**Annex 2\_Tenders Tasks, Timeline and Deliverables: Wastewater management system in Breza until 2050 – conceptual design, feasibility study, and the first phase of technical-investment documentation**

1. **DESCRIPTION OF THE CURRENT SITUATION**

In the area of the Municipality of Breza, municipal waste water collection is managed by the Public Utility Company "Komunalno" Breza. The sewage system covers most of the urban area of the Municipality of Breza (up to 92%). According to the municipal health inspector of Breza, 70% of the population is covered by a managed sewarage, including local (rural) infrastructure that is not connected to the central sewage network. The wastewater from the population is discharged into the Stavnja River, on the multiple locations, without prior treatment. The parts of the municipality not covered by the sewage system indicate a large number of septic tanks, which directly lead to diffuse water and soil pollution.

The Municipality has the following documentation available:

1. Main project for the construction of a wastewater drainage system in the settlement of Bukovik, municipality of Breza;
2. Main project for the construction of a wastewater drainage system in the settlement of Gornja Breza, municipality of Breza;
3. Main project for the construction of a wastewater drainage system in the settlement of Podgora, municipality of Breza;
4. Main project for the construction of a wastewater drainage system in the settlement of Šaš, Business Zone Šaš, municipality of Breza;
5. Main project for the construction of a wastewater drainage system in the settlement of Stare Jame, municipality of Breza;
6. Main project for the regulation of the Crema – Bate stream;
7. Main project for a pedestrian path in the settlement of Šaš, Business Zone Šaš;
8. Regulation of the Jasike stream through the settlement of Banjevac, municipality of Breza – Phase II;
9. Piping of the Jasike stream through the settlement of Banjevac, Municipality of Breza;
10. Piping of the Jasike stream, Phase I;
11. Regulation of the Jasike stream in the city center of Breza, Phase II (section R444 to the Savnja River);
12. Construction of a joint wastewater treatment plant and collector network in the municipalities of Vogošća, Ilijaš, and Breza in Bosnia and Herzegovina.
13. **PROJECT ASSIGNMENT DESCRIPTION**

The implementation of the activity **Wastewater management system in Breza until 2050** includes the development of the conceptual design, feasibility study, and the first phase of technical-investment documentation. The objective is to ensure long-term, sustainable, and efficient wastewater collection and treatment in the Municipality of Breza by maximizing synergies across the developmental pathways outlined in the Sustainable Transition Plan for 2050.

The scope of work includes the following key activities:

1. **Conceptual design**
2. **Feasibility study**
3. **Phased implementation plan**
4. **Investment-technical documentation – Preliminary design** for the first phase of the expansion of the public sewage system

**2.1 CONCEPTUAL DESIGN**

The purpose of developing a Conceptual Design is to includesolutions for sewage network and wastewater treatment for the entire Municipality of Breza, including areas served by sewage network connections and those served by septic tanks, considering the current situation, future needs, principles of environmental protection, and synergies across the developmental pathways outlined in the Sustainable Transition Plan for 2050.

The expected results of creating project documentation are:

* Decision on the optimal solution for the long-term, phased construction of wastewater collection and treatment infrastructure through 2050.
* Environmentally acceptable disposal of municipal wastewater, both from areas connected to the sewage system and from areas using septic tanks i.e. compliance with environmental protection goals, and in line with developmental pathways outlined in the Sustainable Transition Plan for 2050.
* Preservation (quantitatively and qualitatively) of groundwater resources and the environment.
* Improvement of living conditions and economic development.

Within the planned scope of the municipality, it is necessary to design sewerage for the following types of wastewater:

* Wastewater from residential, institutional, commercial, and industrial (if connected to sewage) sources, with appropriate sewage network and treatment plant;
* Storm water that occurs during rainfall from roads and drainage areas (along with oil and grease separators).

The conceptual design primarily needs to consider the following elements:

* The current state (number of residents, individual residential and commercial buildings);
* The planned number of residents and residential buildings for the development of the municipality over a 20-year period;
* Sewage networks with the possibility of connecting all existing, newly designed residential, commercial, and other buildings, and areas currently served by septic tanks;
* Stormwater solutions from the existing hillside areas, roads, and buildings;
* The number of equivalent residents for determining the size of the treatment plant;
* Determining the most suitable location(s) for establishing a wastewater treatment plant for the municipality with a defined coverage;
* Considering the expected further urbanization of the municipality, the conceptual design should address and foresee the possibility of upgrading the sewage network with clearly defined locations for sewer manholes;
* Consider the possible options for resource recovery (of water, energy, organic matter, nutrients) from the wastewater treatment and the possible pathways for the reuse of these resources;
* If possible, provide at least two solutions (centralized and decentralized) for resolving wastewater drainage and treatment. If it is determined that it is not possible to build a single wastewater treatment plant for the entire area, the conceptual project needs to consider the possibility of constructing multiple treatment plants for smaller coverage areas.

The outline content of the Conceptual design is given below:

1. GENERAL DOCUMENTATION (basic information about the project, company registration, relevant authorization, the decision on the appointment of designers, and project terms of reference)
2. TEXTUAL PART

1. Technical report

1.1. Introduction

1.2. Description of the current state

1.3. Available data for design

1.4. Description of the technical solution

1.5. Description of the wastewater treatment plant with all relevant features

1. BILL OF QUANTITIES AND COST ESTIMATES (at the conceptual design level in order to provide input data for the Feasibility Study)
2. GRAPHICAL PART (at the conceptual design level)

## **2.2 FEASIBILITY STUDY**

The Feasibility Study aims to develop adetailed analysis of the technical, economic and environmental aspects of proposed solutions, including cost-benefits analysis, potential risks and long-term sustainability issues. The study will analyze the needs and opportunities for collecting wastewater from the population, as well as from social pollutants (institutions, schools, etc.), the commercial sector, and the industrial sector, and will eventually define which areas of the municipality will be gradually upgraded with separate sewage systems by 2050. Furthermore, regarding wastewater treatment, this study will conceptually address the implementation of decentralized wastewater treatment plants.

The Feasibility Study will be prepared following the completion of the Conceptual Design and the approval from the Municipality of Breza.

The outline content of the Feasibility Study is as follows:

1. **INTRODUCTION**
   1. Basic information about the project. Background of the project - Overview of the project task, and expected project goals. All projections should include a time frame up to 2050
   2. Approach and Methodology of the Study

2. **LEGAL LEGISLATION**

2.1. Legal framework of the Municipality of Breza, Zenica-Doboj Canton, and Federation of Bosnia and Herzegovina (FBiH)

2.2. Compliance of local laws with relevant EU directives

3. **GENERAL DATA**

* 1. Project area (location)
  2. Description of the physical characteristics of the project (relief, geological characteristics and soil, hydrographic characteristics of the area, climatic characteristics of the area)
  3. Strategic - planning, legal and institutional framework (strategic framework, planning documentation, legislation in the area, competent institutions and end users)
  4. Population and projection
  5. Service coverage and projections (water supply coverage, water consumption, sewer connections, description of the existing sewer network, type, age, etc.)

4. **TECHNICAL-TECHNOLOGICAL SOLUTION**

4.1. Processing of industrial and communal wastewater in the plant

4.2. Description of material flows and material balance (water, nutrients and organic matter)

4.3. Evaluation of investments

1. **ANALYSIS OF WASTEWATER COLLECTION AND TREATMENT OPTIONS** - The analysis should include centralized and decentralized wastewater collection and treatment options at the conceptual level, i.e., conceptual design, along with drawings of situational presentations and technological solutions of treatment options. For each option, it is necessary to provide a description of the environmental benefits and risks, impact on water, soil, air, climate, society, and the health of the population, and compare the options. For each option, a presentation of preliminary capital and operating costs is required, as well as a comparison of costs. Based on the analysis of costs and the impact on the environment and society, propose the best conceptual design.

6. **FINANCIAL ANALYSIS OF PROPOSED PROJECT SCENARIOS**

6.1. Assessment of investment costs

6.2. Estimate of operating costs

7. **ECONOMIC ANALYSIS**

7.1. Cash Flow

8. **RISK ANALYSIS**

8.1. Sensitivity analysis

8.1.1. Analysis of elasticity

8.1.2. Identification of "switching values"

8.1.3 Scenario analysis

8.2. Qualitative risk analysis

8.3 Climate related risks

9. **OVERVIEW OF POSSIBLE FINANCIAL ARRANGEMENTS**

10. **USES/ BENEFITS**

10.1. Social justification

10.2. Environmental justification

10.3. Economic justification

11. **CONCLUSION**

## **2.3 PHASED IMPLEMENTATION PLAN OF THE PROJECT**

Based on the results of the approved Feasibility Study, it is necessary to develop a dynamic plan for implementing the entire project through the phases of design, construction, and investment.

## **2.4 INVESTMENT AND TECHNICAL DOCUMENTATION – PRELIMINARY DESIGN OF THE FIRST PHASE**

The phases of project implementation will be defined in the Feasibility Study and the Phased Implementation Plan, which will also outline the scope of the first phase, requiring the development of the

Preliminary design.

**Legal framework**

The selected Contractor should prepare project documentation in accordance with the legal regulations of FBiH and the Zenica-Doboj Canton, specifically:

1. According to the Directive (91/271/EEC) on the treatment of municipal wastewater, systems for the collection and transport of wastewater and other water are defined, and depending on the size of the agglomeration and the type of recipient (sensitivity of the area), the required degree and parameters of treatment for urban wastewater are specified. Any recast or amendment of this directive has to be taken into consideration, in line with the 2050 perspective of the referenced project. In November 2024, the Council of the EU gave the final green light for a revised EU directive on urban wastewater treatment. The revised directive extends the scope to smaller agglomerations, covers more pollutants, including micropollutants, and contributes to energy neutrality (Official site of European Council, [Press releases](https://www.consilium.europa.eu/en/press/press-releases/), November 5, 2024).
2. Within the framework of FBiH regulations: the Water Law of FBiH (“Official Gazette of the Federation of BiH”, number: 70/06), Regulation on the conditions for the discharge of wastewater into the environment and public sewage systems (“Official Gazette of the Federation of BiH”, numbers: 26/20 and 96/20), Decision on the characterization of surface and groundwater, reference conditions, and parameters for assessing the status of water and water monitoring (“Official Gazette of the Federation of BiH, number: 1/14), Regulation on hazardous and harmful substances in water (“Official Gazette of the Federation of BiH, number: 43/07”), Regulation on the classification of water (“Official Gazette of SR BiH, number: 19/80”), Regulation on the categorization of watercourses (“Official Gazette of SR BiH, number: 42/67”), Regulation on the content, form, conditions, method of issuance, and storage of water acts (Official Gazette of the Federation of BiH, numbers: 31/15, 55/19, and 41/20), Water Law (“Official Gazette of FBiH”, number: 70/06), Law on Environmental Protection (“Official Gazette of the Federation of BiH”, number: 33/03), Law on Fire Protection and Firefighting (Official Gazette of the Federation of BiH, number: 64/09).
3. Water Law of the Zenica-Doboj Canton (“Official Gazette of the Zenica-Doboj Canton”, number: 17/07), Waste Management Plan (“Official Gazette of the ZDK, number: 1/09”), Law on Environmental Protection (“Official Gazette of the ZDK”, number: 1/00), Law on Spatial Planning and Construction (“Official Gazette of the ZDK”, numbers: 1/14 and 4/16), Law on Noise Protection (“Official Gazette of the ZDK”, number: 1/14), Regulation on facilities and installations that can only be constructed and put into operation if they have an environmental permit (“Official Gazette of the ZDK”, number: 14/13).

**Substrates**

**Geodetic substrates**

For the preparation of the investment-technical documentation for the first phase, the following geodetic bases must be provided:

* 1:25000 scale maps,
* Plans scale 1:2500.

Necessary geodetic works include the following:

* Development and connection of polygon lines in the state coordinate system,
* Stabilization of a sufficient number of polygonal points,
* Adjustment of the developed polygonal network,
* Surveying the current geodetic situation of the separate sewer sections at a scale of 1:1,000,
* Developing the polygonal network using precise geodetic instruments - total station,
* If there are areas for surveying the geodetic situation of separate sewer sections located in forests, this should be done using precise total stations.

**Geological substrates**

For the specified area, provide and execute:

* Basic geological map of the considered area,
* Detailed reconnaissance of the terrain with a focus on ground stability,
* Collection, processing, and critical evaluation of the usability of previously conducted research results,
* If necessary, conduct additional geological investigations (excavations and boreholes),
* Prepare reports on engineering geological and geotechnical characteristics of the area under consideration.

The preliminary design primarily needs to consider the followings:

* The existing state (number of residents, individual residential and commercial buildings),
* The planned number of residents and residential buildings for the municipality's development over a 20-year period,
* Sewer networks with the possibility of connecting all existing, newly designed residential, commercial, and other facilities,
* Solutions for stormwater drainage from existing slopes, roads, and buildings,

The Preliminary design will carry out all necessary calculations (for the existing and planned future number of residents, facilities, and other economic entities) for the separate sewer network, flood levels in the area of potential sewer lines, and the planned treatment plant.

The Preliminary design project should include design drafts, technical specifications, and a cost estimate for the first phase of the public sewer expansion, which will be ready for implementation. This should be prepared in accordance with the Regulation on the Type, Content, Labeling and Storage, Control, and Recognition of Investment-Technical Documentation (Official Gazette of FBiH, No. 33/10 and 98/14).

The following is the preliminary content outline for the Preliminary design of the first phase:

1. **GENERAL DOCUMENTATION** (basic information about the project, company registration, relevant authorization, decision on the appointment of designers, certificates and project terms of reference)
2. **TEXTUAL PART**

1. Technical report

1.1. Introduction

1.2. Description of the current state

1.3. Available basis for designing

1.4. Description of the technical solution

1.5 Hydraulic calculation and dimensioning of pipelines, pumping stations and other buildings

1.6. Selection of pipe material with instructions for installation

1.7. Description of the trench, method of laying and burying the pipeline

1.8. Testing and commissioning

2. Technical conditions for the performance of works

3. Estimates and estimate of works (accurate and complete with proof of measurements of all positions, done in the Microsoft Office Excel program)

4. Table attachments

4.1. Stakeout scheme

4.2. Specification of earthworks

4.3. Pipe material specification

4.4. Specification of manholes (manholes) and drains

4.5. Connection specification

1. **GRAPHIC PART**

1. Up-to-date geodetic situation

2. Overview situation MJ 1:5000

3. The projected situation of fecal and precipitation collectors with the drawn routes of MJ. 1:1000

4. Longitudinal profiles of fecal and precipitation collectors MJ. 1:100/1000

5. Details

5.1. Detail of trench MJ. 1:25

5.2. Detail of the trench in the planned road MJ.1:25

5.3. Detail of the typical solution of connections M 1:20

5.4. Detail of MJ audit channels. 1:25

5.5. Detail of the opening of the trench, the pedestrian crossing over the trench and the protective fence along the MJ trench. 1:25

5.6. Detail of outlet to the river

5.7. Detail of pipeline intersection with other installations

1. **GEODETIC ELABORATE** (Technical report on geodetic works on the sewer route, list of coordinates of detailed and polygonal points, staking scheme, geodetic data of inspection manholes, devices, etc.)
2. **EXPECTED RESULTS AND TIMELINES**

The expected outcomes of developing the conceptual design, feasibility study, and the first phase of technical-investment documentation are multidimensional. They include obligations as follows:

**Obligations of the designer:**

* **Consultation and Coordination**: When creating projects, it is mandatory to consult and agree with the technical service of the municipality. This is expected to take place throughout the conceptual design and feasibility study, to select on the conceptual design to take forward.
* **Conceptual design** that includes long-term sustainable sewage infrastructure and wastewater treatment until 2050.
* **Feasibility study** that confirms the technical, economic, and environmental feasibility of the proposed solutions.
* **Phased implementation plan** that clearly defines the priorities and time frames for project implementation.
* **Investment and technical documentation - Preliminary design** for the first phase of public sewer expansion, ready for the start of investment activities and execution of works.

**Obligations of the Investor:**

* Preparation of minutes on the acceptability of the Conceptual Design and the Justification Study,
* Preparation of minutes on the acceptability of the Conceptual Project,
* Obtaining urban planning approval according to the agreed Preliminary design.

The planned period for creating a list of all burning sites in the Municipality of Breza is **eight (8) months**.

1. **DEADLINES AND DELIVERABLES**

The selected Contractor will be required to provide services according to the deadlines outlined below:

|  |  |
| --- | --- |
| **Tasks** | **Due Date** |
| **Task 1:**  The first draft of the Conceptual design and the Feasibility Study, submit to SEI and the representatives of the Municipality of Breza for review and comments | 3 months from the date of signing the Agreement |
| **Task 2:**  Submit the final draft of the Conceptual Design and Feasibility Study to SEI and the representatives of the Municipality of Breza for review and comments. | 2 months from the day of approval of the Conceptual Design |
| **Task 3:**  Prepared investment and technical documentation (Preliminary design) | 2 months from the date of Study approval |
| **Task 4**:  Report to SEI on the work performed | 1 month from the date of approval of the Feasibility Study and definition of the first phase |

The selected Contractor is required to consider comments from representatives of the Municipality of Breza, SEI and other relevant parties, and to align their work with the provided suggestions.