CHAPTER 1 BACKGROUND OF THE PROJECT

Background

The Angat Afterbay Regulator Dam is located in the Angat-Maasim River Irrigation System (AMRIS), one of the three biggest irrigation systems in the Philippines (refer to the Location Map). Due to AMRIS's huge number of farmer beneficiaries, as well as its proximity to Metro Manila, agricultural production thereat significantly affects the economy of the region.

The Angat Afterbay Regulator Dam (hereinafter referred to as the Regulator Dam), one of the oldest irrigation dams in the Philippines, was constructed as a fixed type river weir without gates in 1926. To prevent malfunction of the facilities, improvement and rehabilitation works have been undertaken several times in the past. In 1967, after the completion of the Angat Dam in the upstream, steel sector gates were installed at the top of the regulator dam, aiming at the effective use of river water for irrigation, municipal water supply and power generation.

In the years following the installation of sector gates, structural problems associated with the quality and function of the regulator dam emerged. During the flood in 1990, one of the sector gates was seriously damaged, causing a serious problem on water use in the irrigation and urban areas. Despite the efforts made by the National Irrigation Administration (NIA), the original function as a regulator dam has not been fully regained due to budgetary constraints.

Subsequently, after the disastrous event in 1990, the Government of the Philippines requested the Government of Japan to extend technical and financial assistance through its Grant Aid Program for the rehabilitation of the dam's facilities, including the replacement of gates. Based on the request and the understanding between both governments, the rehabilitation project for the intake and flood discharge facilities was implemented from 1997 to 1999. Gate facilities were replaced and appurtenant works were undertaken so as to restore the original function of the intake including flood control. The facilities have been in good operating condition.

However, in December 1998, an inspection found serious structural damages on the downstream concrete aprons that were not included in the improvement project financed with grant aid in 1997-1999. Extensive scouring of the riverbed immediately downstream of the aprons was also found. Upon realizing the urgency of the situation and recognizing that further inaction would endanger the stability of the whole dam in the future, NIA undertook rehabilitation works by utilizing its own budget with further assistance from the ongoing project financed by the World Bank.

The rehabilitation works by NIA as mentioned above were only temporary in nature to protect the dam from further damage in subsequent floods. Several inspections of NIA personnel assisted by Japanese experts confirmed the urgency of the present situation and a decision was made to implement comprehensive protection works with permanent

structures before the onset of the rainy season in 2000. Faced with the same budgetary constraints, however, the Government of the Philippines was again prompted to request the Government of Japan for another Grant Aid assistance, this time, for the "Project for Rehabilitation of the Apron of Angat Afterbay Regulation Dam".

Basic Concept of the Basic Design Study

In accordance with the request of the Government of the Philippines, the present Basic Design Study was implemented with the main purpose of rehabilitating the damaged second apron and improving the riverbed to protect the existing apron and to prevent further riverbed erosion of the immediate downstream of the Regulator Dam. It has been confirmed that the whole dam facility, including the flood discharge gates formerly rehabilitated could also be seriously affected by the damage on the downstream aprons if proper countermeasures are not urgently provided.

The downstream aprons and riverbed stability are greatly influenced by riverbed variation in the downstream channel. Ever since the installation of the Regulator Dam in the Angat River, the supply of sediment from the upstream channel has decreased resulting in the significant riverbed degradation accelerated by the excessive exploitation of river sand and gravel. This riverbed degradation of the downstream channel has greatly affected the stability of the existing aprons and the riverbed, and the second apron was seriously damaged when a heavy flood occurred in December 1998. Therefore, an additional downstream apron and riverbed protection are proposed.

The Basic Design Study was implemented, focusing mainly on arresting the damage to the existing aprons in the downstream that could eventually affect the dam facilities in the upstream and the overall function of the dam, considering both the riverbed variation in the past and the further riverbed degradation in the downstream channel in the future.