



DEPARTMENT OF
ENVIRONMENT
CAYMAN ISLANDS GOVERNMENT

Coastal Works Review

Ministry of District Administration, Tourism & Transport

Demolition of existing dock & construction of new dock

Blossom Village Dr, Little Cayman

Block: 81A Parcel: 21

Ref: DOE/CWK/368

PREPARED FOR: MINISTRY OF HEALTH, ENVIRONMENT, CULTURE AND HOUSING

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Authored by: Technical Review Committee, Department of Environment

Coastal Works Review

Demolition of existing dock &, construction of new dock Block: 81A Parcel: 21

Project Proposal

The applicant – The Ministry of District Administration, Tourism and Transport (DATT) – is seeking permission to remove the existing concrete dock offshore of Block 81A Parcel 21 and replace it with a new enlarged piled dock.

In order to construct the dock, a 12ft wide by approximately 55 ft long (~606.5sqft) causeway will be constructed with Cayman shot rock. The applicant has indicated that the fill will be placed alongside the existing 716sqft I-shaped concrete dock, to allow the 20ft reach of the excavator to reach and remove the concrete dock. Once removed from the sea, the debris from the concrete dock and fill pad will be placed in a dump truck and transported to the Public Works compound.

The new L-shaped dock will be constructed using a small construction boat/pontoon and will run perpendicular to the shore on the southern boundary of the property. The shore perpendicular walkway is 6ft wide by 24ft long. The angled walkway is 6ft wide by approximately 69ft long. The dock will be supported by 8in concrete reinforced PVC piles. The decking will be 2x6in timber planks with ½ inch spacing, positioned 4ft above mean sea level. The proposed works are shown on Figure 1.

Following discussions with the applicant during the life of the application it was agreed that the proposed works would not include the excavation of a channel. Therefore permission is not being sought as part of this application for any dredging works. Additionally, no works are proposed for the existing launching ramp.

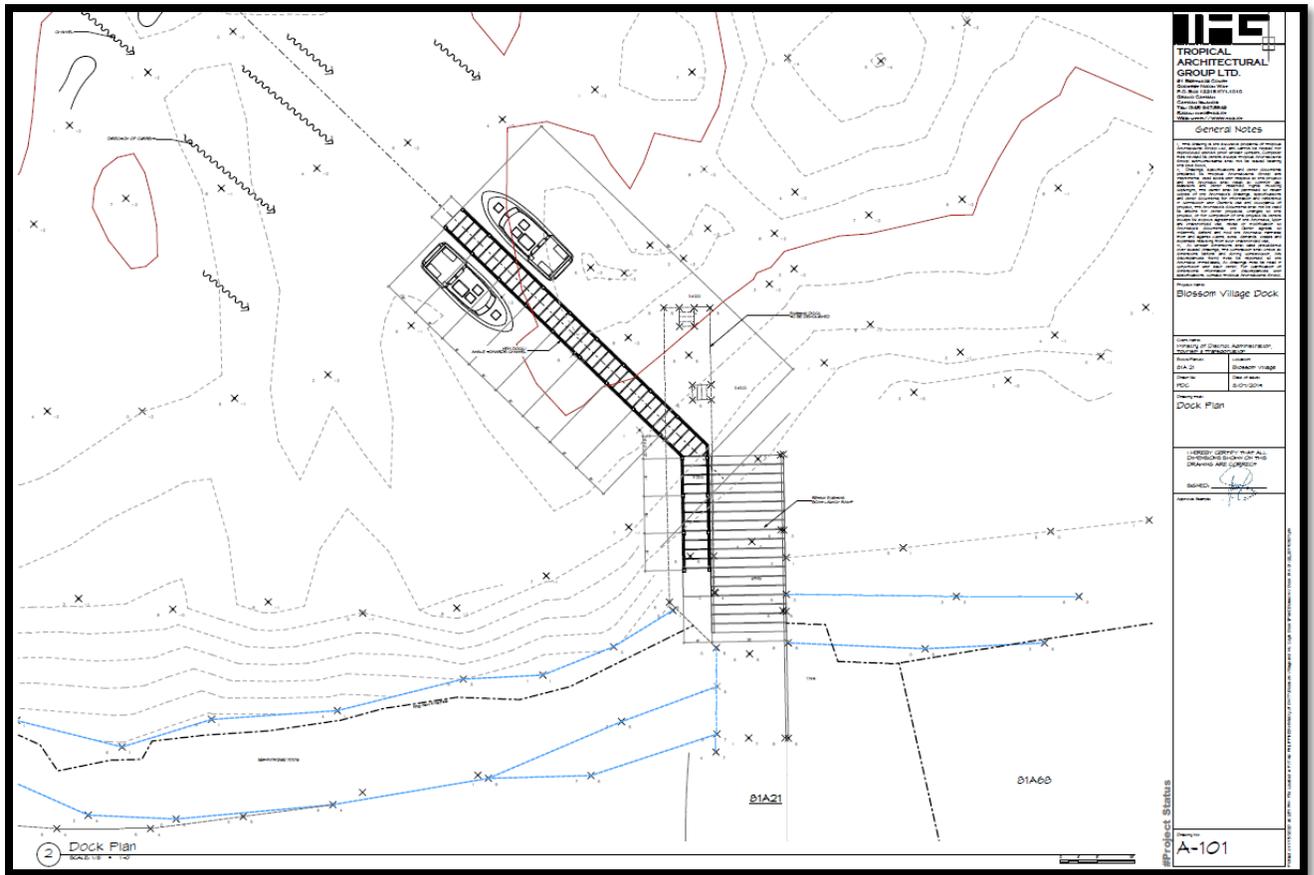


Figure 1: Plan extract showing the proposed dock
 (Source: TAG 2019, LIS 2013)

Background

In 2004 Hurricane Ivan destroyed the Government dock on Block 81A Parcel 22 (adjacent to the application site). In November 29, 2005 the District Commissioner applied for the rebuild of this dock, and it was approved on December 5, 2005. In 2010, a solid concrete dock was built on the adjoining parcel (Block 81A Parcel 21) next to the existing public launching ramp; the DOE has no records of coastal works permission being granted for this dock nor does the applicant. It is therefore reasonable to assume that the existing concrete dock is an unauthorised structure. It should also be noted that the 2005 approved dock, on the adjoining parcel, was never constructed.

After the concrete dock was constructed, the coastline began to significantly erode, especially to the east as shown in Figures 2 to 4. It is evident that the concrete dock prevented the longshore transport of sediment along this coastline. The erosion eventually got to the point where the parking lot on Block 81A Parcel 21 was at risk of being undercut with the potential of collapsing (see Figure 4). This appears to have prompted the Government to construct a rip rap retaining structure in 2012 to safeguard the site. Unfortunately, the placement of a hard structure along the water's edge has resulted in the beach immediately in front of the riprap never recovering and continued erosional impacts to the adjacent properties. The impact of the riprap can be seen in Figures 5 to 6.



Figure 2: Showing coastal erosion to the east of the dock in 2011 one year after dock is rectified and poured solid with concrete (Source: Ministry of DATT, January 2020)



Figure 3: Showing coastal erosion to the east of the dock in October 2011 (Source: Ministry of DATT, January 2020)



Figure 4: Showing car park immediately to the east of the cement dock (Source: Ministry of DATT, January 2020)



Figures 5 & 6: Showing the accumulated impacts from the riprap and cement dock (Source: DOE, Nov 2019)

Usability of the Existing Concrete dock

The lagoon is primarily used by local fishermen with small vessels and shallow drafts who are familiar with the area. This lagoon can be a challenge to navigate for those who are unfamiliar with the area due to shallow water depths and the presence of shallow bars consisting of coral heads and seagrass beds. Therefore, vessels with drafts of 3ft or bigger maybe not be able to fully navigate the lagoon; making the dock only accessible to a certain group of boaters. In addition, this particular coastline is known to be a high energy coast and depending on the wind direction, the dock can be unusable due to wind-driven wave activity. This can make it difficult to moor boats or use the launching ramp. In addition to this, the launching ramp has a very steep gradient, which can make it difficult for users to launch their boats.

Environmental Impacts

The proposed works will impact approximately 1,186sqft area of Crown property and is not within in a Marine Protected area. The site is immediately to the east of a beach which is identified by the DoE as being critical habitat for turtle nesting, based on 20 years of data collection. The proposed works will impact sensitive marine resources with the seabed in this area comprising a mix of seagrass, isolated coral heads, rubble and sand. The environmental implications of the proposed works are outlined below.

Removal of the Existing Dock

The dock is to be removed following the construction of a causeway alongside the dock, to allow an excavator to remove the concrete while moving back to shore. The applicant has indicated that to minimize the effects of sedimentation from the causeway, any material used in the creation of the causeway will be clean and will not contain fines which could create turbidity impacts in the marine environment. The applicant has also confirmed that there will be a silt screen installed to assist in mitigating against any turbidity/sedimentation that is created during the placement and removal of the causeway and from the removal of the concrete dock.

The removal of the concrete dock does not have any long term negative impacts but may have some potential benefits. Since the dock was acting as a groyne and unnecessarily blocking sediment transport, the removal of the dock will remove this obstruction. It is unclear how the effects of this removal will manifest itself for shoreline recovery, given that the rock revetment will potentially continue to act as a barrier to sediment transport. However, the DOE is in support of removing the existing dock and recommends that the recovery of the coastline is monitored.

Construction of a new dock

Direct environmental impacts will result from the construction of the proposed dock, mainly through the placement of the PVC pipes into the seabed. Sedimentation and turbidity can impact surrounding seagrass communities and marine organisms that depend on good water quality. Therefore it will be important to limit the impacts of sediment plumes generated during construction of the dock through the use of silt screens, which the applicant has indicated they will use.

Loss of benthic habitat

Seagrass and any isolated corals in the immediate footprint of the dock and causeway will be impacted. The causeway will crush and smother the seagrass/or coral. Operational impacts arise from the long-

term shading caused by the dock structure which reduces vital light penetration required for seagrass growth and productivity. Seagrass is an important feature and contributor to the health of the marine ecosystem by providing living habitat, food and oxygen to marine fauna. Seagrass also plays a vital role in maintaining good water quality and providing some coastal buffering to mitigate the erosional effects of wave energy. The Department supports the applicant's proposal to install decking positioned 4 feet above mean sea level, with spacing of ½ inch as currently shown on the application plans.

Sargassum Influxes

The Department notes that during periods of high influxes of Sargassum, docks that have side skirting tend to trap and hold in place Sargassum, compared those docks that have no skirting and is at the recommend height of 4ft above mean sea level. From the plans, the dock appears to have side-planking but there is a gap of 1ft between the side-planking and the water level. The DoE recommends that the side-planking is positioned as high above sea level as possible.

Turtle Nesting Habitat

The application site is located immediately adjacent to a critical turtle nesting beach. All marine turtle species are listed in Part 1 of Schedule 1 to the National Conservation Law, 2013, as being 'protected at all times'. Artificial lighting is a major threat to our already endangered sea turtle nesting populations in the Cayman Islands. These lights can deter female turtles from nesting or disorient them on their way to and from the sea when laying their eggs. In the ocean, bright lights on docks shining into the water can attract hatchlings, causing them to gather under the source of artificial light and increasing their vulnerability to predators that are also attracted to lights in the water.

We note that the applicant's submission does not indicate the use of any lighting on the dock at this time. Should the applicant wish to add lighting in the future, we recommend that any lighting proposed for the dock is turtle friendly and the following condition should be attached to the coastal works permit.

The applicant shall prepare and submit a plan to the Department of Environment for turtle friendly lighting, which minimises the impacts on sea turtles. All lighting shall be installed in accordance with the plan, to be approved by the DoE. Guidance on developing a lighting plan can be found in the DoE's Turtle Friendly Lighting: Technical Advice Note (September 2018).

Comments & Recommendations

The Department is in support of the removal of the existing dock and reconstruction of a new piled dock. Therefore, notwithstanding the above-mentioned impacts, the Department recommends this application for approval subject to the standard Permit conditions outlined in Appendix 1. Indicative Royalty, Environmental Mitigation and Administration & Monitoring fees are also outlined in Appendix 1.

Director – Department of Environment

On behalf of the National Conservation Council