Technical Advice Note 1:

Sea Turtle Construction Fencing

Department of Environment
Cayman Islands Government

July 2024

A guide to the design and construction of temporary fences which protect sea turtles from the hazards of construction sites.

Summary: When carrying out construction activities on or adjacent to sea turtle nesting beaches, it is important that the construction site is adequately secured to prevent impacts to sea turtles. It is not always obvious which beaches have sea turtle nesting, so it is important to contact the Department of Environment to determine the presence of nesting prior to construction. On beaches with turtle nesting, an appropriate fence to exclude sea turtles from the construction site should be constructed. The fence should be a solid material such as plywood and embedded into the sand at least 2 feet. All construction activities and storage of construction and waste materials should occur landward of the fence.

Purpose

All species of sea turtles are Part 1 Schedule 1 Protected Species under the National Conservation Act (NCA, 2013) which means that they are protected at all times and it is an offence to harm them. Nesting sea turtles use beachside vegetation as a cue for nesting and will crawl landwards up the beach until they reach the vegetation or a hard structure. When the vegetation is removed they will often continue to crawl up the beach until they reach an existing structure or, potentially, a construction site. The following best practice Technical Advice Note outlines how to design and construct a fence which protects sea turtles from the hazards of a construction site. An unsecured construction site could be dangerous or even life-threatening for a turtle.

Improper or inadequate securing of active construction sites can:

- Impact nesting female sea turtles who crawl onto the beach at night to lay their nests;
- Impact turtle nests which have already been laid on the beach; and
- Impact sea turtle hatchlings as they emerge from their nests and make their way to the ocean.

If there is an impact on sea turtles caused by construction sites, it may be considered the "take" of a protected species, which is an offence under the NCA. As such, construction sites located on turtle nesting beaches must be properly secured in a way that excludes sea turtles from the active construction site.

It is important to carefully check your Decision Letter issued by the Department of Planning, as there may be a requirement for a sea turtle construction fence as part of your planning permission. In the absence of

this requirement, it is your responsibility to contact the Department of Environment (DoE) prior to beginning any construction activities on the beach. While the DoE does record the location of all turtle nests detected, the DoE does not mark turtle nests and there may not be visible signs of turtle nesting activity or turtle nests.

Construction Hazards

Construction sites can be highly dangerous for sea turtles, for example, they may fall into an open excavation pit/area or injure themselves on exposed construction materials. Hatchling turtles are also at risk from construction sites. Heavy equipment used in construction can easily crush a hatchling or turtle nest. It can also collapse the nest chamber, making it impossible for the hatchlings to emerge.

Figures 1 to 6 demonstrate the hazards that construction sites can pose to sea turtles.

Figure 1. A sea turtle stranded after encountering a man-made structure.

Figure 2. A turtle with injuries to her plastron (the underside of her shell) caused by abrasion.

Figure 3. A sea turtle with an injury to her flipper after falling into a trench.

Figure 4. A nesting sea turtle trapped beneath deck construction.

Figure 5. A sea turtle hatchling crushed by construction activities on the beach, note the tire tracks in the background.

Figure 6. Turtle tracks leading towards an unsecured construction site on the beach.

Location

Temporary construction fences should leave ample space for nesting sea turtles and enough space landward of the fence for construction to take place. All construction activities and storage of construction and waste materials must take place landward of the fencing. The construction fence should be installed a minimum of 75 feet from the Mean High Water Mark, or landward of beachside vegetation as shown in Figure 7, but each site will vary. Some areas may allow or require a greater setback from the Mean High Water Mark, depending on site characteristics and historical nesting. Figures 7 and 8 demonstrate suitable locations for construction fencing.

Figure 7. Example of construction fencing which has been placed sufficiently landward of beachside vegetation.

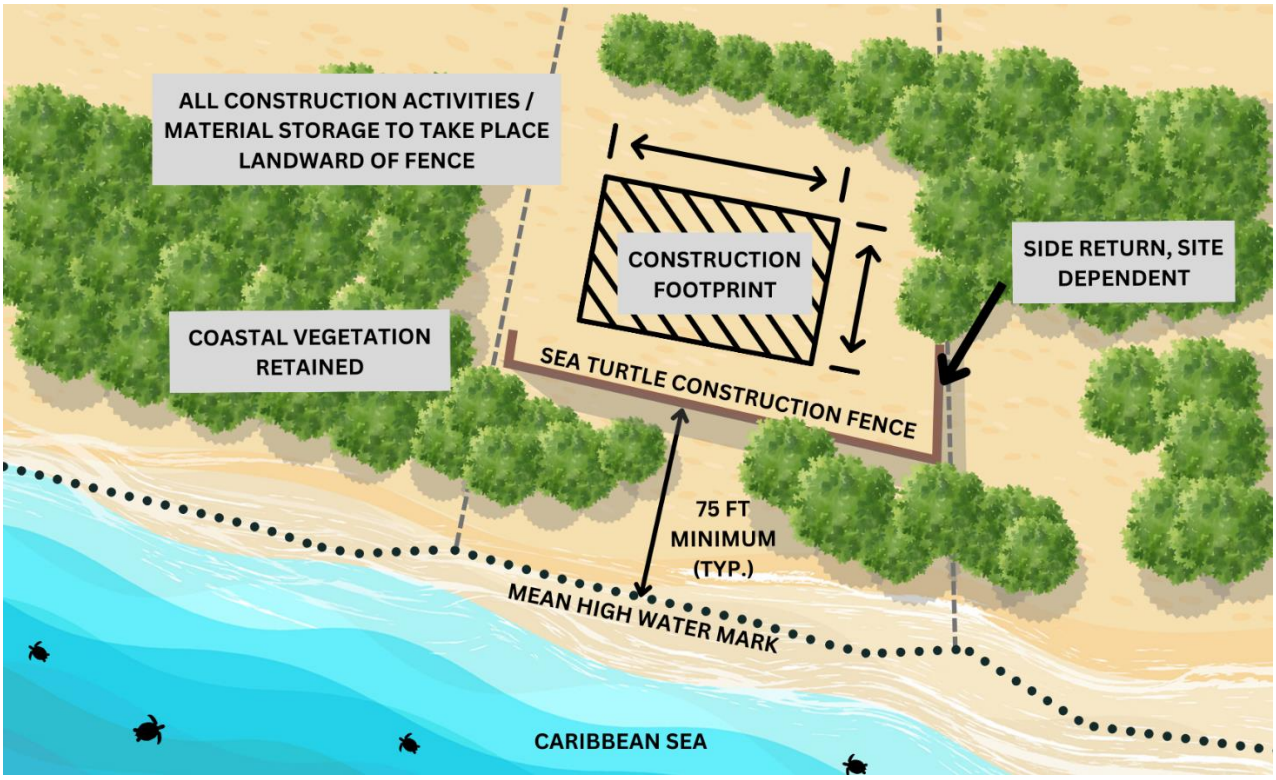

Figure 8. Site plan showing optimal positioning of construction fencing.

Materials

The best material to use for sea turtle construction fencing is plywood. It is readily available and is a sturdy and solid material that can be installed with no gaps (refer to Figures 9 and 10). You may install other fencing on the land side of the plywood for additional site security if desired.

Figure 9. Plywood, as a sturdy and solid material with no gaps, is a good material to use.

Figure 10. Plywood can be embedded into the sand to prevent a turtle from digging under it.

Mesh fencing, Heras fencing and chain-link fencing are all **unacceptable** as they can be dangerous to turtles and may not exclude them from the site. While they may be sufficient to exclude humans from construction sites, these types of fences would be no match for a nesting sea turtle which can weigh as

much as 400 lbs. These types of fencing materials are also open, and can pose a hazard to hatchling sea turtles, which can become trapped between wires or within the mesh. Poor maintenance and re-use of Heras or chain-link fencing on the beach can also lead to corroded or deteriorated fences that can injure a sea turtle and/or people.

Specification

The following outlines the general specification for a fence (see Figure 11) which will protect turtles:

1. The fence must be installed along the beachside of a construction site and partially along the sides. The distance the fence must be installed along the sides will be dependent on the conditions of your site and must be adequate to prevent a turtle from entering the site from the sites of the construction site.
2. The construction fence should be embedded at least 2 feet into the sand so that turtles cannot dig it out or crawl under.
3. The construction fence should extend at least 2 feet above the sand so that turtles cannot crawl over.
4. It should be installed in a manner that any nailing of the wood will be done so that the sharp ends are located on the landside of the fencing to prevent injury to turtles.

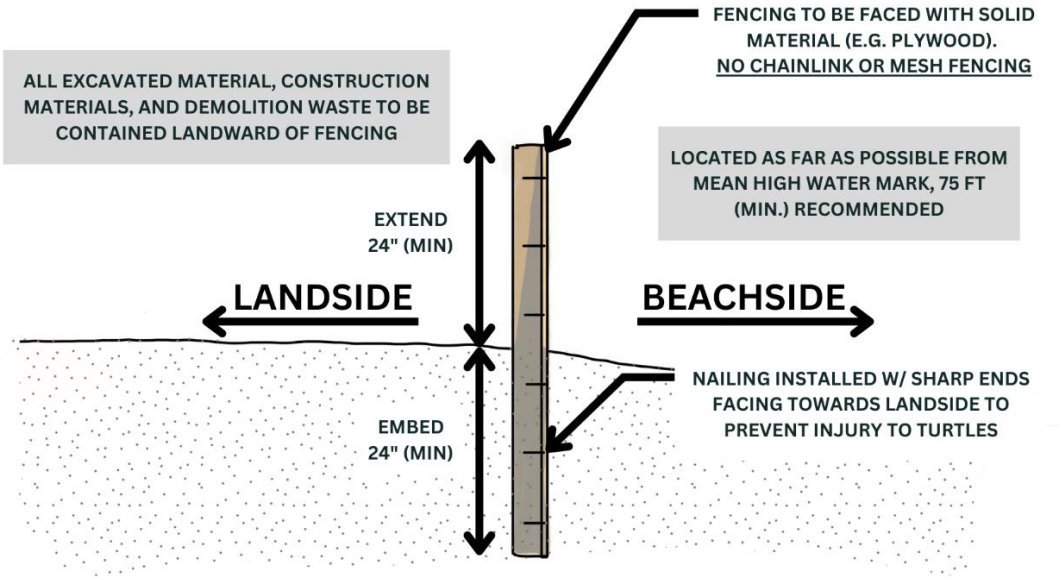

Figure 11. Cross-section of turtle construction fence highlighting the specifications of the fence.

Process for Installing a Fence

The following outlines the process for installing a construction fence on a turtle nesting beach:

1. If applicable, review your Planning Decision Letter to verify any project- or site-specific requirements.
2. Contact the DoE (949-8469 or EMU.DOE@gov.ky) **before** beginning any construction works on or adjacent to the beach to confirm whether the beach is a turtle nesting beach and/or whether there are any active nests on the beach. The DoE will:

   a. Provide written consent that no turtle nests are present in the proposed construction area; or
   b. Visit the site to temporarily mark out the location of existing nests.
3. Mark out the location of the construction fencing with stakes, sticks or tape. The DoE will conduct an inspection within 1 to 3 working days to verify the location.
4. On the day of installation, walk the beach to look for any signs of turtle nesting activity.
5. Install the construction fencing and confirm to the DoE when installation has been completed. Retain any native vegetation which is located on the beachside of the fence. The DoE will conduct an inspection within 1 to 3 working days to verify that the fence is suitable for the exclusion of turtles.
6. After a satisfactory inspection, the DoE will provide written approval or consent to the relevant agency (e.g. the Department of Planning) if required and/or requested.
7. Before removing the construction fence at the end of construction, contact the DoE and obtain written consent that no sea turtle nests will be impacted by the works.

Working Practices for the Duration of Construction

The purpose of the fence is to allow construction to take place safely on the landside of the fence and allow turtle nesting to take place safely on the beachside of the fence. Therefore, the following working practices must be adhered to for the duration of construction:

- The fence must remain in place and in a satisfactory condition to exclude turtles and contain materials until construction work has been completed.
- All excavated material, construction materials, and demolition waste including stockpiled sand must be stored landward of the temporary fencing.
- All heavy machinery must operate and/or be stored landward of the fencing.
- No heavy machinery must operate on the beachside of the fence without DoE consent.
- Retain any native vegetation on the beachside of the fencing.
- Ground-borne vibrations can impact sea turtle eggs and hatchlings by destroying the integrity of the turtle nest cavity. Contact the DoE before conducting any extended vibratory works.
- No lights must be installed which are visible from the beach, including temporary construction lighting.

Contacts

In the event that you find a turtle during the day, in or on your construction site, contact the DoE **IMMEDIATELY** at 916-4271 (Chief Conservation Officer) or 938-6378 (Turtle Team Hotline).

For regular enquiries, administrative matters, or inspections contact the Environmental Management Unit at 949-8469 or EMU.DOE@gov.ky

Acknowledgements

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