



Republic of the Philippines
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
CENTRAL OFFICE
Bonifacio Drive, Port Area, Manila

097-13 DPWH

03-31-2022

MAR 14 2022

DEPARTMENT ORDER)

NO. 47
Series of 2022

At 3/31/2022

SUBJECT: **Guidelines on the Conduct of Feasibility Studies for Roads, Bridge, Flood Control, Drainage and Other Water-Related Projects**

In order to further systematize the planning process of the Department, through quality Feasibility Studies, herewith attached for strict compliance is the set of Guidelines on the Conduct of Feasibility Study for Road and Bridge Projects which provides (i) the definition of Feasibility Study (FS), Pre-FS, and Project Concept Paper (PCP); (ii) the role of DPWH Offices in the conduct, review and acceptance of FS; and (iii) the FS and PCP requisite documents prior to inclusion in the Public Investment Program (PIP) and funding for construction.

Furthermore, in order to streamline the current planning process on Flood Control, Drainage and other related projects through quality Feasibility Studies, included in this issuance is the Guidelines on the Conduct of Feasibility Study for Flood Control, Drainage and other water-related Projects. The guidelines provide: (i) the definition of a Master Plan (MP), FS, Pre-FS, and Project Impact Analysis (PIA); (ii) the role of DPWH Offices in the conduct, review, and acceptance of FS; and (iii) the MP, FS, Pre-FS, and PIA as requisite documents prior to inclusion in the PIP and funding for construction.

This order shall amend parts of the following previous issuances. The amendments are indicated in the table that follows:

- (1) *DO 27, s.2010* – Creation of the DPWH Investment Coordination Committee (DPWH ICC) to Rationalize Project Investments; and
- (2) *DO 30, s.2020* – Guidelines and Checklists of Requirements in the Preparation of Engineering Plan for Feasibility Study (FS) and Conceptual Design Plan for Highways, Bridges and Water Engineering Projects

Provisions under EXISTING Department Orders	Specifications in THIS Department Order
Under D.O. 27, series of 2010 "The DPWH ICC shall be supported by a Technical Working Group (TWG) and assisted by a Secretariat. The composition of the DPWH ICC, TWG, and Secretariat shall be made under a separate Special Order. "	Under Item A-3 of this set of Guidelines (for Road and Bridge Projects): "Planning Service shall form part of the Department's Investment Coordination Committee (DPWH ICC) as its secretariat and shall, through its PPD: (i) consolidate all FS and Master Plans for review, acceptance, prioritization and uploading in the Department's online database; and (ii) create a Technical Working Group, if the need arise (see Annex E-1), which will assist the ICC, provide direction and guidance, monitor the progress of the study, and review and evaluate the results and recommendations of the study."

Provisions under EXISTING Department Orders	Specifications in THIS Department Order
<p>Under D.O. 27, series of 2010</p> <p>"The DPWH ICC shall be supported by a Technical Working Group (TWG) and assisted by a Secretariat. The composition of the DPWH ICC, TWG, and Secretariat shall be made under a separate Special Order."</p>	<p>Under Item B-8 of this set of Guidelines (for Flood Control and other similar/ related Projects):</p> <p>"The Planning Service, through PPD, shall: (i) ensure that there is no duplication in the studies conducted by the UPMO-FCMC, the ROs and/or the DEOs to ascertain efficiency of use of available resources; (ii) create a Steering Committee should the need of elevating the project to higher authorities arise; (iii) create a Technical Working Group (see Annex E-2) which will provide direction and guidance during the course of the study, monitor the progress of the study, review, evaluate and accept/ approve the results and recommendations in the study³; and (iv) consolidate all MPs, FS and PIAs for uploading in the Department's database for public viewing.</p>
<p>Item A of D.O. 30, series of 2020</p> <p>"Feasibility Study Engineering Plan: Part of the study report shall be the preparation of engineering plans for three (3) or more possible options/ schemes in the alignment and/or design of structures considering the technical, financial, environmental, aesthetic, economic and social aspects, among others, in order to determine the most viable scheme."</p>	<p>Under sub-item c of Item A-5 of this set of Guidelines:</p> <p>"The selection process shall use a comprehensive Multi-Criteria Analysis (MCA) which shall also include strategic fit (<i>see item 9.1</i>), social impact (<i>see item e</i>) and impacts to environment (<i>see item f</i>), unless otherwise there is an utmost need to prepare Engineering Plans for all the options formulated as deemed necessary by the Director for Planning Service." Items 9.1, e, and f are further explained in the attached Guidelines.</p>

This Order shall take effect immediately.



ROGER G. MERCADO
Acting Secretary

Department of Public Works and Highways
Office of the Secretary



WIN2Q46655

Encl(): Guidelines on the Conduct of FS for Road And Bridge, Flood Control and Other Water-Related Projects

4.1.2 PZL/AST/EFA/MMM

³ As stipulated in item 3, DPWH Department Order No. 33, s. 2017: Guidelines for Streamlining River Basin Master Plan and Feasibility Study of Flood Control and Drainage

GUIDELINES ON THE CONDUCT OF FEASIBILITY STUDY FOR ROAD AND BRIDGE, FLOOD CONTROL AND OTHER WATER-RELATED PROJECTS

A. For Road and Bridge Projects

1. The Planning Service of the DPWH Central Office, through its Project Preparation Division (PPD) with support from its Environmental and Social Safeguards Division (ESSD), and its counterpart in the DPWH Regional Offices (ROs) and District Engineering Offices (DEOs) all hold the mandate of conducting and/or facilitating the conduct of Feasibility Studies (FS) before implementing public infrastructure projects.
2. Planning Service, through PPD, shall oversee the conduct of FS as to its compliance with the existing national guidelines on project appraisal.
3. Planning Service shall form part of the Department's Investment Coordination Committee (DPWH ICC)⁸ as its secretariat and shall, through its PPD: (i) consolidate all FS and Master Plans for review, acceptance⁹, prioritization and uploading in the Department's online database; and (ii) create a Technical Working Group, if the need arise (see **Annex E-1**), which will assist the DPWH ICC, provide direction and guidance during the course of the study, monitor the progress of the study, and review and evaluate the results and recommendations of the study.
4. Shall projects require submission to National Economic and Development Authority (NEDA), in view of their revised guidelines on Project Screening, for consideration and approval of NEDA, Planning Service shall be the forefront office in all Department's activities prior to NEDA approval of road and bridge infrastructure projects which include, among others, conduct/review of FS, preparation of requisite documents, and submission of the same to the NEDA (cover letter shall be signed by the Secretary).
5. A **Feasibility Study** (FS) shall pertain to the whole gamut of analyses carried out to determine if the project can be implemented, can achieve the desired goals and, more importantly, if it will result in net benefits. It shall include technical and economic analyses, traffic and development impact study, social and environmental impact assessment, institutional analysis, implementation plan, the proposed method of procurement, and if necessary, financial analysis and market risk assessment.¹⁰
 - a. **Traffic Impact Study** shall include assessment of the existing and future traffic condition in the project influence area¹¹ based on capacity, safety measurements, and other relevant factors, comparison of identified alternatives in terms of improvement in network performance, a comprehensive traffic management plan during construction and the

⁸ Objectives and responsibilities of the DPWH ICC are as stipulated in Department Order No. 27, series of 2010: "Creation of the DPWH Investment Coordination Committee (DPWH ICC) to Rationalize Project Investments"

⁹ Planning Service, through Project Preparation Division, is mandated to conduct Master Planning and Feasibility Studies in support to the plans and programs of DPWH. (Planning Service Handbook v.05, Department of Public Works and Highways, Manila, 2018, p.25)

¹⁰ Based on *Guidelines on Provincial/Local Planning and Expenditure Management, Volume 5: Project Evaluation and Development*. Published by NEDA and Asian Development Bank (ADB) in 2007. Accessible at: www.neda.gov.ph/wp-content/uploads/2013/10/PLPEM-Guidelines-Vol5.pdf

¹¹ *Proposed Philippine Traffic Impact Assessment Guidelines*. University of the Philippines National Center for Transportation Studies Foundation, Inc. Accessible at: ncts.upd.edu.ph/old/docs/TIA_Guide_for_the_Philippines.pdf

corresponding disruption especially for projects located in highly developed or urbanized areas.

- b. **Development Impact Study** shall contain an in-depth analysis of long-term sustained effect of the project or intervention to the different aspects of the lives of the populace. This may include, among others, impacts on people's livelihood and general welfare.
- c. **Technical Analysis** shall include (1) formulation of options and selection thereto based on, among others, geographical, geological, geotechnical characteristics of the project site; and (2) the design of infrastructure features of the selected option in accordance with the Department's infrastructure policies, responsibilities and accountabilities (DO No.164, s.2016 or as may be superseded). **The selection process shall use a comprehensive Multi-Criteria Analysis (MCA)** which shall also include strategic fit (*see item 9.1*), social impact (*see item e*) and impacts to environment (*see item f*), unless otherwise there is an utmost need to prepare Engineering Plans for all the options formulated as deemed necessary by the Director for Planning Service. The analysis shall also include discussion on innovation in construction methods that will enhance the quality of the infrastructure and/or increase the efficiency of project implementation.
- d. **Economic Analysis** shall present the projects' economic viability through identification and quantification, to the extent possible, of economic benefits such as reduction in vehicle operating expenses/ cost, decrease in harmful emissions and improvement in land use. The full analysis shall be inclusive of economic indicators such as Net Present Value (NPV), Benefit-Cost Ratio (BCR) and Internal Rate of Return (IRR), and the consequent recommendations based on the obtained values for the indicators.
- e. **Social Impact Assessment** shall involve identification of the likely affected persons/ families and assets, the extent/ significance of the potential risks such as (or changes in) health and lifestyle, estimated acquisition cost in accordance with Republic Act 10752, and the time table for the implementation of the Right-of-Way Action Plan (RAP) including the acquisition. The assessment shall also consider and incorporate gender-specific needs in relation to the project, complying with the Harmonized Gender and Development Guidelines (HGDG) and the Gender and Development (GAD) Toolkit.¹² For projects that are covered by RA 8371 (Indigenous Peoples' Rights Act of 1997), the assessment shall also contain an Indigenous People Action Plan (IPAP)¹³ complying with relevant National Commission for Indigenous People (NCIP) Administrative Orders.
- f. **Environmental Impact Assessment** shall cover the existing condition of the proposed project on the four (4) environmental components (land, water, air/ noise and people) within the impact area. Further, it shall identify, predict and evaluate the extent and significance of the key potential impacts of the project

¹² DPWH Department Order No. 48, series of 2011 (Guidelines on Mainstreaming Gender Equality Actions in Infrastructure Projects)

¹³ Chapter 4 (Indigenous who will be Affected by the Project), p.22-32, Land Acquisition, Resettlement, Rehabilitation, and Indigenous Peoples Policy (LARRIP) 3rd ed., DPWH

from pre-construction to abandonment and shall formulate necessary mitigating measures and actions to address the impacts identified on the project area.¹⁴

- g. **Institutional Analysis** shall present the functional structure and serve as the stakeholder analysis of all government and private institutions, development organizations, special interest groups, and all members of the civil community that implement and support public projects and initiatives.
 - h. **Implementation Plan** shall present the most suitable schedule and manner of execution of the project such as construction phasing and packaging in consideration of the various schemes/ scenarios proposed.
 - i. **Mode of Financing** shall refer to the evaluation of at least three alternative financing schemes which include General Appropriation Act (GAA), Official Development Assistance (ODA), and Public – Private Partnership (PPP). Should the project be suitable for the PPP scheme, a financial analysis (see *item j*) and a market risk assessment (see *item k*) shall be required.
 - j. **Financial Analysis** is conducted to determine the financial sustainability of the project and its overall success. This part of the study shall contain discussion on aspects such as: assumptions in estimating the financial indicators, sensitivity analysis, and other measures of financial viability such as, but not limited to, cost effectiveness.¹⁵
 - k. **Market Risk Assessment** is a systematic study of project-related uncertainties and market risks. Market risk is defined as “the extent to which a private sector proponent’s infrastructure service offering is exposed to demand risk prevailing market constraints related to the business cycle and conditions, perceived affordability of tariff, willingness to pay, and available alternatives to the service.”¹⁶
6. A Feasibility Study (as in item 5) shall be required for projects that: (i) have total indicative project cost above PhP1 Billion - inclusive of Construction Cost (for all phases or segments related to the project) and Right-of-Way Acquisition Cost, and must be regardless of the schedule of release of funds and/or implementation (ii) located in or traverses through areas which are environmentally sensitive and/or listed in Presidential Proclamation 2146 dated December 14, 1981 (or as may be superseded); (iii) located in or traverses through zones or areas with considerable settlements (such as limited ROW available or heavy roadside friction) or those that are covered under Indigenous Peoples’ Rights Act of 1997 (Republic Act 8371) and/or with indicative ROW acquisition cost of more than 50% of the construction cost; and/or (iv) long-span bridges¹⁷.

¹⁴ A stand-alone environmental document (e.g. Environmental Impact Study Report or Initial Environmental Examination Checklist) may be required for the purpose of securing an Environmental Compliance Certificate (ECC) or Certificate of Non-Coverage (CNC), whichever is applicable.

¹⁵ National Economic and Development Authority, 2009. *Value Analysis Handbook*

¹⁶ Public-Private Partnership Center (as of 23 December 2013). *Final Draft of Sector Guidelines for Education*. Accessible at: <https://ppp.gov.ph/wp-content/uploads/2015/01/Final-Draft-Sector-Guidelines-for-Education.pdf>

¹⁷ A long-span bridge is a bridge with spans too long to design from standard handbooks. (<http://www.civilengineeringx.com/structural-analysis/structural-steel/classification-of-bridges-by-span/>) . The current AASHTO standard specifications states that supplemental specifications may be required for unusual types and for bridges with spans longer than 500 ft (150 meters).

7. A **Pre-Feasibility Study** (Pre-FS) and a Feasibility Study (full-scale as in item 5) are inherently linked to each other in terms of principles and procedures. The difference lies in the depth and, therefore, accuracy of the analysis.¹⁸ A Pre-FS shall include, at least, traffic impact assessment¹⁹ and/or development impact study, technical analysis, economic evaluation, and preliminary social and environmental impact assessment. Information which shall be used in a Pre-FS can be secondary, except for that used in the traffic impact assessment, provided that these are verifiable, thus, sources shall be properly cited in the report.
8. Unless otherwise FS is required, Pre-FS shall be conducted for projects with indicative cost more than Php300 Million but not exceeding Php1 Billion.
9. Other projects that will not require FS nor Pre-FS, shall require Project Concept Paper (PCP) to be prepared by the ROs and/or DEOs. The PCP shall cover and briefly discuss the particulars of the project in terms of its strategic fit, technical complexity, environmental impact and social risks. The PCP shall further contain a basic network impact valuation which shall discuss the project's necessity in terms of, among others, improvement in the flow of traffic and/or added opportunities (i.e. employment generation, increase in production, etc.).
 - 9.1. The discussion on **Strategic Fit** shall mention, as reference, the master plan where the project was identified, and shall confirm the project's relevance to the regional and local plans. It shall also show the linkage of the project to the existing national road network and/or indicate the connection to economic processing zones, manufacturing and production areas such as airports, sea ports, tourist spots, farms and other areas of production.
 - 9.2. Under **Technical Complexity**, the geographical, geological (and geotechnical) and hydrological characteristics of the project site which affects the design of infrastructure features shall be described including the options or alternatives considered and criteria used for the selection. The discussion shall further contain the total estimated cost and the proposed implementation schedule of the project.
 - 9.3. The **Environmental Impacts and Social Risks** shall discuss the significant changes in various environmental categories due to the project, particularly on the ecology, aesthetics, and human interest, in consideration to the land, water, air, and people. The discussion shall further provide specific evaluation on the expected environmental quality prediction should the proposed project be implemented and completed.
10. Except for Feasibility Studies undertaken by the Unified Project Management Office (as stipulated and authorized through DO 04, s.2017), the conduct of a FS and/or Pre-FS for all road and bridge infrastructure projects must not come about without the recommendation from the Planning Service, through PPD. ROs and DEOs shall submit

¹⁸ Ibid.

¹⁹ A TIA is a study which assesses the traffic and safety implications relating to a specific development. It is undertaken to assess whether the road network surrounding the proposed development can accommodate the additional traffic while maintaining an acceptable level of service (Republic of Mauritius, Ministry of Public Infrastructure & Land Transport (2015). *Traffic Impact Assessment Guideline*. Accessible at: <http://publicinfrastructure.govmu.org/English/DOCUMENTS/REVISED%20TIA%20GUIDELINES.PDF>

list of projects proposed for FS to the Planning Service, through PPD. PPD shall then assess the submitted projects, through initial evaluations/ rapid assessment reports, based on **function, technical requirements, availability of ROW**, potential impact on environment and social relevance, and **recommend appropriate actions through initial evaluations or rapid assessments of proposed projects**.

11. Project Proponents, for the purpose of initial evaluation/ rapid assessment of projects, must aptly provide Planning Service, through PPD, with (i) Project Profile (Rationale, Objectives, Potential Benefits, etc.); (ii) length of the project; (iii) indicative cost and proposed implementation schedule; (iv) map of the project; (v) E-copy and/or hard copy of Master Plans/ Feasibility Studies/ Pre-Feasibility Studies relevant to the project; and (vii) other relevant documents such as Endorsements and Certifications (e.g. Local Government Unit/s Resolution, RDC Endorsements, etc.).
12. However, initial evaluations/rapid assessments are not to be considered as the complete measure of the project's viability. Thus, in no case shall it be considered as a substitute for extensive studies, viz, the FS or Pre-FS.
13. Upon the recommendation of the Planning Service, through PPD, a project with potential economic viability is then requested to be funded for a more extensive study, viz, the, Feasibility Study, or Pre-Feasibility Study.
14. If all technical expertise and personnel requirements are available within the DPWH Human Resource, activities related to FS from data gathering to preparation of report shall be carried out through in-house undertaking as this favors savings of public funds and time.
15. In order to facilitate timely conduct of FS and the implementation of technically and economically viable projects, FS reports shall be considered valid up to five (5) years²⁰ from the base year of the study or as may be appropriately determined by Planning Service, through PPD.
16. Submission of FS and Pre-FS shall be made to Planning Service through the Project Preparation Division (PPD) for review, comments, and acceptance/ approval pursuant to item 3 of this set of guidelines.
17. Moreover, consideration for inclusion of the projects requiring PCPs (as in item 9) in the NEP shall be made on the basis of acceptance of the Planning Service, through its Development Planning Division (DPD). Should the PCPs require further review, acceptance shall be made with endorsement from the PPD. In such event, a completely filled out Acceptance Form (as in **Annexes A-1 and A-2**) shall be attached as a supporting document to the said endorsement.
18. Submissions shall include softcopies of the: (i) FS/Pre-FS Report or PCP, (ii) the corresponding official transmittal; and (iii) all required files that will enable full review of the document submitted (see checklist in **Annex B-1**). The softcopies must be available online through links that are accessible outside the DPWH network²¹.

²⁰ Regional demographic analyses such as population growth and regional migration pattern for 10 years or longer is possible if two separate projections are performed – one for the first 5 years and then a projection for the next 5 or so. (Kenkyu, J.M. (1980 July). Types and Methods of Regional Population Projection) Retrieved from: <https://www.ncbi.nlm.nih.gov/pubmed/12310097>

²¹ Files uploaded in the Department's drive (Filedrop) cannot be accessed outside the DPWH Intranet.

19. Should a project fall under item 4, i.e. the project has a total indicative cost of ₱2.5 Billion and above (including all its phases and/or segments, Right-of-Way Acquisition Cost, and regardless of the schedule of release of funds/ implementation schedule), the proponent shall submit a complete Feasibility Study Report adhering but not limited to the specifications in item 5 with all the necessary documentary requirements set forth by the NEDA such as the Environmental Compliance Certificate(ECC)/ Certificate of Non-Coverage (CNC) and the Regional Development Council (RDC) Endorsement.
20. Implementing Offices must aptly provide Planning Service, through PPD, with the **monthly** status/ progress of ongoing studies for monitoring purposes (**Annex C**).

B. For Flood Control, Drainage and other Water-Related Projects

1. One of the policies enshrined in the Implementing Rules and Regulations (IRR) of Republic Act (RA) 10121 or the Disaster Risk Reduction and Management Act is to *"Adopt a disaster risk reduction and management approach that is holistic, comprehensive, integrated and proactive in lessening the socio-economic and environmental impacts of disasters including climate change and promote the involvement and participation of all sectors and all stakeholders concerned, at all levels, especially the community"*. It is then critical that the flood control and drainage structures are carefully planned and designed, and the flood control projects have a flood control plan, based on the forecasted river phenomenon which is likely to occur as a result of the discharges corresponding to the design flood frequencies.²²
2. A **Master Plan** (MP) shall refer to a basin-wide comprehensive study of a river system that explains/ discusses, among others, control policies, strategies, flood magnitude targets, and main works of a river system.²³ It shall promote both structural (such as dikes/levees, revetment, dams, floodways, etc.) and non-structural measures (such as watershed management, land use planning, zoning for high-risk areas flood hazard mapping, warning and evacuation systems). A Master Plan shall, at least, contain the following:
 - 2.1. **Hydrologic Analysis** which shall effectively estimate the amount of rainfall that the proposed flood control facilities should be able to convey and control. The resulting discharge and volume of runoff shall be used as the basis for the planning of river/drainage improvements in the study area;
 - 2.2. **Hydraulic Analysis** which shall discuss the most appropriate and effective flood mitigation measures identified through a hydraulic model in the river basin. Said hydraulic model shall allow the analysis of multiple current and future scenarios in a river system under study;
 - 2.3. **Flood Inundation and Damage Analysis** which shall include the inventory of assets at risk and their corresponding level of vulnerability. The analysis shall further, and establishment of flood damage curves in various high-risk situations;

²² Department Order No. 33, series of 2017

²³ DPWH-JICA, 2010. Technical Standards and Guidelines for Planning of Flood Control Structures

- 2.4. **River Improvement Plan** which shall provide analysis of different combinations of structural and non-structural measures considering, among others, flood damage mitigation capabilities and other water use in the project area. These combinations shall form the set of alternatives to be considered in the Multi-Criteria Analysis (see *item 2.8*). The analysis shall include the manner of implementation of the proposed improvement.
 - 2.5. **General Environmental Assessment** which shall cover environmental legal framework, methods of environmental impact evaluation such as spatial analysis to identify environmental sensitive areas, the evaluation of level of environmental and social sensitivity against the proposed flood control measures, and the corresponding initial environmental evaluation on planning concepts and proposed flood control measures.
 - 2.6. **Social Impact Assessment** which shall contain a review on relevant social, economic, and gender-related issues based on available reports and other documented data/ information. It shall further define, enumerate, and map the areas that shall be the targeted clients and beneficiaries of the project, including Indigenous Groups, if there are any.
 - 2.7. **Preliminary Cost and Benefit Analysis** which shall briefly discuss the overall economic impact of the proposed improvement(s) based on the estimated cost, and identified economic benefits for each set of alternatives and/or measures identified. The economic impact shall be evaluated with the use of economic indicators such as, but not limited to, the Net Present Value (NPV), Benefit-Cost Ratio (BCR), and Economic Internal Rate of Return (EIRR) on a 50-year period.
 - 2.8. **Multi-Criteria Analysis** which shall establish multi-disciplinary selection criteria that will assess, without prejudice, each alternative combination of structural and non-structural measures for river improvement, and identify the most efficient combination thereof. The selection criteria shall consider but not limited to technical, economic, social, and environmental aspects. It shall include the priority list of projects for short-term, medium-term, and long-term.
3. **A Feasibility Study**, on the other hand, shall pertain to a set of analyses undertaken to ascertain if a project can achieve its objective, and consequently translate or result in net benefits. It shall include analysis on the hydrologic and hydraulic component of the project, infrastructure constructability, non-structural damage control strategies (and policies), life-cycle cost, social and environmental impact assessment, institutional arrangement, implementation plan (phasing and packaging), the proposed mode of financing, and if necessary, financial analysis and a market risk assessment.²⁴
 - 3.1. **Hydrologic and Hydraulic Analysis** shall include a more detailed and focused approach on the analysis, based on the result of the relevant Master Plan formulation, of the selected flood mitigation measures. Said analysis shall

²⁴ Based on *Guidelines on Provincial/Local Planning and Expenditure Management, Volume 5: project Evaluation and Development*. Published by NEDA and Asian Development Bank (ADB) in 2007. Accessible at: www.neda.gov.ph/wp-content/uploads/2013/10/PLPEM-Guidelines-Vol5.pdf

include the scope of work, the damage control capacity and limitations of the project, and the recommendations thereto.

- 3.2. Especially for environmentally critical projects (ECP) and the projects situated in an environmental critical area (ECA)²⁵, **Environmental Impact Assessment** shall cover the existing condition of the proposed project on the four (4) environmental components (land, water, air/noise, and people) within the impact area. Further, it shall identify, predict and evaluate the extent and significance of the key potential impacts of the project from pre-construction to abandonment and shall formulate necessary mitigating measures and actions to address the impacts identified in the project area.²⁶
 - 3.3. **Social Impact Assessment** shall involve identification of the likely affected persons/ families and assets, the extent/ significance of the potential risks such as (or changes in) health and lifestyle, estimated acquisition cost per Republic Act 10752, and the time table for the implementation of the Right-of-Way Action Plan (RAP) including the acquisition. The assessment shall also consider and incorporate gender-specific needs in relation to the project, complying with the Harmonized Gender and Development Guidelines (HGDG) and the Gender and Development (GAD) Toolkits.²⁷ For projects that are covered by RA 8371 (Indigenous Peoples' Rights Act of 1997), the assessment shall contain an Indigenous People Action Plan (IPAP)²⁸ complying with relevant National Commission for Indigenous People (NCIP) Administrative Orders.
 - 3.4. **Preliminary Detailed Engineering Design** shall include a clearly defined preliminary project layout, longitudinal profiles, and sections, identification of additional surveys to be undertaken during Detailed Engineering Design (if necessary), preliminary site assessment, and shall recommend/program the priority projects.
 - 3.5. **Implementation Plan** shall present the most suitable schedule and manner of execution of the project such as construction phasing and packaging in consideration of the various schemes/ scenarios proposed.
 - 3.6. **Cost and Benefit Analysis** shall present the projects' economic viability through Identification and quantification, to the extent possible, of economic benefits. The full analysis shall be inclusive of economic indicators such as Net Present Worth (NPW), Benefit-Cost Ratio (BCR) and Internal Rate of Return (IRR), and the consequent recommendations based on the obtained values for the indicators
4. A **Pre-Feasibility Study** (Pre-FS) and a Feasibility Study are inherently linked to each other in terms of principles and procedures. The difference lies in the depth and, therefore, the accuracy of the analysis. A Pre-FS shall include, at least, hydrologic and hydraulic analysis, economic evaluation, and preliminary social and environmental

²⁵ Policies are stated in EMB Memorandum Circular 005 July 2014 (accessible through http://eia.emb.gov.ph/wp-content/uploads/2020/07/Revised-Guidelines_Threshold_MC-2014-005.pdf)

²⁶ A stand-alone environmental document (e.g. Environmental Impact Study Report) may be required for the purpose of securing an Environmental Compliance Certificate (ECC) or Certificate of Non-Coverage (CNC), whichever is applicable.

²⁷ For flood-control-related projects subject to submission to the NEDA Investment Coordination Committee (ICC) for review and approval

²⁸ Chapter 4 (Indigenous who will be Affected by the Project), p.22-32, Land Acquisition, Resettlement, Rehabilitation, and Indigenous Peoples Policy (LARRIP) 3rd ed., DPWH

impact assessment. The information which shall be used in a Pre-FS can be secondary, provided that these are verifiable, thus, sources shall be properly cited in the report.

5. **Project Impact Analysis (PIA)** shall refer to the process of determining the attainment of project goals and objectives systematically and objectively in terms of output, effect, and impact. As per Department Order No. 23 series of 2015, the PIA must include information on the flood return period to be used for the design based on its preliminary engineering and survey, and monitoring the following expected outcomes:

- 5.1. Reduction in flood-prone areas;
- 5.2. Reduction in the inundation period; and
- 5.3. Reduction of flood damage.

The PIA shall specify the flood control, sediment control, and/or river training structures/ facility component of the project and the corresponding quantifiable and non-quantifiable benefits supporting the information presented under items 5.1, 5.2 and 5.3.

6. MP (as in item 2) and FS (as in item 3) shall be required for projects on major and principal river basins²⁹. This includes all the proposed flood-control-related projects within the said river basins³⁰ (see **Annex D**).³¹
7. Following Department Order (DO) No. 33, s.2017, the Flood Control Management Cluster of the Unified Project Management Office (UPMO-FCMC), the Regional Offices (ROs) and/or the District Engineering Offices (DEOs), all have the mandate and shall pursue the conduct of flood-control-related MPs and FS, in coordination with the Planning Service.
8. The Planning Service, through PPD, shall: (i) ensure that there is no duplication in the studies conducted by the UPMO-FCMC, the ROs and/or the DEOs³³ to ascertain efficiency of use of available resources; (ii) create a Steering Committee should the need of elevating the project to higher authorities arise³⁵; (iii) create a Technical Working Group (see **Annex E-2**) which will provide direction and guidance during the course of the study, monitor the progress of the study, review, evaluate and accept/approve the results and recommendations in the study³⁶; and (iv) consolidate all MPs, FS and PIAs for uploading in the Department's database for public viewing.
9. Shall projects require submission to National Economic and Development Authority (NEDA), in view of their revised guidelines on Project Screening, for consideration and approval of NEDA, Planning Service shall be the forefront office in all Department's activities prior to NEDA approval of flood control and other related projects which

²⁹ River basins with drainage area of more than 40 square meters are considered principal. If the drainage area reaches 1,400 square meters, then the basin is considered major (The Study on the Nationwide Flood Risk Assessment and the Flood Mitigation Plan for the Selected Areas in the Republic of the Philippines).

³⁰ Item 3 of the Department Order No. 23, s.2015, explicitly states that "The project must be part of an overall master plan/ feasibility study for the river basin or urban area in which the same is located."

³¹ Master Plan of Urban Drainage Structures may require a different approach.

³³ As stipulated in paragraph 3, page 1 of DPWH Department Order No. 33, s. 2017: Guidelines for Streamlining River Basin Master Plan and Feasibility Study of Flood Control and Drainage

³⁵ Ibid.

³⁶ As stipulated in item 3, DPWH Department Order No. 33, s. 2017: Guidelines for Streamlining River Basin Master Plan and Feasibility Study of Flood Control and Drainage

include, among others, consolidate Technical Working Group actions and recommendations for appropriate action (see item 8), preparation of requisite documents, and submission of the same to the NEDA (cover letter shall be signed by the Secretary).

10. Pursuant to D.O. 33, s.2017, the Areas of Responsibilities between the UPMO–FCMC, the ROs and/or DEOs, based are as follows:

10.1. Studies for Flood Control and river control works in a major river basin or a principal river basin that traverses two (2) or more regions shall be conducted by the UPMO–FCMC.

10.2. Unless covered in item 10.1, studies for Flood control and river control works in a principal river basin including drainage in flood-affected areas in a single region shall be pursued by the ROs and/or DEOs.

11. For all proposed flood-control-related projects, unless otherwise covered in item 6, proponents shall aptly provide Planning Service, through its Project Preparation Division (PPD-PS), the following documents for review and evaluation, copy furnish the Development Planning Division (DPD-PS) for possible inclusion of the projects in the Public Investment Program (PIP). The Programming Division (PD-PS) shall thereafter, if said documents are found in order, shall verify completeness of requisite documents for inclusion in the DPWH National Expenditure Program (see **Annex B-2**).

11.1. FS Report (as in item 3) for projects that have a total indicative cost of more than Php1 Billion (inclusive of all the phases/ stages related to the project, and regardless of the implementation and funding schedule);

11.2. Pre-FS (as in item 4) for projects that have a total indicative cost of more than Php300 Million but not exceeding Php1 Billion; or

11.3. PIA Report (as in item 5) for projects that will neither require FS nor Pre-FS.

***** nothing follows *****

Annex A-1: **Project Concept Paper Review Form A** (PPD-PS)

ACCEPTANCE INDICATOR	LEVEL OF ACCEPTABILITY	ACCEPTANCE NOTES
1. Strategic Fit		
1.1. Does the document mention relevant Master Plans or Feasibility Studies	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable	
1.2. Is the project relevant to regional and local plans, e.g. Comprehensive Land Use Plan (CLUP), Comprehensive Development Plans (CDP), etc.?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
1.3. Does the project provide linkage to the existing national road network?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
1.4. Does the project link to operational or planned airports, sea ports, tourist spots or production sites such as farms?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable	
1.4.1 If answer in 1.4 is yes and is planned, does the airport, sea port, tourist spot have a completed or ongoing study?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable	
2. Technical Complexity		
2.1. Are there any issues in constructing the project due to meteorological, geological and/or geomorphic conditions?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2.1.1 If answer in 2.1 is yes, can the proposed construction methodology address the issues?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable	
2.2. Is the breakdown of the proposed project cost provided, i.e Program of Work (POW)?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2.3. Are the unit prices at acceptable levels based on available market prices?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2.4. Is the implementation schedule reasonable given the difficulties in construction, if there are any, and ROW Acquisition?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

ACCEPTANCE INDICATOR	LEVEL OF ACCEPTABILITY	ACCEPTANCE NOTES
3. Basic Network Impact Valuation		
3.1. Does the document contain evaluation on the perceived improvement in the network (e.g. Levels of Service without and with the project case) with acceptable level of analysis?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable	
3.2. Is the claim for improvement on general welfare of the population backed up with verifiable information?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable	
3.3. Are the economic indicators, i.e. Net Present Value (NPV) and Economic Internal Rate of Return (EIRR), presented with sufficient information as support to the evaluation?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

ACTION TAKEN:

- ☐ Project Concept Paper for endorsement to Development Planning Division³⁷
- ☐ Project Concept Paper for Return to Regional/ District Engineering Office

Checked by:

Verified By:

Name of Reviewing Staff

Designation
Project Preparation Division
Planning Service

Name of Head of Office

Chief, Project Preparation Division
Planning Service

³⁷ Item 17 of the Revised Guidelines

Annex A-2: **Project Concept Paper Review Form B (ESSD-PS)**

ACCEPTANCE INDICATOR	LEVEL OF ACCEPTABILITY	ACCEPTANCE NOTES
1. Social Impact		
1.1. Is the estimate for the Right-of-Way acquisition compliant with RA10752 and DPWH ROWA Manual (DRAM)?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
1.2. Is the Harmonized Gender and Development Guidelines (HGDG) followed and presented with Box 10 fully filled out?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
1.3. Does the project traverse ancestral domain or affect Indigenous People?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
4.3.1 If yes, does the document contain an Indigenous People Action Plan (IPAP)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable	
2. Impact to Environment		
2.1. Is the baseline environmental setting of the project site presented in the document?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2.2. Are the project impacts on the environment and possible mitigating measures described in the report?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2.3. Does the document contain environmental recommendations?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2.4. If the project is recommended for implementation considering that the identified environmental impacts can be mitigated and minimized to acceptable levels, did the Proponent secure ECC/CNC for the project?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
2.5. If the project is located within Environmental Critical Area (ECA), did the Proponent secure necessary environmental clearances/permits (i.e. PAMB clearance, SAPA, FLA, FLAg, EGGAR, etc.)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable	

ACTION TAKEN:

- ☐ Project Concept Paper for endorsement to Development Planning Division³⁸
- ☐ Project Concept Paper for Return to Regional/ District Engineering Office

Checked by:

Name of Reviewing Staff

Designation
Environmental and Social Safeguards Division
Planning Service

Verified By:

Name of Head of Office

Chief, Environmental and Social Safeguards Division
Planning Service

³⁸ Item 17 of the Revised Guidelines

Annex B -1: Checklist for Review of Draft Final and Final Feasibility Study Report

- ☐ Official Transmittal (signed) in PDF format*
- ☐ Complete set of submitted Monitoring Forms in PDF format*
- ☐ Terms of Reference for the Consulting Service, if applicable
- ☐ Electronic Copy of the Complete Feasibility Study Report consolidated in one PDF file*
- ☐ Excel File of the Detailed Unit Price Analysis in traceable formula format*
- ☐ Excel File of Economic Model, in traceable formula format*
- ☐ Electronic Copy of the project alignment in shapefile, KMZ, or KML format*
- ☐ Excel File of the Traffic and/or Developmental Data Processing in traceable format*
- ☐ Electronic Copy of the zones used in OD Data Processing, if applicable*
- ☐ Electronic Copy of all software input and output file, if applicable*
- ☐ Electronic Copy of the stand-alone Preliminary Right-of-Way Action Plan, if applicable
- ☐ Electronic Copy of the stand-alone Environmental Impact Study, if applicable
- ☐ Results of Socio-Economic Survey consolidated in one PDF file*
- ☐ Electronic Copy of the Drawing Volume in PDF file format
- ☐ Electronic copy of the Drawings in CADD file format
- ☐ Matrix of Corrections and Comments with corresponding Actions Taken**

(*) Absolute requirement

(**) for Revised Reports

NAME OF DOCUMENT: _____

NAME AND SIGNATURE OF CHECKER: _____

SUBMISSION TRACKER:

Date of Publication in Report:	
Date in Transmittal:	
Date and Time Stamp on email:	
Date of Checking:	

Attach the following: First page of the report, Copy of the transmittal, Copy of Email; and, Copy of PPD-PS Routine;

ACTION TAKEN:

☐ Accepted (For Review with DEADLINE: _____)

☐ Return to Proponent

Reason: _____

Annex B-2: Checklist for Flood Control-related Project Reports

Type of Report/ Date of Publication:	
Date in Transmittal Letter:	
Date and Time Stamp on email:	
Date of Checking:	

Attach the following: First page of the report, Copy of the transmittal and Copy of Email (if applicable)

Primary Requirement Check:

Name of Project:	
Project Category/ Total Project Cost:	
Compliance to item B-11 of the Guidelines: (Absolute Requirement)	<input type="checkbox"/> Complied <input type="checkbox"/> Not Complied Remarks: _____

Supplementary Requirement Check:

PROJECT SPECIFICATIONS	REQUIREMENT	REMARKS
Current Project Status <input type="checkbox"/> On-going/ Continuing <input type="checkbox"/> New Proposal	<input type="checkbox"/> RDC Endorsement <input type="checkbox"/> Other Endorsement(s)	
Project Funding Strategy <input type="checkbox"/> Local/ GAA <input type="checkbox"/> PPP <input type="checkbox"/> ODA	*For FAP only <input type="checkbox"/> Feasibility Study of FAP <input type="checkbox"/> Certificate of Budget Cover from DBM	
Purpose of Project <input type="checkbox"/> Protect at least one (1) national bridge <input type="checkbox"/> Protect section(s) of at least one (1) national road <input type="checkbox"/> Protect public service structure(s) (hospital, municipal/ city hall, school)	<input type="checkbox"/> Project Alignment Map (in SHP, KMZ or KML Format)	
Right-of-Way Status <input type="checkbox"/> Completely acquired <input type="checkbox"/> At least 50% acquired <input type="checkbox"/> Less than 50% acquired <input type="checkbox"/> Acquisition not started	<input type="checkbox"/> Verification from Legal Service on ROW Acquisition	
Disaster Risk Reduction Consideration <input type="checkbox"/> Project is not within a no build zone <input type="checkbox"/> Project is within a no-build zone	<input type="checkbox"/> Verification from DPWH, DENR and/or DOST	

ACTION TAKEN:

- ☐ Verified/ For inclusion in DPWH National Expenditure Program
☐ Return to Proponent
Reason(s): _____

Checked by:

Name of Reviewing Staff
Designation, Programming Division
Planning Service

Verified by:

Name of Head of Office
Chief, Programming Division
Planning Service

Annex C: **Project Feasibility Study Monitoring Form****FEASIBILITY STUDY PROJECT UPDATE FORM***As of* _____**GENERAL INFORMATION:**

Project Name:	
Project Location:	
District Engineering Office:	
Implementing Office:	
Released Budget for Study:	
Approved Budget for the Contract (ABC):	
Date of Advertisement:	

PROCUREMENT DETAILS:

Shortlist of Consultants	Bid Amount

Use separate sheet if necessary

Winning Bidder	
Date of Notice of Award	
Date of Notice to Proceed	
Date of Contract Effectivity	
Date of Contract Expiration	
Contract Duration	

CONTRACT IMPLEMENTATION TRACKING:

Activities	Date as per Proposal	Date Accomplished	Slippage
Kick-Off Meeting			
Submission of Inception Report			
Topographic Survey			
Geotechnical Survey			
Geological Survey			
Traffic Survey			
Environmental Survey			
Socio-Economic Survey			
Social/GAD Survey			
Preliminary RAP Survey			
Traffic Survey			
Submission of Progress and Other Reports			
Submission of Draft Final Report			
Submission of Final Report			
Uploading of Final F/S Report to Website:*			

**To be filled out by PPD*

Expected Overall Accomplishment to date (%)	
Actual Overall Accomplishment to date (%)	
Negative/Positive Slippage	

REMARKS:

Are there any problems encountered during the procurement of the consulting service? If yes, please state the problem(s) and the suggested plan of action to address this (these) problems.

Are there any problems encountered during contract implementation? If yes, please state the problem(s) and the suggested plan of action to address this (these) problems.

Other comments/suggestions/recommendations:

Annex D-1: **List of Major River Basins**

NUMBER	REGION	River Name	AREA (sq.km)
1	1 / NCR	Abra	5,125
2	2 / NCR	Cagayan	25,469
3	2 / NCR	Abulug	3,362
4	3 / 2	Pampanga	9,759
5	3 / 1	Agno	5,952
6	4A / NCR	Pasig-Laguna Bay	4,678
7	5	Bicol	3,771
8	6	Panay	1,843
9	6	Jalaur	1,503
10	6 / 7	Ilog-Hilabangan	2,354
11	CARAGA / 11	Agusan	10,921
12	10	Tagaloan	1,704
13	10	Cagayan de Oro	1,521
14	11	Tagum-Libuganon	3,064
15	11 / 10	Davao	1,623
16	11 / 12	Buayan-Malungan	1,435
17	10 / ARMM	Agus	1,645
18	12 / ARMM /10	Mindanao	23,169

Annex D-2: List of Principal River Basins

NUMBER	REGION	RIVER BASIN	AREA (sq.km)
1	1	Bulu	231
2	1	Bandan	134
3	1	Bacarra-Vintar	772
4	1	Laoag	1,353
5	1	Quiaoit	188
6	1	Tineg	1,550
7	1	Ikmin	444
8	1 / CAR	Silay-Sta. Maria	294
9	1	Buaya	169
10	1 / CAR	Amburayan	1,386
11	1	Bararo	191
12	1 / CAR	Bauang	353
13	1 / CAR	Aringay	469
14	1 / CAR	Patalan-Cayang-Angalacan	347
15	1 / 3	Dagupan (Sinocalan)	897
16	2	Zinundungan	405
17	2	Dumon	456
18	2 / CAR	Chico	4,588
19	2 / CAR	Matalug	719
20	2 / CAR	Saltan-Babaca	794
21	CAR	Tanudan	388
22	2	Paret	1,031
23	2	Tuguegarao	658
24	2	Pinacanauan	328
25	2	Balasig	220
26	2	Tumauini	190
27	2 / CAR	Siffu-Mallig	1,938
28	2	Ilgan	4,464
29	2	Abuan	616
30	2	Disabungan	677
31	2 / CAR	Magat	4,631
32	2 / CAR	Taotao	419
33	CAR	Alimit	600
34	CAR	Ibulao	353
35	2 / CAR	Lamot	438
36	2 / CAR	Matuno	738
37	2	Sta. Fe	547
38	2 / CAR	Ganano	1,131
39	2	Addalam	1,014
40	2	Diboluan	366
41	2	Linao	234
42	2 / CAR	Pamplona	706
43	2 / CAR	Cabicungan	244

NUMBER	REGION	RIVER BASIN	AREA (sq.km)
44	2	Aunugay	103
45	2	Baua	110
46	2	Palawig	101
47	2	Taboan	369
48	2	Dikatayan	188
49	2	Dinilican	131
50	2	Palanan-Pinacanauan	806
51	2	Casiguran	191
52	3	Aguang	647
53	3 / 4A	Umiray	553
54	3	Angat	781
55	3	Penaranda	512
56	3	Coronell	740
57	3	Pantabangan	244
58	3	Balanga	144
59	3	Moron	66
60	3	Panatawan	163
61	3	Sto. Tomas	263
62	3	Bucau	734
63	3	Bancul	224
64	3	Lawis	406
65	3 / 1	Nayam	213
66	3	Balincuguin	406
67	3	Alaminos	200
68	3	Camiling	764
69	3	O. Donnel Moriones	830
70	3	Ambayabang	400
71	3	Rio Chico	1,573
72	NCR / 4A	Marikina	600
73	4A	Romero-Sta. Maria	262
74	4A	Pagsanjan	325
75	4A	Pila-Sta. Cruz	128
76	4A	San Juan	178
77	4A	San Cristobal	131
78	4A	Maragondong	339
79	4A	Lian	184
80	4A	Banabang-Molino	108
81	4A	Pansipit	656
82	4A	Kapumpang	406
83	4A	Rosario-Lobo	197
84	4A	Bolbok (Lawaya)	105
85	4A	Malaking-Ilog	781
86	4A	Iyam	269
87	4A	Macalelon	165
88	4A	Catanauan	122
89	4A	Silongin	59

NUMBER	REGION	RIVER BASIN	AREA (sq.km)
90	4A	Lagola-Pagsanjan	89
91	4A	Yabahaan	63
92	4A	Bigol	89
93	4A	Guinhalinan	149
94	4A	Vinas	159
95	4A	Calauag	163
96	4A	Pandanan	154
97	4A	Sta. Lucia	94
98	4A	Lugan (Malaybalay)	91
99	4A	Maapon	201
100	4A	Bucal (Lalangnan)	77
101	4A	Labayat	56
102	4A	Tignoan	86
103	4A	Agos	672
104	4A	Anibawan	97
105	4A	Laboc (Balsahan)	96
106	4A	Canas	210
107	4A	Ilang-Ilang	82
108	4A	Imus	105
109	4A	Balete	132
110	4A	Filantopia	72
111	4A	Ibod	348
112	4A	Kaliwa	440
113	4B	Abra de Ilog	122
114	4B	Malaylay-Baco	488
115	4B	Pulang Tubig	422
116	4B	Mag-asawang Tubig	491
117	4B	Butas	356
118	4B	Pula	260
119	4B	Agsalin	147
120	4B	Bansud	156
121	4B	Samagui	97
122	4B	Bongabon	396
123	4B	Baroc	184
124	4B	Bulalacao	75
125	4B	Cagaray	234
126	4B	Labangan	159
127	4B	Magbando	578
128	4B	Lunintao	334
129	4B	Anahawin	134
130	4B	Monpong	353
131	4B	Amnay	466
132	4B	Pola	288
133	4B	Pagbahan	328
134	4B	Mamburao	272
135	4B	Tawiran-Tagum (Marinduque)	58

NUMBER	REGION	RIVER BASIN	AREA (sq.km)
136	4B	Boac	209
137	4B	Busuanga	194
138	4B	Abongan	125
139	4B	Lian	338
140	4B	Barabakan	273
141	4B	Rizal	351
142	4B	Caramay	69
143	4B	Langogan	203
144	4B	Babuyan	298
145	4B	Bacungan	96
146	4B	Iwahig Penal	213
147	4B	Inagauan	171
148	4B	Aborlan	245
149	4B	Malasgao	226
150	4B	Apurauan	83
151	4B	Baton-Baton	134
152	4B	Aramayawan	94
153	4B	Iwahig	127
154	4B	Panitian	91
155	4B	Pulot	170
156	4B	Lamakan	131
157	4B	Kinlupan	59
158	4B	Eraan	183
159	4B	Tiga Plan	177
160	4B	Malabangan	75
161	4B	Ilog	70
162	4B	Bansang	78
163	4B	Conduaga	56
164	4B	Culasian	71
165	4B	Iwahig (Brookes)	150
166	4B	Okayan	58
167	4B	Canipan	106
168	5 / 4A	Labo	913
169	5	Daet Basud	270
170	5	Kilbay-Catabangan	285
171	5	Ragay	188
172	5	Tinalmud	119
173	5	Tambang	164
174	5	Lagonoy	228
175	5	Guinale	103
176	5	Donsol	396
177	5	Ogod	122
178	5	Putiao	188
179	5	Cadacan	197
180	5	Banuang-Duan	46
181	5	Febrica (Tugbugan)	56

NUMBER	REGION	RIVER BASIN	AREA (sq.km)
182	5	Matnog	63
183	5	Lanang	134
184	5	Napayawan	94
185	5	Mandaong	58
186	5	Asid	140
187	5	Malbag	244
188	5	Guiom	152
189	5	Nainday	88
190	5	Daraga	113
191	5	Nauco (Aguada)	102
192	5	Beleno	63
193	5	Cabuyan	84
194	5	Bato	305
195	5	Pajo	333
196	5	Sipocot	447
197	6	Ibajay	244
198	6	Aklan	852
199	6	Jalo	78
200	6	Mambusao	465
201	6	Panay Malinao	503
202	6	Alingon	56
203	6	Balantian	50
204	6	Pinantan	134
205	6	Barotac	102
206	6	Akalaygan	88
207	6	Jalaud	1,503
208	6	Jalano	350
209	6	Jagdong	356
210	6	Lamunan	281
211	6	Jaro-Agaman	272
212	6	Sibalom	222
213	6	Guimbal	194
214	6	Sibalom	564
215	6	Ipayya	71
216	6	Cagaranan	294
217	6	Palawan	206
218	6	Cairauan	51
219	6	Dalanas	119
220	6	Tibiao	41
221	6	Malogo	163
222	6	Sicaba	175
223	6	Grande	122
224	6	Himocaan	427
225	6	Danao	134
226	6	Sipalay	327
227	6	Hilabangan	409

NUMBER	REGION	RIVER BASIN	AREA (sq.km)
228	6 / 7	Binalbagan	772
229	6	Bago	798
230	6	Imbang	150
231	7	Libertad	213
232	7	Tanjay	215
233	7	Candugay	116
234	7	Siaton	228
235	7	Cauitan	85
236	7	Sipocong	308
237	7 / 6	Bayawan	434
238	7 / 6	Pagatban	378
239	7	Tyabanan	116
240	7	Guinabasan	120
241	7	Balamban	231
242	7	Sapang Dako	147
243	7	Inabanga	572
244	7	Ipil	252
245	7	Matulid	153
246	7	Loboc	513
247	7	Abatan	352
248	7	Kotkot	82
249	7	Mananga	102
250	8	Catarman	272
251	8	Bugko	133
252	8	Pambukhan	596
253	8	Catubig	688
254	8	Palapag	141
255	8	Oras	491
256	8	Dolores	702
257	8	Ulot	903
258	8	Taft	375
259	8	Borongan	134
260	8	Suribao	583
261	8	Llorento	340
262	8	Balangiga	169
263	8	Basey	250
264	8	Silaga	204
265	8	Calbiga	283
266	8	Gandara	1,067
267	8	Jibatan	378
268	8	Mano	221
269	8	Sangputan	270
270	8	Palo	259
271	8	Salano (Quilot)	302
272	8	Daguitan-Marabang	266
273	8	Cadacan	458

NUMBER	REGION	RIVER BASIN	AREA (sq.km)
274	8	Bisay	103
275	8	Himbangan	120
276	8	Pandan	114
277	8	Bongquirogon	209
278	8	Salug	150
279	8	Pagbangaran	140
280	8	Pagsangahan	453
281	8	Gamay	158
282	8	Sulat	129
283	8	Binahaan	120
284	9 / 10	Mapangi	1,202
285	9 / 10	Paro (Dapitan)	384
286	9	Dipolog	471
287	9	Dikaya	272
288	9	Golid (Duwait)	215
289	9	Sindangan	584
290	9	Ingin (Maras)	252
291	9	Palandoc	203
292	9	Bucas	153
293	9	Pataug	177
294	9	Quipit	633
295	9	Siocon	603
296	9	Piacan	91
297	9	Anungan	108
298	9	Pangamiran	109
299	9	Sibuco	140
300	9	Malayat (Alimpaya)	110
301	9	Tumaga	228
302	9	Taguite	384
303	9	Tigbao	106
304	9	Digsa	95
305	9	Sanito	115
306	9	Bakalan	128
307	9	Kabasalan	227
308	9	Sibuguey	959
309	9	Kamalarang	133
310	9	Tupilac	284
311	9	Labangan	483
312	9	Gubauan	158
313	9	Gumalarang	102
314	9	Aloran	87
315	CARAGA	Malinao Inlet	112
316	CARAGA	Gaas Lulet	139
317	CARAGA	Surigao	141
318	CARAGA	Magallanes	244
319	CARAGA	Lake-Mainit-Tubay	977

NUMBER	REGION	RIVER BASIN	AREA (sq.km)
320	CARAGA	Asiga	264
321	CARAGA	Cabadbaran	215
322	CARAGA	Ojot	765
323	CARAGA	Wawa	795
324	CARAGA	Libang	228
325	CARAGA	Maasam	418
326	CARAGA	Kasilayan	284
327	CARAGA	Gibong	824
328	CARAGA	Adgaoan	965
329	CARAGA / 10	Simulao	944
330	CARAGA	Umayan	802
331	CARAGA	Ihaoan	664
332	CARAGA / 10	Linugos	202
333	CARAGA	Taracan	447
334	CARAGA	Tandag	189
335	CARAGA	Tago	1,355
336	CARAGA	Hubo-Oteiza	201
337	CARAGA	Hinatuan	344
338	CARAGA	Bislig	381
339	CARAGA	Andanan	380
340	10	Odiongan	328
341	10	Gingoog	102
342	10	Balatocan	233
343	10	Cabulig	234
344	10	Iponon	407
345	10	Alubijid	120
346	10 / ARMM	Mandulog	791
347	10	Liangon	211
348	10 / 9	Maranding	553
349	10	Clarín	134
350	10	Palilan	91
351	10	Oroquieta	108
352	11	Cantillan	188
353	11	Catul	716
354	11	Dapras	144
355	11	Banganga-Mahaneb	317
356	11	Manurigao	294
357	11	Caraga	498
358	11	Casaunan	393
359	11	Quinonoan	138
360	11	Bugnan-Mayo	146
361	11	Bitanayan	93
362	11	Sumlog	381
363	11	Matibo	172
364	11	Hijo	700
365	11	Tuganay	666

NUMBER	REGION	RIVER BASIN	AREA (sq.km)
366	11	Saug	1,000
367	11	Lasang	467
368	11	Talomo	244
369	11	Lipadas	133
370	11	Tagulaya-Sibulan	158
371	11	Digos	175
372	11	Padada-Maint	1,303
373	11	Glan	359
374	11 / 12	Little-Lun	234
375	11 / 12	Big-Lun	230
376	12	Siquil	280
377	12	Makar	614
378	10 / ARMM	Mandulog	791
379	12	Dapao	170
380	12	Mataling	414
381	12	Nituan	326
382	12	Libungan	889
383	12	Dalika	380
384	12	Allah	6,849
385	12	Malasila	365
386	12	Toliman-Dumakling	532
387	12	Buluan	1,588
388	12	Maridagao	2,037
389	12	Kabacan	884
390	12	Mulita	1,041
391	12	Alkan	437
392	12	Kulaman	647
393	12	Muapag	265
394	12	Marupali	1,047
395	12	Tigua	331
396	12	Mataber	205
397	12	Y'Lang	209
398	12 / ARMM	Tian	803
399	12	Kraan	278
400	12	Kalaong	318
401	12	Banga	684
402	12	M'Lang	360
403	12	Pulanggi	6,772

Annex D-3: **Project Categories and Corresponding Scope of Work**

CATEGORY	TYPE OF STRUCTURE/MEASURE	FUNCTION
FLOOD CONTROL	River Improvement	
	De-silting/ De-clogging	Increase Channel/Discharge Capacity
	Widening	Increase Channel/Discharge Capacity
	Straightening, etc.	Enhance Flood Flow
	Diking System	Increase Channel/Discharge Capacity
	Flood Wall	Increase Channel/Discharge Capacity
	Flood Control Dam	Hold Flood Water
	Retarding Basin	Retain Excess Water
	Retention/Detention Pond	Retain Excess Water
	Diversion Channel	Divert Flood Water/Increase Discharge Capacity
	Cut-Off Channel	Enhance Flood Flow
	Pumping Station	Pump Flood Water
SEDIMENT CONTROL	Sabo Dam	Hold Debris/Sediment
	Sand Pocket	Hold Debris/Sediment
	Slit Dam	Hold Large Debris
RIVER/COASTAL PROTECTION	Hydraulic Drop	Protect Riverbed from Scouring
	Revetment	Protect Riverbank from Erosion
	Spur Dike	Control Flood/Sediment Flow
	Dike	Storm Surge Protection
	Groin	Protect Coastal Erosion/Storm Surge
	Seawall	Protect Coastal Erosion/Storm Surge

Annex E-1: Technical Working Group for Road and Bridge Projects

To ensure the effective and coordinated implementation of studies for road and bridge projects, the Technical Working Group (TWG) for such projects include, but not limited to:

- Chairperson: Director, Planning Service
- Vice-Chair: Chief, Project Preparation Division, Planning Service
- Member: Chief, Environmental and Social Safeguards Division, Planning Service
- Member: Chief, Programming Division, Planning Service
- Member: Chief, Traffic Engineering Division, Bureau of Quality and Safety
- Member: Chief, Highways Division, Bureau of Design (for Road Projects)
- Member: Chief, Bridges Division, Bureau of Design (for Bridge Projects)
- Member: Chief, Pre-Construction Division, Bureau of Construction
- Member: Chief, Safety and Disaster Management Coordination Division, Bureau of Maintenance
- Member: Chief, Technical Services Division, Bureau of Research and Standards
- Provisional Member(s): Project Manager, UPMO Concerned
Chief, Planning and Design Division, DPWH Regional Office(s)
District Engineer, DPWH District Engineering Office(s)

Secretariat: Project Preparation Division, Planning Service

Note: The reviewing offices may involve other concerned offices, agencies or stakeholders as needed for coordination and to ensure that the results and recommendations under the project are consistent with existing national/local policies and strategies, as the need arises.

Annex E-2: Technical Working Group for Flood Control Project Related Studies

To ensure the effective and coordinated implementation of flood control-related studies, the Technical Working Group (TWG) for all Flood Control Related Projects include, but not limited to:

Head: Manager, Flood Control and Sabo Engineering Center, UPMO-FCMC
Co-Head: Chief, Project Preparation Division, Planning Service
Member: Chief, Environmental and Social Safeguards Division, Planning Service
Member: Chief, Programming Division, Planning Service
Member: Chief, Water Project Division, Bureau of Design
Member: Chief, Pre-Construction Division, Bureau of Construction
Member: Chief, Safety and Disaster Management Coordination Division, Bureau of Maintenance
Member: Chief, Technical Services Division, Bureau of Research and Standards
Provisional Member(s): Chief, Planning and Design Division, DPWH Regional Office(s)
District Engineer, DPWH District Engineering Office(s)

Secretariat: Project Preparation Division, Planning Service

Note: The reviewing offices may involve other concerned offices, agencies or stakeholders as needed for coordination and to ensure that the results and recommendations under the project are consistent with existing national/local policies and strategies, as the need arises.