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IMPLEMENTATION COMPLETION AND RESULTS REPORT

TF 018611

ON A

SMALL GRANT

IN THE AMOUNT OF USD 2.73 MILLION

TO THE

Republic of the Philippines

FOR THE

Preparation of a Program Towards Sustainable Flood Management in the Greater Metro Manila Area Project (P145237)

December 10, 2021

Water Global Practice

East Asia And Pacific Region

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ABBREVIATIONS AND ACRONYMS

AA	Administration Agreement
AIIB	Asian Infrastructure Investment Bank
COVID-19	Coronavirus Disease 2019
CPF	Country Partnership Framework
DENR	Department of Environment and Natural Resources
DFAT	Department of Foreign Affairs and Trade
DO	Development Objective
DoF	Department of Finance
DPWH	Department of Public Works and Highways
ECC	Environmental Compliance Certificate
ECQ	Enhanced Community Quarantine
EMB	Environmental Management Board
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESSD	Environmental and Social Safeguards Division
FPIC	Free, Prior, and Informed Consent
GAP	Gender Action Plan
GCQ	General Community Quarantine
GDP	Gross Domestic Product
GoP	Government of the Philippines
ICR	Implementation Completion and Results Report
IFR	Interim Financial Report
IP	Implementation Progress
ISR	Implementation Status and Results Report
JBIC	Japan Bank for International Cooperation
JICA	Japan International Cooperation Agency
NEDA	National Economic and Development Authority
NEDA-ICC	National Economic and Development Authority's Investment Coordination Committee
NGO	Non-Governmental Organization
PAD	Project Appraisal Document
PH-PTF	Australia-World Bank Philippines Development Trust Fund
PHRD	Japan Policy and Human Resources Development
PMF	Probable Maximum Flood
PoE	Panel of Experts
PPP	Public Private Partnership
PSC	Project Steering Committee
QCBS	Quality and Cost Based Selection
RVP	Regional Vice President
SCD	Systematic County Diagnostic
TA	Technical Assistance
ToR	Terms of Reference
TTL	Task Team Leader

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DATA SHEET

BASIC INFORMATION

Product Information

Project ID	Project Name
P145237	Preparation of a Program Towards Sustainable Flood Management in the Greater Metro Manila Area Project
Country	**Financing Instrument**
Philippines	Investment Project Financing
Original EA Category	**Revised EA Category**

Organizations

Borrower	Implementing Agency
Department of Finance	Department of Public Works and Highways

Project Development Objective (PDO)

Original PDO

The objective is to prepare priority projects, identified by the flood management master plan, that aim to improve flood management and resilience in and around Metro Manila.

FINANCING

	Original Amount (US$)	Revised Amount (US$)	Actual Disbursed (US$)
Donor Financing			
TF-18611	2,730,000	2,647,359	2,647,359
Total	**2,730,000**	**2,647,359**	**2,647,359**
Total Project Cost	**2,730,000**	**2,647,359**	**2,647,359**

KEY DATES

Approval	Effectiveness	Original Closing	Actual Closing
16-Sep-2014	19-Jun-2015	31-Jan-2017	30-Jun-2021

RESTRUCTURING AND/OR ADDITIONAL FINANCING

Date(s)	Amount Disbursed (US$M)	Key Revisions
24-Jan-2017	0.00	Change in Results Framework Change in Loan Closing Date(s) Change in Implementation Schedule
30-Jan-2018	0.00	Change in Results Framework Change in Loan Closing Date(s) Change in Implementation Schedule
31-Jan-2020	0.52	Change in Results Framework Change in Loan Closing Date(s) Change in Disbursements Arrangements Change in Implementation Schedule
29-Jun-2020	0.52	Change in Results Framework Change in Loan Closing Date(s) Change in Implementation Schedule

KEY RATINGS

Outcome	Bank Performance	M&E Quality
Moderately Satisfactory	Moderately Satisfactory	Substantial

RATINGS OF PROJECT PERFORMANCE IN ISRs

No.	Date ISR Archived	DO Rating	IP Rating	Actual Disbursements (US$M)
01	09-Dec-2015	Moderately Satisfactory	Moderately Satisfactory	0.00
02	16-Dec-2016	Unsatisfactory	Unsatisfactory	0.00
03	27-Jun-2017	Unsatisfactory	Unsatisfactory	0.00
04	13-Feb-2018	Unsatisfactory	Unsatisfactory	0.00
05	15-Aug-2018	Moderately Unsatisfactory	Moderately Unsatisfactory	0.30
06	13-Feb-2019	Moderately Satisfactory	Moderately Satisfactory	0.30
07	08-Aug-2019	Moderately Satisfactory	Moderately Satisfactory	0.30
08	10-Feb-2020	Moderately Satisfactory	Moderately Satisfactory	0.52
09	23-Dec-2020	Moderately Satisfactory	Moderately Satisfactory	0.52

ADM STAFF

Role	At Approval	At ICR
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Task Team Leader(s):	Joop Stoutjesdijk	Joop Stoutjesdijk
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I. PROJECT CONTEXT AND DEVELOPMENT OBJECTIVES

Context

1. The Philippines ranks third among countries most at risk for natural disasters, with typhoons and floods being the most devastating in terms of their economic and social impact. Typhoons and related flooding are regular events in the Philippines, with an average of 20 typhoons affecting the country per year. There has been a trend towards more numerous and more devastating floods in recent years, especially caused by human activities such as deforestation and rapid urbanization, and possibly by climate change.

2. Metro Manila, with about 15 percent of the country's population and contributing about 35 percent to the economy, lacks the ability to adequately deal with recurrent flooding, in particular for lack of flood management infrastructure. On September 26, 2009, one of the most severe tropical storms in history, Ondoy (internationally named Ketsana), affected Metro Manila. It caused substantial damage and losses, equivalent to about 2.7 percent of the Gross Domestic Product (GDP). The floods caused by Ondoy affected some 4.9 million people, with casualties accounting for 1,030 in Luzon, including 940 in and around Metro Manila. The flood also inundated the Laguna lakeshore areas for two to three months, a situation that was exacerbated by the two subsequent typhoons, named Pepeng and Santi, that followed within days of Ondoy.

3. The Disaster Risk Reduction and Management Act (Republic Act No. 10121) was approved in 2010, after Ondoy. This law aims to make disaster risk reduction and management (DRRM) a proactive approach, also considering climate change adaptation, and to put DRRM as the mainstream of development plans from the national to local level. The Philippine Development Plan for 2011-2016 also emphasized the importance of DRRM for building the disaster resilience of communities, institutional arrangements and measures for reducing disaster risks, and the relation with Climate Change Adaptation.

4. After Ondoy, the Government, with technical and financial support from the World Bank, prepared a Flood Management Master Plan for Metro Manila and Surrounding Areas (hereafter "the Master Plan").[1] The Master Plan, approved by the National Economic and Development Authority (NEDA) Board in September 2012, proposed a set of priority structural and non-structural measures to provide sustainable flood management and safely control against major flood events in Metro Manila. The total estimated cost for the implementation of the Master Plan is around PhP352 billion (US$7.5 billion) over a 20 to 25-year period, including cost for resettlement of people living in danger zones. The main elements of the Master Plan are:
   a. structural measures to reduce flooding from river systems that run through the city, including, as a priority measure, a high dam in the upper Marikina River catchment area to reduce the peak river flows entering the city during typhoon and other extreme rainfall events;

[1] Support for the Master Plan and sustainable flood management in the Metro Manila area was included in the World Bank's Country Partnership Strategy for the Republic of the Philippines (2015-2018, Report No. 78286-PH) under Engagement Area 4 – Resilience to Climate Change, Environment and Disaster Risk Management.

b. structural measures to eliminate long-term flooding in the flood plain of Laguna de Bay, including land raising or another similar development, to protect the population living along the shore against high water levels in the lake;
c. structural measures to improve urban drainage;
d. non-structural measures such as flood forecasting and early warning systems and community-based flood risk management; and
e. recommendations for an improved institutional structure to deal with flood management in an integrated manner.

5. The Master Plan is being implemented in phases. The Department of Public Works and Highways (DPWH) and the Metropolitan Manila Development Authority (MMDA), the agencies tasked with the planning, design, construction and management of floods in Metro Manila, financed some interventions such as dredging and improvements to a small number of flood pumping stations as part of item (c) of the Master Plan (mentioned above). In order to scale up such activities, the government started implementation of the US$500 million Metro Manila Flood Management Project (MMFMP – P153814), with support from the World Bank and the Asian Infrastructure Investment Bank (AIIB). The MMFMP started implementation in March 2018, with a current loan closing date of November 30, 2024.

6. The MMFMP is the first major phase of the implementation of the Master Plan which targets the improvement of flood management in selected areas in Metro Manila. The MMFMP includes: (i) constructing new and modernizing existing pumping stations, and improving their supporting infrastructure and associated drainage systems; (ii) improving solid waste management practices within the vicinity of drainage systems served by the selected pumping stations; and (iii) supporting the resettlement of Project Affected People which are mostly informal settlers.

7. The next major phase of the Master Plan implementation was intended to be item (a), the construction of the Upper Marikina Dam and other structural and institutional measures for the Pasig-Marikina River, which is the main river flowing through Metro Manila. The dam was to temporarily store flood waters upstream of the city to safely manage a flood with a 100-year return period to the ultimate discharges in Laguna de Bay and Manila Bay without causing flooding in the city. The dam was to be accompanied by a large Flood Retention Basin about ten km downstream of the dam site to further control the flow of flood waters to the city. The preparation of feasibility studies and designs of the Upper Marikina Dam was started with a US$3.2 million technical assistance (TA) grant (P145391) from the Australia-World Bank Philippines Development Trust Fund (PH-PTF) in February 2015.

8. At the same time that the PH-PTF grant was approved by the World Bank, the Japan Policy and Human Resources Development (PHRD) Trust Fund (the subject of this Implementation Completion and Results Report [ICR], hereafter “the grant”) was also approved to provide further assistance to the Philippine Government for the preparation of other priority projects identified in the Master Plan. The PHRD grant-funded work was originally intended for the design of and environmental studies for the Flood Retention Basin (which would complement the Upper Marikina Dam) as well as the flood forecasting system and institutional plans, which would have supported the next major phase of the implementation of the Master

Plan. During the design of the Flood Retention Basin, the consultants found that land limitations would not allow the construction of a basin that would be large enough to complement the operation of the dam. This triggered the need for bigger storage capacities upstream. With the World Bank's assistance, the DPWH project team and consultants looked at technical options to store more water upstream including raising the height of the Upper Marikina Dam or adding smaller dams on tributaries of the Pasig-Marikina River. The team concluded that increasing the height of the Upper Marikina Dam was the most feasible and economically efficient option. The grant funded the design updating work which increased the height of the Upper Marikina Dam, as well as the updating of the environmental studies. Details on all activities financed by the grant are summarized below.

Project Development Objectives (PDOs)

9. The objective of the Technical Assistance (TA) financed by the grant was to prepare priority projects, identified by the flood management master plan, that aim to improve flood management and resilience in and around Metro Manila.

Key Expected Outcomes and Outcome Indicators

10. The expected outcomes of this TA were priority projects for flood management and resilience that are prepared with engineering studies, economic studies, and social and environmental studies, up to a level ready for appraisal/financing by the government. Specifically, outcome indicators were: (i) proposals for Upper Marikina River structural measures fully designed that are technically, economically, socially, and environmentally sound and that are ready for appraisal; (ii) proposals for an integrated flood forecasting and early warning system fully designed and ready for appraisal; and (iii) proposals for institutional arrangements for sustainable flood management in the Metro Manila Area acceptable to the Government of the Philippines and key stakeholders and ready for implementation.

11. Some of the outputs from the grant-funded studies were intended to be part of the Pasig-Marikina River Basin Flood Management Project[2] (PMRBFMP), which would have featured the two main complementing structures for flood management, the Upper Marikina Dam and the Flood Retention Basin. The PHRD grant was intended for the design of the Flood Retention Basin, as well as other accompanying studies on flood forecasting early warning system and institutional arrangements.

Components

12. The grant financed the following components:

[2] Project preparation was dropped in August 2021.

Component A – Preparation of feasibility and design studies for priority flood management infrastructure. The original cost estimate for Component A was US$2.35 million, while the actual disbursement was US$2.66 million. This component financed multi-disciplinary teams of consultants to assist DPWH and other agencies to prepare feasibility studies for flood protection works in the Marikina River, upstream of the proposed Phase IV of the Pasig-Marikina River Channel Improvement Program.[3] It also financed the development of a comprehensive flood forecasting system and monitoring and early warning system for the Greater Metro Manila Area, in particular in the Pasig-Marikina River Basin. These studies were followed by design work that included the technical and engineering studies, economic studies, and social and environmental studies, up to a level ready for appraisal/financing.

Component B – Development of institutional arrangements for sustainable flood management. The original cost estimate for Component B was US$0.25 million, while the actual was US$0.7 million. This component financed a consulting firm to develop in detail the optimal institutional arrangements for flood management in the Greater Metro Manila Area.

Component C- Project management and administration. The original cost estimate for Component C was US$0.13 million. The funds were to be used by the DPWH for incremental operating expenses to manage the implementation of the grant. However, DPWH did not subsequently use the funds from the grant for agency operations as the operating cost for the administration of the grant was financed by the regular budget of DPWH.

II. OUTCOME

Assessment of Achievement of Each Objective/Outcome

13. The outcomes as stated in the PDO are prepared projects (investments) that were identified in the Master Plan. The TA successfully achieved these outcomes with feasibility studies and design studies completed for the following:
    a. A heightened Upper Marikina Dam including the updating of the Environment and Social Impact Assessment (ESIA);
    b. Design for the Flood Retention Basin downstream of Marikina River including the ESIA, and Land Acquisition and Resettlement Action Plan;
    c. Design of the Flood Forecasting and Early Warning System for Metro Manila; and
    d. Proposed Institutional Plan with recommended arrangements for Flood Management in Metro Manila.

[3] To reduce flood risks, the Government of the Philippines, with financial and technical support of the Japan International Cooperation Agency (JICA), Overseas Economic Cooperation Fund (OECF) and Japan Bank for International Cooperation (JBIC), made a number of flood management investments during the past decades, including floodways, embankments, and pumping stations. Previous projects by JICA have been implemented sequentially based on the flood prevention master plan for Metro Manila that was prepared in 1990. Of particular notice is the construction of the Manggahan Floodway and the four-phase Pasig-Marikina River Channel Improvement Program that is improving the capacity of the Pasig-Marikina River to discharge flood waters within Metro Manila. The optimum use of the infrastructure constructed under the Pasig-Marikina River Channel Improvement Program will require the infrastructure that was designed under the grant.

14. The designs formed the basis for the proposed PMRBFMP which was submitted by DPWH on July 17, 2020 for approval by the NEDA Investment Coordinating Committee (ICC). Prior to the submission, the Department of Finance had already requested that the PMRBFMP be included as a proposed World Bank project to assist the Philippines. It is notable that aside from being a flood management structure, the Upper Marikina Dam was also designed in a way so that a portion of the reservoir volume could be made available to deliver water (5 m^3 per second) to serve the population of Metro Manila. This design was considered in view of the 2019 water crisis that drastically reduced water supply in Metro Manila.

Overall Outcome Rating

15. **Relevance**. The relevance of the grant is high to this day because it is aligned with the Country Partnership Framework or CPF (for the period July 2019-December 2023, Report No. 143605-PH), the National Disaster Risk Reduction and Management Plan 2020-2030, and the need to manage recurrent flooding in the Pasig-Marikina River Basin. The TA remains supportive of one of the three focus areas of the CPF which aims to promote peace and build resilience, to address the country's core vulnerabilities of conflict alongside natural disasters and climate change. The Pasig-Marikina River Basin will continue to be at risk of flooding especially as more recurrent typhoons are to be expected in the Philippines due to climate change. A total of 94 destructive typhoons struck the country in 2011-2015, about ten percent more than the number of typhoons in 2006-2010, with almost triple the cumulative cost of damages. The Philippines is expected to be among the countries that will suffer long-term and repetitive damage from extreme weather patterns brought about by climate change. Without the necessary flood management structures which were laid out in the Master Plan, and which were studied and designed under this US$2.73 million grant and the US$3.2 million PH-PTF grant (which financed the original design of the Upper Marikina Dam), the risk of recurring flooding to households, livelihood and the economy in general will only become greater.

16. **Efficacy**. The PHRD grant supported the preparation of projects as originally planned in the TA. It resulted in the achievement of the two PDO indicators, namely, proposals for Upper Marikina River structural measures fully designed that are technically, economically, socially, and environmentally sound and that are ready for appraisal and proposals for an integrated flood forecasting and early warning system fully designed and ready for appraisal. All the planned activities, including the additional work on the design adjustment for the Upper Marikina Dam, were completed under a total of eight studies, listed below:

- Feasibility Study and Preparation of Detailed Engineering Design of the Flood Protection Works (Retention Basin) in the Marikina River: Pre-Feasibility Study Report, July 2019;
- Feasibility Study and Preparation of Detailed Engineering Design of the Flood Protection Works (Retention Basin) in the Marikina River: Feasibility Study Report, May 2020;
- Feasibility Study and Preparation of Detailed Engineering Design of the Proposed Upper Marikina Dam: Feasibility Study, April 2020;
- Environment and Social Impact Assessment (ESIA) Report – Pasig-Marikina River Basin Flood Management Project Retarding Basin;
- Retarding Basin Component Pasig-Marikina River Basin Flood Management Project Retarding Basin - Pre-Feasibility Land Acquisition Plan and Resettlement Action Plan in City of Quezon, National Capital Region;

- Market Value Appraisal of Various Lots in Quezon City and San Mateo (proposed site for the Retention Basin), March 24, 2019;
- Feasibility Study and Detailed Engineering Design of the Flood Forecasting and Warning System (FFWS), May 15, 2020; and
- Flood Risk Management Institutional Study, June 2021.

The feasibility and detailed design studies for the activities that were prepared with funding from the grant were packaged under the PMRBFMP proposal which was submitted to the government for approval for World Bank funding. Unfortunately, the PMRBFMP did not move forward as intended (details below). At completion of the grant, the designs were sufficiently complete for tendering the project for construction. Thus, in terms of efficacy of achieving the PDO, the TA is rated *substantial.*

17. **Efficiency.** The TA went through four restructurings with a total extension of the closing date of 54 months due to a number of reasons. Initially, the procurement of consultants was delayed by six months due to a transition to a new government which led to a review of the Master Plan and the grant activities. In addition, DPWH required that consultants for the PH-PTF Grant for the design of the Marikina Dam be procured first and the feasibility study underway before procuring consultants for the PHRD Grant for the Retention Basin. This required that the closing date of the PHRD grant be extended. In the end, DPWH and the World Bank agreed that it would be advantageous that the consultants for the dam design be engaged for the Retention Basin as well, considering the supplemental nature of the two structures. When changes in the design of the Marikina Dam became necessary to consider land limitations for the Retention Basin, supplementary contracts were signed for the re-design of the Dam. The re-design as well as changes in the accompanying environmental and social studies on the dam were all additional work funded by the PHRD grant. Further delays were experienced with the onset of the COVID-19 pandemic. Due to the long implementation period, the *TA efficiency is rated modest*.

18. **Overall Rating**. The overall rating for the TA is *Moderately Satisfactory (MS)* given the high relevance of the PDO, substantial efficacy in the achievement of the PDO and the modest efficiency due to the prolonged completion time of the TA.

Other Outcomes and Impacts

19. **Institutional Strengthening**. The TA provided institutional strengthening to the unit in DPWH that was responsible for the implementation of the grant. This was mainly done through training sessions and regular interaction with the World Bank task team, as well as the consultants. The strengthening was both on the technical design of a dam project as well as on the World Bank processes for procurement, environment and social safeguards, and project implementation and management. The institutional strengthening has laid the foundation for a smoother implementation of future World Bank-funded projects with DPWH.

20. **Gender**. Gender issues were addressed in the Environment and Social Impact Assessment and the Land Acquisition and Resettlement Action Plan. Specific gender sensitive actions identified were: (i) commitments on gender equality; (ii) equal employment opportunity granted to women in project implementation; (iii)

dedicated resources for supporting gender mainstreaming in the dam construction project; (iv) technical skills education and entrepreneurship training of women as part of post-relocation activities; and (v) promotion of nutrition of lactating mothers who will be affected by relocation.

21. **Poverty Reduction and Shared Prosperity**. The Upper Marikina Dam and the Retention Basin which were designed with grant support would have drastically reduced the vulnerability of disadvantaged people to floods which could wash away their homes and livelihoods. Recurrent flooding has the greatest negative impact on the poorest populations who generally live in higher-risk flood-prone areas. This kind of risk exposure restricts people's ability to exit from poverty and inhibits growth.

III. KEY FACTORS THAT AFFECTED IMPLEMENTATION AND OUTCOME

22. The TA achieved its outcomes but faced significant delays which resulted in four restructurings and an overall closing date extension of 54 months. The key factors which affected the implementation were:

- **Elections and change in government within the first year of grant implementation led to a new review and a different procurement strategy.** The grant became effective in June 2015 and national elections happened in May 2016. During this period, DPWH did not carry out any procurement as the outgoing administration decided to leave the decision on the grant to the incoming administration. The new government conducted a review of the flood management master plan and agreed to pursue the design of the Marikina Dam. However, DPWH decided that it would like to have a consultant in place for the dam design under the PH-PTF grant and have these services well underway before recruiting consultants for the activities under the PHRD grant. This required that the closing date of the PHRD grant be extended and brought in line with the PH-PTF grant closing date. The government requested a three-year extension of the closing date of the PHRD grant, however the World Bank initially approved only a one-year extension of the closing date to January 2018 due to lack of implementation progress. Any further extension was to be assessed based on actual progress of implementation. Eventually the PHRD grant was extended by another two years, which was followed by additional extensions, mostly caused by the delaying impact of the COVID pandemic.

- **Linkage of the design of the Upper Marikina dam and the Retention Basin necessitated adjustments in the design of both structures and affected other consultancy works.** The feasibility study for the Retention Basin funded by the grant revealed that basin excavation would have to be very deep due to insufficient land available, which would have been technically difficult and very expensive. After a thorough technical assessment, it was agreed that it would be technically and operationally better to limit the volume of the retention basin and increase the storage upstream. The final agreed option was to increase the height of the Marikina Dam by less than ten meters, which required an update of the design of the Marikina Dam and the social and environmental studies, which were all done under the PHRD Grant. This required another extension of the closing date of six months from January 2020 to June 2020 as the new scope required additional field and design work as well as updates of the ESIA, Land Acquisition and Resettlement Action Plan, and Indigenous Peoples Plan.

- **The COVID pandemic caused delays in the conduct of work of the consultants as strict lockdowns and restrictions were put in place by government.** As consultants were starting their work on the revised scope in early 2020, the government in March 2020 imposed an enhanced community quarantine (ECQ) for Metro Manila and neighboring provinces in response to the COVID-19 pandemic. The three consulting teams were also locked down and the activities that were expected to be carried out under the grant could not be worked on, including the remaining field works needed to complete the studies. This delay necessitated a one-year extension of the closing date from June 2020 to June 2021, but even then field work had to be limited due to the ongoing pandemic. The works were nevertheless completed satisfactorily in June 2021, despite the restrictions.

23. The outcomes expected of this TA, i.e., studies and designs of priority projects in the Master Plan, were all achieved albeit with substantial delays. However, the long-term development outcome of flood control and management in the Pasig River-Marikina Basin may not be fully realized. As of the preparation of this ICR, the government has indicated that the dam will not be constructed as originally planned. However, some of the studies from this TA will likely still be used by the government in preparing alternative solutions to flood management in the Pasig River-Marikina Basin.

IV. BANK PERFORMANCE, COMPLIANCE ISSUES, AND RISK TO DEVELOPMENT OUTCOME

24. The World Bank provided strong and consistent support to the DPWH and its consultants throughout the implementation. The task team met with DPWH and the consultants on a regular basis to provide assistance to the counterparts. The review and discussions between the consultants, DPWH, and the World Bank task team led to a change in the design of the Upper Marikina Dam. The World Bank also hired its own consultants to provide support to the ESIA consultants and ensure alignment with Environmental and Social Framework[4] standards. Delays in the processing of payments to consultants were regularly flagged and appropriate assistance provided to DPWH.

25. The TA was classified as Category A and required a full environmental assessment. The project supported only the preparation of feasibility studies and engineering designs of a priority structural investment that was identified in the Master Plan and environmental and social assessments for this priority investment. Nevertheless, OP 4.01 was triggered since the studies were expected to lead to investments expected to have positive but also potentially adverse environmental and social impacts if not managed adequately. The TA also triggered the following safeguards policies during appraisal: Natural Habitats OP/BP 4.04, Forests OP/BP 4.36, Physical Cultural Resources OP/BP 4.11, Indigenous Peoples OP/BP 4.10, and Involuntary Resettlement OP/BP 4.12. The DPWH conducted an ESIA with an Environmental and Social Management Plan (ESMP) and a land acquisition and resettlement action plan for the downstream Retarding Basin. The FS for the Upper Marikina Dam which included the ESIA for the Dam was likewise updated in this TA. The ESIA for both the Retarding Basin and the Upper Marikina Dam detailed the environmental impacts and the corresponding mitigation plans for each.

[4] The TA was prepared under the Safeguards Policies, however, it later adopted the Environmental and Social Framework which was launched in the Bank in October 2018 and which replaced the Safeguards Policies. The ESF sets out the World Bank's commitment to sustainable development, through a Bank Policy and a set of Environmental and Social Standards that are designed to support Borrowers' projects, with the aim of ending extreme poverty and promoting shared prosperity.

26. FM and procurement compliance were regularly reviewed during the Implementation Support Reviews conducted throughout the TA. FM compliance reviews pointed out delays in disbursement and in submission of Interim Financial Reports, which were later addressed. For procurement, substantial delays were experienced in the procurement of consultants, which were due to the transition to a new government and to developments in the PH-PTF grant for the FS and detailed design of the Upper Marikina Dam. Once the alignment of the Dam and the Retarding Basin designs were finalized, procurement of consultants proceeded accordingly.

V. LESSONS LEARNED AND RECOMMENDATIONS

27. **The design process for a complex infrastructure project like the Upper Marikina Dam and the complementary Retention Basin must be planned for efficiency alongside its funding sources.** The proposed PMRBFMP had two interlinked components, the Upper Marikina Dam and the Flood Retention Basin. Designing and aligning the components of such a flood management system is a complex process that requires iterations and optioneering, which impact on the design of each component. The entire design process would have been better facilitated with the use of a single fund, which would have allowed easier consolidation and alignment of the components. The use of two separate grants for the design of the Upper Marikina Dam and the Flood Retention Basin proved to be more complicated as the task team had to consolidate designs, completion dates, action items and even contracts of consultants across the two grants. Most of the time spent for the restructuring of the two grants would likely have been saved with a single fund source. Alternatively, another option is for some parts of the design work to have been funded by the government. This may be a lesson for the World Bank on funding design studies for large-scale project systems with interlinked components.

28. **The team's quick response to manage the impact of the COVID-19 pandemic on the TA was timely and appropriate.** The restrictions following the COVID pandemic necessitated adjustments to how team members conducted their work. During the quarantine, all work had to shift online. There were limitations on this approach especially in the conduct of community surveys, obtaining information from government agencies, and general coordination work. The early call for a one-year extension of the grant in June 2020 (only three months into the pandemic) provided relief to the consultants involved and in the end was sufficient to complete the work.

ANNEX 1. RESULTS FRAMEWORK AND KEY OUTPUTS

A. RESULTS INDICATORS

A.1 PDO Indicators

Objective/Outcome: Prepare priority projects, identified by the flood management master plan, that aim to improve flood management and resilience in and around Metro Manila.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Proposals for Upper Marikina River structural measures fully designed that are technically, economically, socially, and environmentally sound and that are ready for appraisal.	Number	0.00 22-Dec-2014	1.00 31-Jan-2017	2.00 30-Jun-2021	2.00 30-Jun-2021
Comments (achievements against targets):					

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Proposals for an integrated	Number	0.00	1.00	1.00	1.00

flood forecasting and early warning system fully designed and ready for appraisal.		22-Dec-2014	31-Jan-2017	30-Jun-2021	30-Jun-2021

Comments (achievements against targets):

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Proposals for institutional arrangements for sustainable flood management in the Greater Metro Manila Area acceptable to the Government of the Philippines and key stakeholders and ready for implementa	Number	0.00 22-Dec-2014	1.00 31-Jan-2017	1.00 30-Jun-2021	1.00 30-Jun-2021

Comments (achievements against targets):

A.2 Intermediate Results Indicators

Component: Preparation of feasibility and design reports for priority flood management infrastructure.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion

Feasibility study for the proposed interventions in Upper Marikina River completed.	Number	0.00 22-Dec-2014	1.00 30-Jun-2016	2.00 30-Sep-2020	2.00 30-Sep-2020

Comments (achievements against targets):

Component: Development of institutional arrangements for sustainable flood management.

Indicator Name	Unit of Measure	Baseline	Original Target	Formally Revised Target	Actual Achieved at Completion
Mid-term report with draft proposals for institutional arrangements for sustainable flood management completed.	Number	0.00 22-Dec-2014	1.00 30-Jun-2016	1.00 31-Mar-2021	1.00 30-Apr-2021

Comments (achievements against targets):

B. ORGANIZATION OF THE ASSESSMENT OF THE PDO

Objective/Outcome 1: To prepare priority projects, identified by the flood management master plan, that aim to improve flood management and resilience in and around Metro Manila	
Outcome Indicators	1. Proposals for Upper Marikina River structural measures (heightened Marikina Dam and Retention Basin) fully designed that are technically, economically, socially, and environmentally sound and that are ready for appraisal. 2. Proposals for an integrated flood forecasting and early warning system fully designed and ready for appraisal. 3. Proposals for institutional arrangements for sustainable flood management in the Greater Metro Manila Area acceptable to the Government of the Philippines and key stakeholders and ready for implementation
Intermediate Results Indicators	1. Feasibility study for the proposed interventions in Upper Marikina River completed. 2. Mid-term report with draft proposals for institutional arrangements for sustainable flood management completed.
Key Outputs by Component (linked to the achievement of the Objective/Outcome 1)	Outcome 1: 1. Feasibility Study and Preparation of Detailed Engineering Design of the Flood Protection Works in the Marikina River: Pre-Feasibility Study Report, July 2019

	2. Feasibility Study and Preparation of Detailed Engineering Design of the Flood Protection Works (Retention Basin) in the Marikina River: Feasibility Study Report, May 2020 3. Feasibility Study and Preparation of Detailed Engineering Design of the Proposed heightened Upper Marikina Dam: Feasibility Study, April 2020 4. Environment and Social Impact Assessment (ESIA) Report – Pasig-Marikina River Basin Flood Management Project Retarding Basin 5. Retarding Basin Component Pasig-Marikina River Basin Flood Management Project Retarding Basin - Pre-Feasibility Land Acquisition Plan and Resettlement Action Plan in City of Quezon, National Capital Region 6. Market Value Appraisal of Various Lots in Quezon City and San Mateo (proposed sites for the retarding basin) Outcome 2: 7. Feasibility Study and Detailed Engineering Design of the Flood Forecasting and Warning System (FFWS) Outcome 3: 8. Flood Risk Management Institutional Study

ANNEX 2. PROJECT COST BY COMPONENT

Components	Amount at Approval (US$M)	Actual at Project Closing (US$M)	Percentage of Actual costs/Planned costs (US$M)
Component A - Preparation of feasibility and design studies for priority flood management infrastructure	2.35	2.66	113
Component B - Development of institutional arrangements for sustainable flood management	0.25	0.07	28
Component C - Project management and administration	0.13	0[5]	0
Total	**2.73**	**2.73**	**100**

[5] DPWH did not use the funds from the grant for agency operations as the operating costs were absorbed by the regular budget of DPWH.

ANNEX 3. RECIPIENT, CO-FINANCIER AND OTHER PARTNER/STAKEHOLDER COMMENTS

The ICR was shared with the counterparts and in a letter dated October 1, 2021, DPWH provided the following comments.

This is to inform that we have reviewed the draft Implementation Completion and Results (ICR) Report for the above subject grant. The draft ICR has presented fairly the achievement of the project's development objective (PDO) to prepare priority projects, identified by the flood management master plan, that aim to improve flood management and resilience in and around Metro Manila.

We concurred with the Bank's assessment that several factors affected the project's implementation and outcome resulting to the grant's restructurings and an overall extension of 54 months. Notably, is the COVID pandemic that significantly impacted the Consultant's conduct of field works and liaisons with the stakeholders. Nevertheless, the project's expected outcomes were eventually realized amidst substantial delays.

It is likewise unfortunate that the long-term development outcome of flood control and management in the Pasig-Marikina River Basin may not be fully realized under the Bank's assistance as the development of the dam in the Upper Marikina area has been taken over by the private sector. We would like to assure, however, that the Department is very much keen on pursuing the implementation of the Flood Retention Basin under the Bank's financial auspices. A separate letter will be communicated to the Bank regarding this matter.

ANNEX 4. SUPPORTING DOCUMENTS

1. Feasibility Study and Preparation of Detailed Engineering Design of the Flood Protection Works (Retention Basin) in the Marikina River: Pre-Feasibility Study Report, July 2019
2. Feasibility Study and Preparation of Detailed Engineering Design of the Flood Protection Works (Retention Basin) in the Marikina River: Feasibility Study and Design Reports, May 2020
3. Feasibility Study and Preparation of Detailed Engineering Design of the Proposed Upper Marikina Dam: Feasibility Study, April 2020
4. Environment and Social Impact Assessment (ESIA) Report – Pasig-Marikina River Basin Flood Management Project Retarding Basin
5. Retarding Basin Component Pasig-Marikina River Basin Flood Management Project Retarding Basin - Pre-Feasibility Land Acquisition Plan and Resettlement Action Plan in City of Quezon, National Capital Region
6. Market Value Appraisal of Various Lots in Quezon City and San Mateo (proposed sites for the retarding basin), March 24, 2019
7. Feasibility Study and Detailed Engineering Design of the Flood Forecasting and Warning System (FFWS), May 15,2020
8. Flood Risk Management Institutional Study
9. Implementation Status and Results Reports (10)
10. Aide Memoires
11. Restructuring Papers (RES42360, RES40336, RES31343, RES26819)
12. Project Paper, April 30, 2014