and reinspect at next scheduled inspection.
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C32
<b>Site Name/ Location</b>	North Mindarie Foreshore
<b>Date</b>	20/01/2021
<b>Time</b>	08:55 (8 GMT)
<b>Item Number</b>	10
<b>Costal Asset Type</b>	Sign
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Corrosion with section loss
<b>Defect Description</b>	Significant corrosion with section loss to steel support members.
<b>Condition Rating (0- 10)</b>	8
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	9
<b>Overall Rating (CR X RR)</b>	72
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 6 months



# City of Wanneroo - Coastal Asset

## Defect Photo



# Appendix GG

**Site C33 – South Mindarie Foreshore  
Defect Forms**



## City of Wanneroo - Coastal Asset

### Defect

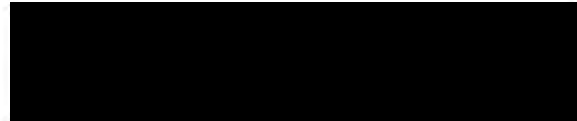
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:45 (8 GMT)
<b>Item Number</b>	1
<b>Costal Asset Type</b>	Lookout
<b>Sub-element (Surface)</b>	Bitumen base
<b>Material Type</b>	Asphalt
<b>Defect Description</b>	General deterioration and cracking resulting in potential trip hazard
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Resurface area
<b>Maintenance Timeframe</b>	Within 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**





## City of Wanneroo - Coastal Asset

### Defect

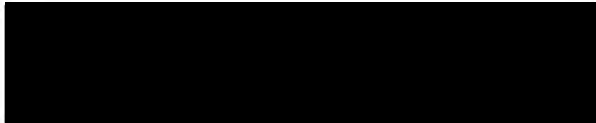
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:54 (8 GMT)
<b>Item Number</b>	2
<b>Costal Asset Type</b>	Shower
<b>Sub-element (Surface)</b>	Limestone paver
<b>Material Type</b>	Limestone
<b>Defect Description</b>	Limestone pavers in shower area in good condition.
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	8



**City of Wanneroo - Coastal Asset**

**Defect Photo**

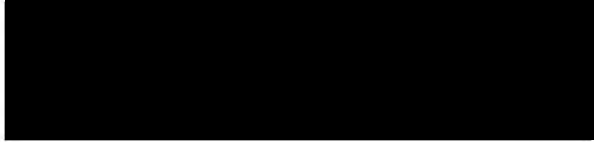




## City of Wanneroo - Coastal Asset

### Defect

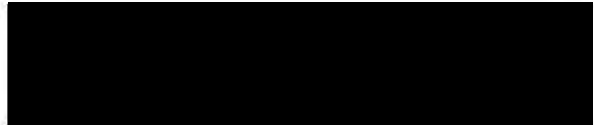
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:57 (8 GMT)
<b>Item Number</b>	3
<b>Costal Asset Type</b>	Lookout
<b>Sub-element (Walls)</b>	Wall
<b>Material Type</b>	Limestone
<b>Defect Description</b>	Chipping to edges, erosion to limestone brick surface evident.
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 5 years



# City of Wanneroo - Coastal Asset

## Defect Photo





## City of Wanneroo - Coastal Asset

### Defect

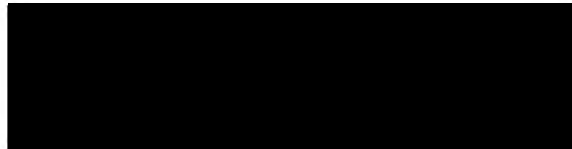
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	11:00 (8 GMT)
<b>Item Number</b>	4
<b>Costal Asset Type</b>	Lookout
<b>Sub-element (Fencing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber, rot
<b>Defect Description</b>	8 posts. Typical condition throughout. Minor splitting and rot to posts.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	8
<b>Overall Rating (CR X RR)</b>	32
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**





## City of Wanneroo - Coastal Asset

### Defect

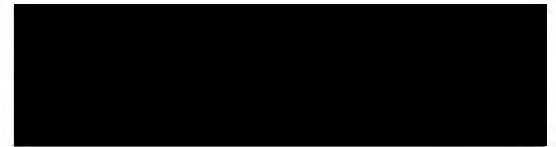
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	11:20 (8 GMT)
<b>Item Number</b>	5
<b>Costal Asset Type</b>	Lookout
<b>Sub-element (Fencing)</b>	Timber Posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Minor splitting throughout on top beam and posts. 4 posts, 8m top beam. Minor rust staining. Vegetation impaired visual inspection
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

### Defect Photo





## City of Wanneroo - Coastal Asset

### Defect

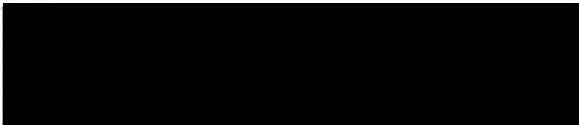
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	11:07 (8 GMT)
<b>Item Number</b>	6
<b>Costal Asset Type</b>	Lookout
<b>Sub-element (Fencing)</b>	Timber rail
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber, salt attack
<b>Defect Description</b>	Significant salt attack causing soft wood along mid rail at northern and southern ends. Minor splitting evident.
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	12
<b>Overall Rating (CR X RR)</b>	84
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**

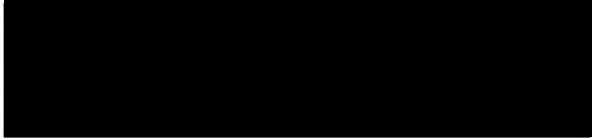




# City of Wanneroo - Coastal Asset

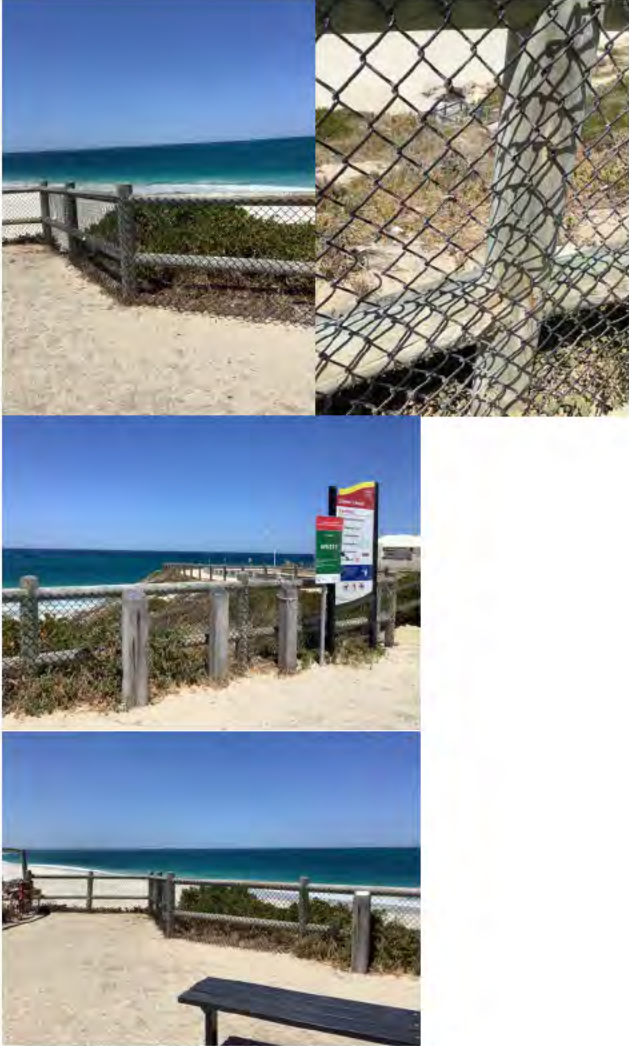
## Defect

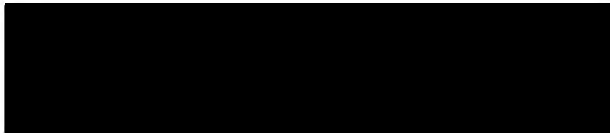
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:41 (8 GMT)
<b>Item Number</b>	7
<b>Costal Asset Type</b>	Lookout
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Noticeable build-up of debris
<b>Defect Description</b>	Fence typical corrosion and coating loss at staples. Generally good condition
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Greater than 5 years



# City of Wanneroo - Coastal Asset

## Defect Photo





# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:53 (8 GMT)
<b>Item Number</b>	8
<b>Costal Asset Type</b>	Lookout
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Impact/mechanical damage
<b>Defect Description</b>	Hole in fence at western end of lookout
<b>Condition Rating (0- 10)</b>	8
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	5
<b>Risk Rating</b>	10
<b>Overall Rating (CR X RR)</b>	80
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 1 - 2 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**





## City of Wanneroo - Coastal Asset

### Defect

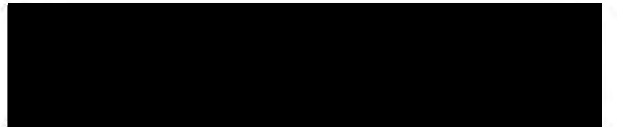
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	11:14 (8 GMT)
<b>Item Number</b>	9
<b>Costal Asset Type</b>	Lookout
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Noticeable build-up of debris
<b>Defect Description</b>	Steel mesh on south eastern side. Vegetation limiting inspection Typical corrosion to mesh and associated fixings. Strainer wires deteriorated. Mesh not well secured to top beam on western side.
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	28
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 5 years



# City of Wanneroo - Coastal Asset

## Defect Photo





## City of Wanneroo - Coastal Asset

### Defect

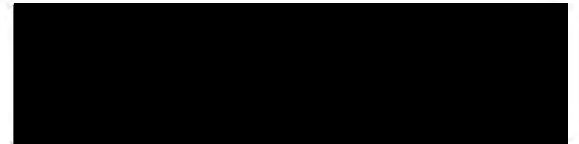
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:56 (8 GMT)
<b>Item Number</b>	10
<b>Costal Asset Type</b>	Lookout
<b>Sub-element (Fencing)</b>	Mesh staples
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Coating loss
<b>Defect Description</b>	Typical corrosion throughout. Similar condition to other staples on concrete path
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**

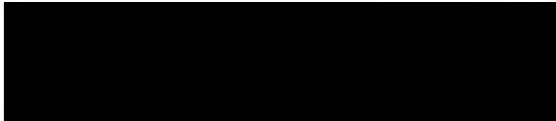




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:52 (8 GMT)
<b>Item Number</b>	11
<b>Costal Asset Type</b>	Bollards
<b>Sub-element (Bollards)</b>	Bollards
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber (typical)
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**





## City of Wanneroo - Coastal Asset

### Defect

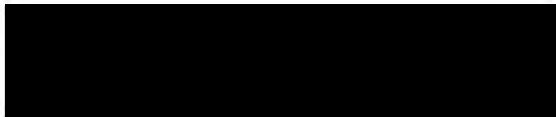
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:33 (8 GMT)
<b>Item Number</b>	12
<b>Costal Asset Type</b>	Lookout
<b>Sub-element (Sign)</b>	Sign
<b>Material Type</b>	Steel, Coated Steel
<b>2021 Observed Defects (Steel)</b>	Corrosion with section loss
<b>2021 Observed Defects (General)</b>	Subsidence, sinking, rotation
<b>Defect Description</b>	1 post observed with corrosion, 2 with rotation. 6 total posts
<b>Quantity of Defects</b>	4 signs total, 1 corroded, 2 rotated
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	3
<b>Overall Rating (CR X RR)</b>	15
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 5 years



# City of Wanneroo - Coastal Asset

## Defect Photo

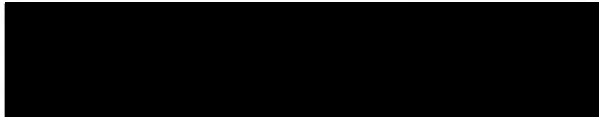




# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:40 (8 GMT)
<b>Item Number</b>	13
<b>Costal Asset Type</b>	Lookout
<b>Sub-element (Bench)</b>	Steel frame and base plates
<b>Material Type</b>	FRP / Steel
<b>2021 Observed Defects (FRP)</b>	No visible defects
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4



**City of Wanneroo - Coastal Asset**

**Defect Photo**





# City of Wanneroo - Coastal Asset

## Defect

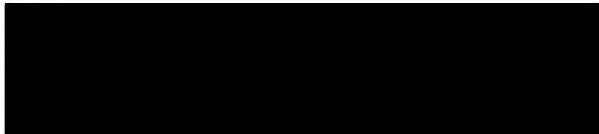
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	11:06 (8 GMT)
<b>Item Number</b>	14
<b>Costal Asset Type</b>	Shower
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Minor surface corrosion at base
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	8
<b>Maintenance Recommendation</b>	Monitor
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**





# City of Wanneroo - Coastal Asset

## Defect

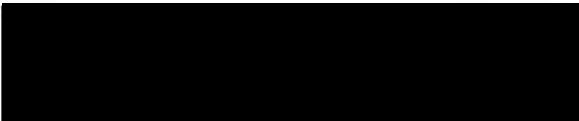
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	11:04 (8 GMT)
<b>Item Number</b>	15
<b>Costal Asset Type</b>	Shower
<b>Sub-element</b>	Drain
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects to drainage plate.
<b>Defect Description</b>	Anti slip tape coming off
<b>Condition Rating (0- 10)</b>	3
<b>Health and Safety Concern (Y/N)</b>	Yes
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	12
<b>Maintenance Timeframe</b>	Within 6 months



City of Wanneroo - Coastal Asset

Defect Photo





## City of Wanneroo - Coastal Asset

### Defect

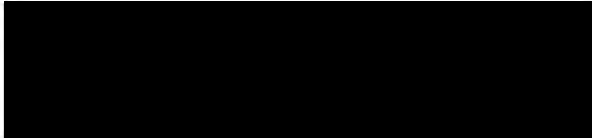
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	11:10 (8 GMT)
<b>Item Number</b>	16
<b>Costal Asset Type</b>	Shower
<b>Sub-element</b>	Drink Fountain
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion
<b>Defect Description</b>	Corrosion at base
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	16
<b>Maintenance Recommendation</b>	Re-coat
<b>Maintenance Timeframe</b>	Greater than 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**





# City of Wanneroo - Coastal Asset

## Defect

<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:12 (8 GMT)
<b>Item Number</b>	17
<b>Costal Asset Type</b>	Stairs
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	Impact/mechanical damage, abrasion and erosion, Spalling
<b>Defect Description</b>	Minor spall at edge of treads.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Conventional concrete repair
<b>Maintenance Timeframe</b>	Greater than 5 years



## City of Wanneroo - Coastal Asset

### Defect Photo





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:37 (8 GMT)
<b>Item Number</b>	18
<b>Costal Asset Type</b>	Concrete Stairs
<b>Sub-element (Stairs and Landing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>Defect Description</b>	Significant split to base of post
<b>Condition Rating (0- 10)</b>	9
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	12
<b>Overall Rating (CR X RR)</b>	108
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 6 months



**City of Wanneroo - Coastal Asset**

**Defect Photo**

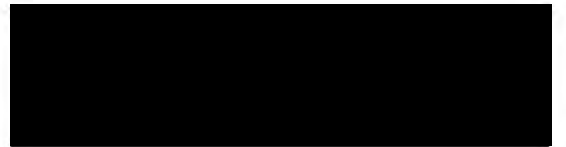




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:13 (8 GMT)
<b>Item Number</b>	19
<b>Costal Asset Type</b>	Stairs
<b>Sub-element (Stairs and Landing)</b>	Timber posts
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	General damage, Split timber
<b>Defect Description</b>	Typical splits to timber posts.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Greater than 5 years



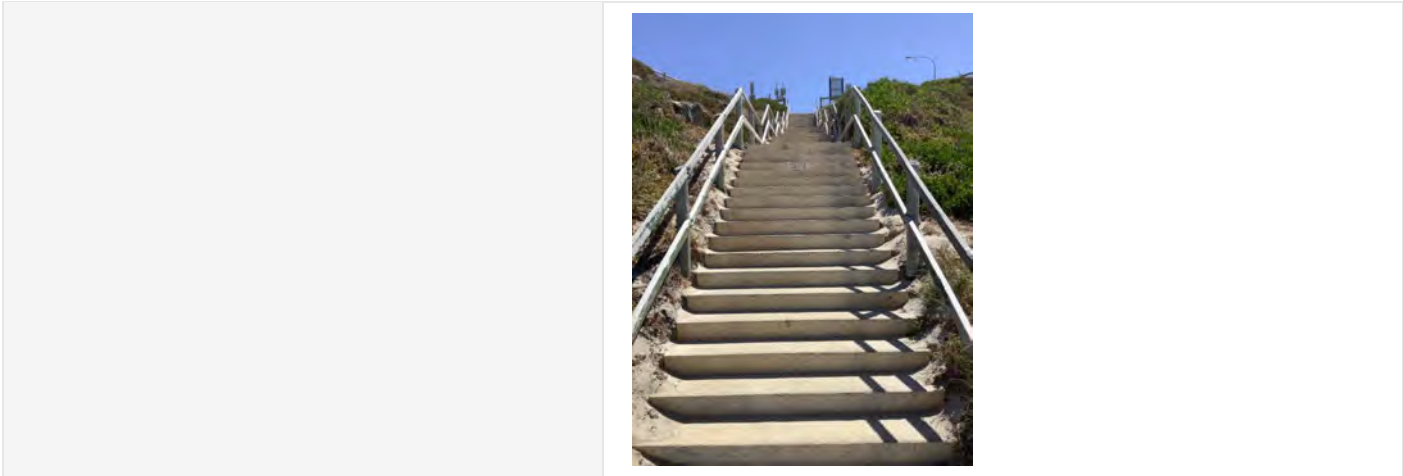
## City of Wanneroo - Coastal Asset

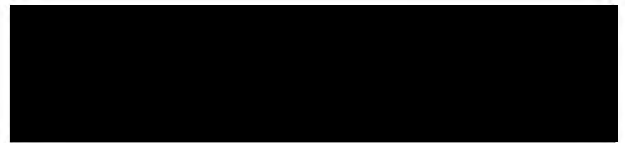
### Defect Photo





City of Wanneroo - Coastal Asset

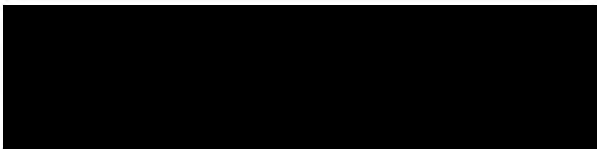




## City of Wanneroo - Coastal Asset

### Defect

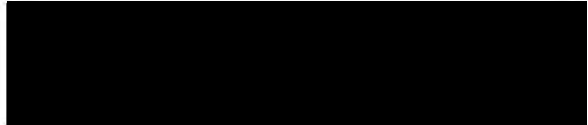
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:28 (8 GMT)
<b>Item Number</b>	20
<b>Costal Asset Type</b>	Concrete Stairs
<b>Sub-element (Fencing)</b>	Timber rail
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Rotted timber, Split timber, Other
<b>Defect Description</b>	Typical coating loss and minor splits and rot to railing.
<b>Condition Rating (0- 10)</b>	4
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	9
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Re-coat
<b>Maintenance Timeframe</b>	Within 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**

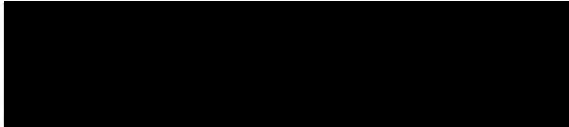




## City of Wanneroo - Coastal Asset

### Defect

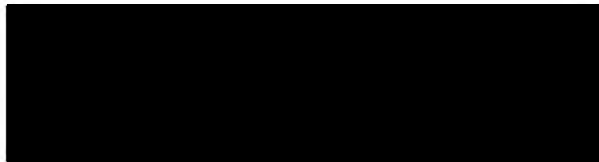
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:23 (8 GMT)
<b>Item Number</b>	21
<b>Costal Asset Type</b>	Concrete Stairs
<b>Sub-element (Fencing)</b>	Timber rail
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	General damage
<b>Defect Description</b>	Localised damage to bottom east top rail at connections.
<b>Defect Location</b>	Bottom east side top rail
<b>Condition Rating (0- 10)</b>	8
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	4
<b>Risk Rating</b>	12
<b>Overall Rating (CR X RR)</b>	96
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 1-2 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**





## City of Wanneroo - Coastal Asset

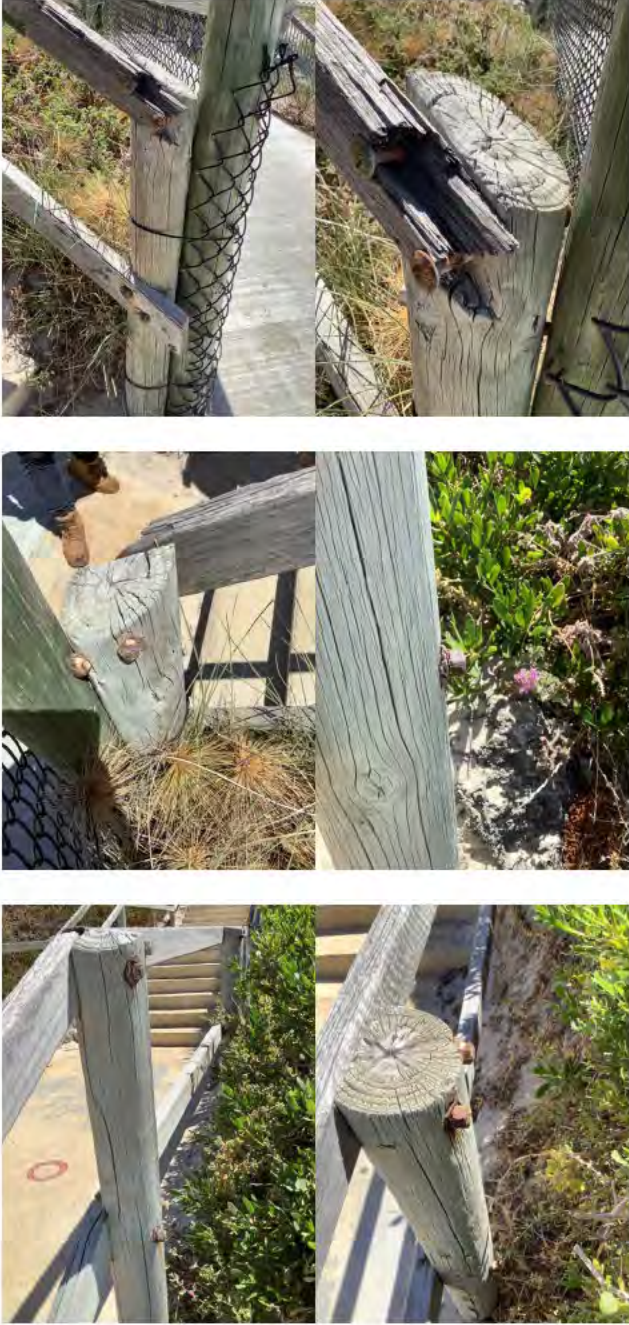
### Defect

<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:26 (8 GMT)
<b>Item Number</b>	22
<b>Costal Asset Type</b>	Concrete Stairs
<b>Sub-element (Stairs and Landing)</b>	Connections
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Corrosion of fasteners and connections
<b>Defect Description</b>	Bolt thread exposed on bottom eastern post. Coating loss typical on bolts. Debris build up typical . Section loss to washers typical
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	3
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 5 years



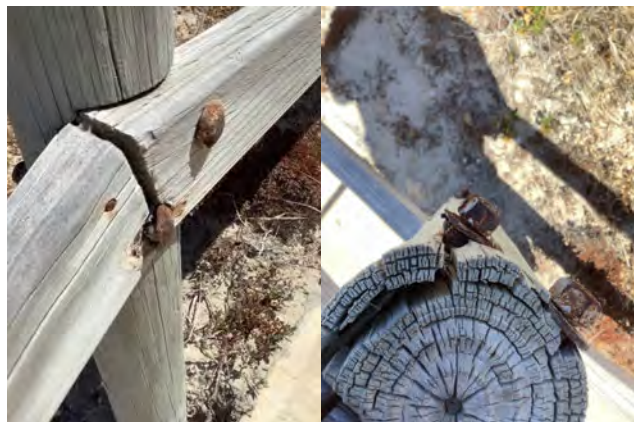
# City of Wanneroo - Coastal Asset

## Defect Photo





## City of Wanneroo - Coastal Asset





## City of Wanneroo - Coastal Asset

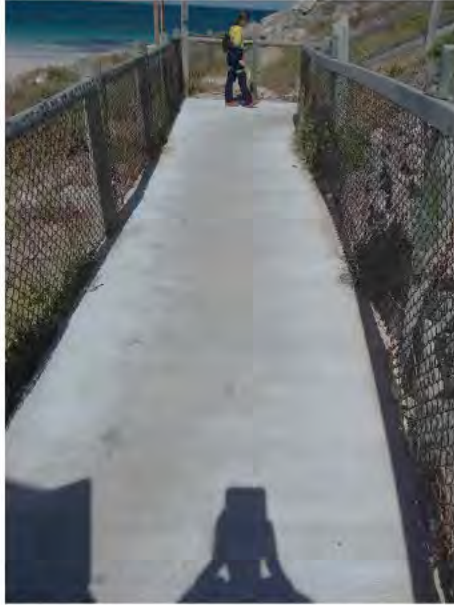
### Defect

<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	09:35 (8 GMT)
<b>Item Number</b>	23
<b>Costal Asset Type</b>	Concrete path
<b>Sub-element (Surface)</b>	Concrete Slab
<b>Material Type</b>	Reinforced Concrete
<b>2021 Observed Defects (Reinforced Concrete)</b>	No visible defects
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4



## City of Wanneroo - Coastal Asset

Defect Photo

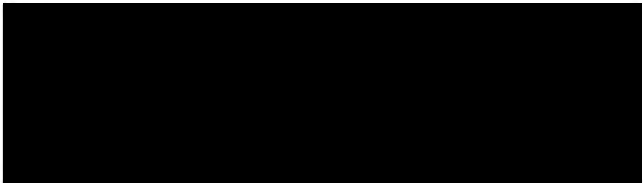




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	14/01/2021
<b>Time</b>	10:10 (8 GMT)
<b>Item Number</b>	24
<b>Costal Asset Type</b>	Concrete Path
<b>Sub-element (Fencing)</b>	Timber posts
<b>Sub-element (Handrails)</b>	Handrail
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Rotted timber, Split timber
<b>2021 Observed Defects (General)</b>	Subsidence, sinking, rotation
<b>Defect Description</b>	Splitting of timber observed to all posts, northern posts observed with deflection due to subsidence, minor rot observed
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**

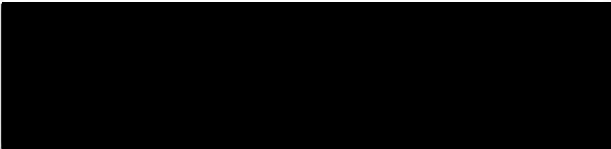




## City of Wanneroo - Coastal Asset

### Defect

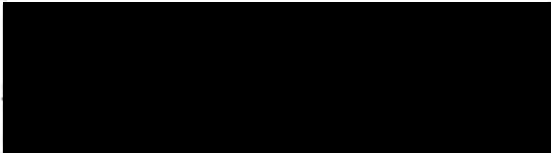
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	09:56 (8 GMT)
<b>Item Number</b>	25
<b>Costal Asset Type</b>	Concrete path
<b>Sub-element (Fencing)</b>	Timber rail
<b>Material Type</b>	Timber
<b>2021 Observed Defects (Timber)</b>	Split timber
<b>2021 Observed Defects (General)</b>	Subsidence, sinking, rotation
<b>Defect Description</b>	Splitting typical. Rotation of rails evident, most likely due to subsidence of post.
<b>Condition Rating (0- 10)</b>	5
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	30
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**

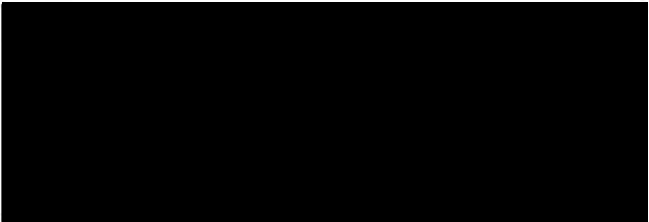




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:03 (8 GMT)
<b>Item Number</b>	26
<b>Costal Asset Type</b>	Concrete path
<b>Sub-element (Fencing)</b>	Timber connection
<b>Material Type</b>	Galvanised Steel
<b>2021 Observed Defects (Steel)</b>	Corrosion with section loss
<b>Defect Description</b>	Heavy corrosion to connection bolts (typical)
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	36
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**





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## City of Wanneroo - Coastal Asset

### Defect

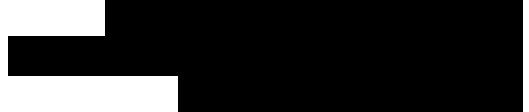
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	09:38 (8 GMT)
<b>Item Number</b>	27
<b>Costal Asset Type</b>	Concrete path
<b>Sub-element (Fencing)</b>	Mesh
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Coating loss, Surface corrosion, Noticeable build-up of debris
<b>Defect Description</b>	Coating loss on mesh, corrosion near mesh staples, Not completely fixed to top rail at points. Mesh doesn't go to ground level.
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	1
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	12



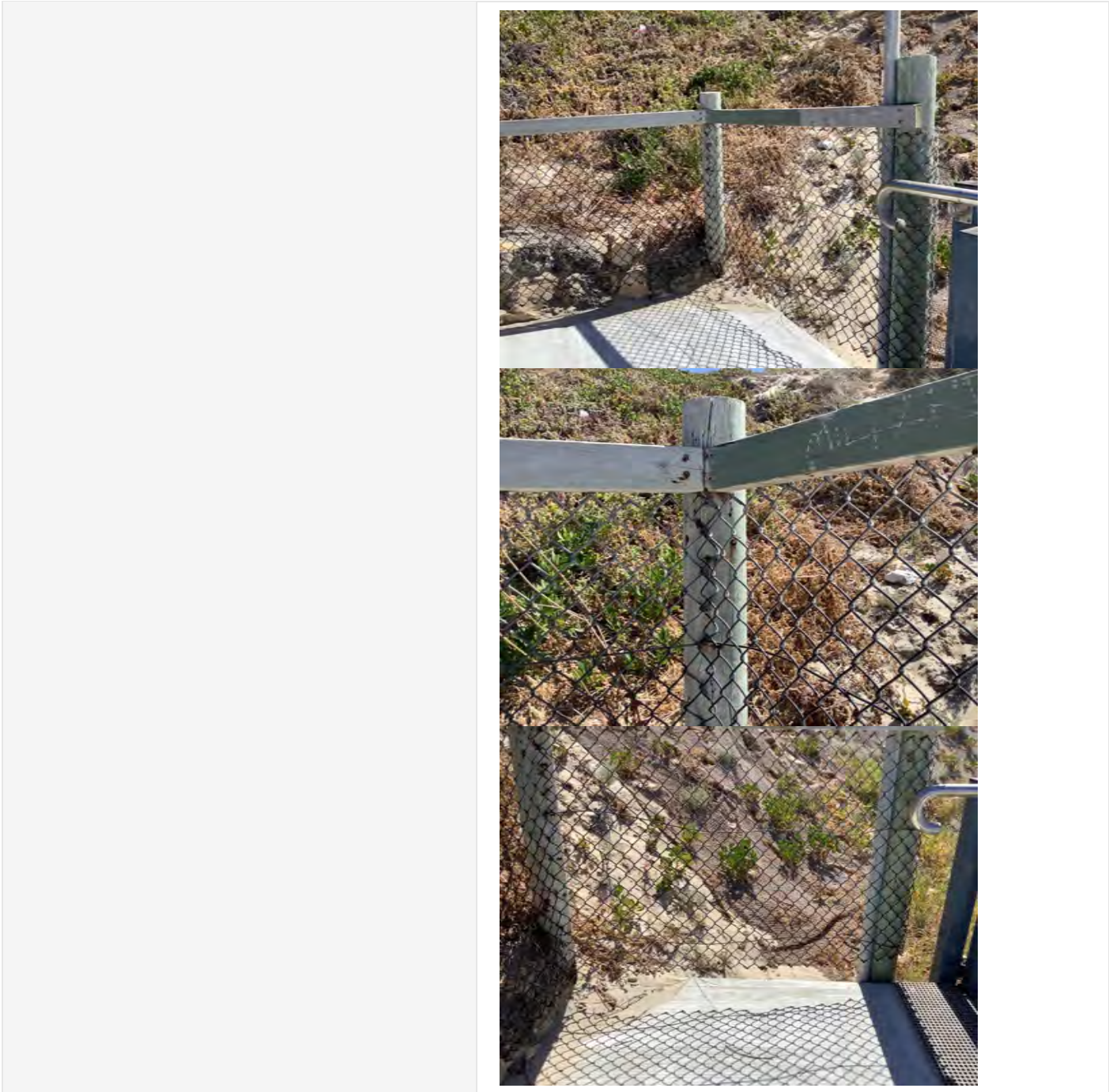
**City of Wanneroo - Coastal Asset**

**Defect Photo**



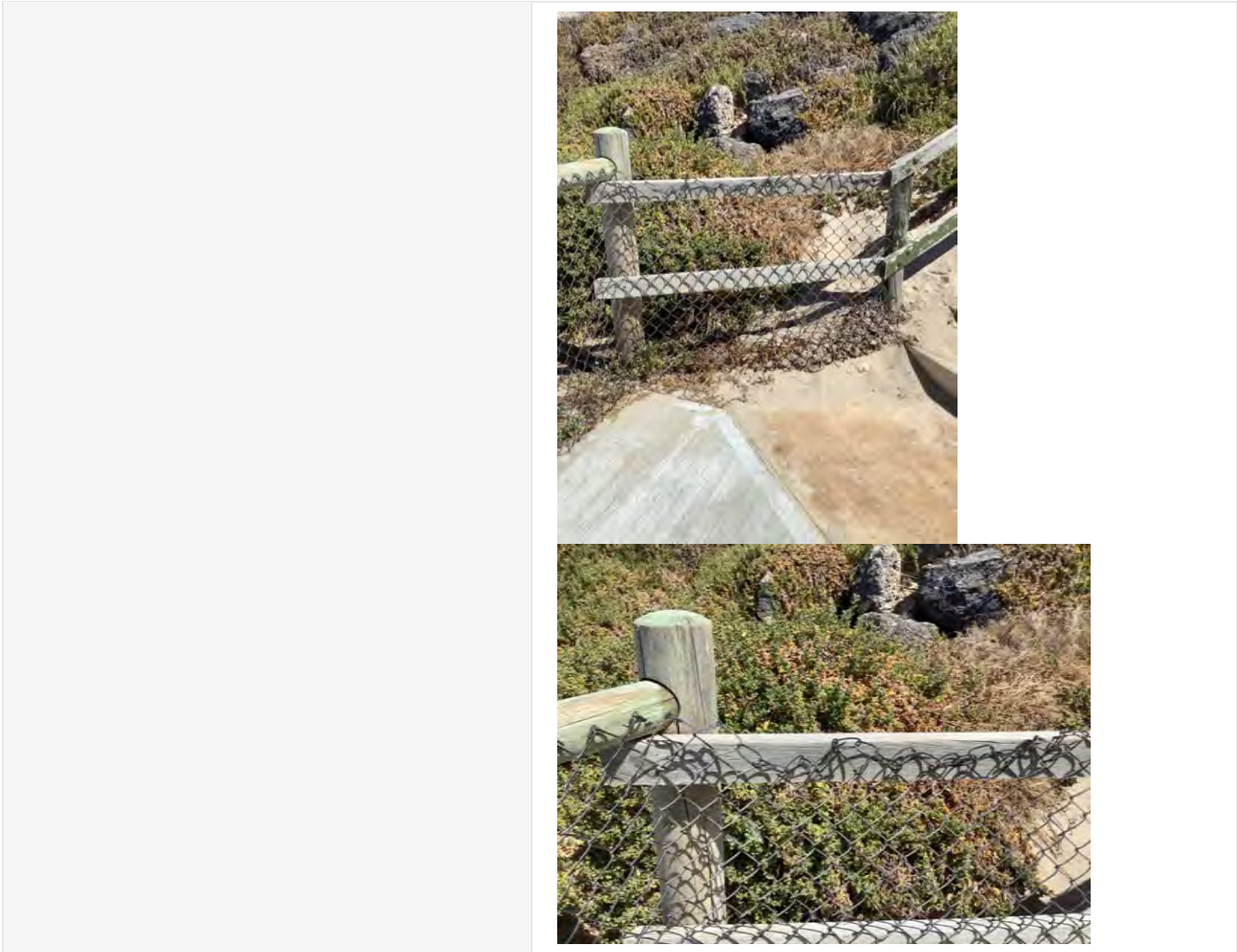


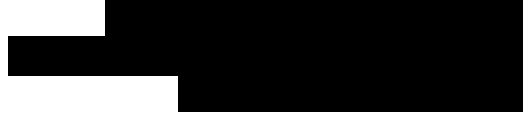
City of Wanneroo - Coastal Asset



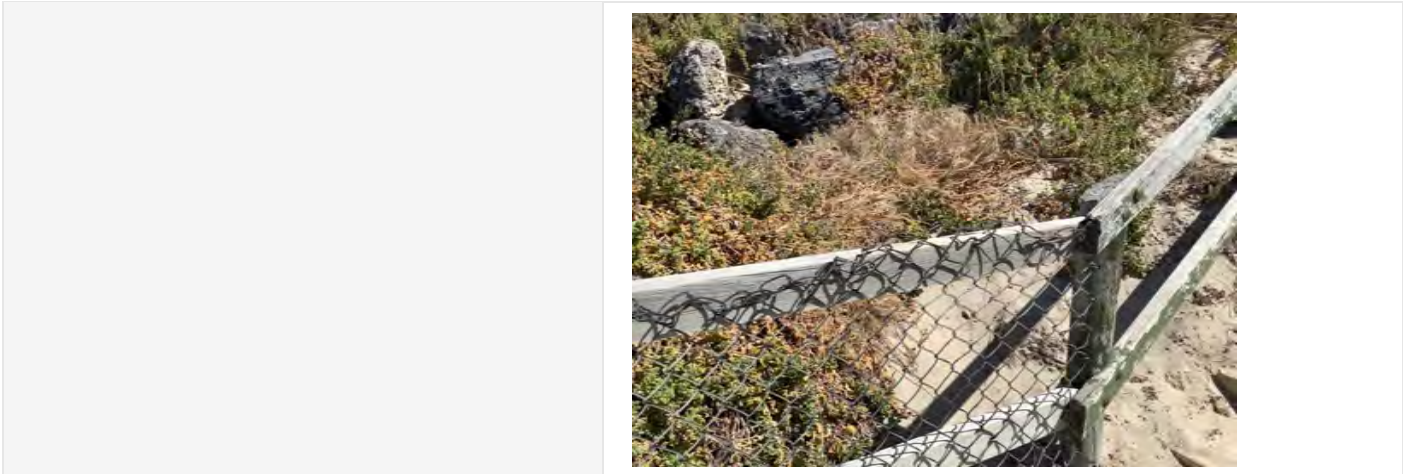


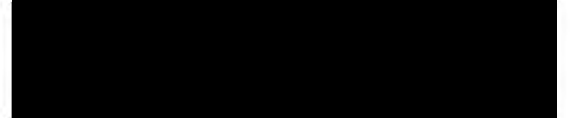
City of Wanneroo - Coastal Asset





**City of Wanneroo - Coastal Asset**

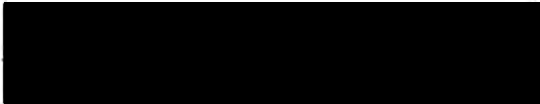




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	09:57 (8 GMT)
<b>Item Number</b>	28
<b>Costal Asset Type</b>	Concrete path
<b>Sub-element (Fencing)</b>	Mesh staples
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Surface corrosion, Noticeable build-up of debris
<b>Defect Description</b>	Corrosion on all staples for mesh. Noticeably worse at eastern side of path.
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	24



**City of Wanneroo - Coastal Asset**

**Defect Photo**





## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:02 (8 GMT)
<b>Item Number</b>	29
<b>Costal Asset Type</b>	Concrete path
<b>Sub-element (Fencing)</b>	Mesh strainer wires
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Coating loss, Surface corrosion, Noticeable build-up of debris
<b>Defect Description</b>	Coating loss at staples on timber posts. Not fixed to mesh on southern side for mid wire. Mesh fixings have corroded and have noticeable build up of debris. No wires on western side.
<b>Condition Rating (0- 10)</b>	6
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	2
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	24
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 5 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**





## City of Wanneroo - Coastal Asset

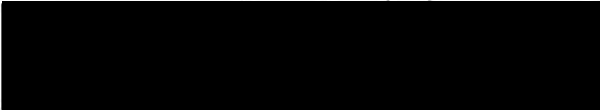




## City of Wanneroo - Coastal Asset

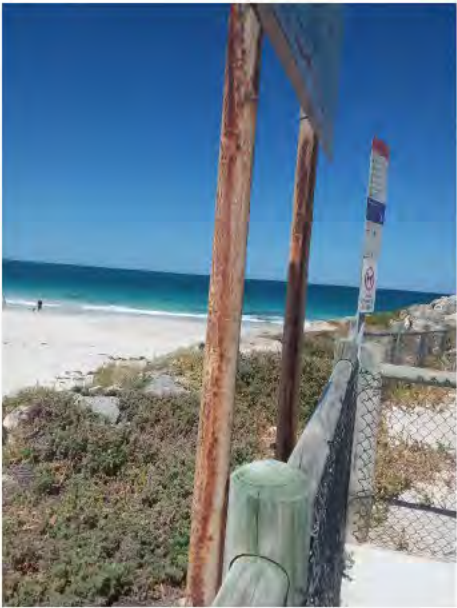
### Defect

<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	10:07 (8 GMT)
<b>Item Number</b>	30
<b>Costal Asset Type</b>	Concrete path
<b>Sub-element (Sign)</b>	Sign
<b>Material Type</b>	Coated Steel
<b>2021 Observed Defects (Steel)</b>	Corrosion with section loss, Coating loss
<b>Defect Description</b>	Heavy corrosion to 2 No signage posts, section loss evident.
<b>Condition Rating (0- 10)</b>	7
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	3
<b>Risk Rating</b>	6
<b>Overall Rating (CR X RR)</b>	42
<b>Maintenance Recommendation</b>	Replace
<b>Maintenance Timeframe</b>	Within 1-2 years



**City of Wanneroo - Coastal Asset**

**Defect Photo**

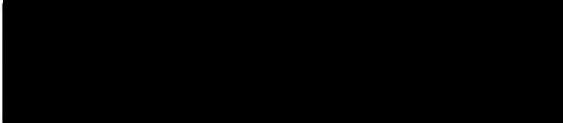




## City of Wanneroo - Coastal Asset

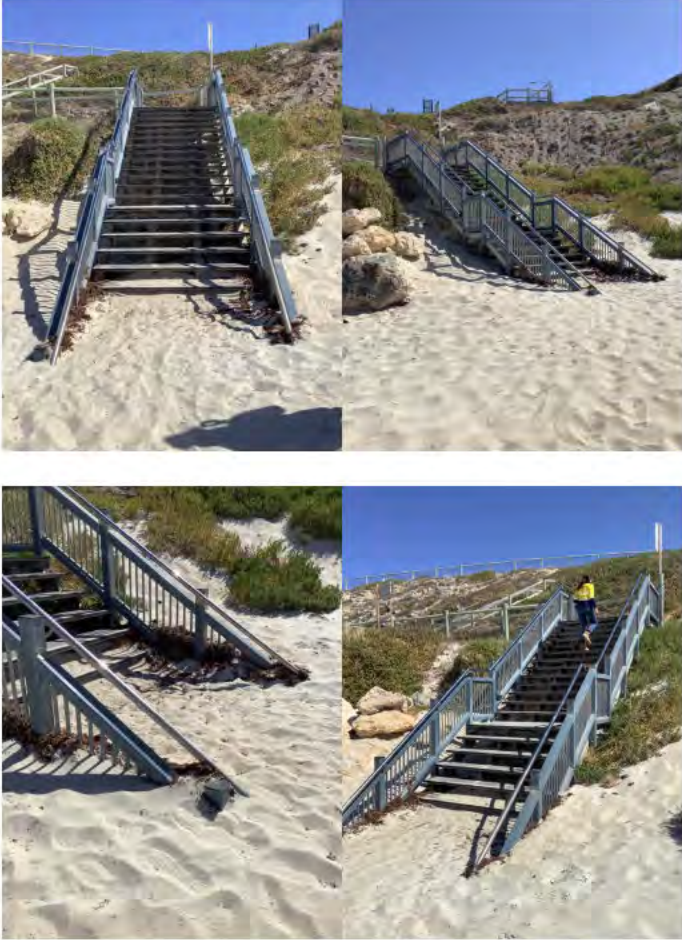
### Defect

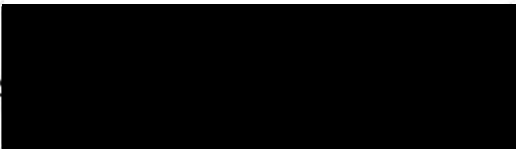
<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	15/01/2021
<b>Time</b>	09:32 (8 GMT)
<b>Item Number</b>	31
<b>Costal Asset Type</b>	Stairs
<b>Material Type</b>	FRP, Steel
<b>2021 Observed Defects (Steel)</b>	No visible defects
<b>2021 Observed Defects (FRP)</b>	No visible defects
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	4
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	4
<b>Overall Rating (CR X RR)</b>	8



# City of Wanneroo - Coastal Asset

## Defect Photo

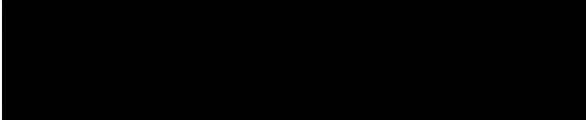




## City of Wanneroo - Coastal Asset

### Defect

<b>Site No.</b>	C33
<b>Site Name/ Location</b>	South Mindarie Foreshore
<b>Date</b>	13/01/2021
<b>Time</b>	16:23 (8 GMT)
<b>Item Number</b>	32
<b>Costal Asset Type</b>	Stairs
<b>Sub-element (Handrails)</b>	Handrail
<b>Material Type</b>	Stainless Steel
<b>2021 Observed Defects (Steel)</b>	Rust staining
<b>Defect Location</b>	Typical at connections
<b>Condition Rating (0- 10)</b>	2
<b>Health and Safety Concern (Y/N)</b>	No
<b>Consequence of Failure</b>	2
<b>Likelihood of Failure within next 5 years</b>	1
<b>Risk Rating</b>	2
<b>Overall Rating (CR X RR)</b>	4



**City of Wanneroo - Coastal Asset**

**Defect Photo**





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