

European Tender: open procedure
D2B21RI05 – 29 July 2022

ToR Semarang Urban Flood Resilience

Imprint

Project name	Semarang Urban Flood Resilience D2B21RI05 Develop2Build Terms of Reference
Version number	Version: 01-06-2022
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Enclosure	
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Annexes	The following annexes constitute an integral part of this Terms of Reference (ToR). These annexes are published together with the ToR document. Annex 1: List of Abbreviations Annex 2: Preliminary NCEA Assessment on Triggering IFC Performance Standards Annex 3: Template Disbursement Schedule

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1 GENERAL INFORMATION

1.1 Beneficiary Country

Beneficiary country is the Republic of Indonesia, more specifically the city of Semarang in Central Java province.

1.2 Financing Organisation and Contract Authority

Invest International Public Programmes B.V. is the financing organisation and contract authority for this Contract. The requested service, as per this Terms of Reference (ToR), is procured as part of the Develop2Build Grant Agreement between **Invest International Public Programmes B.V.** and the **Indonesian Ministry of Public Works & Housing**.

The **Competent Authority**, i.e. **the City of Semarang**, will issue their statement of acceptance relating to (interim) deliverables and associated invoices. Payments are made directly from the D2B programme to the Consultant.

Parties that are contracted under this contract are not eligible to participate in tenders/contracts for the implementation phase of the project.

Develop2Build

The program Develop2Build (D2B) is executed by Invest International Public Programmes B.V. This program is commissioned by the Netherlands Ministry of Foreign Affairs. Through D2B, the Ministry of Foreign Affairs provides support to national and regional authorities of partner countries to develop and procure qualitative, high standing public infrastructure projects with positive effects on people, the environment and society.

D2B offers direct support to government authorities in low-income and Dutch partner countries in converting promising ideas for public infrastructure into viable high-impact projects. This support is provided in the form of grants for studies that need to be completed before an infrastructural project can be tendered. The projects must contribute to the development of the private sector, improving people's ability to provide for themselves. For more information on D2B and the countries on the list, go to <http://english.rvo.nl/subsidies-programmes/develop2build-d2b>.

1.3 National context

The Indonesian strategic framework is condensed in the national Medium-term Strategic Plan 2020-2024. It highlights infrastructure development, which includes basic services (i.e. housing, water, transport, resilience, dams & irrigation), economic infrastructure (e.g. land-, air- and sea-connectivity, tourism, manufacturing) and urban infrastructure (e.g. safe drinking water and sanitation). The north coast of Java, including specifically Semarang, has been given particular priority to reduce disaster risk and increase urban resilience to flooding.

1.4 Background Study

The intended D2B study is a logical and consistent next step in the longstanding cooperation between Indonesia and the Netherlands, in particular in Semarang, under the umbrella of the Memorandum of Understanding Water between the Netherlands Ministry for Infrastructure and Water Management and Indonesian Ministry of Public Works & Housing. It follows the Netherlands supported Water as Leverage Program Semarang (WaL, 2018-2020) and Water Management Semarang Project (WMS, 2019-2021), both yielding clear concepts and recommendations on structural interventions while flagging the need to prepare feasibility studies to transform these into 'tender-ready' projects.

1.5 Problem Analysis

As follows from the topographical gradient, the city and its environments are being drained by predominantly south to north oriented watercourses (figure 1.1). Watercourses may either be rivers or canals. There are 9 major catchment areas within the municipal boundary, which discharge approximately 1 m/m² rainfall per year into the Java Sea through 21 rivers and canals. Over time, some of them have been normalised and/or provided with elevated embankments and/or interconnected and/or deviated. In addition to handling the water that falls within city limits, Semarang is to channel-through run-off from the southside hilly and mountainous areas. The city of Semarang has a history in constructing drainage canals. The biggest historical channel is Kanal Semarang, constructed during the Dutch colonial period. The two biggest more recent canals are Banjir Kanal Timur situated to the east and Banjir Kanal Barat to the west of the old City Centre.

The most recent floods of February 2021 again demonstrated that the current drainage system is unable to cope with the present frequency and volumes of run-off peaks in the lower city parts, let alone with future (bigger, more frequent) volumes. They revealed that flooding is a growing threat to the more uphill areas as well. Sizeable landslides occurred in those areas and some 1,000 inhabitants had to be evacuated. The floods also damaged assets and led to (temporary) closure of transport hubs putting further pressure on the city's economic development and finances. Furthermore, floods risk the loss of lives, property and livelihoods as they disrupt access to basic services such as hospitals, transportation and schools while discouraging private sector investment.

In synopsis, Semarang's major water-related problems are:

Upstream:	landslides, water shortage, (flash) floods, erosion, waterlogging
Downstream:	tidal & fluvial flooding (exacerbated by land subsidence through excessive groundwater abstraction, geology and intensive development), water (supply) shortage, water quality issues, impeded drainage (through silting and littering), and land loss (due to sea level rise and coastal abrasion).

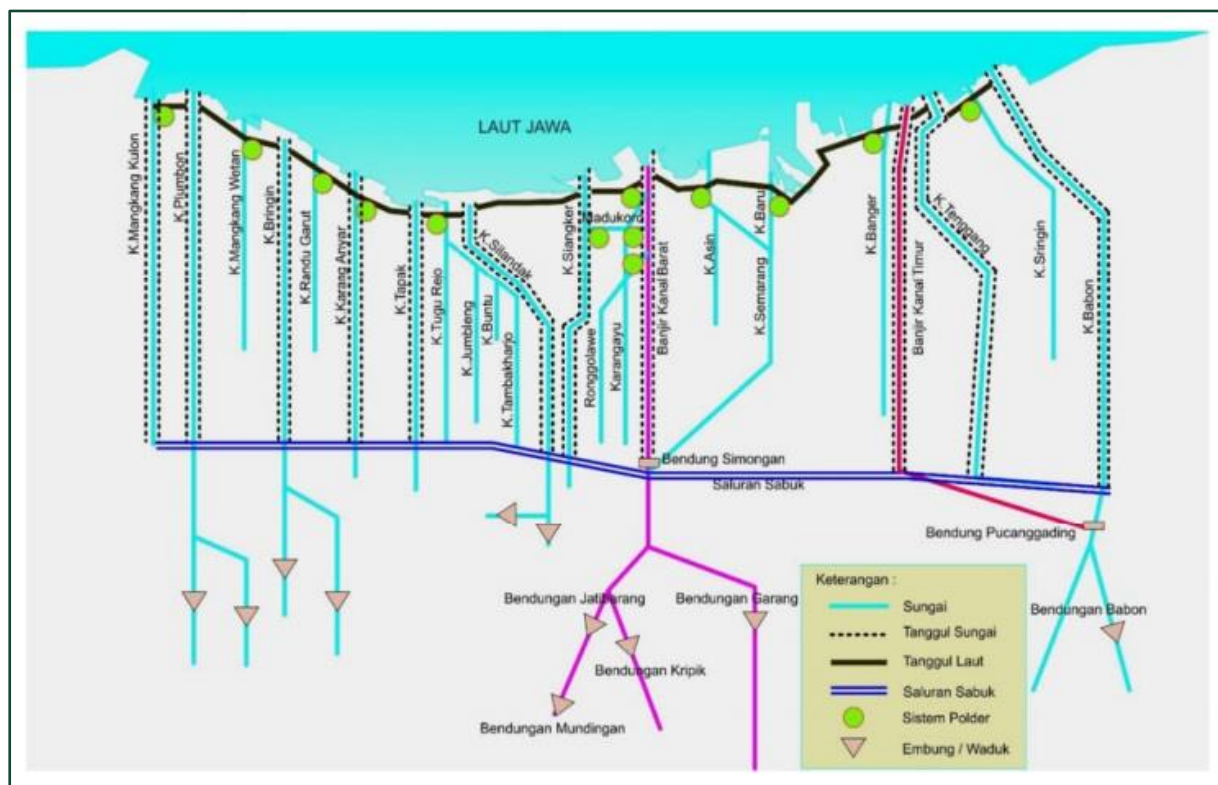


Figure 1.1 - Schematic Depiction of Semarang's Waterways

With the rapid land subsidence and gradual sea level rise, the time windows and suitable locations for gravity drainage into the sea become increasingly limited. This context, together with the growing volumes and frequency of problematic run-off events, is a direct –and growing- threat to the city's population and assets, as well as to the aspirations for further growth and development. This explains the increase in pumping capacity and in the development of small polders over previous decades. It is anticipated that over time virtually all low-lying city quarters will somehow be part of (a) pumped (sub-) polder system(s).

The historical as well as the newly planned interventions (CDAP - City Drainage Acceleration Plan 2022-2024, and SRP - Sea Dike cum Toll Road with retention Ponds) mostly focus on the drainage infrastructure in the downstream, low-lying city quarters. Stepwise, they try to respond to the growing and increasingly erratic flood volumes ending up there, as well as to the ongoing land subsidence. But solutions that strongly rely on pumping are increasingly complicated to realise and manage (capacity, timing, maintenance, financing, inter-dependency, reliability). Moreover, they demand ever more storage capacity while space is scarce. Where the drainage systems feeding the storages seem large enough by design, their capacity is under-utilised due to siltation (increasingly so due to the aggravating upstream erosion), garbage dumping and illegal settlement. The maintenance programmes cannot keep pace with clogging due to budgetary and/or organisational constraints.

Quoted downstream measures are predominantly reactive and will stay in need of regular retrofitting and upgrading (dike heights, pump capacities and numbers, canal enlargement, dredging). The need for more

structural and source-oriented upstream intervention is voiced more and more: Semarang is rapidly growing and gaining density while space and time for upstream action gradually diminish. However, the city government finds it difficult to act in this rather unexplored area. Hence, the government is under increasing pressure to come forward with a mix of (non-) structural measures: rapid and effective in the short run – fundamental and sustainable on the longer term. Combatting further progression of land subsidence and provision of alternative raw water resources (to meet the growing domestic and industrial demand while reducing groundwater abstraction) are overarching imperatives that are to guide any further interventions in the water management structures and operations.

The planning initiatives mentioned above (CDAP, SRP, WaL and WMS) geographically overlap in 8 clusters (figure 2.1) in and around the city centre but are not yet connected and aligned while they may have strong inter-relations. These may be positive (delivering synergy and representing opportunities) as well as negative (i.e. counter-productive, interfering, doubling).

Major observations are:

- CDAP and SRP are not connected. It is yet unclear whether or not the proposed pumping capacities (CDAP) will be sufficient, and to what extent dike and reservoirs (SRP) will actually contribute to flood reduction
- CDAP is rather sectoral and “autonomous”, i.e. not built on a more integrative, risk-informed and guiding spatial plan (e.g. by integrating disaster risk reduction principles)
- CDAP shows yet no relation to provincial and academic views on Integrated Coastal Zone Management (for a wider area)
- CDAP and the WaL-concepts Rechanneling/Feeding/Water-neutral Industry have a strong downstream focus
- CDAP comprises grey infrastructure and lacks green infrastructure, including nature-based solutions for flood risk reduction, and non-structural measures
- CDAP lacks a fundamental analysis of causes-interventions-effects and does not elaborate on costing, financing options and maintenance implications
- Both CDAP and SRP do not address the progressive land subsidence and sea level rise.

With an aim to enhance the city’s flood resilience, the city recognises the clear perspectives provided by WaL and WMS on structural interventions but requested support to take this forward; in capitalising on them, in presenting considered choices, in improving CDAP and in developing tender-ready projects. The city recognises the urgency of upstream intervention and of more fundamental downtown measures (retention, re-use) as well as green infrastructure (incl. nature-base solutions) but struggles with their identification and implementation – noting the importance of coordination with River Basin Management Authority (Pemali – Juana) (BBWS PJ) activities in Semarang and surrounds to deliver a more integrated system.

1.6 Sector context

1.6.1 National sector context

In its Medium-Term Strategic Planning 2020-2024, the Indonesian government explicitly pays strategic attention to Java's northern urban coastal areas, including Semarang, highlighting infrastructure development (including basic services such as housing, water, transport, resilience, irrigation and dams), economic infrastructure (e.g. land-, air- and sea-connectivity, tourism, manufacturing) and urban infrastructure (e.g. safe drinking water and sanitation). As such, the development of innovative flood risk mitigation, provision of investment financing options and the set-up of effective governance structures are key priorities.

1.6.2 Sector context project region

Local priorities

The mayor's five strategic priorities include building environmentally sound infrastructure in support of Semarang's progress, directly referring to WaL. Regarding the need for short-term upgrading of the downstream drainage systems, the city government produced the City Drainage Acceleration Plan 2022-2024 (CDAP, 2021) for handling flood infrastructure and urban inundation. However, it recognises that for more sustainable outcomes, it is necessary to intervene in the upstream areas as well. The city seeks assistance from D2B to undertake the necessary studies in preparation of structural and non-structural measures, taking note of recommendations of WaL and WMS. In recognition of the need for downstream and upstream interventions, the Indonesian perspective aligns with that of the Dutch experts in these earlier projects.

Parallel initiatives

In parallel to the development of this D2B, the World Bank (WB) commissioned a pre-feasibility study to pinpoint viable structural and non-structural measures in Semarang under the National Urban Flood Resilience Program (NUFRoP). It may present its first results in Q3/2022. While the D2B will already be running at that time, the WB-study might give further guidance for D2B Phase 2 as to which interventions might be eligible for (WB) financing. Furthermore, it is expected that under the Blue Deal Program, Dutch water boards will focus on water governance elements in Semarang's centre.

Institutional landscape (overview, details under 1.5.4)

In terms of flood resilience in and around the city of Semarang, several institutional actors have distinct competencies to act. Note here that the specific key stakeholders to the D2B Project are mentioned in detail in section 2.6.4.

- Semarang City: Bappeda is responsible for development planning coordination and PU for secondary & tertiary waterways within the city's administrative boundary;
- Central Java Province: responsible for spatial planning, in particular outside the city's boundary including the coastal area;
- Ministry of Planning, BAPPENAS: sets out the relevant development plans including with regards to flood resilience;
- Ministry of Public Works & Housing (MPWH): responsible for the delivery of infrastructure and for about 80% of the city's main water infrastructure;

- Directorate General of Water Resources (DG SDA): responsible for strategies pertaining to flood resilience
- Department of Rivers & Coasts (under DG SDA): has technical capacities and responsibilities regarding primary waterways and coasts
- Directorate General of Highways (Bina Marga): responsible for highways, increasingly so in combination with the development of sea dikes
- Directorate General of Human Settlements (Cipta Karya): has responsibilities pertaining to housing development, water supply and waste (water) handling.
- The River Basin Organisation for Pemali Juana (Balai Besar Wilayah Sungai Pemali Juana, BBWS PJ) is an implementing agency under SDA of MPWH, responsible for primary waterways and drainage infrastructure in Jratunseluna River Basin (including the City of Semarang).

1.6.3 Existing Studies and Related Programs

The following studies and related programs are of relevance and can be made available after submission of a Non-Disclosure Agreement.

- Proposal Program Percepatan Penanganan Infrastruktur Banjir dan genangan kota 2022-24 \ Proposal for the Acceleration Program for handling flood infrastructure and urban inundation 2022-24 (Semarang City 2021)
- Final reporting Water as Leverage Semarang (various consortia, 2019)
- Final report Water Management Semarang (Witteveen+Bos & partners, 2021)
- Visi misi program prioritas 2021-24 \ Mission statement priority program 2021-24 (Semarang City 2020)
- Laporan Progres Kajian Lingkungan Hidup Strategis (KLHS) Perubahan Rencana Pembangunan Jangka Menengah Daerah (RPJMD) Kota Semarang Tahun 2021 - 2025 \ Progress Report on Strategic Environmental Assessment (KLHS) Changes in Development Plans
- Regional Medium Term Planning 2021-25 (Semarang City 2020)
- Solusi komprehensif atasi banjir & rob di pantura Jateng & Kota Semarang \ A comprehensive solution to overcome floods and tidal waves on the north coast of Central Java and the city of Semarang (Ministry of Public Works and Housing 2021)
- Pembangunan JalanTol di Wilayah Pantura Semarang yang Terintegrasi dengan Tanggul Laut dan Polder \ Construction of the toll road in the coastal region of Semarang, integrated with the sea wall and the polder (Ministry of Public Works and Housing 2019)
- Rencana Strategis 2020-2024 Balai Besar Wilayah Sungai Pemali Juana \ 2020-2024 Strategic Plan River Basin Authority Pemali Juana (BBWS 2019)
- Proyek Pembangunan Sistem Kolam Retensi Semarang Timur dan Sriwulan Kota Semarang, Jawa Tengah Tol Semarang Demak Seksi 1 STA 0+000 s.d. STA 10+690 \ Development Project for East Semarang and Sriwulan Retention Pond Systems, Semarang Demak Toll Road Section 1 STA 0+000 s.d. STA 10+690 (Ministry of Public Works and Housing 2020)
- Program penanganan banjir dan rob di pantura Jawa Tengah \ Program for handling floods and tidal waves on the north coast of Central Java (BBWS 2021)
- Diskusi akhir Masterplan drainase utama Kota Semarang \ Final discussion of Semarang City's main drainage master plan (MPWH-BBWS 2020)

- ToR to the pre-feasibility study “Investment options urban flood resilience” in the context of the National Urban Flood Resilience Program (WB 2021)
- Water as Leverage for Resilient Cities Asia Presentasi Update Perkembangan Program \ Water as Leverage for Resilient Cities Asia Update on Program Progress (various consortia 2020)
- Program Percepatan Penanganan Infrastruktur Banjir dan Program Water as Leverage (WaL) di Kota Semarang (Handayani 2021)
- Media analysis of the flood event of 5 to 10 February 2021, Semarang (FloodTags 2021)
- Laporan Inventarisasi Sistem Drainase Perkotaan \ Inventory Report on City Drainage System (BBWS-PJ 2020)
- Penanganan banjir dan rob di pantura Jawa Tengah \ Handling floods and tidal waves on the north coast of Central Java (Pranowo 2021).

Main features of the existing plans:

The February 2021 floods triggered the City Government to develop the 2022-2024 City Drainage Acceleration Plan (CDAP) and to request MPWH for assistance. In its first iteration, CDAP focusses on short-term downstream interventions by civil works, with emphasis on rehabilitation, normalization and raising pump capacities.

In parallel to CDAP, the city plans to develop two sections of a sea dike with a toll road and retention ponds (SRP). One runs west along the harbour (SHTR - Semarang Harbour Toll Road) initiated by Semarang city government, under study by MPWH.).

The other (specifically relevant to the D2B) is section I of the Semarang-Demak highway, close to implementation by MPWH's DG for Highways (Bina Marga). Both sections enclose two retention ponds (coastal reservoirs) each.

In the meantime, various Dutch supported projects and programs yielded insights and ideas that may further inform the pursuit of sustainable and coherent water management in and around the city. WaL Semarang resulted in six strategic, innovative and integrating concepts that can be applied at various locations in the city. Partners for Water supported WMS delivered, amongst others, a water strategy for the city with short-term action programs, and a medium-/long-term outlook and insight into land subsidence.

1.6.4 Socio-economic context and the institutional and organisational framework

For the preparation and execution of the D2B project, close coordination, cooperation and a joint vision on responsibilities and tasks is required among relevant parties at national, provincial and local level.

Description of the parties in the cooperation

Primary stakeholders

The primary stakeholders will coordinate the further development and implementation of the project by working together in a project coordination team (see organisational diagram in 5.2.1.).

Ministry of Public Works and Housing (MPWH) / Kementerian Pekerjaan Umum dan Perumahan Rakyat (PUPR): In line with national institutional and legal arrangements in Indonesia, the proposed interventions and projects concerning the water and drainage infrastructure system in Semarang generally

are the responsibility of the Ministry of Public Works and Housing and/or its subsidiaries. Also, in accordance with the legal and procedural requirements for the D2B programme and Invest International Public Programmes B.V., the Ministry – national level – is regarded as the main beneficiary of the proposed cooperation. Hence, the MPWH is the Grantee for the proposed cooperation and financial contribution to the assignment. Acting on behalf of MPWH is the **Directorate General for Water Resources** (MPWH-SDA), which will be signatory to the Grant Agreement.

City of Semarang: the City of Semarang as primary stakeholder and represented by the City Secretary and the Mayor of Semarang, will be the Competent Authority for the implementation of the D2B project. Herewith the City is primarily responsible for the implementation of the D2B project comprising coordinating with relevant local actors as well as with Invest International Public Programmes B.V. The City Secretary/Mayor, with approval of the Ministry, will delegate operational management of the project to Bappeda (see below). Through the Grant Agreement, the Grantee provides a Power of Attorney to the City of Semarang to designate its role as Competent Authority.

Bappeda - City of Semarang: Bappeda will have a full mandate to manage the project on behalf of the City of Semarang. As the municipal planning coordination department, Bappeda has an overarching competence to manage the project and coordinate the project team. Its main tasks include facilitating, monitoring and approving the work of the consultants; and providing statements of acceptance on (interim) deliverables and associated (interim) payments. When specialised technical expertise is required, Bappeda can make use of dedicated local or external technical experts.

Invest International Public Programmes B.V. (IIPP) - The Netherlands: IIPP is the implementing agency of the D2B project preparation instrument, and is owned by the Dutch Ministry of Finance. IIPP will be tasked to procure the Consultant and make direct (interim) payments for (interim) deliverables following a statement of acceptance of (interim) deliverables by the Competent Authority (on-granting to the local level is therefore not possible). As proponent for D2B and financing support, IIPP will be the second signatory to the Grant Agreement.

River Basin Organization Pemali Juana / Balai Besar Wilayah Sungai Pemali Juana (BBWS PJ): BBWS PJ, the regional river basin management authority, is a government authority directly under MPWH and responsible for the integral management of a number of river basins in Central Java, including primary waterways and water resources in the Semarang region, including those within the city boundaries. It is the *de-facto* representative of MPWH-SDA for water management related matters in its mandated region. As such, it can speak on behalf of MPWH-SDA. By virtue of its mandate and work portfolio, and because of its tasks concerning the primary waterways (river and drainage system), BBWS Pemali-Juana has the mandate and technical expertise to assess and oversee the proposed D2B project. BBWS-PJ scope of works will be limited to make sure all requirements and responsibilities as Competent Authority are fulfilled by Semarang City, as per the grant agreement. BBWS-PJ supervises the City of Semarang and, specifically, monitors and facilitates the progress, in order for the City of Semarang to fulfil applicable requirements, as necessary, in line with Law of 23/2014 on Pembagian Kewenangan Pemerintah Pusat dan Daerah, making the City of Semarang the owner of the D2B-project on the side of Indonesia.

Department of Public Works (Dinas PU), City of Semarang: Dinas PU will be part of the project coordination team. The main interventions and field of work of the D2B project concerns the water management and drainage infrastructure system of the city, which is the responsibility of PU Semarang. PU Semarang also prepared the initial CDAP proposal including the various proposed drainage system infrastructure improvements that will be further investigated in the D2B assignment.

Secondary Stakeholders

Central Java Province: Since the Governor is explicitly looking upstream for sustainable flood relief, the Province welcomes and backs any sensible upstream intervention supporting flood safety. While not being a formal party (as the project targets the city's mandate area), the Province is to be kept informed. Their higher-level support may facilitate establishing and maintaining commitments from key institutional actors at various levels of government. In monetary terms, the Province is not expected to contribute directly to the D2B studies but may have a role in the subsequent implementation phase, such as through financing land acquisition.

Ministry of Public Works and Housing – Office for International Cooperation (MPWH-KLN): KLN is a coordinating agency under the MPWH's Secretary General and, as is common in many international cooperation projects, will have an important liaison function for the communication process in between the involved partners, and a supporting role on administrative and communications issues between the national, local, and international partners.

Ministry of National Development Planning Indonesia / Badan Perencanaan Pembangunan Nasional (BAPPENAS): BAPPENAS has an important coordination and facilitation role when it comes to international (grant, loan) funding of major infrastructure works. Its current tasks include oversight of several national programmes, and for coordinating international development partnerships.

Ministry of Finance Indonesia / Kementerian Keuangan of Indonesia (MoF): Although MoF does not have a direct role in the D2B project, in consideration of subsequent financing for the construction phase they will play a role in any potential DRIVE grant.

The Netherlands Delegated Representative Water in Jakarta (DR) – The DR complements the role of KLN, especially where there is a relation with the MOU Water between Indonesia and The Netherlands.

External stakeholders

The D2B cooperation project aims to abide by national Indonesian rules, as well as by regulations and practices for international cooperation projects. Therefore, it is proposed that the project coordination team maintains good and functional contact with relevant external stakeholders such as provincial and national organisations. This will be done by convening periodical project progress meetings with these stakeholders.

2 OBJECTIVES & EXPECTED RESULTS

2.1 General description of the project

The D2B study addresses the aforementioned request for assistance from Semarang City and will:

- support taking forward the perspectives on structural interventions provided by WaL and WMS;
- identify promising upstream interventions;
- identify downtown measures that are more fundamental than before;
- co-ordinate with current BBWS PJ's and national activities in Semarang and surrounds to arrive at a more integrated system.

This will be done for a demarcated area through central- and east-Semarang, including eight clusters in which most interventions from aforementioned plans and initiatives are concentrated geographically, but not yet connected (see Formulation Plan added to the tender documents). For these 13 areas (see figure 2.1¹), the project will develop an integrated approach that:

- addresses the water retention and re-use capacity up- and midstream as well as drainage solutions downstream;
- fully integrates all high potential (non-) structural measures and suggestions stemming from CDAP, SRP, WaL, WMS and, considering the integration with other planned projects, yielding a set of interventions that is consistent, coherent, complementary and fit-for-purpose;
- demonstrates a possible blueprint for other areas in the city after considered transposition and translation.

¹ Note that one of the retention ponds related to SRP is located in the area of Sayung (Kabupaten Demak); this pond will be a boundary condition in de modeling set (chapter 4).
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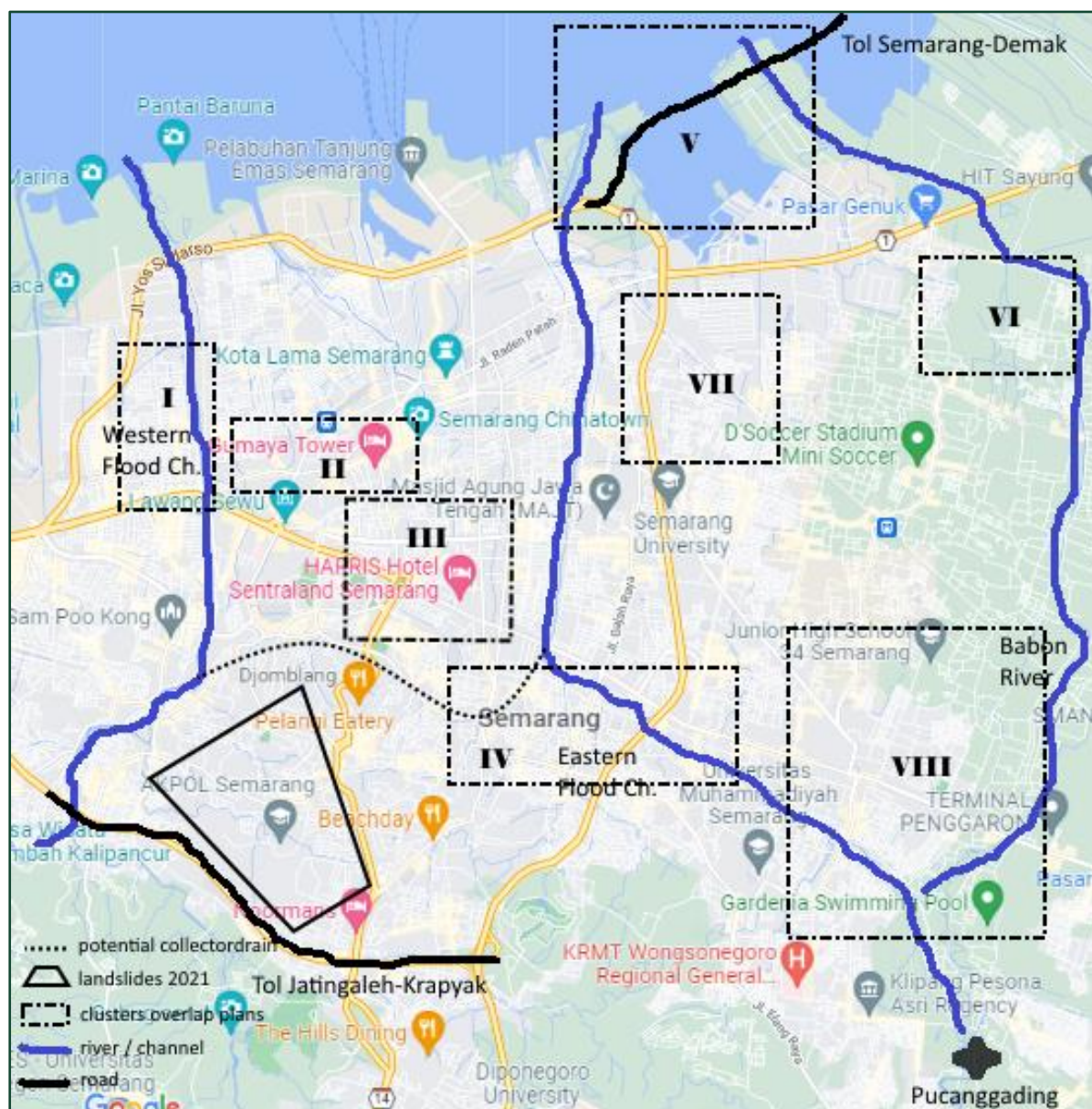


Figure 2.1 – Demarcated study area

2.2 General Objective

The overall objective of the D2B project is to improve the City of Semarang's climate resilience by reducing the incidence and frequency of floods resulting from rainfall and sea-level rise.

The D2B project responds to a request for support from the City of looking to minimise flood risk and in improving the city's climate resilience, along two tracks:

1. to assist the city in the further iteration of CDAP, initially presented as a financing proposal of +/- EUR 65 million², focused on short-term upgrading of the urban drainage system and flood mitigation works, and thus addressing the immediate needs of the local population;
2. to help the city work the outcomes of the WaL- and PfW-programs into institutionally and financially sound project proposals to be incorporated in the city's urban resilience plan, to arrive at a longer term, more structural and integrated approach to prevent flooding.

2.3 Specific Objectives

The specific objectives of the D2B project are:

1. To connect and align the CDAP, SRP, WaL-concepts, WMS-outcomes and take into account any relevant results of other studies such as the pre-feasibility study on Semarang executed under the umbrella of NUFReP;
2. To identify pro-active measures in the upstream areas that fundamentally reduce flood flows towards the lower city;
3. To capitalise on WaL-concepts wherever applicable within city's mandate area (concretise, translate to investments, implement) with priority for water retention, re-use and improved evacuation of the surplus;
4. To identify viable options to capture substantial rainfall run-off volumes to be added to the raw water resources for domestic and industrial use;
5. To ensure that all proposed interventions are embedded in the receiving local communities, by engaging them properly in the design phase (e.g. through information-/input-sessions, design workshops, etc.).

2.4 Expected Results

To get to a list of priority projects, the anticipated results of Phase 1 (from commissioning to five months after) are:

- Detailed description of the interactions between, and the system response on, already proposed interventions and potential additional ones;
- Clear pinpointing and description of the missing/poor functioning elements (the “weakest links”) in the drainage chain from residential and industrial areas down to the sea;
- Identification of viable options to complement CDAP; these include alternative (sets of) integrated measures, both upstream and downstream, that together provide a more integrated solution to the problem of flooding, with priority for water retention, re-use and improved evacuation of the surplus. Options are to be presented to the (potential) project owner(s) for their prioritisation. To assist in this, the viable options also indicate their indicative impact in quantitative terms whenever possible;
- Preparation of a multi-criteria analysis (MCA) largely qualitative and jointly developed with stakeholders (including a workshop);

² The financing proposal refers to the CDAP drainage improvement and flood mitigation infrastructure program prepared by PU Semarang for national consideration.

- Identification of a committed and viable project owner/promoter for Phase 2 of the D2B, with a clear view on and commitment to the implementation/construction phase;
- Identification of promising procurement and financing options (i.e. approached potential financiers) on the implementation of the prepared project component(s).

To bring the agreed (short-) list of priority projects to a 'tender-ready' stage, the anticipated results of Phase 2 (from go-decision after Phase 1 to seven months after) are:

- A full feasibility study including a full or light ESIA (in Indonesia: AMDAL) in line with financiers' criteria, including for instance the World Bank's Environmental & Social Safeguards Framework (WB ESF);
- A Detailed Engineering Design (DED), sufficiently detailed to comply with the Indonesian regulatory requirements to obtain possible national funding (APBN) and/or external financing, for the interventions selected at the end of Phase 1, insofar as interventions are located on public land; to the extent interventions are located on private land, this will only be considered for phase 2 if there is clear public ownership and agreement with the land owner(s) at the end of phase 1 to build these projects.
- For essential elements of an integrated solution that are located on private land and for which there is no agreement at the end of Phase 1, the local government is responsible to get agreements during, and beyond, phase 2, and preparing pre-designs. The Consultant is not expected to play a role in this.
- An outline of the onward financing structure (for the construction phase).

3 SCOPE OF WORK

3.1 Description of the assignment

The Consultant is to identify, develop and deliver a set of *viable* infrastructure interventions to substantially *reduce flooding* (by sea and by run-off) and *contribute to slowing down land subsidence*³, in both *upstream and downstream* areas of Semarang City, that is *ready for implementation*.

“Viable” here refers to:

- realistic
- sustainable
- accepted by key stakeholders
- substantially contributing to climate adaptation (flood resilience)
- integrated in the context of existing infrastructure, of planned measures or works and of interventions underway
- having a committed owner for the realisation (i.e. construction) phase.

“Ready for implementation” implies that –for the selected set of measures at the end of Phase 2-, all (clusters of) measures have their detailed design, full, limited or focused ESIA, funding source(s), maintenance plan and budgeting for construction, operation, maintenance & depreciation.

The demarcated study area is depicted in figure 2.1. For this area, the Consultant will develop an integrated approach that:

- addresses the water retention and re-use capacity up- and midstream as well as drainage solutions downstream;
- fully integrates high potential interventions and suggestions stemming from CDAP, SRP, WaL, WMS and, considering the integration with other planned projects, yielding a set of interventions that is consistent, coherent, complementary and fit-for-purpose;
- can serve as a blueprint for other areas in the city after transposition and translation.

Phasing

The D2B project is divided into two phases with a go / no-go decision in between (Figure 2.2).

Phase 1 will run for 5 months upon commissioning and is sub-divided into two parts:

1A: Diagnosis of the current situation: identification of the scope for improvement and completion of the CDAP in light of SRP, WaL, WMS and other planned or short-listed projects to arrive at a more integrated and adequate solution to the problem of flooding, and

1B: (Pre-)Feasibility and project embedding: considering the interventions identified at pre-feasibility stage, further embedding of the D2B short-listed project(s) in the Indonesian institutional context, including conclusive agreement on project ownership (i.e. the promoter) as a condition for the continuation of the D2B assignment into Phase 2⁴.

³ Under this assignment, Consultant will not develop/design water supply facilities or alternatives to ground water abstraction. However, it is encouraged to develop structural and non-structural interventions that contribute to water retention, water saving, re-use, sub-surface water replenishment.

⁴ In the inception phase, the Consultant is to propose a simple multi-criteria analysis tool that will be an aid to decision-making at the end of Phase 1 to arrive at a shortlist of projects.

Phase 2 will run for 7 months, contingent on a go decision at the end of Phase 1. Its aim is to develop the selected components into a construction project that is ready to be implemented from an institutional, financial and technical viewpoint. It includes:

Preparation of the full feasibility study, a full Environmental and Social Impact Assessment (ESIA) (or a lighter version, depending on national requirements), an Environmental and Social Management Plan (ESMP) or Upaya Pengelolaan Lingkungan (UKL) and Environmental Monitoring Plan or Upaya Pemantauan Lingkungan (UPL)⁵, the detailed engineering design (DED), the stakeholder engagement plan, the Operations & Maintenance plan, and the financing scheme for the prioritised infrastructure component(s) – yet excluding the land acquisition and the resettlement action plan (LARAP) (see section 6.3 for a detailed list of deliverables).

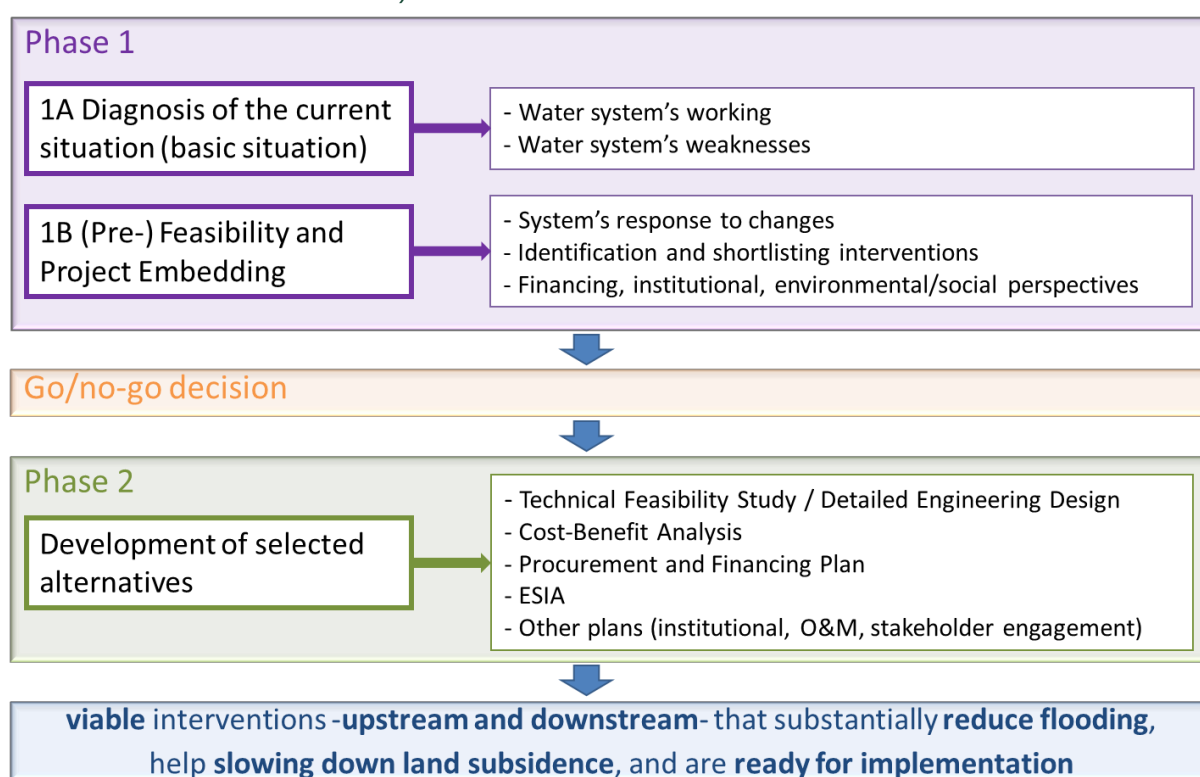


Figure 2.2 – Phasing of the D2B project

Go / no-go decision

At the end of Phase 1, the project partners will be presented with a choice as to what set of measures, and therewith scenario, is preferred and which measures will be taken up by whom. This choice will include a set of infrastructure works for which the identification of the project owner is a requirement to continue to phase 2. Once a prioritised list of infrastructural interventions is selected, Invest International's Engagement Committee will be presented with a go or no-go decision to commence with Phase 2 of the

⁵ The decision on full ESIA or EM&MP can only be made after Phase 1, and can be incorporated in Consultant's bid for Phase 2 then.

project. This decision will be based on a Multi-Criteria Analysis (MCA) capturing the technical, economic and financial feasibility of the proposed infrastructure, the technical integration with other selected or on-going projects, the institutional viability and environmental and social considerations as well as the project deliverability. The Consultant is to use these parameters to build a simple MCA-tool as an aid to decision-making by local stakeholders and D2B on the final shortlist of projects.

A no-go-decision from the Indonesian project partners and IIPP will end the D2B assignment at that point. The possibility of this happening is explicitly stated here. In the case of a no-go-decision, the Consultant(s) will not be entitled to claim any payments for activities specified in their outline bid for Phase. Upon a go-decision, a maximum of two weeks will be given to prepare a detailed bid for Phase 2, to be accepted by IIPP.

Throughout the running period of the D2B, the Consultant is to keep track of relevant parallel initiatives in the area by other parties/donors, to maintain open dialogue on the scoping of the D2B in that respect, and to ensure no duplication of work. In this regard, the World Bank's project under NUFRReP is of interest as it is anticipated that this project will deliver a long and short list of measures, based on an initial pre-feasibility study, for the City of Semarang, in Q3/2022.

3.2 Specific activities

3.2.1 Phase 1A Diagnosis of the current situation (basic situation)

Tasks:

1. Stocktaking, preparation of Inception report and outline of the multi-criteria analysis tool

Parameters for the largely qualitative MCA-tool capture the technical, spatial, economic and financial feasibility, 'plan-led'⁶ & technical integration, institutional viability, environmental, climate vulnerability, and social aspects and project deliverability. These parameters can be worked out in specific (sub-) criteria. See task 16, shortlisting of interventions and recommendations, for further explication of the consultation process associated with the MCA.

2. Environmental and Social Screening

This includes identification of the national regulatory requirements regarding environmental certification (AMDAL). This should enable at the scoping-stage what requirements are applicable. It feeds in to the decision-making at the end of Phase 1 regarding the level of assessment required on identified environmental and social impacts.

3. Identification and first screening of alternative interventions

4. Stakeholder Identification, including vulnerable groups and accounting for gender considerations

Identify and engage with a representative set of affected local stakeholders, along gender, ethnic and/or religious lines. In consulting communities, equal attention shall be paid to the views of women. The

⁶ The aim is to realise full compatibility between the (amended) CDAP, SRP and the results from WMS, and WaL by aligning these plans and concepts in the clusters (where they geographically overlap).
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consultation process is to be documented, signed off by the participants and shall have a minimum of 40% women.

5. Technical, Environmental, Climate Vulnerability and Social Baseline Studies

Depending on the findings of the stock-taking (data-availability and –obtainability), Consultant will perform the necessary baseline studies to bridge essential data- and information gaps. The baseline studies should enable quantification of the climate vulnerability of the local population (under different emissions scenarios), and flood-reducing capacity of the alternative interventions that are proposed towards the end of Phase 1.

6. Analysis and description of the Institutional Landscape

7. Development of a Theory of Change

The Consultant shall develop a Theory of Change (ToC): consisting of a comprehensive description and illustration of how and why a desired change is expected to happen in the particular context. It is focused in particular on mapping out or “filling in” what has been described as the “missing middle” between what the project does (its activities or interventions) and how these lead to desired goals being achieved. The ToC needs to consist of a report, clearly stating but not limited to the following:

- Description of the effects and the desired impact⁷ (the ultimate outcome) that the project will have on the local community (using economic, socio-cultural, institutional, environmental, technological and other indicators);
- Description of the inputs⁸ and activities⁹ of the project;
- Description of the pathways through which the project (inputs and activities) contributes to the outputs and outcomes;
- Description of the outputs¹⁰ and outcomes¹¹ (short-, medium-, and long-term outcomes) of the project. Ideally, these pathways will be based on existing evidence/literature, and/or assumptions will be made explicit.
- Description of the desired results/impact (logical step approach contributing to the project objectives);

The ToC needs to be delivered as a visualisation including the project inputs, activities, outputs, outcomes and impact, followed by a short explanation/narrative.



⁷ Impact is the (positive and negative) long-term effect on identifiable population groups produced by an intervention, directly or indirectly, intended or unintended. These effects can be economic, socio-cultural, institutional, environmental, technological or of other types.

⁸ Inputs are the financial, human, material, technological and information resources used for the intervention.

⁹ Activities are the actions taken or work performed through which inputs, such as funds, technical assistance and other types of resources are mobilised to produce specific outputs.

¹⁰ Outputs are the products and services which result from the completion of activities within an intervention.

¹¹ Outcomes are the intended or achieved short-term effects of an intervention's outputs, usually requiring the collective effort of partners. Outcomes represent changes in development conditions which occur between the completion of outputs and the achievement of impact.

Further, a brief description of the Sustainable Development Goals (SDG's) the project contributes to has to be incorporated, with a detailed description of contributions to SDG 8 and 13 in particular. The ToC needs to be developed by the Consultant in collaboration with IIPP and the local stakeholders.

8. Development of an M&E Plan

In line with the ToC and the baseline studies, the Consultant is expected to develop, in collaboration with IIPP and the local stakeholders, a Monitoring and Evaluation (M&E) Plan. The M&E Plan defines clearly the approach of the Consultant to monitor and evaluate the project activities with the goal to achieve the desired results of the Client in a sustainable manner. The M&E Plan clearly states but is not limited to the following:

- A brief project description, including:
 - Project goals and objectives
 - Theory of change
- M&E indicators (process, output and outcome indicators)
- Data Collection Methods and Timelines
- Roles and Responsibilities (description of staff member's role in M&E data collection, analysis, and/or reporting)
- Reporting
 - Analysis plan
 - Reporting template table
- Dissemination plan (description of how and when M&E data will be disseminated internally and externally)

9. Development of supporting hydrologic and hydraulic model(s)

The modelling set is to be fit for exploration of the hydrological and hydraulic functioning of the water system in the demarcated area as a base (model) to explore interactions/system response between already proposed interventions and potential additional ones. It is to be calibrated using available data, and validated for the 2019-2021 period. The Consultant is not expected to undertake own field work to gather data.

The modelling set should be able to rather accurately describe and predict water system's response to changes (structural and non-structural interventions/operation). For the surface water compartment this implies its behaviour in terms of lead-times to runoff and propagation, (changes in) the duration, depth and frequency of inundations. For the sub-surface water compartment, the modelling set should be able to roughly quantify groundwater table fluctuations and groundwater replenishment rates in alternative interventions.

Any newly developed model should fit the infrastructure of recipient organisation(s) and be apt for future expansion/refinement toward a potential data-driven and automated water management.

10. Performing a response-analysis on the current drainage system

The Consultant shall thoroughly assess and document the functioning of the current drainage infrastructure including identification of weak/uncovered elements.

11. Identifying system's weaknesses

Based on the outcomes of Phase 1A, the Consultant is to pinpoint the crucial missing/poor functioning/frictional elements in the current full drainage chain, from residential and industrial areas upstream down to the sea.

3.2.2 Phase 1B (Pre-) Feasibility and Project Embedding

Throughout Phase 1B, Consultant will actively seek to embed the project more solidly in the institutional context. Alongside the growing insights in project scope and locations during this phase, support from national and local actors is to be garnered, ultimately culminating in the commitment from the identified project owner/promoter for Phase 2 of the D2B with a clear view and commitment to the eventual construction phase.

Tasks:

12. Assessing effects of already proposed interventions

Covering the demarcated area, the effects of the measures proposed in CDAP and the effects of SRP will be quantified in terms of (changes in) the duration, depth and frequency of inundation, groundwater effects.

13. Assessing the merits of existing Plans

CDAP will be assessed on weak/uncovered points and friction-areas in relation to other plans (SRP, spatial plans). Other short-listed and planned projects relating to urban flood resilience will be assessed as well.

14. Identification of potential solutions (longlist) and their effectiveness

Based on all of the above, a preliminary identification of promising solutions (structural *and* non-structural measures) to remediate shortfalls shall be made. The aim is to realise full compatibility between the (amended) CDAP, SRP and the results from WMS, WaL and NUFReP's shortlist by aligning these plans and concepts in the clusters (where they geographically overlap). This will be done by capitalising on WaL-concepts and NUFReP's shortlist with priority for water retention, re-use and improved evacuation of the surplus. This implies:

- *for the more uphill stretches:* defining additional pro-active measures that fundamentally reduce flood flows towards the lower city, by bringing in elements from Rechannelling the City and Spongy Mountains,¹² on locations where relatively quick wins seem feasible (respective of a.o. land ownership). The focus will be on reservoirs, retention/infiltration ponds, erosion prevention, local terracing (Spongy Mountains) and on trajectories of the transversal collector drain in mentioned section;
- *for the more downstream area:* bringing in additional ponds and other additional (long storage) retention capacity (Rechannelling the City).

All longlisted interventions will be provided with an indicative assessment of their effects, costs (investment, operation, maintenance) and spatial implications. The most potential measures are retained and –where applicable- logically connected to some ten integrated potential intervention clusters (IPICs); about five in

¹² i.e. Water as Leverage concepts
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the middle- and upstream catchment areas and about five more downtown¹³. The IPICs will be looked at in light of the WB NUFRP team's activities, to avoid overlap and to look for synergies and/or complementarity.

15. Environmental & Social Scoping, ToR for the ESIA

All identified IPICs are to be provided with an environmental and social scoping. Based on Indonesian E&S law, IFC PS and WB ESF, it needs to be made clear whether a full or a limited or focussed ESIA is necessary for the identified potential solutions. Scoping is a process which determines the potentially adverse impacts that are likely to be significant and consequently should be the main focus of any ESIA or otherwise. Consequently, scoping identifies data already available and existing data gaps. The scoping process determines the appropriate spatial and temporal scopes for the assessment, which alternatives to study and suggests suitable survey and research methodologies.

The results are documented in the environmental and social scoping report and concluded in a ToR for the ESIA, which is to be developed in Phase 2. The aim of a scoping report is to determine together with the key stakeholder the study boundaries (in terms of scope and level of detail) for the ESIA, as well as to ensure that the study area is clearly demarcated and agreed upon beforehand. The scoping report will include (but is not limited to):

1. Conclusions from the Environmental and Social Screening including:
 - a. Review of existing information on environmental and social baseline conditions;
 - b. Specification of the various intervention alternatives and provide justification for proposed alternative;
 - c. Gap Analysis between the host countries law, the IFC PS, the WB ESF including which performance standards are triggered;
2. Identified local stakeholders (community, non-governmental and community-based organisations, the local government). The Consultant is expected to engage with a representative set of potentially affected stakeholders, along gender, ethnic and/or religious lines. When communities are consulted, equal attention shall be paid to the views of women. The consultation process will be documented, signed off by the participants and shall have a minimum of 40% women. For cultural reasons, it may be necessary to set up focus groups with women only, when appropriate;
3. Identification of the main risks and impacts in the various phases of the Project, specific attention will be given to expected cumulative impacts;
4. A risk categorisation on the various interventions proposed at the end of Phase 1, based on the IFC PS and subject to internal review from IIPP;
5. The methods to be used, the level of effort needed to fully understand the risks and impacts, and options for mitigating them. The results of the scoping process should determine what should be included in the full or limited/focused ESIA, which could include separate studies or management plans;
6. Conduct initial site visits, including formal and informal discussions/meetings with local communities, government agencies and other key stakeholders, in project affected areas;

¹³ As D2B promotes Nature Based Solutions (NBS), it is an asset if there are viable/useful NBS included in the project-list. Even if they are not carried on in Phase 2, IIPP may find other ways to help them materialise.

7. Develop a tentative Stakeholder Engagement Plan (SEP) that shall be applicable throughout the Project cycle including the planning stage and provides effective and inclusive engagement with Project affected parties with a specific focus on vulnerable groups. A Gender Action Plan GEP will be integrated into this SEP. The SEP should also include eventual private land owners that could be implicated in potential interventions;
8. Determine area of influence. The area likely to be affected either directly or indirectly by Project operations, including ancillaries and associated activities;
9. Align with the preliminary design and possible locations of the Project in the feasibility study, including the production/upstream, transportation (pipelines) and storage;
10. Prepare a ToR for the full, limited or focused ESIA, whichever applicable.
11. The Environmental and Social Scoping report and the ToR for ESIA will be reviewed by IIPP. The consultant is expected to incorporate a maximum of 2 weeks for this review in the planning and accommodate for a field visit by IIPP¹⁴. A go/no-go decision will be made after review of the prefeasibility study and the environmental scoping document before the Consultant can continue implementing the ToR for ESIA.

16. Shortlisting of interventions and recommendations

On the basis of all preceding steps, the identified IPICs will be presented in an overview of all constituting elements and relevant pros, cons and interlinkages. The overview will contain a preliminary Cost-Benefit Analysis (CBA) and financial analysis of the alternatives based on Multi-Criteria Analysis (MCA). The MCA is to cover the technical, economic and financial feasibility of the proposed infrastructure, the technical integration with other selected or on-going projects, the institutional viability, environmental & social considerations, and project deliverability (see activity 1 of this section). The assessment criteria are to be agreed with the Competent Authority and IIPP. The MCA is to be presented in a “traffic light” overview as to easily see the ranking of the IPICs in being fit-for-purpose. This overview will be shared, discussed and prioritised with the relevant stakeholders, including the project owner and (if different) the promotor for Phase 2. This is to result in a shortlist of two to four substantial IPICs in the upstream parts of the study area, and two to four in the downstream areas. Only IPICs can be shortlisted that have a clear project owner, with relevant competency and sufficient HR/financial capacities.

17. Institutional Capacity and Receptivity Analysis

This analysis includes the identification of the project promotor for Phase 2, demonstrated by his clear statement of commitment.

18. Financial Plan\Identification of onward financing options

Consultant is to analyse the feasibility of different financing options including, but not limited to, national, provincial and/or local financing, and financing options with international donors including DRIVE. This should result in realistic and verified options to the implementation of the D2B findings after Phase 2, i.e. for the construction phase.

¹⁴ The planning of these two weeks and potential field trip should be scheduled as early as possible to not cause delays

<< Go / No-Go Decision >>

3.2.3 Phase 2 Development of the selected alternatives

By the end of Phase 1B, the project owner / promotor for Phase 2 will be known and lead onward. If the further institutional embedding over Phase 1B has been done properly, the shortlist of preferred interventions will not require adapting.

Tasks:

19. Technical Feasibility Study / Detailed Engineering Design

The technical FS involves all locations of intervention that are publicly owned and the constructional elements on privately owned land that seem ready for implementation, on the basis of fruitful negotiation with the landowners (in Phase I). Publicly owned intervention sites will get a DED, privately owned sites an outline design.

20. Land need assessment and acquisition plan

This activity makes explicit the land requirement for the selected interventions as well as the ownership situation for these lands, and the land acquisition strategy and planning. This includes the privately owned spots (predominantly located uphill). Actual land acquisition and resettlement action plan (LARAP) are excluded from this assignment. If resettlement will take place, a resettlement policy framework is included in the scope of the ESIA.

21. Detailed Cost Benefit Analysis (CBA) and Financial Analysis

Both the financial and economic analyses are part of the full feasibility study. The economic and financial modelling methodology should be based on the FAST modelling standard.

22. Procurement and Financing Plan

This includes delivery of the financing scheme, agreed with the project owner for the implementation phase.

23. ESIA

The Consultant will carry out the ESIA in accordance with the approved ToR from Phase 1 for the favourable interventions. The ESIA must be in accordance with both the national environmental and social assessment laws (AMDAL) and regulations, in particular the “Omnibus Law¹⁵”, and the IIPP standards that

¹⁵ In 2020 the Indonesian Parliament adopted a new law, referred to as the “Omnibus Law”. This law affects the requirements in Indonesia for ESIA. The explanation will need to be updated to reflect the relevant clauses from the Omnibus Law. The Indonesian regulation on ESIA is laid down in the Environmental Protection and Management Law of 2009, and the 2012 Environmental Permit regulations (No. 27) that were issued under this law. More detailed regulation has been issued by the Ministry for Environment and Forestry as well, including:

- Regulation No. 07/2010: Competence Certification for ESIA Compiler and the ESIA Compiling Service Provider (LPJP);
- Regulation No. 05/2012: The types of businesses and/or activities subject to ESIA (Amdal);
- Regulation No. 16/2012: Guideline for Compiling ESIA (Amdal), UKL-UPL and SPPL;
- Regulation No. 17/2012: Guideline for Public Participation in ESIA and Environmental Permit;
- Regulation No. 8/2013: Procedures for ESIA Review and Environmental Permit Issuance;
- A set of 5 regulations in 2018 concerning an online permit submission system.

are based on IFC PS (2012), WB EHS, WB ESF and OECD. The ESIA predicts and assesses the Project's potential adverse impacts and risks, in quantitative terms to the extent possible. It is not intended to be a stand-alone set of activities but needs to bring into view what the environmental and social issues are that need to be addressed in detailed Project design and implementation. It furthermore evaluates environmental and social risks and impacts from associated facilities and other third-party activities. The ESIA identifies and defines a set of environmental and social mitigation and management measures to be taken during the implementation of the Project to avoid, minimise, or compensate/offset for risks and adverse environmental and social impacts, in the order of priority, and their timelines; it also identifies any residual negative impacts that cannot be mitigated. The desired outcomes of the mitigation and management measures should be set as measurable events to the extent possible, such as performance indicators, targets or acceptance criteria that can be tracked over defined time periods. The process indicates the responsibilities required for implementation of the mitigation and management program. The two-phased approach taken in this D2B project including the exploratory nature of Phase 1 means that it is not yet possible to conclusively indicate the specific environmental and social aspects that need to be taken into account. Nevertheless, this project will need to apply an ESIA or AMDAL for its activities, depending on national law, the risk categorisation and associated requirements from (potential) international donors. Under section 3.2, some environmental and social risks to the D2B project are mentioned. In addition, Annex 2 provides a preliminary assessment whether certain IFC PS are triggered. Given that the specific project interventions will likely differ in nature and take place at different locations in the city, it is recommended that it is investigated how one ESIA process can meet the procedural/permitting needs for each of the interventions. This could involve an approach that addresses relevant environmental and social issues for the full set of interventions, leading to an overall E&S plan for the project, which is complemented with site- and intervention specific environmental and social management plans.

24. Environmental and Social Management Plan(s)

25. Stakeholder Engagement Plan for the Project including Grievance Mechanism

26. Institutional and Capacity Building Plan

27. Operation and Maintenance Plan

This plan should include O&M budget requirements as well as an overview of required technical capacities and human resources.

28. Emergency Response Plan

To be able to respond appropriately to potential crisis, emergencies and other possible situations, which could interfere with executing the tasks of the Consultant (and achieving the Project results), the Consultant is expected to develop an Emergency Response Plan. The Plan clearly states but is not limited to the following:

- Scenarios (An account or synopsis of a possible course of events that could occur, which forms the basis for planning assumptions);
- Response strategy (Based on the scenarios a response strategy is developed, including specific intervention objectives and targets, including beneficiary numbers);

- Implementation plan;
- Operational support plan, setting out the administrative, logistical and other support requirements of a response. This includes zoning, roles and responsibilities communication (staff, authorities, and local population), emergency procedures, available resources (fire stations, health centre, list and location of available equipment, contacts lists), and training program. The plan will provide for staff training to ensure that all employees are knowledgeable of existing emergency procedures and emergency contingency plans, including evacuation routes. The plan will include schedule for fire drills;
- Preparedness plan (identification of actions to improve preparedness for both specific and general crises);
- Budget both for preparedness and for the actual responses that have been planned.

4 ASSUMPTIONS, CONSTRAINTS AND RISKS

4.1 Assumptions

Stakeholders

- Semarang City Government as leading Indonesian party, will allocate and maintain sufficient relevant staff to contribute to the project: staff who are available, willing to share their knowledge and experience, and in the position to leverage the same from the other participating Indonesian parties;
- A substantial part of the larger interventions required to realise a robust and integrated flood management system over coming decades, will be located on privately owned land as the availability of sizeable patches of public grounds is limited;
- NUFReP, indicatively focussing on West-Semarang, will present its first results in Q3/2022 and give further guidance for D2B Phase 2 as to which interventions might be eligible for (WB) financing;
- Under the NL supported Blue Deal Program, Dutch water boards very likely will focus on water governance elements in Semarang's centre;
- Community organisations around subsystems of the water management infrastructure (e.g. Banger Polder, Kota Lama) have a strong feeling on what should be done (and what not) and on how they should be involved in resolving the flooding issues they face, and will become vocal once the project is being heard of. Successful design and implementation requires engagement of stakeholders/communities in order for their ideas to be carefully considered;
- Upon the finalisation and results of the yet ongoing technical studies, MPWH's DG for Highways will proceed with section I of the Semarang-Demak highway (sea dike with toll road and retention ponds) and start construction works in the second half of 2022. The second dike-road-ponds stretch, located around the harbour and initiated by City Government (Semarang Harbour Toll Road - SHTR), is still under study by MPWH and implementation will not be started in the coming 2 years.

Environment

- As the built-up area and population densities are extremely high in the northern and central city quarters, it is unlikely that in that area the construction works resulting from this study will surpass the thresholds for a full ESIA/AMDAL (stipulated in the Indonesian regulations, Part I);
- Regional Infrastructure, dredging and construction of flood canals. The thresholds for excavation of and/or land hauls for sizeable retention elements more uphill are preliminarily assumed to be non-limiting for a restricted AMDAL;
- The rapid land subsidence and the gradual sea level rise will not slow down over the coming decade as effective countermeasures (strict limitation of groundwater extraction, effective international measures against climate change) take more time to be implemented and yield results;
- The volumes and frequency of problematic run-off events will continue to increase over coming decades, as a result of ongoing expansion of built-up area, erosion and silting, climate change effects (on rainfall pattern and intensity, on sea level) and land subsidence.

Social setting

- The physical realisation of the interventions resulting from this study will mainly affect the socially and economically weaker groups within Semarang's society (resettlement), as it is mainly them that populate the more marginal free spaces on/along canals, under highways and on frequently inundated lowlands in formal and informal settlements;
- The continuing flooding of the low-lying parts of town predominantly affect the poorer groups within Semarang's population; maybe not in monetary terms but certainly so when it comes to impact on livelihoods, day to day security and continuity of shelter (livelihood restoration);
- The increasing incidence of landslides and flooding in the higher parts of town will make the generally more wealthy private landowners in those areas more inclined to contribute to flood prevention (in retributions or in kind (making available of land)).

Security

- The current demographic, ethnic and social-economic situation in Semarang is not hostile to the future project team nor to its individual members;
- The general health situation in Indonesia is mediocre, with dengue (especially in Semarang), hepatitis A, typhoid, dysentery and Covid19 as major threats. It is assumed that any visitor to Indonesia seeks counselling on the prevailing health conditions at the moment of traveling. Furthermore, treating capacity for complicated illnesses is limited to the bigger cities;
- Covid19 will remain endemic, with sudden and unpredictable changes in intensity, new/unknown variants and uncertainty in timing/severity/duration of government response in the form of restrictions.

Data and information

- There is a wealth of data and analyses on local and regional hydrology, on land subsidence, on flood events, on the social-economic disaggregation, and on the status of the water management infrastructure. These data will be made available to the Consultant at the very start of the project, the gathering being prepared and supported by the competent authority;
- The availability of data and analyses on the hydraulic characteristics of the drainage system, on pollution status of soil and subsoil, and on groundwater dynamics and quality is limited, but considered sufficient for the basic analyses in Phase 1A.

4.2 Constraints

Scope of the project

- The project aims to deliver designs for civil works that are ready for implementation (realisation, construction). Non-structural, managerial and institutional measures and components are explicitly part of the assignment but should not take the upper hand;
- The project has a geographical focus (see figure 2.1) so it will not solve the flooding problems for the entire city. Nevertheless, the explicit part of the scope is to intensively align with the (spatially) complementary NUFReP project, and to produce blueprint interventions that can be transposed to other parts of the city;
- The project seeks to identify climate adaptive interventions that support slowing down of groundwater abstraction and land subsidence by developing structural and non-structural

interventions that contribute to water retention, water saving, re-use and sub-surface water replenishment. It will not deliver water supply facilities or alternatives to groundwater abstraction;

- The project focuses on the surface water system and (additional) structures, but it takes on broad groundwater components where these (i) influence the effectiveness of the existing system and may influence the effectiveness of proposed interventions, and (ii) are substantially replenished as an effect of proposed interventions;

IIPP, in consultation with the Competent Authority, reserves the right to determine the scope of the final phase in the context of the mid-term go/no-go decision.

Quality

- There will be no time to recover apparent data gaps that require measurement over extended time periods. This may impact the quality of model calibration and validation, as well as the reliability of predictions.

Schedule

- The time frame for executing the project is strictly limited to one year. The delivery of the final report may take one month more at maximum;
- The project is phased in three parts of eight weeks, 12 weeks and 30 weeks respectively. This phasing is to be maintained - the individual durations per phase, however, may be altered upon solid argumentation in the Consultant's bid;
- To allow for an external finance track, the Green Book procedure needs to be taken into account during the execution of the studies. The Indonesian project parties, i.e. the project owner(s) identified at the end of phase 1 is responsible to submit the documents for inclusion in the Green Book. The Consultant is not expected to work directly on this Green Book submission, but will provide necessary information by providing the deliverables of this assignment.

Legal and regulatory

- Both in terms of content and timelines, the prescriptions to a viable AMDAL are less stringent than the IFC PS for an ESIA. This ToR prescribes full compliance to both IFC PS standards and AMDAL stipulations. This is particularly relevant for those selected project components that have an (expected) environmental categorisation of B or A.

Contracting and purchasing

- The mid-term reassessment by IIPP and Competent Authority of the scope of the final phase may in the extreme case result in discontinuation of the project. In such case, the Consultant will not be entitled to claim any payments for activities specified in their bid for Phase 2;
- Following a mid-term go-decision, IIPP and Competent Authority will specify the exact scope of the final phase (which may remain unchanged as to the original one). The Consultant will then have a maximum of two weeks to prepare a detailed bid for Phase 2, to be accepted by IIPP.

Costs

- The maximum available project budget is € 950,000 including contingencies.

Resources

- City Government of Semarang is not overstaffed and is quite loaded with work. This puts challenges to the availability of city government staff to the project, having other demanding tasks as well.
- Staff of the City Government predominantly speak Bahasa and limited to no English.

4.3 Risks

Risks emerge where assumptions turn out to be invalid or superseded, or where constraints apparently are more severe/tight than identified earlier. The main risks to the D2B as resulting from sections 3.1 and 3.2, are summarized below. In his bid, Consultant shall describe how these will be addressed and mitigated.

Category	Risk	Risk level/ likelihood	Impact on project
Integrated planning/ Institutional context	CA faces difficulties to free up sufficient staff for the project > unclear situations, pressure on planning, partners may step out, approach/ solutions not optimally integrated in context and with other initiatives	Medium	High
	Insufficient coordination with NUFReP and/or Blue Deal > confusion, sub-optimally integrated approach/solutions, contradictory and or counterproductive interventions/ measures	Medium	Medium
	Community level stakeholders feel insufficiently heard/involved and/or compensated > non-acceptation, resistance, delays	Medium	High
Land subsidence	Hopefully not, but land subsidence proceeds at even higher speed than currently > identified measures might prove to be insufficient (in dimensions, location, character)	Low	High
Data & information	Constraints in Semarang City staff availability to the project, slow response to requests made to data possessing parties, disputes on data ownership and/or on delivery charges of data lead to data becoming available too slowly > pressure on project planning and/or quality	High	High
	Delayed (or non-)acquisition of essential data that are already identified as being limitedly available (hydraulic, soil pollution, groundwater) > pressure on project planning and/or quality	Medium	High
	Quality of analytic and predictive model results is contained by gaps in/length of extended time series (with too short a project duration to recover) >	Medium	Medium

	consequences for effectiveness of proposed interventions		
Sea dike + toll road	Delay in/abortion of project progress (detailing, tendering and/or implementation) > pressure on D2B planning and relevance of outcomes	High	Medium
	SHTR comes to implementation earlier than assumed > impact on the demarcated study area and on the project scope	Low	Low
Land acquisition	Private landowners do not agree to interventions on their land > resulting interventions may be limited in size, number and/or impact	Medium	High
Social Safeguards	Affected relatively weaker social groups feel insufficiently compensated (upon involuntary resettlement, loss of livelihoods, loss of social cohesion, etc) > unrest, protest, blockades within running period D2B	Low	Medium
	Idem > unrest, protest, blockades in the implementation phase after D2B	Medium	High
Environmental and health aspects	D2B findings indicate sizeable retention works in the more uphill areas > still a full AMDAL may be required	High	Medium
	AMDAL has more flexible demands and timelines than does IFC PS > challenges to project planning	Medium	Medium
	Accurate forecasting of the effects of ongoing built-up, erosion/silting and climate change on the rainfall-runoff regime (quantity and timewise) appears difficult > pressure on validity and robustness of proposed interventions	High	High
	Stagnant open water can increase the number and severity of outbreaks of malaria and dengue fever. Specifically in the context of Semarang, dengue control is a priority > pressure on the acceptability of additional open water, its shaping and its management	Medium	Medium
COVID-19	New, more aggressive and/or more sick making variants of Covid 19 may emerge unforeseen and rapidly. They may lead to severe travel restrictions and/or a ban on physical gatherings > pressure on project planning, organisation and/or quality	Medium	Low

Table 3.1 - Risk matrix

5 PROJECT MANAGEMENT

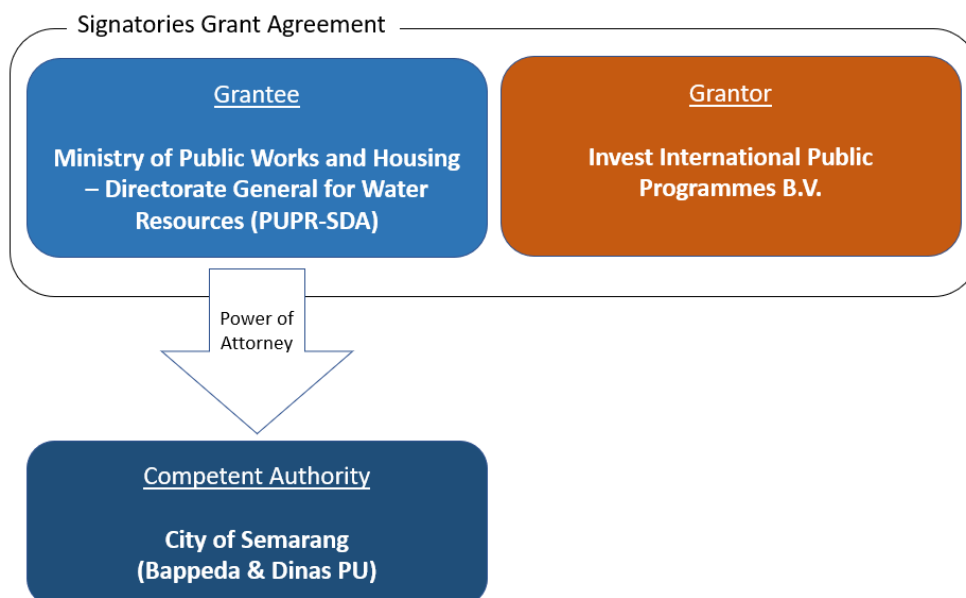
5.1 Responsible organisation

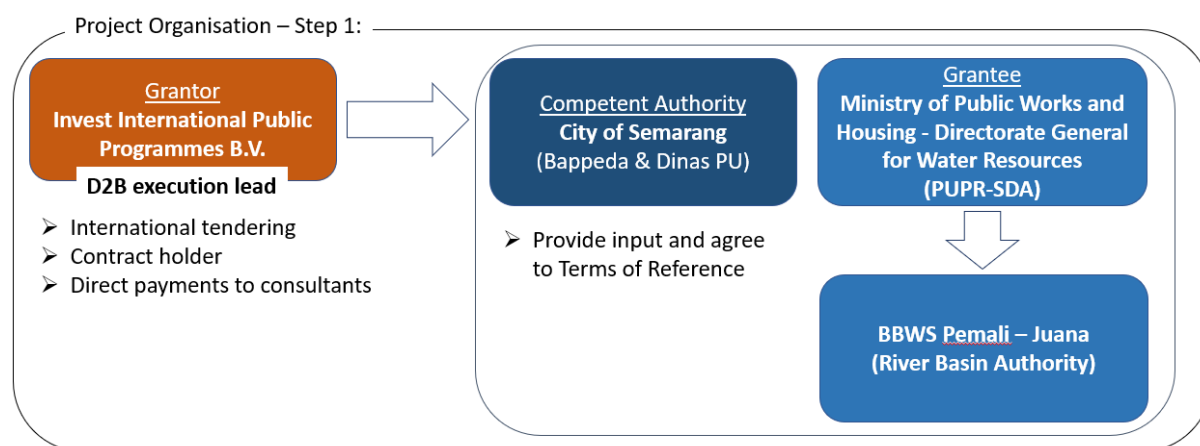
The primary stakeholder (Competent Authority) for the project is the City of Semarang, with Bappeda in the lead for managing the project. However, since the proposed interventions concerning the water and drainage infrastructure system in Semarang generally fall under the responsibility of MPWH-SDA (Grantee), the project is a joint responsibility of the City of Semarang and MPWH and its subsidiary agencies, such as BBWS PJ.

The primary stakeholders will coordinate the further development and implementation of the project by working together in a project coordination team.

5.2 Management structure

5.2.1 Organisational Diagram





Progress Monitoring

For the execution of the D2B-project, it is necessary to agree on a coordination and reporting format. Similarly, when the D2B-financed Consultants are in place, the Consultants will have to do regular reporting to D2B and the Project Team of the Competent Authority and by extension to the Project Coordination Team (PCT), as outlined in section 6.4.

Project implementation (D2B Development Phase, after Grant Agreement is signed)

In the Develop2Build project implementation phase, the Project Coordination Team will hold periodic progress meetings.

The main purpose of these progress meetings is to monitor the progress of the D2B assignment, and provide guidance and support if necessary. The Project Team of the Competent Authority is further tasked to monitor the consultants' work through statements of acceptance on (interim) deliverables. With reference to the specific arrangements (attendance, staffing, agenda, etc.) for meetings once the consultants are selected will be determined upon start of the consulting assignment (immediately after signing the consulting assignment contract).

5.3 Roles and responsibilities

Organisation		Representative (s)	Roles and responsibilities
Invest International Public Programmes B.V.		Mr. Jeroen Bakker, Investment Manager Ms. Laura Scheske, Investment Advisor	<u>Grantor</u> . Proponent for the D2B program, financing support, procurement of the Consultant, direct (interim) payments for (interim) deliverables following a statement of acceptance of (interim) deliverables by the Competent Authority
Ministry of Public Works & Housing (MPWH/PUP R)	Directorate General of Water Resources (SDA)	Mr. Jarot Widnyoko	<u>Grantee</u> . General oversight, Technical/Policy advice
	SDA/Directorate of Water Resources Management System and Strategy	Mr. Ir. Birendrajana	Technical/Policy advice
	SDA/Directorate Rivers & Coasts	Mr. Leo Eliasta	Technical/Policy advice
	BBWS Pemali Juana	Mr. Muhammad Adek Rizaldi	Technical input, assessment of deliverables
	Bureau for International Cooperation (PAKLN)	Mr. Ir. Edy Juharsyah, M.Tech.	General Liaison and communication support, support concerning national administrative regulations and requirements
Semarang City	Bappeda	Ms. Arwita Mawarti, ST, MT	<u>Competent Authority</u> . Overall responsible for the implementation of the D2B project - project oversight, planning, coordination with relevant local actors and with IIPP, facilitating, monitoring and approving the work of the Consultant, providing statements of acceptance on (interim) deliverables and associated (interim) payments. assessment of deliverables
	Dinas PU	Mr. C. Aref Dwi Harjono, ST, MT	Technical input and oversight, supporting Bappeda
Contractor			To be determined after ICB process

Project coordination team Operational working structure for the stakeholders involved in major decisions (selection of interventions, go/no-go after Phase I, discussion of issues as appropriate).	
IIPP (Invest International, NL)	Mr. Jeroen Bakker, Ms. Laura Scheske
Semarang City - Bappeda	Ms. Arwita Mawarti, ST, MT; Mr. Miftahul Huda, ST
Semarang City – Dinas PU	Mr. C. Aref Dwi Harjono, ST, MT Mr. Ir. Victor Tri Karyanto Nugroho, ST, MT
BBWS Pemali Juana	Ms. Anggraeni
Ministry of Public Works and Housing	Mr. Ir. Birendrajana Mr. Leo Eliasta

6 LOGISTICS, DELIVERABLES, REPORTING AND QUALITY ASSURANCE

6.1 Place where studies take place

Day to day management of the project will be done from Indonesia. Technical elaboration, design and report-writing can be done either locally or remote (hybrid working), where it is encouraged that inland and inter-continent flying is limited to the essential minimum (evaluation criterion). Stakeholder engagement and fieldwork for social and environmental studies are expected to be done in Indonesia.

6.2 Language

All reporting shall be in the English language, with summaries in Bahasa Indonesia. The report concluding Phase 1 as well as the final report shall be delivered in both languages in full.

6.3 Deliverables

The key deliverables for this project are:

Phase 1 (contract signing – 5 months after)

1. Inception Report (within 6 weeks after contract signing) as well as a multi-criteria analysis tool
2. Stakeholder Consultation & Institutional Landscape
3. Technical, Environmental and Social Baseline Studies
4. Theory of Change and M&E Plan
5. Hydrologic and hydraulic models incl. calibration-/validation-/user-documentation
6. Systems analysis current drainage system
7. Potential solutions: longlist, CBA, shortlist
8. ToR for the ESIA
9. Institutional Capacity and Receptivity Analysis
10. Financial Plan & Financing Options
11. Workplan for Phase 2 (including budget)

Phase 2 (go decision after Phase 1 – 7 months after)¹⁶

12. Technical Feasibility Study / Detailed Engineering Design
13. Land acquisition plan
14. Procurement and Financing Plan
15. Environmental and Social Impact Assessment & Management Plan
16. Stakeholder Engagement Plan
17. Institutional Capacity Building Plan
18. Operation and Maintenance Plan

6.4 Progress- and project-reporting

The Consultant will deliver the following project reports:

Progress Notes ¹⁷	monthly, in 1 st week following reporting period
Integrated Report Phase 1	<2 weeks after finalising Phase 1 <i>and</i> <6 months after contract signing
Final Report D2B Study	<4 weeks after finalising Phase 2 <i>and</i> <14 months after contract signing

6.5 Quality control and Quality Assurance

The Consultant is expected to apply its quality assurance procedures to all work submitted by the consortium. Deliverables that have not undergone a quality assurance procedure are not acceptable. The Consultant is also expected to put in place procedures to ensure the security and safety of its work, its staff and the people they engage with during the fulfilment of their duties. Failure to take effective security and safety precautions will be seen as non-compliance with the terms of the contract agreement. Given the likelihood of continued social disruption due to the Covid-19 pandemic, the Consultant should develop a *modus operandi* that allows for continuity to the extent possible.

¹⁶ conditional to a “go” decision after Phase 1

¹⁷ rolling overview of realisation, constraints, expectations/outlook for upcoming period, planning/staff/budget consequences
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Annex 1: List of Abbreviations

ADB	Asian Development Bank
AfD	Agence Francaise de Developpment
APBD	Provincial budget
APBN	Indonesian annual state budget “Anggaran Pendapatan dan Belanja Negara”
BAPPEDA	Planning Agency of the City of Semarang
BAPPENAS	Ministry of Planning (central level)
BBWS (PJ)	River Basin Management Authority (Pemali – Juana)
CA	Competent Authority
CBA	Cost-Benefit Analysis
CDAP	City Drainage Acceleration Plan 2022-2024
D2B	Develop to Build
D2B IC	Develop to Build Internal Committee
DG-SDA	Directorate – General for Water Resources, MPWH
DPRLN-JM	BAPPENAS Blue Book
DRPPLN	BAPPENAS Green Book
EIB	European Investment Bank
ESIA	Environmental and Social Impact Assessment
FS	Feasibility Study
IFC	International Finance Corporation
IFC PS	IFC Performance Standards (2012)
IPIC	Integrated Potential Intervention Cluster
MCA	Multi-Criteria Analysis
MoU	Memorandum of Understanding
MPWH	Ministry of Public Works & Housing
MPWH-KLN	Ministry of Public Works and Housing - Office for International Cooperation
MPWA-SDA	Ministry of Public Works & Housing - Directorate General of Water Resources
NCEA	Netherlands Commission for Environmental Assessment
NUFReP	National Urban Flood Resilience Project
PCT	Project Coordination Team
PfW	Partners for Water programme
PU	Public Works Agency of the City of Semarang
QE	Quality at Entry
SHTR	Semarang Harbour Toll Road
SRP	Sea Dike cum Toll Road with retention ponds
WaL	Water as Leverage programme
WB	World Bank
WB ESF	World Bank’s Environmental & Social Safeguards Framework
WMS	Water Management Semarang (assignment under the PfW programme)

Annex 2: Preliminary NCEA Assessment on Triggering IFC Performance Standards

D2B follows internationally agreed standards and methods to assess projects and funding applications. In line with other development partners, the IFC PS and ESIA methods and procedures are followed.

IFC PS 1: Assessment and Management of Environmental and Social Risks and Impacts: Triggered

This IFC PS is triggered. This PS instructs project proponents to:

- Assess social and environmental impacts – positive and negative – in the project's area of influence
- Avoid, minimize, mitigate or compensate for adverse impacts on workers, communities and the environment
- Identify ways to improve the social and environmental performance of the project through the effective use of management systems.
- Engage with affected communities and other relevant stakeholders (including establishment of grievance mechanisms).

In this case NCEA suggests considering a more generic approach to the assessment, which sets a general framework for the management of E&S risks and impacts, which is further operationalised for the different locations where interventions will take place.

IFC PS 2: Labour and Working Conditions: Triggered

This PS is triggered if a project mobilised a workforce, which will be the case here also. An approximation of the workforce that will be mobilised in project implementation needs to be given, including identification and management of any issues regarding the treatment, health and safety of workers (also in relation to the supply of equipment, construction material or management of project waste).

IFC PS 3: Resource Efficiency and Pollution Prevention: Triggered

This PS is triggered. The Assessment for the project will need to look at key alternatives and measures to avoid, minimize, and clean up any pollution potentially caused by the project, as well as optimise material and energy efficiency within the project. In particular, those considerations that may be relevant for the construction phase of the project.

IFC PS 4: Community Health, Safety and Security: Triggered

This PS will be triggered, as the interventions take place within a highly populated area. The assessment will need to identify alternatives or measures to minimize impacts on the health and safety of the local community as a result of the project. In particular, safety and health risks and nuisance from construction for different users will need to be assessed. Particular attention should be paid to impacts on vulnerable people.

IFC PS 5: Land Acquisition and Involuntary Resettlement: Likely to be triggered

This PS is likely to be triggered. This formulation plan notes that land acquisition may need to occur. Note that this IFC PS also instructs project proponents to avoid or minimize displacement (through alternative project designs) and to improve or restore the living condition and livelihoods of displaced persons when resettlement is unavoidable. Aside from land acquisition, this PS also covers loss of shelter, income and livelihoods due to the project.

IFC PS 6: Biodiversity Conservation and Sustainable Management of Living Natural**Resources: Possibly triggered**

At this stage it is unclear whether this PS is triggered. In the urban environment of the city of Semarang this may be unlikely, but the assessment will need to check if the project may cause any possible biodiversity-or ecosystem issues. It will be important to confirm, early on in the project, whether any modified habitat with significant biodiversity value, natural habitat, critical habitat, or a Legally Protected Area or an Internationally Recognized Area, will be affected. Same holds for any ecosystem services that the project may significantly influence. If this is the case, the approach outlined in IFC PS 6 guidance will apply.

IFC PS 7: Indigenous peoples: Unlikely to be triggered

This PS is not expected to be triggered, but this will need to be confirmed in the assessment.

IFC PS 8: Cultural heritage: Possibly triggered

This PS may be triggered if the project interventions impact any cultural heritage values, including religious sites and historical artefacts. This will need to be confirmed early on in the assessment.

Annex 3: Template Disbursement Schedule

Disbursement Schedule – Consultancy Contract

This disbursement schedule describes the disbursements for the consultancy contract under the D2B project Semarang Urban Flood Resilience, D2B21RI05.

Contract name: Consultancy Service for the project Semarang Urban Flood Resilience
Contract number: D2B21RI05
Employer: Invest International Public Programmes B.V.
Contractor: TBC
Total contract amount: TBC

Note: D2B makes a maximum of 6 payments for this contract

Type of payment	Payment description and conditions	Disbursement D2B (EUR)	Recipient D2B disbursement
Advance Payment (15% of Phase 1)	- Signed D2B Grant Arrangement - Signed copy of the contract - Invoice for the advance payment <i>Opt. Proof of Advance Payment Guarantee with IIPP stated as beneficiary</i>		Contractor
Payment 2 at end of Phase 1A	- Submission of Deliverables - Inception Report - MCA tool ... - Approval by D2B on Deliverable 1 - Statement of Acceptance by the <i>Competent Authority</i> to certify that the services delivered are in accordance with the Terms of Reference - Invoice for the payment - Request for payment		Contractor
Final Payment Phase 1	- Submission of Deliverable 2 - Approval by D2B on Deliverable 2 - Statement of Acceptance by the <i>Competent Authority</i> to certify that the services delivered are in accordance with the Terms of Reference - Invoice for the payment - Request for payment		Contractor

Payment 4	• Go-decision at the end of Phase 1 • Submission of Deliverable ◦ Detailed proposal for phase 2 (work plan, cost estimate) • Approval by D2B on Deliverable • Statement of Acceptance by the <i>Competent Authority</i> to certify that the services delivered are in accordance with the Terms of Reference • Invoice for the payment • Request for payment		<i>Contractor</i>
Payment 5	• Go-decision at the end of Phase 1 • Submission of Deliverable ◦ Detailed proposal for phase 2 (work plan, cost estimate) • Approval by D2B on Deliverable • Statement of Acceptance by the <i>Competent Authority</i> to certify that the services delivered are in accordance with the Terms of Reference • Invoice for the payment • Request for payment		<i>Contractor</i>
Final Payment (10% of total contract value)	• Go-decision at the end of Phase 1 • Submission of final Deliverables ◦ ... • Approval by D2B on Deliverables • Statement of Acceptance by the <i>Competent Authority</i> to certify that all the services delivered are in accordance with the Terms of Reference • Invoice for the payment • Request for payment		<i>Contractor</i>
Grand-total		Total contract amount	

Bank details recipient:

Recipient:

Account number:

IBAN number:

BIC code:

Bank name: