

FEASIBILITY STUDY ON NEAR NATURE CONTROL OF WATERFRONT RESTORATION IN THE PEARL RIVER ESTUARY AREA

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1 ABSTRACT

The Pearl River estuary is one of the typical coastal wetland types in Southern China, which has significant value in both ecological and economic aspects. Over the past 30 years, large numbers of river bank hardening projects, such as reclamation, river levee and wharf, have directly changed the hydrodynamic environment characteristics of the Pearl River estuary area, which has led to a chain of ecological environment deterioration problems. The crucial concept of near natural control is to reconstruct the environmental basement near the original or natural state in the damaged area by artificial means, so as to gradually restore the sustainable ecosystem and create a rich local landscape. This paper focuses on the near natural control spatial restoration of the hard engineering waterfront with low ecological function in the Pearl River estuary area. Based on the realistic regional hydrological characteristics of the Pearl River estuary area, we design a series of spatial waterfront modes according to the conditions and the needs of different surrounding land use. These spatial modes are constructed by waterfront slope reconstruction, soil matrix improvement, mangrove and associated plant community replanting, and other ecological engineering methods of varieties for spatial units. On the basis of meeting the functional requirements such as irrigation, freight transport and flood control, this research assesses whether near nature control is a feasible way to restore the natural material and energy flow of the Pearl River estuary waterfront effectively, and gradually restore the diversity of its ecosystem.

1.1 Keywords

landscape planning, near nature control, waterfront restoration, pearl river estuary , hydrological characteristics