Pacific Region Infrastructure Facility

Guidance for Managing Coastal Protection Works in Pacific Island Countries

Visual Inspection Form

Pacific Region Infrastructure Facility

Coastal Protection Works - Visual Inspection Form (page 1)

Inspection details

Asset name *(if applicable)*		**Date**	
Asset owner/ manager *(if known)*		**Inspected by**	
Land owner *(if known)*		**Section** *(if applicable)*	
Site cultural/ env significance *(if known)*		**Monitoring level** *L1 - Basic, L2 - Detailed*	
Location, address or GIS		**Monitoring type** *Scheduled, un-scheduled, post-event (specify)*	
Previous inspections *(specify if known)*		**Previous actions** *(specify previous repairs if known)*	

Notable events *(specify any notable weather events that may have occurred since construction or last inspection)*	

Structure details

Structure type *(select more than one if required)*

- ☐ Seawall
- ☐ Revetment
- ☐ Breakwater / offshore breakwater
- ☐ Groyne
- ☐ Nature based - specify:
- ☐ Other - specify:

Construction material *(select more than one if required)*

- ☐ Rock armour
- ☐ Timber
- ☐ Mass concrete
- ☐ Reinforced concrete
- ☐ Grouted rock
- ☐ Grouted sand bags
- ☐ Stacked sand bags
- ☐ Stacked coral boulder
- ☐ ACB / grouted mattress
- ☐ Masonry blocks / bricks
- ☐ Gabion
- ☐ Beach nourishment
- ☐ Concrete armour unit
- ☐ Sand-filled geotextile container
- ☐ Imported fill
- ☐ Concrete / sand-filled fuel drum
- ☐ Set cement bag
- ☐ Gravel / rubble berm
- ☐ Seabees
- ☐ Shot-crete
- ☐ Sheet piles (Steel / FRC / PVC)
- ☐ Waste material - specify:
- ☐ Hybrid - specify:
- ☐ Nature based solution - specify:

Material specifications *Armour/facing/member sizing, interface, layout, access (stairs, ramps, etc)*	

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Structure details

Asset intent / reason	☐ Support reclaimed land	☐ Protect land from erosion	☐ Protect land from inundation or wave overtopping		
	☐ Change waves or sediment transport processes	☐ Improve amenity	☐ Other - specify:		
Engineering standard *Engineered / non-engineered*			**Asset importance rating**	☐ 1 High ☐ 2 Med ☐ 3 Low	
Length of structure (m)			**Typical height of structure (m)** *(toe to crest)*		
Crest height (m) *(above high tide)*			**Structure slope (H:V)**		
Photos of structure	☐ Front left	☐ Front right	☐ End 1	☐ End 2	☐ Crest along ☐ Crest down
Photo number/s *(if applicable)*					

Environmental setting

Coastal environmental setting	☐ Lagoon (<3km fetch)	☐ Lagoon (>3km fetch)	☐ Open sandy coast
	☐ Open coast (reef platform <300m width)	☐ Open coast (reef platform >300m width)	☐ Other - specify:
Structure toe position on beach/foreshore	☐ Above high tide (always emergent)	☐ Between mid and high tide (submerged at higher parts of the tide)	☐ Buried
	☐ Between low and mid tide (emergent during lower parts of the tide)	☐ Below low tide (always submerged)	☐ Other:

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Elemental assessment	Considerations depending on type of work		Notes on element (take photos of each element where possible)
Toe / Foundation	N/A	Is the toe founded on hard strata?	
	N/A	Is the surrounding ground higher than the toe?	
	N/A	Are there signs of scour?	
	N/A	Is the toe buried?	
	N/A	Is there a gap between the bottom of the structure and the ground?	
	N/A	Is there evidence of bed lowering since construction?	
Structure facing	N/A	Are there displaced armour rocks/units?	
	N/A	Are there gaps in the armour/outer layer?	
	N/A	Is there visible cracks in the façade?	
	N/A	Is there exposed reinforcing?	
	N/A	Is there exposed reinforcing?	
	N/A	Is there signs of deterioration (cracked concrete, rust, ALWC, splitting/worn timber)?	
	N/A	Are there discontinuities in the outer surface?	
	N/A	Are there visible splits in geotextile containers?	
	N/A	Is the geotextile partially empty, flapping?	
Filter layers / geotextile	N/A	Can you see a geotextile underlayer?	
	N/A	Is the geotextile underlayer intact?	
	N/A	Is the geotextile of sufficient thickness/high quality?	
	N/A	Is there more than one layer of armour rock/units?	
Backfill	N/A	Are there signs of migration of fill through the structure?	
	N/A	Is there holes or slumping behind the structure?	
	N/A	Is the land lower immediately behind the structure?	
Crest	N/A	Is there evidence of overtopping, vegetation die-back / salt burn?	
	N/A	Is there signs of submergence on higher tides; algae, darker colour elements?	
	N/A	Are units at the crest of the structure displaced?	
	N/A	Is the capping beam cracked / deteriorated?	

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Elemental assessment	Considerations depending on type of work		Notes on element (take photos of each element where possible)
Drainage	N/A	Is ponding present behind the crest?	
	N/A	Are there weep holes in the face of the structure?	
	N/A	Is the structure blocking creek/inlet or landward flow path?	
	N/A	Is there evidence of flow through/under the structure at low tides?	
Slope	N/A	Does the structure appear to be slumping/ becoming flatter?	
	N/A	Does the structure appear to be leaning forward or back?	
	N/A	Are any geotextile containers emptying or moving?	
Alignment	N/A	Are sections of the structure out of alignment with the rest?	
	N/A	Does there appear to be wash-throughs / or blow-outs along the structure?	
	N/A	Are there signs of increased erosion at either end of the structure?	
	N/A	Is beach nourishment maintaining its design shape/planform?	
Fixings	N/A	Does the structure have fixings; mooring points/bollards, stormwater pipes, a footpath or furniture/lighting connected to the structure?	
	N/A	Are the fixings in good working order?	
Access	N/A	Is there safe access to and from the coast both over and along the structure?	
	N/A	Is access available for disabled people?	
	N/A	Is there safe access to maintain the structure?	
	N/A	Is the structure safe for the community to interact with, sit/walk on?	
Nature-based	N/A	Is vegetation planted as part of a NbS in good condition?	
	N/A	Is there evidence of dieback or sparsity in vegetation?	
	N/A	Is the planting securely founded/rooted on the bed?	
	N/A	Are other NbS components in good condition	

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Structure rating

Potential failure mechanism	From the elemental assessment, are you able to determine a possible future failure mechanism that may occur before next inspection? i.e: - Toe erosion - Structural degradation - Geotechnical failure - Armour damage or displacement - Loss of internal materials - Crest Damage - Outflanking and end erosion Refer to Operations Manual and Guidance Document for Defects-Failure linkages	**Notes on potential failure:**

Performance rating: ☐ A - Excellent ☐ B - Good ☐ C - Fair ☐ D - Poor ☐ E - Very poor/failed	**Notes on performance** (based on results of elemental assessment):
Condition rating: ☐ A - Excellent ☐ B - Good ☐ C - Fair ☐ D - Poor ☐ E - Very poor/failed	**Notes on condition** (based on results of elemental assessment):

Effects assessment

Effects on community	**Positive** ☐ Improved coastal access ☐ Provision of new meeting/social location ☐ Improved fishing/fossicking ☐ Improved recreational amenity; walking, sunbaking, diving, surfing, etc ☐ Reduction in wave overtopping/inundation	**Negative** ☐ Exposed steel/wire ☐ Unstable rocks ☐ Loss of access to or along beach ☐ Flooding caused by seawall blocking return flow ☐ Is the structure having adverse outcomes for any particular group	**Other - specify:**
Effects on the Environment	**Positive** ☐ Improved water quality ☐ Improved flora or fauna habitat ☐ Training of creek/inlet	**Negative** ☐ Increased erosion in front of the asset (i.e. beach is lowering) ☐ Increased erosion next to asset (i.e. end effects or downdrift erosion) ☐ Affecting lagoon currents or stream flow processes ☐ Affecting wave processes (i.e. increased reflection) ☐ Affecting ecology (specify) ☐ Blocking flow path ☐ Trapping debris/waste	**Other - specify:**

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Response notes

Risk level

Performance risk level
Performance vs importance:

- ☐ VERY LOW
- ☐ LOW
- ☐ MODERATE
- ☐ HIGH
- ☐ VERY HIGH

Condition risk level
Condition vs importance:

- ☐ VERY LOW
- ☐ LOW
- ☐ MODERATE
- ☐ HIGH
- ☐ VERY HIGH

Intolerable effects
Environmental / social (specify):

Condition / Performance	Importance of structure: 3: Low	2: Medium	1: High
A – Excellent	Very Low	Very Low	Low
B – Good	Very Low	Low	Low
C – Fair	Low	Moderate	Moderate
D – Poor	Moderate	Moderate	High
E – Very Poor	Moderate	High	Very High

Potential / recommended response
(refer to Operations Manual for description of response options)

- ☐ Do nothing (defer to next monitoring round)
- ☐ Increase monitoring frequency
- ☐ Undertake L2 (detailed) assessment
- ☐ Undertake maintenance or repair works
- ☐ Upgrade or adapt structure

Notes: