



TERMS OF REFERENCE

Phase II: From Vision to Investment - Pre-feasibility Development for Water Resilience in the Greater Semarang Region

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1. INTRODUCTION

This assignment is financed through the Partners for Water Program, executed by the Netherlands Enterprise Agency (RVO), part of the Netherlands Ministry of Economic Affairs. The Partners for Water Program is commissioned by the Ministry of Infrastructure and Water Management on behalf of the Interdepartmental Water Cluster.

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The Netherlands is internationally well-known for its expertise on water management, which is therefore one of the cornerstones of the bilateral relationships the Netherlands maintains. Through the Netherlands International Water Ambition (NIWA), more intense relationships with other countries are aimed for, which are fostered through strategic partnerships with seven so-called delta countries. Under the NIWA, several ministries are involved: Foreign Affairs (BZ), Agriculture, Fisheries, Food Security and Nature (LVVN), Economic Affairs (EZ) and Infrastructure and Water Management (I&W). Ultimate aim is to increase water security and water safety in the world of humans, plants and animals, and optimize the Dutch contribution to this aim.

The Government of the Netherlands (GON) through the Ministry of Infrastructure and Water Management and the Government of Indonesia (GOI) through its Ministry of Public Works (PU) have a long-lasting cooperation on water which is secured in a Memorandum of Understanding on Water (MoU-Water) for 2022-2027. Within the framework of the MoU, the Joint Steering Committee (JSC) in November 2023 approved to facilitate joint working groups (WGs) enhancing strategic dialogues resulting in (an outline for) a programmatic approach on the following themes:

- WG 1: Integrated Water Resilience from North Java to enlighten other priority developments in Indonesia
- WG 2: Lowland development and irrigation
- WG 3: Knowledge exchange, capacity building and youth engagement

This assignment is a follow-up of 'Phase I: Setting the Scene for a coordinated vision for the greater Semarang region towards 2045' and contributes to activities under Working Group 1 and 3 and aligns with the mutual ambitions of both GoI and GoN under the MoU Water.

2. BACKGROUND

2.1 Regional context

Water management and climate change adaptation in the North Java region, particularly in Semarang, face several significant challenges. Semarang is highly vulnerable to coastal flooding, coastal erosion, and land subsidence. Rising sea levels, coupled with the sinking of land due to groundwater extraction, exacerbate the risk of inundation. This poses severe threats to infrastructure, housing, and livelihoods, particularly in low-lying areas.

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The increasing frequency and intensity of extreme weather events, such as heavy rainfall and storms, lead to urban flooding. Semarang's drainage systems are often overwhelmed, resulting in prolonged waterlogging and disruption of daily activities. Climate change affects water availability and quality. Irregular rainfall patterns and prolonged dry spells challenge the region's ability to maintain a stable water supply. Additionally, saltwater intrusion from rising sea levels threatens freshwater resources, impacting both agriculture and domestic water usage. Mangrove forests and coastal ecosystems, which act as natural buffers against flooding and erosion, are under threat from both climate change and human activities. Their degradation reduces the natural resilience of the region to climate impacts.

Moreover, Semarang is a sinking city. Each year the soil drops 8 cm in the most affected areas. The main cause of this subsidence may be the pumping of groundwater from the deep aquifers. Regardless, the problem is acute, and the land is expected to subside even further if the causes are not addressed, increasing the lands vulnerability to coastal and fluvial flooding. The flood problem is also deeply intertwined with the recent rapid urbanization that has been taking place especially in the upper hilly areas. The urbanization of the previously green space on the hills also leads to more flash floods and a decline in the water supply.

The socio-economic impacts are profound, particularly for vulnerable communities. Displacement, loss of income, and health risks associated with waterborne diseases are significant concerns. Effective water management and adaptation strategies must address these socio-economic dimensions to build community resilience. Investment in resilient infrastructure, such as improved drainage systems, seawalls, and sustainable urban planning, is critical to mitigate the impacts of climate change. Effective water management and climate adaptation require robust policy frameworks and coordinated governance. Challenges include limited resources, lack of data for informed decision-making, and the need for collaboration across various levels of government and stakeholders. Phase I - Setting the Scene, identified four interlinked structural issues to address further:

- Reactive and Fragmented Approaches to Water and Flood Risk Management
- Disconnected Upstream-Downstream Management and Cross-Boundary Planning
- Unsustainable and Inequitable Water Supply Systems
- Underutilisation and Low Preference for Nature-Based Solutions

Addressing these challenges necessitates a multi-faceted Nature Based Approach, integrating scientific research, community engagement, and sustainable practices to enhance the resilience of Semarang and the broader North Java region to climate change.

Although the above challenges appear in the wider North Java region, the impacts are most pronounced in the greater Semarang region being a high risk, high hazard area. Given the considerable population density and predicted socio-economic growth potential, the region remains vulnerable. This is why, among others, the Government of Indonesia expressed interest to further look into the Semarang region, thereby building upon and integrate existing (bilateral) activities, knowledge and networks.

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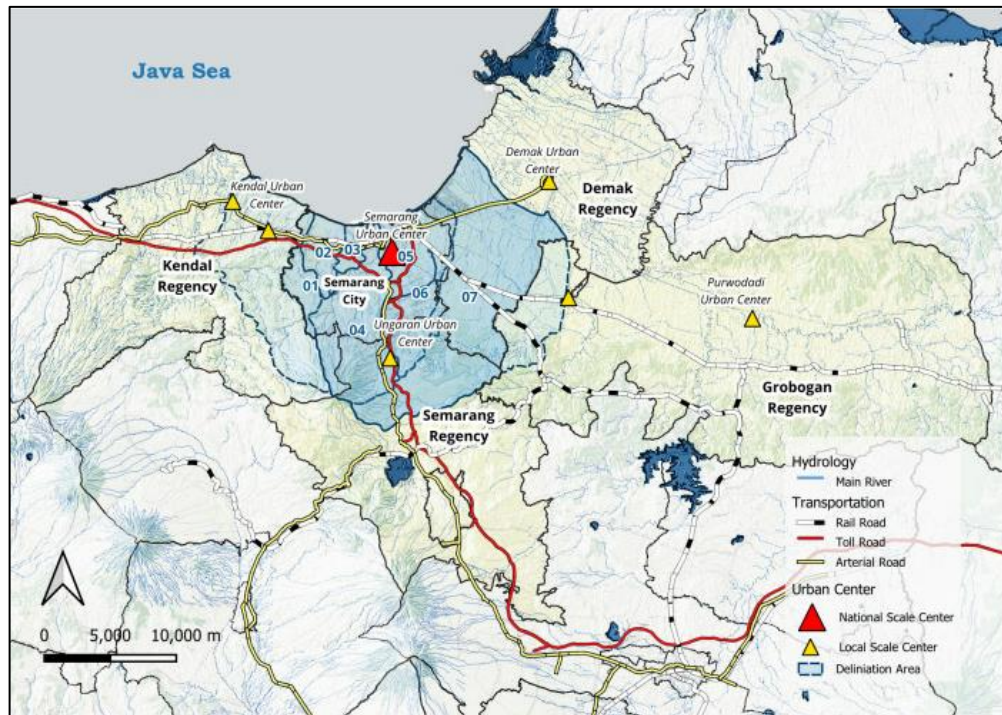


Figure 1: Regional scope, Greater Semarang Region

2.2 Previous work

*Building with Nature

The Building with Nature (BwN) project in Demak district, Central Java Indonesia is a successful example of Nature-based solutions to restore eroding delta's, low-lying regions that are prone to flooding from storm surges, high tides and other weather phenomena partly due to climate change. The success factors are multi-disciplinary, ranging from i) technical interventions such as coastal defence permeable dams' constructions, regenerating mangroves to ii) institutional building of public-private partnership and long-term collaboration iii) economic development through sustainable business models like rehabilitation of aquacultural ponds and coastal fishery and iv) social adaptation through coastal field training, building public awareness, participation and locally-led public and private initiatives.

The project gained higher economic returns from sustainable coastal fishery and through bio-rights that were provided to aquacultural farmers sharing their land for mangroves rehabilitation and restoration of aquacultural ponds that is future prove in terms of environmental, climate and social economic development.

The Building with Nature approach has demonstrated its effectiveness although there are challenges ahead in scaling and reaching long term sustainability. These include:

- Institutional and technical: ground water extraction should leverage with NbS coastal protection interventions. Overexploitation of ground water should be mitigated and be incorporated in coastal protection plans. Both public and private institutions should strengthen their cooperation.
- Economic: scaling of the BwN project is dependent on longer-term public private agreements, alignment of locally-led initiatives AND national coastal protection and development plans to finance infrastructural, nature based (mangroves and other resilient woods) developments together with resilient revenue models for sustainable fisheries, aquacultures and other agricultural and industrial practices.
- Social: build on the lessons learned from coastal field offices and community training and integrate with local and regional (public and societal) institutions.

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The BwN project report can be found through the following link: [Project Report](#).

Geographically linked to the BwN project is the construction of the Semarang-Demak Toll Road, particularly its Sayung-Demak segment. It is designed as part of a sea embankment, providing both transport connectivity and act as a flood-control barrier against tidal (rob) flooding. Despite attempts to make the design environmentally adaptive (e.g. applying bamboo mattress to address soft soil), the implementation negatively impacted local ecology (i.e. mangrove clearance for construction, changes in natural drainage patterns and river flow disruptions causing flooding, decline in fish stocks and displacement of traditional aquaculture). As such being partially counterproductive to the goals of the BwN project.

***Water as Leverage (WaL) Semarang 1.0**

From 2018-2020, the Water as Leverage for Resilient Cities Asia initiative, in which Semarang was a focus city, applied a holistic and inclusive design-led methodology. Though WaL Semarang generated strategic, integrated proposals, it lacked alignment with national development planning, investment frameworks and long-term financing. Its outcomes serve (and served) as crucial building blocks for Phase I: Setting the Scene and Phase II (described in this ToR).

As part of WaL Semarang, six (6) strategic programs were formulated, that till date still serve as inspiration for local urban planning. Information on the outcomes can be found through the following links: [Program Summary](#) and [One Resilient Semarang](#) and [Cascading Semarang](#).

***Developing 2 Build (D2B) Urban Flood Resilience Semarang**

Invest International Public Programs (IIPP) has awarded a "Develop2Build" (D2B) Grant to the Indonesian Ministry of Public Works (PU). This grant is intended to develop designs and supporting documentation for the Semarang Urban Flood Resilience (UFR) Project, aimed at enhancing flood protection in Central Semarang. In the initial project phase, four high-priority interventions in Central Semarang were identified and have been designed and engineered:

1. Upgrading embankments of the Silandak river, next to the Semarang airport
2. Installing a pumping station and removing bottlenecks at the Kali Baru (Baru River)
3. Improving the Kartini drain and renovating Kartini drainage pumps
4. Removing obstructions in the Lateral Canal

The UFR project is expected to be completed by June 2025, after which the project will be handed over to the Ministry of PUPR for implementation and construction, potentially supported by a grant from IIPP.

***Phase I: Setting the scene: Greater Semarang Region (2025)**

As part of the bilateral collaboration between Indonesia and the Netherlands, preparatory activities under the name of 'Phase I: Setting the scene for a coordinated vision for the greater Semarang region towards 2045: sustainable, integrated and inclusive urban development' took place from November 2024 – June 2025. See appendix 10 of the Tender Document for the Setting the Scene Report. The knowledge repository can be accessed through the following links (access on request):

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- [Repository](#) of the planned and ongoing water related initiatives in Greater Semarang region
- Policy document [repository](#) (summaries)
- Stakeholder mapping [repository](#)

During Phase I, an integrated analyses of technical and socio-economic challenges, governance and financial arrangements was prepared, combining outcomes of previous (bilateral) activities.

Technical and Socio-Economic Pillar [*Setting the scene report*]

Greater Semarang's water systems face growing stress from urban expansion, climate change, and intensifying land use. Core challenges include low piped water access, unsustainable groundwater extraction, subsidence, flooding, and gaps in waste and sanitation services, particularly in informal and low-income areas.

Piped water coverage remains below 40%, driving widespread groundwater extraction that causes critical land subsidence, especially in coastal zones like Sayung and Tugu. This, in turn, worsens tidal flooding and undermines the long-term effectiveness of major infrastructure.

Flooding stems from both upstream degradation—due to deforestation and land conversion—and downstream exposure, as urban growth encroaches into flood-prone zones. Many communities remain outside formal drainage and sanitation networks. In informal settlements, greywater, blackwater, and solid waste are frequently discharged into rivers or drains, leading to pollution, health risks, and drainage blockages—especially during heavy rains.

While infrastructure investment is ongoing—such as the Semarang–Demak Sea Wall, SPAM systems, and large dams—most interventions are sectoral and fragmented, with limited integration across scales or systems. Promising pilots in decentralized wastewater management and community-based water programs exist, but scaling remains limited.

The opportunity lies in adopting a more integrated, inclusive socio-technical approach—linking water supply, sanitation, drainage, and ecological functions, while explicitly addressing underserved communities. Strengthening cross-sector coordination, embedding nature-based solutions, and aligning infrastructure with watershed dynamics can improve public health, environmental quality, and long-term water resilience.

Governance Pillar [*Setting the scene report*]

Water governance in Greater Semarang is characterized by both significant fragmentation and strong institutional potential. While challenges remain in aligning mandates, coordinating across levels of government, and embedding resilience into routine planning processes, there are also clear opportunities to build on existing frameworks, capacities, and leadership structures.

At the national level, three key ministries hold influential and complementary roles:

- The Ministry of Public Works and Housing (PUPR) is the main actor for infrastructure implementation, with broad reach through its regional agencies (e.g. BBWS) and substantial project delivery capacity.
- The Ministry of National Development Planning (BAPPENAS) plays a coordinating and vision-setting role, aligning resilience and climate priorities with spatial and development agendas.
- The Ministry of Finance (Kemenkeu) provides financial stewardship and access to innovative instruments through institutions like PT SMI and PT PII, enabling blended finance and viability gap funding.

In addition to these three ministries, one new ministry, i.e, coordinating Ministry of Infrastructure and regional development, has been established to strengthen development at the regional level.

While these ministries provide essential leadership, their coordination is not always consistent, and overlapping project pipelines and responsibilities can create inefficiencies. Opportunities exist to strengthen cross-ministerial collaboration—particularly in defining shared priorities and aligning long-term infrastructure and resilience strategies.

At the provincial and local levels, multiple agencies—including BAPPEDA, PDAMs, DLH (environmental agencies), and community-led initiatives like PAMSIMAS—engage in planning and service delivery. However, governance remains siloed: roles are sometimes unclear, inter-agency communication is limited, and strategic coordination across jurisdictions (e.g. between Semarang City and Demak or Kendal) is weak. Spatial planning tools like RTRWs and RPJMDs often fail to reflect watershed dynamics or integrate resilience and nature-based approaches.

Despite these constraints, there is readiness within many institutions to move toward more integrated, participatory, and adaptive governance models. Building on existing forums, updating regulatory instruments, and investing in coordination platforms can help transition from fragmented efforts to a more cohesive governance system—where mandates are clearer, collaboration is institutionalized, and upstream–downstream linkages are actively managed.

Finance Pillar [*Setting the scene report*]

Financing remains one of the most significant bottlenecks in translating water resilience strategies into implementable action across Greater Semarang. The current system is marked by fiscal asymmetry, limited access to diversified funding instruments, and weak institutional support for preparing and structuring complex projects.

While Semarang City benefits from relatively strong own-source revenue (PAD), surrounding regencies like Demak and Kendal remain heavily reliant on central government transfers, limiting their flexibility to initiate or co-finance integrated or preventive interventions. Many priority projects—particularly those related to upstream conservation, decentralized services, or nature-based solutions—fall outside existing sectoral funding channels and are not captured in regional development budgets.

That said, the region is not without options. Indonesia has established a suite of blended finance and PPP tools, and institutions such as PT SMI and PT PII have been instrumental in financing public infrastructure with private sector participation.

Moreover, there is growing interest from international financial institutions (IFIs)—including the World Bank, ADB, and the Green Climate Fund to invest in urban climate adaptation, flood resilience, and water security. These institutions have shown willingness to support Greater Semarang through loans, grants, technical assistance, and project preparation facilities.

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However, several constraints persist. Many local governments lack the technical and administrative capacity to prepare bankable projects, navigate approval processes, or meet the fiduciary requirements of IFIs. There is also institutional unfamiliarity with innovative financing mechanisms, limited public awareness about cost recovery models, and community resistance to water pricing—often rooted in the belief that water should be a public good. Additionally, certain water-related infrastructure projects (e.g. coastal protection with NBS) have more difficulties establishing a sound business case over other, more revenue-generating, water infrastructure projects (e.g. drinking water, wastewater treatment). These factors create both political and operational barriers to sustainable financing.

Nonetheless, by strengthening investment readiness, clarifying roles across financing institutions, and embedding financial planning into the early stages of project development, the region can move toward a more proactive financing ecosystem. This includes establishing project pipelines, accessing climate finance, exploring land value capture, and integrating cost recovery models where feasible and equitable. With the right enabling conditions, financing can shift from a constraint to a key driver of water resilience.

Hotspots

Following intensive stakeholder discussions, 6 hotspot areas were defined, in which an integrated approach could enhance coordination towards resilient urban development.

- 1a. Coastal Area – East

The Sayung coastal area in Central Java faces severe land subsidence, tidal flooding, and coastal erosion, driven by excessive groundwater extraction and rapid industrial development. While initiatives like the Semarang-Demak Toll Road and Building with Nature are underway, these efforts have come late and remain fragmented, with limited integration between grey and green infrastructure. Concerns persist around the unclear effectiveness of flood protection measures, an overreliance on hard infrastructure, and missed coordination opportunities among agencies.

To reverse ongoing degradation and enhance long-term resilience, stakeholders must prioritize coordinated, multi-stakeholder coastal management, enforce groundwater regulations, and scale up nature-based solutions. Financial strategies must also align with systemic governance frameworks, leveraging Green Sukuk, Climate Bonds, PPPs, and blended financing to support integrated development that addresses aquifer recharge, subsidence mitigation, and coastal protection comprehensively.

- 1b. Coastal Area – West

Western Semarang, including the Kendal Region, is a national infrastructure priority, with projects such as the Harbour Toll Road, Sea Wall, and Kendal Industrial Park aimed at enhancing industrial access and logistics. As development in this area is more recent compared to the East, it presents a critical opportunity to avoid repeating earlier shortcomings—such as unmanaged

land subsidence, fragmented planning, and ecological degradation. However, challenges such as land subsidence, environmental risks, and coordination gaps persist. While financing draws from public-private partnerships (PPPs), Special Economic Zone (SEZ) incentives, and multilateral support, it remains largely disconnected from integrated water management and climate safeguards. Policymakers should prioritize nature-based solutions, enforce climate risk assessments, and promote inclusive development, supported by Green Sukuk, Climate Bonds, and blended finance.

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- **2. Downtown Area**

Downtown Semarang, a densely populated and economically vital area, faces chronic flooding due to ageing drainage, limited green space, and extreme weather. Despite ongoing efforts like D2B, NUFRéP, and canal upgrades, initiatives remain fragmented. Key challenges include coordination gaps, limited community engagement, and insufficient funding for integrated solutions. Stakeholders should prioritize holistic urban water management by aligning blue-green infrastructure with spatial planning, expanding decentralized systems, and strengthening collaboration. Financing through national and city budgets, PPPs, Climate Bonds, and international grants can support long-term resilience and urban revitalization

- **3a. Upstream Area in the Urban Fabric**

The upstream region of Semarang, including Jatibarang and BSB, is vital for water supply, flood control, and ecological stability. Key infrastructure such as the Jatibarang Dam, SPAM system, PDAM plant, and BSB Dam supports urban and industrial needs but faces challenges including urban encroachment, pipeline leakage, weak institutional coordination, and lack of routine maintenance. Although the Jatibarang Dam plays a critical role in flood control and water storage, it is currently underutilized as a source for drinking water. Sediment buildup in the dam poses potential hazards and reduces storage capacity, yet cleaning efforts remain limited. Addressing longterm risks to surface and spring water requires stronger land-use controls, integrated watershed management, and community engagement, backed by blended financing from national budgets development grants, and green financial instruments.

- **3b. Upstream Area with Rapid Growth**

The upstream areas of Semarang—Tinjomoyo, Banyumanik, and Gunungpati—are crucial water catchments threatened by unchecked urbanization that reduces infiltration and worsens downstream flooding. Fragmented, underfunded initiatives like rainwater harvesting face challenges from weak land-use enforcement, informal settlements, and poor upstream–downstream coordination. Strengthening watershed planning, scaling nature-based solutions, and enforcing zero delta Q principles are essential, supported by national budgets, international grants, Green Bonds, and ecosystem-based financing.

- **3c. Upstream Area with Green Open Space**

The upstream area spanning Demak and Semarang Regencies is vital for supplying clean water, slowing down water and supporting ecosystems in Greater Semarang. However, rapid development and weak land-use controls are threatening its ecological balance. Although projects like the Jragung Dam and small-scale conservation initiatives exist, they lack full integration and community involvement. There is a clear need for improved coordination, stronger conservation policies, and increased funding dedicated to protecting green spaces. Future efforts should focus on community-based forest

management, eco-friendly infrastructure planning, and financial incentives to encourage conservation among stakeholders

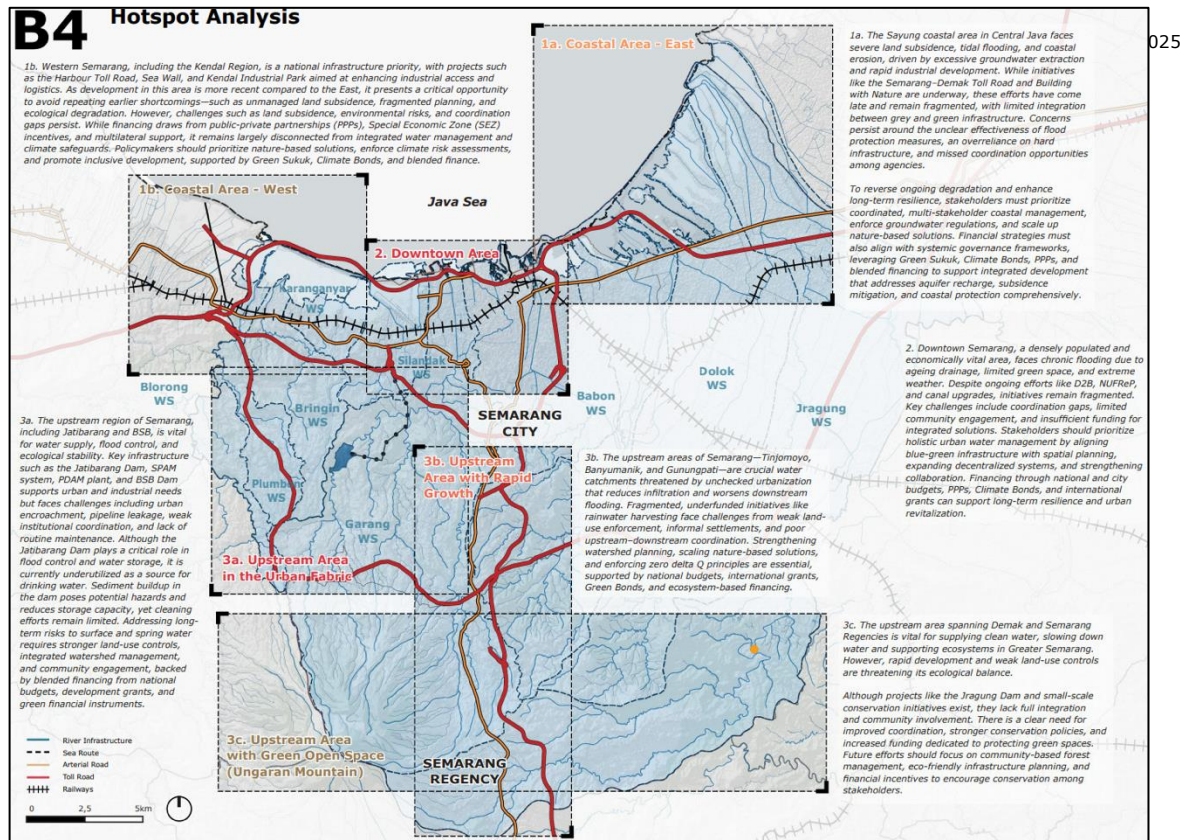


Figure 2: Hotspot Analysis [Setting the Scene Report]

2.3 Bridging Phase: Greater Semarang Region (2025)

With the Setting the Scene Process (Phase I) being finalized in August 2025 and Phase II (described in this ToR) starting from late November 2025 onwards, the intermittent period will be used to continue stakeholder consultations as to bridge the two phases, maintain stakeholder momentum and commitment and advance ongoing discussions.

The bridging phase is aimed to guide the stakeholders in hotspot prioritization, narrowing down from the six (6) hotspots to two (2) hotspots for which detailed intervention projects will be formulated as part of Phase II. A three-tiered approach will be applied to guide the hotspot prioritization process:

1. Overview of relevant local (regency, province, kota) and national level targets in planning documents applicable to each hotspot area
2. Initial ideas for project definitions, clearly connected / contributing to one or more of these targets. The initial ideas highlight potential intervention directions that can be further developed in Phase II.
3. Joint (local / national) decision making on the two (2) priority hotspots and a clear expression of commitment from each local, regional, national agency towards next steps of implementation.

The hotspot prioritization and decision-making process will be informed by a qualitative Multi-Criteria Analysis (MCA), co-developed with national and local

stakeholders. The conditions (requirements that must be met), criteria and their individual weight are set in consultation with the key national and local stakeholders. To ensure focus, transparency, and practicality at this stage, the following set of criteria will be considered:

- Alignment with policy and strategic planning documents
- Up- and downstream integration
- Stakeholder interest, engagement and ownership
- Co-benefits potential
- Urgency of intervention
- Data availability
- Potential for scaling
- Funding pathway (incl. blended finance alternatives)

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The MCA ensures a transparent and replicable process for hotspot selection, in which individual scoring is substantiated by traceable arguments, resulting in outcomes that are supported by the various key stakeholders and form the basis for further analysis in Phase II.

By the end of the bridging phase, the focus in each of the two selected hotspots is clear, i.e. to which target(s) defined in regional and local planning documents the potential intervention directions will contribute. Additionally, there is clarity on the responsibilities, roles and potential contributions of each (national, regional, local) level stakeholder towards further steps in implementation.

Determination of the exact set of interventions and anticipated contribution to each target(s) will be part of Phase II and is among others defined by the intended investment amount available through bilateral / multilateral loans, grants and/or Indonesian government budget. The results from the Bridging Phase will be available in November 2025.

2.4 Nature-based solutions approach

As climate risks intensify and urban areas face growing water-related challenges, there is increasing recognition that traditional, grey infrastructure alone is insufficient to ensure long-term resilience. **Nature-based solutions (NBS)** may offer a powerful complement to tackle socio-ecological challenges such as flood risk and sedimentation. Taking natural processes along in design and construction may result in more resilient infrastructure, more able to adapt to changes in the environment.

The Government of Indonesia through its National Flood Risk Management Strategy aims to adopt NBS as part of a more systematic and strategic solution to mitigate flood risk. Facilitated by the Asian Development Bank (ADB), World Bank and Government of the Netherlands, the Government of Indonesia has set major steps to mainstream NBS into national infrastructure planning and policy, among others through the formulation of a National NBS Strategic Guideline (ongoing). This guideline defines how NBS can be considered in infrastructure planning and design, scaled and standardized across sectors and geographies. This includes setting design parameters, performance criteria, and financing mechanisms tailored to Indonesia's unique environmental and governance context. In parallel the National NBS Technical Guideline is under development, defining the strategic and operational scope of NBS for flood risk management in Indonesia for rivers and riverine cities (supported by ADB) and urban area (supported by World Bank). The technical guideline closely aligns with the National River Engineering Design Criteria (KP Sungai) and is aimed to complement traditional gray infrastructure with sustainable, nature-based solutions.

Taking a nature-based approach which besides gray also evaluates green and hybrid solutions from the earliest phases of project development—starting with pre-feasibility and stakeholder dialogue—ensures that the ultimate set of interventions are more adaptive, cost-effective, and socially inclusive. In cities like Semarang, where rapid urbanization intersects with complex hydrological systems, gray infrastructure combined with NBS such as natural infiltration, urban wetlands, green corridors, and watershed reforestation may offer sustainable pathways to enhance water resilience while strengthening the connection between people and nature.

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As part of Phase II it is envisioned that defining and detailing intervention packages for the Greater Semarang region follow nature-based approach, in which gray, hybrid and green alternatives are evaluated that are able to enhance water resilience in a durable manner. As such, Phase II is envisioned to turn the NBS Strategic and Technical Guidelines into practice and provide a valuable learning case for replication in other areas across North Java and Indonesia.

2.5 Build Neglect Rebuild

Water infrastructure systems in many urban regions face a persistent cycle known as **Build–Neglect–Rebuild (BNR)**—where infrastructure is developed, insufficiently maintained, and ultimately requires premature rehabilitation or replacement. Often well before the intended end of its service life. This pattern has been observed in both high-income and low-income contexts and is particularly prevalent in fast-growing urban areas facing climate and water-related stress.

Key drivers of the BNR cycle include the absence of structured asset management systems, inadequate financing for operations and maintenance (O&M), weak institutional coordination, and a lack of long-term planning and ownership. As evidenced in case studies from both Southeast Asia and Bangladesh, addressing BNR requires a shift toward integrated, lifecycle-based approaches to infrastructure development and maintenance ([PFW Bangladesh Report, 2024](#); [PFW BNR Deep Dive Report, 2024](#)).

Breaking the BNR cycle starts with integrating O&M considerations from early project preparation onwards. In the context of Phase II, operationalizing the BNR principles could entail:

- **Embedding O&M into the full project lifecycle:** From pre-feasibility onwards, project designs must incorporate lifecycle costing, routine maintenance schedules, and clearly defined institutional responsibilities and budgets for O&M.
- **Highlighting requirements for asset management and monitoring systems:** Infrastructure should be regularly assessed using standardized condition surveys and performance indicators to enable timely maintenance and avoid reactive, crisis-driven repairs.
- **Addressing sedimentation and environmental pressures:** Infrastructure planning should take a nature-based approach, integrate sediment control, and catchment-scale interventions to extend asset lifespan and functionality.
- **Mobilizing sustainable and responsive financing:** Ensure that funding arrangements cover both capital investments and ongoing maintenance, supported by mechanisms for rapid emergency response.
- **Building inclusive and multi-level governance:** Foster local ownership through co-creation processes with communities, while aligning interventions with municipal, provincial, and national strategies and financing pathways.

2.6 Strategic Environmental Assessment

Since 2016, Strategic Environmental Assessment (SEA) – locally known as Kajian Lingkungan Hidup Strategis (KLHS) – is a mandatory step to be integrated in national and regional spatial development plans. In preparation to the 2025-2045 National Long-Term Development Planning process (RPJPN), Bappenas has conducted an SEA. A similar process took place at the local level. Per Article 16 of the 2009 Environmental Protection and Management Act, SEA involves three essential steps:

- Studying environmental effects of a policy, plan, or programme in its territorial context;
- Formulating reasonable alternatives;
- Recommending improvements to the plan or policy.

Given that SEA applies to policies, plans and programmes – and explicitly aims to integrate environmental considerations into planning – embedding Phase II activities within the light of SEA is necessary and beneficial to:

- Ensure alignment with national and regional planning: SEA at RPJPN and RPJMD levels ensures that water infrastructure projects are aligned with long-term strategic objectives, including sustainability, resource efficiency, and resilience.
- Contribute to holistic environmental assessment: By situating water infrastructure proposals within SEA, decision-makers can assess cumulative (multi-sectoral) impacts, carry out ecosystem service evaluations, and ensure resource use efficiency—key components of SEA reporting.
- Evaluate alternative scenarios and inform a strategic choice: SEA's requirement for formulating alternatives allows planners to evaluate different water infrastructure approaches (e.g., types of facilities, siting, scale) before committing to a specific concept (as developed as part of Phase II).
- Improve stakeholder legitimacy: SEA's inclusive, transparent, and participatory methodology—engaging ministries, private sector, academia, and NGOs—facilitates broad-based input and support (as needed to continue the process after Phase II).
- Ensure legal and institutional alignment: Embedding Phase II within SEA ensures compliance with the Environmental Protection and Management Law (2009), GR 46/2016, and MoEF Regulation P.69/2019, which govern environmental and social integration into development planning. As such, an important procedural step towards infrastructure implementation is accounted for.

In the light of integration of SEA components into Phase II, the Tendering Authority will be advised and supported by a team of experts from the [Netherlands Commission on Environmental Assessment \(NCEA\)](#), whom may also participate in project level meetings with the Tenderer.

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3. **AMBITION**

Building on the strategic vision, stakeholder alignment, and contextual understanding established during Phase I (Setting the Scene), the ambition of this assignment is to collaboratively advance the development of resilient, inclusive, and integrated water-related interventions in the Greater Semarang Region, by bridging the gap between visionary planning and tangible investment.

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Through a combination of strategic stakeholder engagement, technical and financial analysis, and integrative design processes, the assignment objectives are to:

1. Create an **enabling environment** that mobilizes commitment and financing from local, national, and international stakeholders through facilitation of meaningful multi-level dialogues that align policy, planning, and investment priorities. Build local ownership and capacity through inclusive and interdisciplinary processes such as design ateliers and community dialogues;
2. Co-develop **pre-feasibility level project concepts** for two priority hotspot areas that are technically sound, environmentally, economically and socially viable, and financially feasible. The pre-feasibility concepts are prepared to meet International Financial Institutions (IFIs) / Development Finance Institutions (DFIs) / local and regional governments appetite to provide technical assistance to prepare the feasibility study to get to a tender-ready infrastructure project;
3. Provide a clear **pathway towards project implementation**, including recommended steps for the transition to the feasibility study phase;
4. Develop a **communication and dissemination package** with visually attractive materials that support the stakeholder dialogue, design process and decision making and allow for effective replication of the process in relevant areas across Indonesia.

Ultimately, this assignment seeks to lay a strong foundation for implementation-ready, climate-resilient solutions that are embedded in local contexts, aligned with strategic government planning, and supported by viable financing mechanisms.

Paying attention to the following elements will help the process to reach its objectives:

- **Integrate outcomes of previous work** commissioned by RVO in the establishment of project concepts, being Phase I: Setting the Scene, the Bridging Phase, WaL Semarang 1.0, Water Management Semarang and Building with Nature.
- **Integrate outcomes of previous work** from different organisations such as but not limited to, World Bank (NUFReP), BlueDeal, WaterWorx, Invest International in the establishment of project concepts.
- **Extent the integrated narrative from Phase I** with the outcomes of Phase II, showing how the detailed interventions from the pre-feasibility documents contribute to enhancing integrated water resilience in the Greater Semarang Region. Connect the narratives to overall 5-year strategic planning documents and defined targets at national and local level, to show 1) to what extent proposed interventions are able to close the gap and 2) to highlight any gaps remaining.
- **Include multi-sectoral dynamics** as part of integrated water resource planning. The socio-technical pillar in Phase I has highlighted the various sectoral dynamics (e.g. industrial development, transport, urban sprawl) impacting water resource management in Semarang Region. Any water resource infrastructure planning is to integrate these ongoing and anticipated multi-sectoral dynamics in the early project development. This also includes

integration and alignment with spatial planning processes for the different sectors (e.g. Industry, Transport, Landuse, Public Health etc.) and the assessment of both negative and positive impacts of project interventions. The Tenderer is expected to take into these potential multi-sectoral impacts as part of the pre-feasibility study activities as well as in the various (government) stakeholder sessions.

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- **Contribute to impactful alignment** between different Indonesian Ministries (Bappenas, PU etc.), financing institutes (e.g. WorldBank, Invest International, ADB, AIIB) and implementing agencies on water infrastructure related planning in the Greater Semarang Region by facilitating bi-annual coordinated dialogues. The dialogues are aimed at 1) creating a shared understanding on the challenges, infrastructure and governance needs, 2) improving alignment among the different ongoing and planned (large) water infrastructure and governance projects, their geographical scope and anticipated impact and through this 3) enhancing integrated infrastructure planning to increase infrastructure effectiveness and durability of specific interventions.
- **Incorporate Build Neglect Repair;** The consultant(s) are expected to incorporate considerations that help avoid the Build-Neglect-Rebuild (BNR) cycle, as identified in PfW-supported work in Bangladesh, Mozambique and other countries. This includes adopting a life-cycle perspective in the design and planning of infrastructure, identifying risks related to inadequate O&M, and proposing institutional and financial arrangements that support long-term asset sustainability. The approach should reflect lessons learned from past projects and contribute to more durable, well-maintained water infrastructure systems.
- **Maximize synergies with WaterWorX Semarang;** VEI B.V. has a long-term presence in Semarang since 2019 through the Water Operator Partnership (WOP) with PDAM Semarang under the WaterWorX program. As part of this, VEI is actively involved in enhancing water supply and water resilience in the region. The expert team of VEI is available to partner with any consortium to support with background material, detailed system knowledge and network, alignment with WaterWorX initiatives, potentially of great value to enhance the quality and viability of the products that will be developed under Phase II. At the start of Phase II a coordination meeting between VEI B.V., Consultant and Contracting Authority is held to discuss the type and level of support. If any, the Contracting Authority will formalize this in an MoU/partner agreement between VEI B.V. and Consortium/Contracting Authority.
- **Collaborate and align with BlueDeal;** Five Dutch Water Authorities have joined forces to collaborate with provincial authorities in Pekalongan, Semarang and Tangerang to enhance flood control and water quality. In Semarang, BlueDeal activities focus on flood risk management by supporting local authorities to enhance Standard Operating Procedures and strengthen management and decision making around flood resilience. At the start of Phase II, a meeting between Tenderer, contract authority and a BlueDeal delegation will be arranged to discuss collaboration and alignment of activities.
- **Collaborate and align with Invest International** on ongoing (Urban Flood Resilience Semarang) and planned (Coastal interventions in Demak) infrastructure investment projects. Throughout Phase II it is anticipated that consortia and experts of RVO and Invest International exchange on a regular basis relevant insights and progress of their assignments, ultimately resulting in optimal alignment of project interventions developed in connected

geographies. In case hotspot area Demak is prioritized during the bridging phase, the bridging phase will further detail geographical delineation to not overlap with investment preparation activities by Invest International.

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4. ACTIVITIES

4.1 *Enabling environment*

In order to serve an inclusive participation process, the Tenderer is expected to integrate and apply Gender Equality, Disability and Social Inclusion (GEDSI) principles throughout the various outlined activities, stakeholder dialogues and atelier sessions below to ensure participation of women, youth, persons with disabilities and marginalized groups.

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The Tenderer is expected to integrate multi-sectoral dynamics as part of the different stakeholder engagement activities below. As such, it is aimed to align water infrastructure planning with anticipated / foreseen developments in other sectors (e.g. Industry, Transport, Housing, Landuse) in order to avoid negative impact and increase positive impacts (co-benefits).

***Financing and Investment Dialogue**

After the kick-off, the team will facilitate one (1) financing and investment dialogue with potential financiers who are active in the Greater Semarang Region – to be held in close coordination with (at least) the Indonesian Ministries of Public Works and Bappenas, key stakeholders from kota, regency and province level and the Netherlands Embassy. The financing and investment dialogue is aimed to define upfront the intended investment amount available through bilateral/multilateral loans of IFIs and DFIs, grants and/or Indonesian government budget as well as any pre-requisites, conditions, and investment criteria that come with the pre-feasibility study document. This helps set the financial boundaries for project intervention packages, ensures bankability and increases likeliness of implementation. The process intends to assess sizeable investment projects (EUR10-20 mln, >EUR20mln), implemented through a blended mix of funding and financing. Confirmed attendance and participation of at least World Bank and Invest International is a prerequisite for the financing and investment dialogue to take place. Setting a date for the dialogue thus needs to close consultation with aforementioned parties. The Netherlands Delegated Representative on Water can be used to liaise in this.

The *Coordinated Stakeholder Dialogues* can be used to keep track of the discussions and outcomes of the financing and investment dialogue during project execution, to evaluate whether the process meets the pre-requisites expressed by the participating stakeholders.

***Design ateliers and stakeholder consultations**

Throughout the tender contract period, the tenderer is expected to facilitate (high-level) stakeholder consultations and design ateliers in order to keep momentum, engagement and commitment among stakeholders, inform on different design steps and ensure local anchoring and grounding of the initiatives. Two types of interaction are foreseen.

Local atelier sessions

Throughout the contract period organize at least eight (8) local atelier sessions to gather input for design steps, collect feedback on the feasibility of the project ideas and gain commitment for the next steps in the process. The local atelier sessions are to be clearly linked to intermittent milestones of the project development (Section 5.2). Depending on the design process, atelier sessions can be held with a larger or smaller group of stakeholders and can have a specific (e.g. thematic or geographical) focus and have a full day or multi-day character.

The local atelier sessions built upon the outcomes of the *financing and investment dialogue*. The atelier sessions will involve financial experts (both as part of the consortium as well as from the different participating organizations) able to assess whether project ideas fit within the available investment budget (loan, grant, government budget).

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The local atelier sessions are aimed to have an integrated inter-disciplinary nature, aimed to bring different expert fields and government levels together to assess financial viability and feasibility of solutions pathways from different angles (e.g. policy, planning, finance, technical, etc.). The local atelier sessions are an envisioned platform to integrally discuss, modify and verify the process and deliverables, such as the project proposals and conceptual designs. The sessions might further help the expert team gain a better understanding of the city- and region's strengths, vulnerabilities and local dynamics (culture, vulnerable communities, youth, disabled, etc), and gather additional data and information to enrich the designs. As such, the sessions form a key element of Phase II and are used to jointly move from identified challenges to targeted solutions. It is the responsibility of the expert team to engage in building local coalitions, capacity and local support during the process. The local atelier sessions will be designed to meet the needs of both the team as well as all other key stakeholders and counterpart organizations involved in the Phase II process.

Participate in the Atelier Sessions with (a select group of) international and locally-based experts. As a minimum, it is expected that the team lead and/or deputy team lead participate in all workshops. However, physical participation of other experts (both international and local) is strongly encouraged. Teams are to indicate the intended physical presence of experts in the proposal.

Several aspects need to be considered as part of the Atelier sessions:

- Discuss process and approach, including clear milestones and deliverables during a first design atelier session
- Use the 5-year strategic planning from national and local level agencies as a point of departure in the atelier sessions
- Actively stimulate discussions, joint design and in-situ workshop elements and other activities to stimulate out-of-the-box thinking while gathering the necessary information to determine which conceptual designs to take further
- Discussions on prioritization will be incorporated as part of the atelier sessions. There should be room for shared vision development and enable actors to influence vision- and project development activities.
- Identifying options for leverage, e.g. by connecting opportunities for local business development or improving public sector
- responsibilities should be a prominent part of the discussion. Project ideas should fit within the existing – mainly sectoral – institutional model of the Government of Indonesia

Community dialogues

Throughout the process of project development, organize for at least four (4) dedicated moments of interaction with local communities in which the anticipated project interventions are foreseen. The community dialogues are to ensure inputs and feedback of local communities is integrated into the project interventions, important input and considerations for the preliminary ESIA are gathered, and local involvement for further project development is mobilized. The community dialogues

further help to identify opportunities for livelihood improvement at community level that can be integrated into the design concepts.

High-level round tables

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Organize at least two (2) high-level round tables during the contract period to inform high-level officials on the progress of project development, confirm alignment with policy, planning and financing, gather verbal commitments for important design steps in the project development, discuss follow-up financing mechanisms for the feasibility phase and reflect on the replicability and upscaling of the approach to other areas. It is advised to make the various potential financing agencies part of the high-level round tables. The high-level round tables are to be clearly linked to intermittent milestones of the project development (Section 5.2).

Interact with the Partners for Water team in preparing both the Atelier sessions and the high-level round tables that are part of Phase 2, for which it is expected that the tenderer provides an in-depth contribution to the agenda, stakeholder list and workshop set-up/contents.

***Coordinated stakeholder dialogues on the Greater Semarang Region**

In line with the rationale behind Water as Leverage and Setting the Scene, working towards resilient cities and landscapes does require alignment among different stakeholders and initiatives in order to effectively and integrally mitigate complex water related challenges and adapt to changing conditions.

This sub-activity anticipates facilitating bi-annual coordinated dialogues between different Indonesian Ministries (Bappenas, PU etc.), financing institutes and implementing agencies on water infrastructure related planning in the Greater Semarang Region. Specific responsibilities include:

- Support Bappenas in their capacity to set-up and chair a regional dialogue on Integrated Water Resilience in Greater Semarang Region
- Act as a secretary to Bappenas in facilitating inter-agency collaboration. Jointly prepare the coordinated dialogue by collecting input from the individual stakeholders – both local and national level, as well as International Financiers such as World Bank, Invest International and Asian Development Bank - to set a curated agenda for the coordinated dialogue.
- Draft the Minutes of Meetings of the coordinated dialogues.
- Collect follow-up actions and action-holders from the coordinated dialogue and regularly inquire the progress.

Please note that these dialogues focus on the Greater Semarang Region and therefore may discuss initiatives that might fall outside the geographical scope of the two hotspot areas. Therefore, this sub-activity is separated from the high-level round tables.

4.2 Project development

As part of the project development, the initial concepts in each of the two hotspot areas will be further detailed up to pre-feasibility level, ultimately resulting in a pre-feasibility study document for each hotspot location (two in total).

***Validate initial concepts**

Following a process of familiarization with the outcomes of Phase I and the Bridging Phase, the expert team is expected to validate the focus (i.e. to which target(s) defined in regional and local planning documents the potential intervention

pathways will contribute) defined in each of the two hotspots areas. The expert team re-assesses the high-level costing, and mirrors this with the outcomes of the *Financing and Investment Dialogue* on the available intended investment amount.

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*** Technical Options Assessment**

The targets as set in regional and local planning can be attained via different combined sets of interventions. As part of the technical options assessment, disaggregate the potential intervention pathways into a list of possible intervention packages by following a nature-based approach, outlining both structural and non-structural interventions, and the potential for hybrid or green solutions, next to or instead of grey infrastructure. By defining intervention packages, one is able to better secure the integrated nature of interventions, potentially being able to mitigate multiple challenges at the same time. The thematic focus of each package is aimed to address a combined set of challenges of e.g. urban drainage, retention, recharge, water supply, though each package might have different centres of gravity.

A first *Local Atelier Session* can be held to gather inputs on the different intervention packages. Following stakeholder discussions during Phase I, there is a preference to explore intervention packages in the upstream, that have a positive impact on downstream flooding – a strong upstream-downstream connection.

Define and apply screening criteria to perform a preliminary screening of the different packages. These may include, but not limited to, the following aspects:

- Technical feasibility in local site conditions (geology, hydrology, urban setting, etc.)
- Operational and maintenance requirements
- Potential effectiveness in reducing flood risk or increasing infiltration
- Preliminary cost implications
- Capacity to improve livelihood of local communities
- Environmental and social acceptability
- Integration with existing or planned infrastructure, and or the ability to have a multiplier impact in case combined with other interventions
- Potential for replication
- Alignment with government plans or regulations, incl. environmental permitting (AMDAL)

The preliminary screening may require analytical work necessary to make an informed scoring, this may include: analysis of site locations, calculation of potential environmental, social and economic impacts, hydrological modelling, etc.

Please note that detailed technical surveys are outside the scope of this project development phase, but will be recommended for the feasibility phase.

Through this process, shortlist priority packages of technically viable and context-appropriate options for further consideration, which will be validated through the community dialogues and atelier sessions.

The technical options assessment is to be part of an iterative process in which also the Economic and Financial Analysis as well as the Social and Environmental Screening is conducted. As such, an intervention package can be formulated in which positive ('do good') impacts are optimized and negative ('do harm') impacts are minimized, while being financially feasible and economically viable.

***Economic and Financial Analysis**

Based on the shortlisted options, estimate order-of-magnitude costs and benefits for each intervention option, including:

- Capital costs (CAPEX)
- Operation and Maintenance (O&M) costs over the lifecycle (OPEX)
- Potential revenues and project net benefits (including an estimated valuation of the physical costs and benefits)
- Environmental and Social Screening (see below)
- Rehabilitation or replacement costs if relevant
- Potential negative externalities of construction
- Transaction costs (permits, community engagement, planning, etc.)

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Perform a screening-level Cost-Benefit Analysis, following the FAST (Flexible, Appropriate, Structured, Transparent) modelling standard, including a rough indicate on key indicators such as Benefit-cost ratio (BCR), Net Present Value (NPV), Financial Internal Rate of Return (FIRR) and payback period and conduct a sensitivity analysis.

Examine the financial implications from the perspective of implementing agencies and potential investors or funders, thereby addressing affordability, funding sources and finance mechanism options.

The Economic and Financial Analysis is to be part of an iterative process in which also the Technical Options Assessment as well as the Social and Environmental Screening is conducted. As such, an intervention package can be formulated in which positive ('do good') impacts are optimized and negative ('do harm') impacts are minimized, while being financially feasible and economically viable.

***Environmental and Social Screening**

Screen the shortlisted intervention packages for likely environmental and social impacts using structured tools. Highlight both positive ('do good') and negative ('do harm') impacts. Please note that this screening is an integral part of the Economic and Financial Analysis. At least pay attention to the following aspects:

Environmental risks:

- Land take and habitat disturbance
- Impact on water quality or hydrology
- Pollution, noise, air quality issues during construction
- Risk of induced flooding or unintended consequences

Social risks:

- Physical or economic displacement
- Loss of access to land, water, or public services
- Impacts on indigenous peoples or marginalized communities
- Health and safety concerns
- Gender and social inclusion considerations

Based on this screening, perform a preliminary Environmental and Social Impact Assessment (ESIA) in which attention is paid to applicable legislation and safeguards to consider, and in which you highlight and detail the contents of the thematic assessments that are required during the Feasibility Phase.

***Prioritization of intervention options**

Combine the economic, financial, technical, environmental and social aspects to prioritize or rank the intervention options and inform the discussion on the preferred

intervention option. Use atelier sessions to perform this exercise jointly with the stakeholders and validate it through the community dialogues at community level, and use the high-level round tables to gain support (buy-in) for the priority options from all key stakeholders at a preliminary level. This high-level round table is used to secure preliminary commitment from all stakeholders to continue towards Feasibility Study level.

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***Preliminary Design Concepts**

For each selected intervention, prepare a concept-level design package that includes:

Narrative Description:

- Objective and rationale
- Description of intervention
- Integration with existing infrastructure or systems
- Expected benefits (e.g., flood extent reduction, enhanced water availability, biodiversity, etc.), linked to the targets set in local, regional and national planning

Basic Engineering Concepts:

- Proposed location or general alignment (with map/overlay)
- Key design parameters (e.g., channel dimensions, storage volume, area restored, etc.)
- Approximate sizing and configuration
- Basic construction approach and assumptions (e.g. type of vegetation, materials used, outflow design)
- O&M considerations

Refined Cost Estimates:

- Refine the cost estimate (CAPEX and OPEX) from the Economic and Financial Analysis based on the increased detail provided with the priority interventions

Visual Illustrations:

- Conceptual layout plans or diagrams (not final drawings)
- Schematic cross-sections or renderings (if applicable)

Design Assumptions and Constraints:

- Phasing possibilities (short-, medium-, long-term)
- Land availability and access
- Topography and hydrology assumptions
- Environmental or social restrictions
- Institutional and capacity limitations

Following the outcomes of the financing and investment dialogue, align the contents of the design concepts to meet investment criteria of interested IFIs / DFIs / local, regional and national level agencies.

***Risk Assessment**

Perform a risk assessment for the various intervention packages, thereby addressing the following aspects:

- Technical risks (e.g., soil instability, sea level rise)
- Financial risks (cost overruns, delays)
- Environmental and social risks
- Institutional/governance risks

- Risk mitigation strategies

***Implementation Arrangements**

Assess and describe the following aspects to outline the potential institutional, regulatory and financial arrangements deemed necessary to implement the prioritized interventions:

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- Arrangements (e.g. institutional and legal framework, regulatory requirements and approvals, barriers or constraints or effective execution)
- Potential project implementation structure for each intervention, including the potential for bundling interventions
- Roles and responsibilities of key actors (e.g., Ministry of Public Works, local (kota, regency, provincial) government, local communities), incl. the commitment from a 'owner' from Government of Indonesia for each of the two Pre-feasibility concepts
- Procurement and contract options (EPC, design-build, etc.)
- Capacity building needs

4.3 Preparation next phase

In order to guide the process towards a next phase of development, two components are anticipated.

***Project impact and preliminary project schedule**

Provide a clear overview of the anticipated project impact and the various steps after the pre-feasibility phase towards implementation. Closely coordinate with relevant key stakeholders to align and confirm the contents of this section. Clearly indicate and detail the following aspects:

- Theory of change
- Project objective
- High-level step-by-step description towards implementation (e.g. studies, design, permitting, procurement, construction) presented in a logic framework
- Detailed description of the required next steps for Feasibility Study, including which (data) gaps are to be addressed, which studies and in-depth surveys are still required as part of the Feasibility Study Phase
- High-level timeline
- Expected results (linked to targets set in local, regional and national planning), key milestones and dependencies, connected to the timeline and following Indonesian planning process

Ensure the project impact and preliminary project schedule is an integral component of the pre-feasibility document.

*** Optional: Handover and support transitions to Feasibility Study**

Allocate dedicated time and budget to support the handover process and guide the transition from pre-feasibility to feasibility study level. Depending on the outcomes of the two high-level round tables on continuation of project development into Feasibility Study Phase, the budgeted resources for this component will be effectuated. The consultant is therefore asked to include this as an optional component in his (budget) proposal. The total budget, including this optional component, will be evaluated as part of the tender evaluation procedure.

4.4 Communication and dissemination

***Visual Communication Package**

Develop a visual communication package to be updated throughout the contract period and to be used in briefings and outreach. Include as part of the communication package at least:

- Bilingual maps and infographics
- Short slide decks for targeted stakeholder briefings
- One-pagers tailored to technical, financial and governance stakeholders
- Input for at least two (2) articles for communication via social media channels (from PFW and others)

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***Updated Knowledge Repository**

Continue populating and expanding the knowledge repository (Google Docs) developed during Phase I, and include at least:

- Phase II project concepts and outputs.
- Meeting notes, stakeholder agreements.
- Additional spatial/technical datasets as provided during the process.

Facilitate the hosting of the repository during the contract period, given the knowledge repository is continued in Google Docs with restricted (permitted) access to view and/or edit.

5. DELIVERABLES

5.1 Enabling environment

The deliverables outlined in this section contribute to and provide evidence for reaching objective 1: to create an **enabling environment** that mobilizes commitment and financing from local, national, and international stakeholders through facilitation of meaningful multi-level dialogues that align policy, planning, and investment priorities. Build local ownership and capacity through inclusive and interdisciplinary processes such as design ateliers and community dialogues.

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A. Financing and investment dialogue outcome report

Minutes of the meeting of one (1) financing and investment dialogue incl.:

- Key takeaways and decision points
- Stakeholder commitments or follow-up items
- Reflection on replicability and scale-up
- List of attending organizations

B. Atelier sessions outcome reports

Documentation of at least eight (8) atelier sessions held with communities, local government, and national actors:

- Visual materials, maps, design sketches
- Stakeholder insights and alignment feedback
- Workshop findings and implications for project design
- Reports will include:
 - Key takeaways and decision points
 - Stakeholder commitments or follow-up items
 - Reflection on replicability and scale-up

C. Community Dialogues outcome reports

Documentation of at least four (4) co-creation activities held with communities:

- Visual materials, maps, design sketches
- Stakeholder insights and alignment feedback
- Workshop findings and implications for project design
- Reports will include:
 - Key takeaways and decision points
 - Stakeholder commitments or follow-up items
 - Reflection on replicability and scale-up

D. Roundtable outcome reports

Documentation of at least two (2) roundtables held with high level actors:

- Visual materials, maps, design sketches
- Stakeholder insights and alignment feedback
- Workshop findings and implications for project design
- Reports will include:
 - Key takeaways and decision points
 - Stakeholder commitments or follow-up items
 - Reflection on replicability and scale-up

The outcome reports are expected to be supplemented by clear commitments from responsible actors in relation to 1) agreement over the selected interventions, 2) the role of the actors towards implementation (ownership) and 3) indicate the anticipated funding and financing applicable. A responsibility that is shared with key Indonesian Counterparts for this assignment.

E. Coordinated dialogues outcome reports

Minutes of meetings of at least one (1) coordinated dialogues, including:

- Key takeaways and decision points
- Stakeholder commitments or follow-up items
- Reflection on replicability and scale-up

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5.2 Project development

The deliverables outlined in this section contribute to and provide evidence for reaching objective 2: Co-develop **pre-feasibility level project concepts** for two priority hotspot areas that are technically sound, environmentally, economically and socially viable, and financially feasible. The pre-feasibility concepts are prepared to meet International Financial Institutions (IFIs) / Development Finance Institutions (DFIs) / local and regional governments appetite to provide technical assistance to prepare the feasibility study to get to a tender-ready infrastructure project.

A. Phase 2 Synthesis Report

A professionally designed and bilingual (EN/ID) supporting maximum 10 page document capturing:

- Summary of the overall process
- Portfolio of projects and programmatic logic
- Expected impacts and effects from the proposed intervention (related to the targets set in local, regional and national planning), with an explicit focus on water and climate change adaptation related impacts.

B. Phase II Project report

The aim of the project report is to report on the process of Phase II towards both the Contracting Authority and key counterpart. It serves both as a backlog and as a reference for future processes that aim to follow the same methodology. The project report is expected to:

- Outline the applied methodology and approach
- Portfolio of initial concepts and considerations / decisions
- High level technical, environmental and economic assessments
- Prioritization and methodology matrix of intervention options
- Set-up, reflections and key outcomes of stakeholder process
- Suggest potential improvements to the methodology and approach

The project report should among others reflect on various process and output indicators:

- Number and type of stakeholder sessions held
- Number and type of stakeholders attending
- Number of (financing and funding) commitments with assigned responsibilities and / or expressions of concrete interest in follow-up implementation
- Level of stakeholder ownership demonstrated through written endorsements
- Number of interventions accepted by national and local counterparts for integration into planning
- Level to which GEDSI principles were met during the stakeholder sessions

C. Two (2) Pre-feasibility study reports

Two separate Pre-Feasibility study reports, one per selected intervention package, that serves as input for an investment proposal of interested IFIs/DFIs and therefore aligns with their investment criteria, including:

- Description of relevant project context (making use of outcomes Phase I), with problem analysis, project description, institutional context, stakeholder analysis and available data/studies/reports.
- Clear indication of the location or locations of the potential intervention packages, including an overview of existing conditions, current use and ownership over the site.
- Integrated assessment of:
 - a. Technical options
 - b. Economic and financial project aspects, including a conceptual financing mix, identifying the costs and benefits, and indicating if it is economically and financially viable to go further with this project proposal. As a result of this assessment, a preliminary conclusion must be drawn about the financial feasibility and bankability of the project proposal, and suggestions regarding necessary actions to bring this assessment to full feasibility.
 - c. Preliminary environmental and social impacts of the project proposal.
 - d. Risk and Impacts
 - e. Governance related aspects, evaluating the opportunities and barriers related to the proposed intervention from a governance/legal perspective.
 - f. Assessment of the coherence of the proposed project with Indonesia and Semarang development plans, sector plans and policies and other applicable documents, indicating the way the conceptual design fits in national, regional and local strategies, policies and plans.
- Attractive and technically sound visualisation of the proposed project, including the connection to landscape elements and water bodies within the Semarang context.
- In-depth evaluation of the potential impacts on economic development, social impacts and employment in the city.
- General costing estimates options (CAPEX and OPEX)
- Implementation arrangements
- Project impact and preliminary project schedule

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5.3 Preparation next phase

The deliverables outlined in this section contribute to and provide evidence for reaching objective 3: Provide a clear **pathway towards project implementation**, including recommended steps for the transition to the feasibility study phase.

A. Project impact and preliminary project schedule

- Dedicated section of the pre-feasibility document outlining the anticipated project impact and results, high-level timeline, and a step-by-step description towards implementation
- At least one (1) online meeting to mirror and confirm the contents and timelines included as part of the project schedule

Note: this deliverable is expected to form an integral component of the pre-feasibility document.

B. Handover

- Acceptance letter of the pre-feasibility reports from the project owner at Indonesian side.

- Support in meetings and writing the uptake of pre-feasibility outcomes into the strategic planning and investment process

5.4 Communication and dissemination

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The deliverables outlined in this section contribute to and provide evidence for reaching objective 4: Develop a **communication and dissemination package** with visually attractive materials that support the stakeholder dialogue, design process and decision making and allow for effective replication of the process in relevant areas across Indonesia.

A. Visual Communication Package

For use in outreach and briefings, including:

- Bilingual maps and infographics
- Short slide decks for targeted stakeholder briefings
- One-pagers tailored to technical, financial and governance stakeholders
- At least two (2) articles for communication via social media channels (from PfW and others)

B. Updated Knowledge Repository

- Phase 2 project concepts and outputs.
- Meeting notes, stakeholder agreements.
- Additional spatial/technical datasets as provided during the process.
- Facilitate the hosting of the repository.

6. KEY COUNTERPART ORGANISATIONS

A broader set of counterpart organisations is supporting and/or connected to this assignment:

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Organisation	Type of involvement and responsibility
RVO – Partners for Water	Responsible for the coordination of the assignment. Close contact with the Partners for Water program is also needed with regard to the dissemination of project results and communication.
Embassy of the Kingdom of the Netherlands (EKN)	The Embassy can support the project with insights and network, especially with regard to the different ministries in Indonesia. After contracting, the team is required to define specific agreements with EKN on the process and involvement in reaching out to (governmental and international) stakeholders.
Ministry of Public Works and Housing (PUPR)	Signatory of the bilateral MoU on Water between the Netherlands and Indonesia. Counterpart and lead for IND in this assignment.
Ministry of National Development Planning (Bappenas)	Counterpart and contributor for IND in this assignment. Coordinating Ministry to guide the national development planning process. Responsible for coordinating line ministries in the process of study, and provide available data, information, and advice within the context of planning process and products.
Regional planning agencies (provincial/district/city) including Bappeda Kota Semarang	Responsible for coordinating local agencies in the process of study, and provide available data, information, and advice within the context of planning process and products at regional level Bappeda Kota Semarang is the development planning agency for Semarang and the surrounding region.
Local/regional technical agencies (e.g. public works, environment, forestry, fisheries/agriculture, industry, village community empowerment, social, etc.)	Provide technical data, information, insights within each sector.
Bappeda Central Java Province	Development planning agency for the Central Java Province.

7. IMPLEMENTING ARRANGEMENTS

Timeline: The assumed commencement of the project is expected to be 2 December 2025. The assignment will be carried out during 16 months so that the final outcomes should be available by 31 March 2027. The consultant is required to provide a detailed planning of all activities including also a schedule of moments of engagements with stakeholders (see the overall planning in paragraph 8). The planning should also allow sufficient time for review of deliverables and also take into account holiday seasons.

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Roles of Contracting Agency RVO and PU: The Contracting Agency is RVO and is responsible for the final approval of deliverables, in close coordination with PU for acceptance. The Consultant must communicate with RVO on all matters pertaining to this assignment.

PU, as the formal counterpart to this assignment, has an active role in this assignment, and will therefore be included in the review of deliverables, stakeholder consultations and progress meetings. A point of contact within the PU shall be provided during the kickoff meeting. The Consultant is expected to coordinate actively with PU on technical matters and stakeholder consultations, keeping RVO copied in communications. A kick-off meeting will be organized by RVO with the participation of all involving parties (the consultant, PU, and RVO) to discuss and agree on the approach and plan of implementation.

Progress meetings: A monthly meeting will be held – led by the consultant – between RVO, the Consultant, and the Embassy during the execution phase. Dates for monthly meetings will be set up at the kick-off meeting. Additional meetings may be organized upon need. The Consultant is required to give detailed insight into the progress of the assignment during these progress meetings. For this purpose, a change log, progress report or other methodology shall be used, to be agreed upon in the kickoff meeting. The emphasis should be on planning, outputs, key project risks, possible mitigation measures that can be taken by the Consultant and/or the Contracting Authority/Key Indonesian Counterparts (PU, Bappenas), and the principal owner to address these risks. Additionally, it is recommended to provide an online platform where all assignment output can be accessed by relevant parties.

Coordination with Invest International: Invest International has ongoing (Urban Flood Resilience Semarang) and planned (Coastal interventions in Demak) infrastructure investment projects in the Greater Semarang Region. Throughout Phase II it is anticipated that consortia and experts of RVO and Invest International exchange on a regular basis relevant insights and progress of their assignments, ultimately resulting in optimal alignment of project interventions developed in connected geographies. In case hotspot area Demak is prioritized during the bridging phase, the bridging phase will further detail geographical delineation to not overlap with investment preparation activities by Invest International.

Coordination with WaterWorX Semarang: VEI B.V. has a long-term presence in Semarang since 2019 through the Water Operator Partnership (WOP) with PDAM Semarang under the WaterWorX program. As part of this, VEI is actively involved in enhancing water supply and water resilience in the region. The expert team of VEI is available to partner with any consortium to support with background material, detailed system knowledge and network, alignment with WaterWorX initiatives, potentially of great value to enhance the quality and viability of the products that will be developed under Phase II. At the start of Phase II a coordination meeting

between VEI B.V., Consultant and Contracting Authority is held to discuss the type and level of support. If any, the Contracting Authority will formalize this in an MoU/partner agreement between VEI B.V. and Consortium/Contracting Authority.

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Quality control and assurance: The consultant must carry out quality control and quality assurance prior to submitting all draft deliverables. Upon request, the consultant must provide insight into quality control carried out for specific deliverables. These can include but are not limited to, internal draft versions of reports, internal quality control sheets of model set-up, modelling logs, calibration and validation, and internal checklists on data sets.

Report review procedure: Drafts of the deliverables must be sent to RVO. The draft deliverables will be reviewed by RVO and PU, and where applicable other relevant stakeholders. RVO will coordinate the delivery of a compiled and structured list of comments to the consultant within 2 weeks after delivery of the draft reports. RVO may extend the review period in case feedback from key stakeholders cannot be provided in time. In this occasion, RVO will inform the Consultant as soon as possible. The consultant must deliver the final deliverable and a separate document with a response to all comments, along with how these have been incorporated into the final deliverable. RVO will be responsible for final sign off of the deliverables and will await acceptance of PU to do so.

Deliverables requirements: All draft and final deliverables must be written in English. All report deliverables must be submitted in MS Word and Adobe PDF. All reports should have an easy-to-read layout, be well-structured, and be well-written. They must be clear and concise with minimal formatting, spelling, grammatical or arithmetic errors, and include a summary and helpful illustrations, graphics, charts, and maps. Bearing in mind that the intended recipients of the report may not necessarily be specialists, it is important that the reports are easily understood by non-experts and will contain commonly understandable communication products, such as maps and graphical representations of the current and future risk for current and future climate and land-use scenarios.

Consultation: While the assignment will include desk research, the assignment's practical nature and urgency will require substantial engagement with stakeholders and field visits to identify priority actions and ensure that actions are feasible and practical. More specifically:

- The assignment should involve close consultation with PU and key stakeholders in Semarang
- The assignment should include field visits by the Consultant's team to Semarang; it is expected that the Consultant includes at least eight visits to Semarang with the project team (meetings, consultation and workshops).
- The consultant will prepare presentations and draft minutes of all meetings held with the RVO, the Embassy and stakeholders; wherever possible;
- The consultant will coordinate meetings with key stakeholders (Government, private sector, civil society, academia, and development partners); the Embassy will assist, as needed, with introductions;
- The consultant must use a highly participatory approach to engage technical staff from key agencies in the activities to facilitate ownership and use of the findings.

The consultant is required to detail in the proposal the stakeholder consultation and define at which moments workshops and consultations will be organized and when field trips to Kathmandu are envisioned in the program.

Data and materials handover:

All data to be provided to RVO shall be fully documented, including provenance, licensing, metadata, and cataloged on external hard drives or via a web portal;

- Models and all data files prepared for the simulation of priority actions have to be provided to RVO fully documented to enable reviews of the proposed actions and to enable the current or any other consultant to provide follow-up studies and the possible other use of the model;
- Data formats must follow Open Geospatial Consortium standards;
- Metadata schema must follow ISO 19115 Geographic information — Metadata standard.

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8. PLANNING AND PHASING

Activities defined in this ToR are to be carried out from 1 December 2025 (or as soon as the tendering and contracting procedure has finished) until 31 March 2027. A specific planning of each of the activities will be set up between the contracting authority, contractor and GoI during a kick-off meeting. The kick-off meeting is tentatively scheduled for Tuesday 2 December 2025 at 16PM WIB (10AM CET).

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The following indicative timeline deliverables should be taken into account. Exact timing is to be discussed in close coordination with Government of Indonesia and Contracting Authority upon kick-off:

1 December 2025	Starting date of Contract
05 December 2025	Detailed and updated planning of activities
31 March 2026	Potential intervention packages available for discussion
1 August 2026	Draft pre-feasibility documents for review
15 November 2026	Final pre-feasibility documents
31 January 2027	Draft Synthesis report and Draft Project report
31 March 2027	End date of Contract