NATIONAL MARITIME SAFETY AUTHORITY

Terms of Reference

TASK DESCRIPTION

PROJECT/TASK TITLE:	AtoN Pile Structures Replacement – Madang
EXECUTING AGENT:	National Maritime Safety Authority (NMSA)
IMPLEMENTING AGENT:	National Maritime Safety Authority (NMSA)
PROJECT SPONSOR:	General Manager / CEO
PROJECT LOCATION:	Madang, Madang Province
COMMENCEMENT:	TBA
PROJECT DURATION:	15 Days

1.0 INTRODUCTION/BACKGROUND

The Navigation Safety Services Department (NSSD) of the National Maritime Safety Authority (NMSA) is responsible for the operation and maintenance of Marine Aids to Navigation (AtoN) sites and structures in and around PNG waters. The NSSD has funds allocated in its 2023 Work Plan Budget and intends to utilize these funds to replace deteriorating pile structures and lattice towers earmarked for this year.

Madang Harbour is a picturesque land-locked harbour at the southern end of an extensive lagoon lying on the west side of the approach to Isumrud Strait. It is bordered on the Southern side by the Schering Peninsula and on the North by Biliau Island.

1.1 KRANKET ISLAND LEAD LIGHTS

The Dallman Passage is a 43m marine fairway with Quarantine Anchorage 45m. Both international and domestic vessels use the passage entering from seaward and exiting the Madang Port. The increased level of domestic trade has significantly observed numerous vessels of various sizes transiting the narrow passage.

Currently, there are two sets of available Port Entry Lights (PEL), the Dallman Passage Front & Dallman Passage Rear and the Krangket Island Front and Krangket Island Rear. The Dallman PEL is used by vessels for passage alignment when entering from seaward and the Krangket Island lead lights for alignment manoeuvring leaving the wharf and out of the narrow passage.

The existing Krangket Lead Lights structures are concrete H-beam piles with platforms. Over time, these concrete structures experienced deterioration, hence appropriate actions on the piles are required so the PEL can maintain their functions. In addition, the Krangket lead lights (Front & Rear) have been without day marks. As a requirement by the International Association of Marine Aids to Navigation and Lighthouse Authority (IALA), the lead lights should have day marks for day use; the vessel's position alignment in/out of passages.

1.2 CONDOR POINT ATON

The Condor Point AtoN is located along the North Coast Road (NCR) of Madang Province. The AtoN's exact location is Latitude: 04° 07.137' S Longitude: 144° 51.747' E and was re-established in 2007 with a 23m lattice tower that houses a 10NM light with electrical components. The Condor Point AtoN acts as a waypoint for vessels to establish their positions transiting along the coastline. Adjacent to Condor Point, are Cape Gourdon and Cape Girgir which supports vessels' coastal navigation.

The 23m lattice tower recently has undergone rapid oxidization over the years due to sea splash and sea vapour after the coastline changed and the sea moved up closer to the structure. This has affected the components of the tower extremely. Therefore, most importantly the site needs to be improved to serve and provide safe navigation for transiting vessels.

1.3 RECOMMENDATION

NMSA through onsite structural inspection & assessment has decided that the following be carried out on the existing structures;

- Krangket Island Front Leadlight 3m concrete structure to be replaced. A white rectangular day-mark board affixed maintaining the 3m height without a platform.
- Krangket Island Rear Leadlight 5m concrete structure be replaced. A white rectangular day-mark affixed maintaining the 5m height without a platform.
- Replace the existing Condor Point Structure with a pure stainless steel lattice structure at a new proposed location nearby maintaining the current 23m height.

This is to allow the effective and continuous function of providing safe navigation for transiting vessels.

2.0 OBJECTIVE

This objective of this ToR is to secure a suitably qualified contractor with necessary logistical capabilities who can efficiently mobilise and replace the 3 deteriorating pile structures at their specified locations.

3.0 ESSENTIAL REQUIREMENTS OF THE STRUCTURE AND COMPONENTS

The National Maritime Safety Authority requires the preferred contractor to provide the required materials for the three sites respectively.

3.1 KRANGKET ISLAND LEAD LIGHTS – FRONT & REAR

The AtoN Installation Contractor (AIC) is required to mobilize from its base with appropriate equipment and materials to the construction site and conduct the installation. The required day marks should be of recommended and internationally recognised standard as a requirement by NMSA.

The AIC shall ensure the following:

3.1.1 Procure two 600mm diameter stainless steel piles with associated accessories and their structural components.

3.1.2 Transport the piles and accessories to the installation site ensuring items remain in good condition prior to installation.

3.1.3 The piles are to be attached with rectangular day marks that can be effectively detected, recognized and identified by the mariners under any given conditions.

3.1.4 The materials should be robust and maintained in accordance with the Maritime Buoyance System (MBS) and the IALA Guideline 1094.

3.1.5 Have in place the appropriate machinery and equipment as required for the improvement works.

3.2 CONDOR POINT

The AIC shall ensure the following:

3.2.1 Conduct a site visitation and assessment on the site. If the need arises for further investigation on the soil properties, the AIC shall engage the appropriate agency to carry out the investigation with a completion report submitted to NMSA.

3.2.2 The structural engineering design and assessment of AtoN should be undertaken by engineers with the relevant qualifications and design experience, appropriate to the AtoN complexity and environmental setting. The phase of structural design should consider durability, sustainability, safety and quality as a requirement by IALA and NMSA.

3.2.3 The final design/drawing should be presented to NMSA for further discussion and approval.

3.2.4 Structural stability and integrity are essential to maintain functional performance. The materials are weldable pure stainless steel and shall be a high resistant to corrosion.

3.2.5 Provide stainless steel materials with associated accessories and their structural components to be transported to the installation site ensuring items remain in good condition prior to installation.

4.0 SITE CONDITION

The following are the designated construction sites:

4.1 Krangket Island Front Lead
- Site coordinates (WGS-84): 05° 12.175′ S, 145° 48.895′ E
- Water depth is around 3m.
- Concrete H- Beam pile (Existing)

4.2 Krangket Island Rear Lead
- Site coordinates (WGS-84): 05° 12.170′ S, 45° 48.910′E
- Water depth at the site is 3m.
- Concrete H- Beam pile (Existing)

4.3 Condor Point
- Site coordinates (WGS-84): 04° 07.137′ S, 144° 51.747′ E
- Required height of 23m
- Steel Lattice Tower is required with a top platform

5.0 SCOPE OF WORKS

KRANKET ISLAND LEAD LIGHTS

5.1 Mobilize and transport the 600mm mono-piles with appropriate materials including all required structural attachments and accessories to specified work sites.
5.2 The old structure shall be dismantled and the pile removed and stowed away neatly for disposal in an orderly and environmentally friendly manner
5.3 Piles shall be driven to an adequate depth below the seabed to ensure pile stability in the given environment.
5.4 Krangket Front, the top of the piles shall be 5m above the mean high water mark (high tide).
5.5 Krangket Rear, the top of the piles shall be 7m above the mean high water mark (high tide).
5.6 A sacrificial zinc anode block shall be fixed to the piles well below the MLLW mark (lowest tide).
5.7 The 600mm diameter mono-pile structures with a stainless steel ladder attached shall only support the lantern and the day mark board. A platform is not required.
5.8 For the mono-piles structures, the Denso anti-corrosion and sealing system shall be applied the full length of the pile from pile top to sea level, MLLW mark
5.9 Install the rectangular day marks with the provided dimensions
5.10 Ensure features and properties of the completed structure shall provide a successful and long-lasting use in the given environment.

CONDOR POINT

6.1 Mobilize appropriate materials including all required structural attachments and accessories to specified work sites.
6.2 The existing deteriorated lattice tower shall be dismantled and the components removed and stowed away neatly for disposal in an orderly and environmentally friendly manner.
6.3 Establish a new base foundation for the new tower structure 04° 07.139′ S, 150° 51′.749′ E, 10m due 150° south from the existing site. The foundation shall be firmed and maintain structural stability and integrity.
6.4 Assemble the new tower with its components appropriately in a safe manner ensuring all pieces are secured.
6.5 Install the platform section with a secured entry gate and brackets around it to keep away illegal entry.
6.6 Install the lantern and its electrical components
6.7 Fabricate a battery box with a locking system and a bracket to hold the solar panel

Note:
1. NMSA will provide marine lantern and other electrical materials (Solar, Batteries, Lanterns, Regulator)

6.0 REQUIREMENTS FOR THE BIDDER

6.1 GENERAL PRINCIPLES

By accepting the Terms of Reference (ToR), the Bidder agrees and confirms that they shall meet the following general conditions:

- The Bidder presents a brief company profile in its bid.
- The Bidder gives an assurance of proof of evidence of capability and experience in supplying to a high standard and reliability of services and products required.
    - Documentations and specifications of the project shall be compiled, supplied to NMSA after installation completion, and properly collated and labelled.

6.2 QUALIFICATIONS AND EXPERIENCES

The successful Bidder is expected to be technically qualified and experienced and have all the required working assets for commencement through to completion of the project.

The successful Bidder is expected to be familiar with the specifications of the maritime industry standards and guidelines aligned with the works required in this ToR.

6.3 EXPECTED RESPONSE PROPOSALS

6.3.1 EOI is required to include and detail the following requirements:

- Description of proposed works to accomplish the scope of works and requirements.
- Proposed works implementation schedule
- Detailed costing and proposed schedule of payment

6.3.2 Provide copies of the following documents to comply with business requirements:

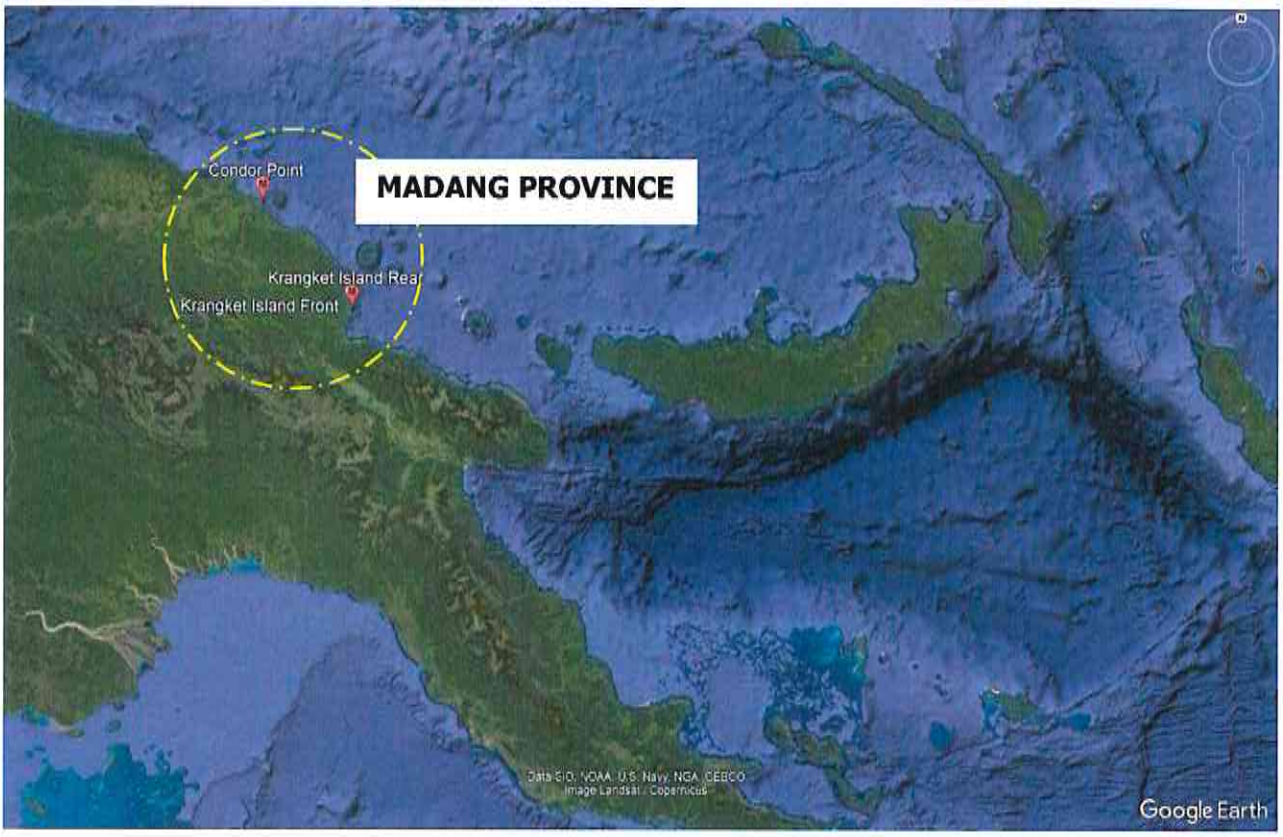
- IPA Certificate
- IRC TIN/CoC
- Worker Insurance

7.0 CONTRACT ARRANGEMENT

The preferred bidder will enter into a contract agreement with National Maritime Safety Authority. The successful contractor will commence work after the signing of the contract agreement.

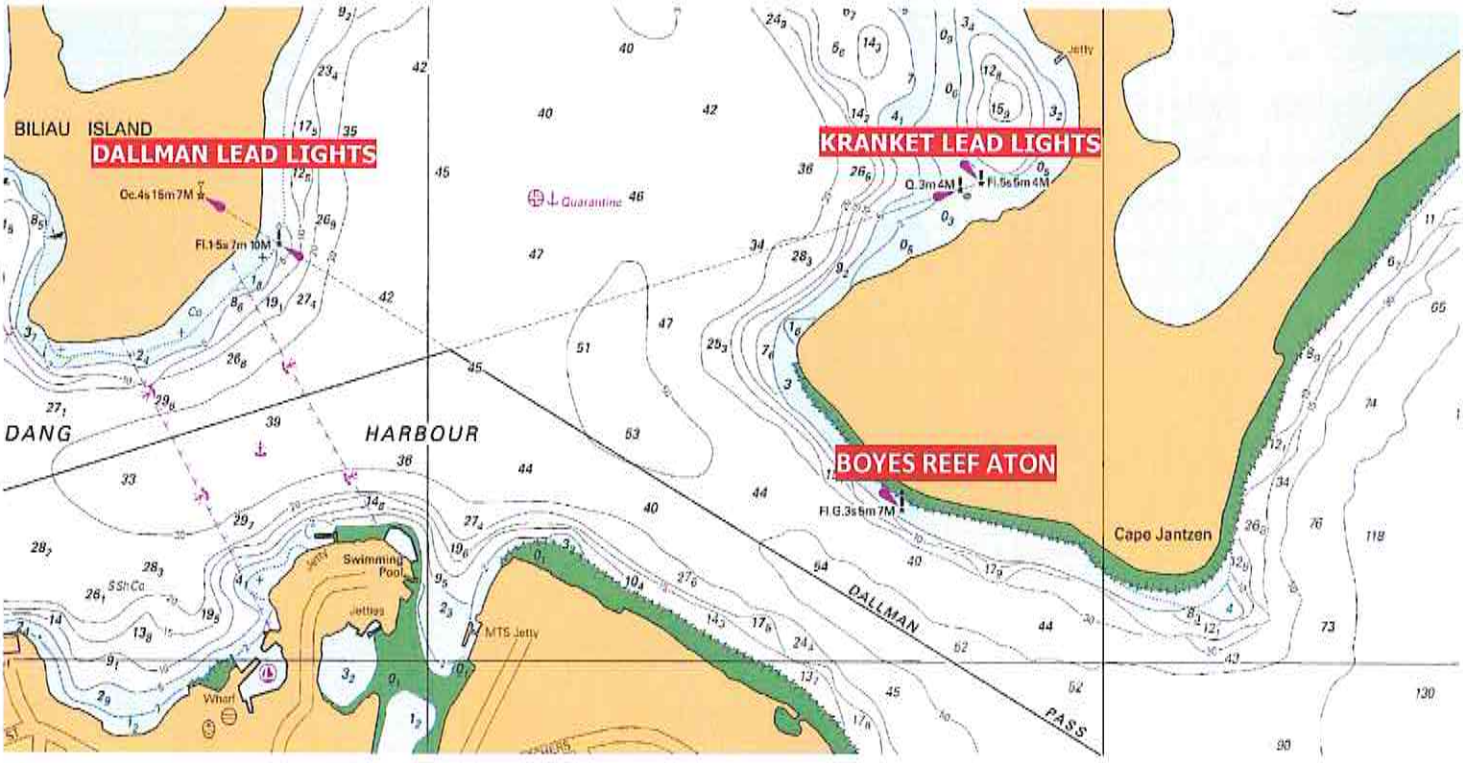
ATTACHMENTS

1. Location of the Aton Sites for Replacement



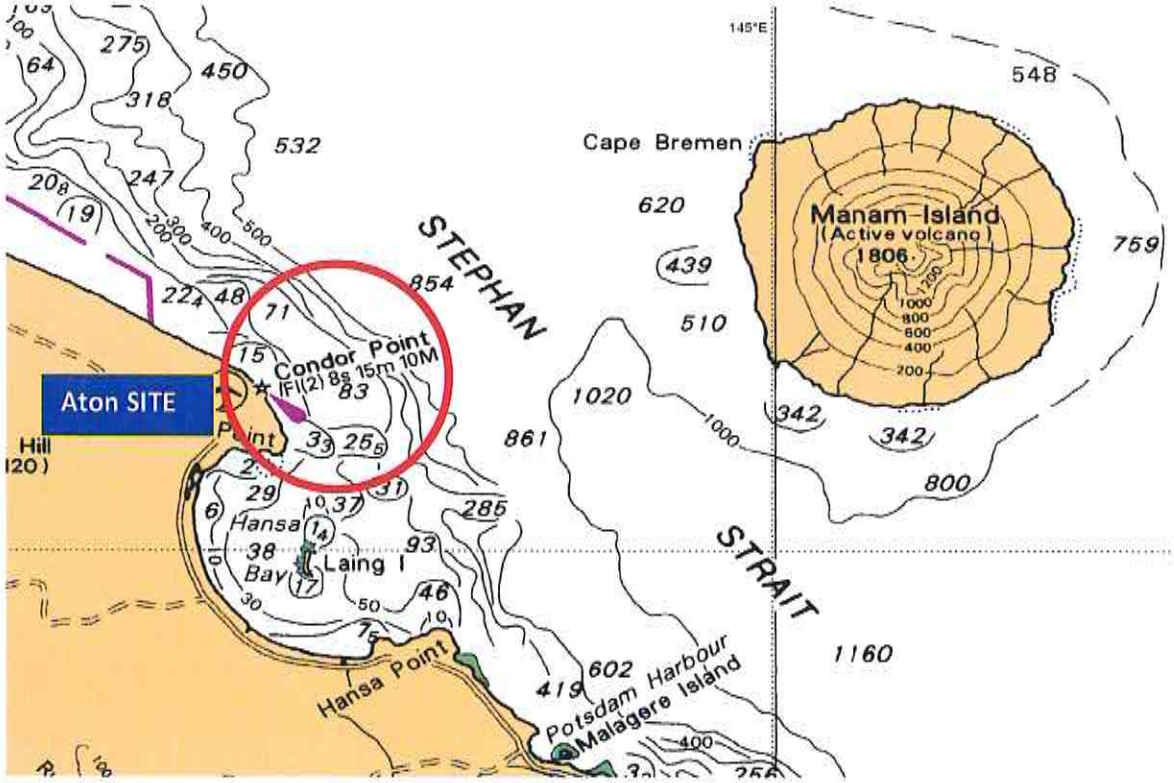
2. Location of Kranget Island Lead lights

3. General location of Krangket Front and Rear Leads chart no. PNG 00646P1



4. Location of Condor Point Aids to Navigation

5. General location of Krangket Front and Rear Leads. Chart No. PNG 00388PO

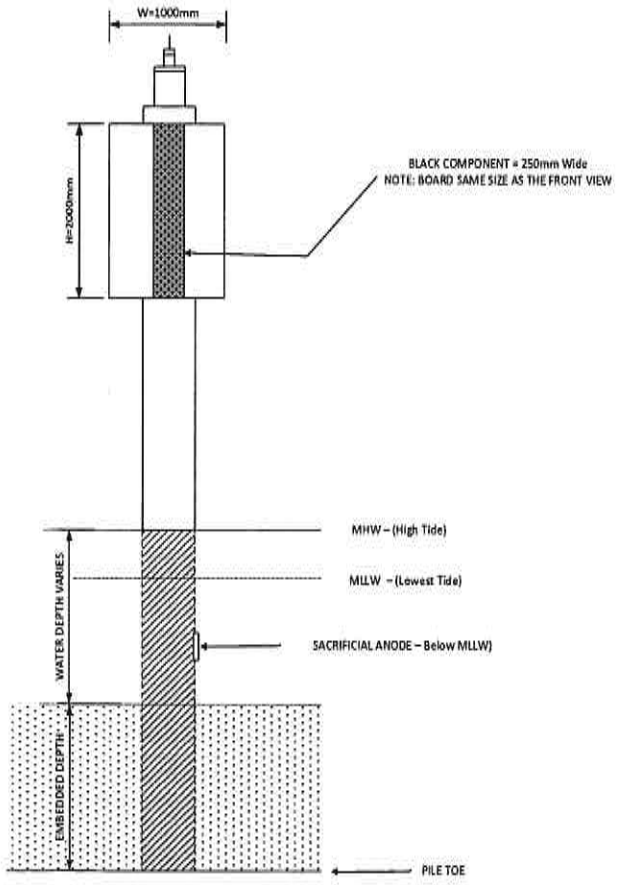


6. Designated location (coordinates) for the AtoN structures

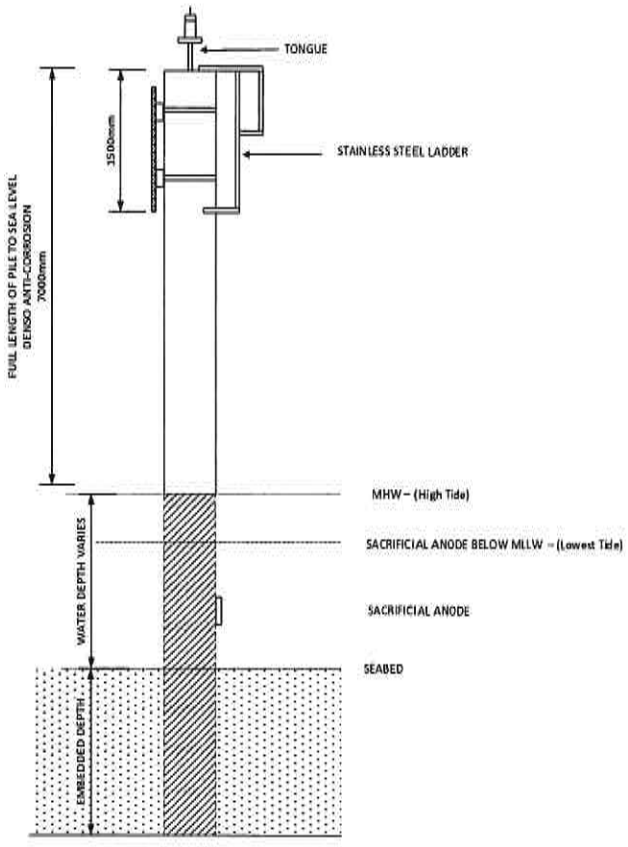
- Krangket Island Front Lead - 05° 12.175′ S, 145° 48.895′ E
- Krangket Island Rear Lead - 05° 12.170′ S, 45° 48.910′E
- Condor Point - 04° 07.137′ S, 144° 51.747′ E

7. Sketch Structure details for the concrete structure at Krangket

PORT ENTRY LIGHTS – KRANGKET ATONS



FRONT VIEW



SIDE VIEW

8.0 APPROVAL TO PROCEED

We approve the TOR as described above to proceed as necessary.

Manager Navigation Safety Services		Executive Manager Maritime Operations	
Approved		Approved	
Not Approved		Not Approved	
Signature		Signature	
Date: / / 2023		Date: / / 2023	