MEMORANDUM

TO: Director of Planning **YOUR REF: F15-0228 (PAD15-0001)**

ATTN: Kristen Augustine, Planning Officer

FROM: Director of Environment

DATE: **18 November 2015**

SUBJECT: **Cayman Enterprise City PAD Application**

LOCATION: **21B/28REM1, 15C/29 and 15C/354**

Further to a review of the above noted application, the Department of Environment (DOE) provides the following comments and recommendations for consideration.

The applicant has met with the Department of Environment on a number of occasions to discuss the proposed development. During these discussions the Department outlined its concerns which stem primarily from the following issues:

1) The ongoing drainage and flooding issues in South Sound and seeking to ensure that the development doesn't contribute to these problems.
2) The loss of primary mangrove wetland habitat, in terms of ecological functions and carbon sequestration.
3) Maintaining good water quality in the proposed artificially created waterbodies.

We address each in turn.

1) Drainage and Flooding

The DoE is encouraged to see the use of sustainable drainage solutions incorporated in the PAD application, particularly given the stormwater retention functions that the South Sound drainage basin performs. The South Sound mangrove basin is a non-tidal mangrove wetland which is impounded by the beach ridge and South Sound road to the south, and higher elevation, drier land as well as the Linford Pearson highway to the north. The beach ridge and roads are relatively impermeable to sea water and the mangrove swamp is flooded principally by rainwater. Historically, excess rainwater not retained by the extensive mangrove wetland basin gradually percolated through the beach ridge and mangrove coastlines along the length of South Sound lagoon. Following the construction of South Sound Road and the beginning of developments which reclaimed portions of the mangrove wetland, this percolation of excess rainwater has been reduced substantially and the remaining undeveloped land functions as a water retention basin.

Detailed water level measurements in South Sound have shown that the mean surface water level within the swamp is higher than the mean sea level in South Sound (Davies, J.E. and Giglioli, M.E.C, 1977). During the wet season, impounded rain water remains within the basin and has limited means of escape. As more and more development is brought forward, the implications of removing the stormwater retention capacity of the basin becomes increasingly significant and problematic, due to potential flood risk for properties within the basin. As shown on Figure 1, the current application is only one of a series of developments coming forward in the basin.

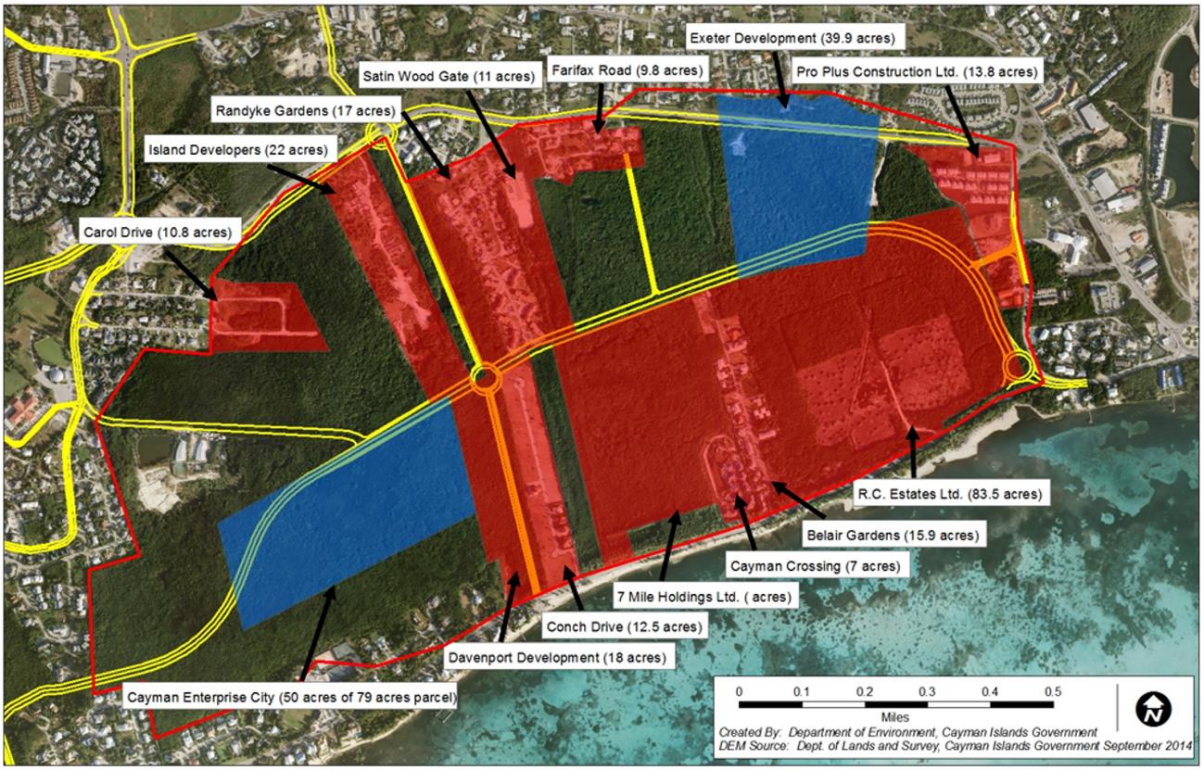

Figure 1: Aerial image showing permitted developments (highlighted in red) and proposed developments (highlighted in blue) within the South Sound drainage basin.

Furthermore, the plans which accompany this application show the location of a proposed road leading off Fairbanks Road through the centre of the South Sound basin. The DoE is concerned that unless this is appropriately planned with culverts and stormwater retention basins, this too will further exacerbate the flooding and drainage issues. Whilst the road is outside of the scope of the PAD application, the DoE urges the CPA to carefully consider the future of the road and the further modification to the drainage basin.

The DoE notes from the Development Statement that the applicant is going to undertake additional engineering, hydrological and biological analyses of the living lake and filtration wetlands. **If the CPA is minded to grant approval, it is recommended that the submission of these studies, for review by the DoE, is a condition of approval.**

2) <u>Loss of mangrove wetland habitat</u>

The DoE does not support the permanent loss of over 50 acres of primary mangrove habitat given the ecological function that it serves. Whilst the DoE supports the use of native landscaping, as outlined in the Development Statement, there is still a significant ecological loss arising from the project due to the transformation of 50+ acres of primary habitat. Furthermore, mangroves are extremely effective at sequestering carbon from the atmosphere. The removal of a large tract of mangrove habitat will reduce the island's natural carbon sequestration potential and the demucking of the site will release captured carbon back into the atmosphere.

The Development Statement advises that the masterplan will preserve as much of the existing landscape characteristics as possible, and prior to development a tree survey will be established to locate existing mature specimen trees with a view to incorporating them into the landscaping masterplan. **The DoE recommends that the requirement for a survey to identify area of mangrove**

habitat to be retained within the development should be a condition of planning permission, if the CPA is minded to grant approval. A condition should also be imposed to ensure the maintenance of landscaping.

Maintaining good water quality in the waterbodies

The DoE is concerned regarding the proposed excavation depth of up to 30 feet deep within the water body. In the DoE's experience, lakes with excavated depths of over 14 feet, and sometimes even shallower water bodies, which do not have an appropriate management strategy (including aeration of the water body), tend to have issues associated with poor water quality, including frequent fish kills, objectionable odours, unsightly algal blooms and water discolouration, which can be a nuisance to surrounding residents. Poor water quality is usually a result of limited vertical mixing and a subsequent drop in dissolved oxygen necessary to support life in the lake system, deeper lakes exacerbate this problem. Additionally deep excavations are susceptible to contamination from neighbouring septic tank disposal wells through ground water movements.

Discussions with the applicant has confirmed that Coastal Systems International has been retained to advise on water quality maintenance. Furthermore, the Development Statement confirms that additional engineering, hydrological and biological analyses of the living lake and filtration wetlands will be undertaken. The analysis will study water circulation patterns within the lake. **If the CPA is minded to grant approval, it is recommended that the submission of these studies, for review by the DoE, is a condition of approval.**

The DoE also recommends that prior to excavation of the lake, a detailed management plan for water quality monitoring and maintenance of all waterbodies is submitted to the DoE and Water Authority for approval.

The DoE support the inclusion of a vegetated buffer strip around the water's edge to further aid in attaining maximum water quality. This buffer will aid in the prevention of erosion, trap sediment, filter runoff, provide habitat for wildlife and help enhance the site amenities. The vegetation buffer will also provide a strip along the shoreline that can accept sheet flow from developed areas and help minimize the adverse effects of untreated stormwater.

The DoE also supports the inclusion of a littoral zone, created through sloping edges, which provides habitat for wading birds, substrate for light dependent aquatic plants and animals, and an important safety feature should a non-swimmer fall into the water body. The Department strongly recommends the use of native vegetation along the littoral zone of the lake as well as throughout the property when landscaping.

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Technical Review Committee

For Director of Environment