

*Unofficial translation*

THE REPUBLIC OF TAJIKISTAN  
STATE UNITARY ENTERPRISE "DUSHANBEVODOKANAL"

DUSHANBE WATER SUPPLY AND WASTEWATER PROJECT

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Subproject: Procurement and installation of energy saving equipment for 21 booster pumping stations (DWSWP/G-02)

Dushanbe - 2021

**LIST OF ABBREVIATIONS AND SYMBOLS***Ошибка! Залка не определена.*

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## LIST OF ABBREVIATIONS AND SYMBOLS

ACS	Automation control system
WB	The World Bank
WHO	World Health Organization
SUE	State Unitary Enterprise
SEE	State Ecological Expertise
DVK	Dushanbevodokanal
EF	Efficiency factor
IDA	International Development Agency
GRM	Grievance Redress Mechanism
SC	Supervision of construction
LLC	Limited Liability Company
OP	Operational Policy
PIU	Project Implementation Unit
OHS	Occupational Health and Safety
PVC	Polyvinyl chloride
PID	Proportional-integral-differentiating
ESMP	Environmental and Social Management Plan
EIR	Electrical installation regulations
FC	Frequency converters
RT	The Republic of Tajikistan
PPE	Personal protective equipment
BCR	Building codes and regulations
TS	Transformer substation
EI	Electrical isolation
EC	Electromagnetic compatibility

COVID-19	Coronavirus Infection 2019 (an infectious disease caused by the novel coronavirus SARS-CoV-2)
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## INTRODUCTION

The purpose of the project for water supply, wastewater and installation of frequency converters in the city of Dushanbe is improving water supply and wastewater treatment services in selected districts of Dushanbe, as well as improving financial management and overall water supply

performance. Dushanbe has a well-developed but degraded water supply and sewerage infrastructure that requires repair and replacement.

The project has three components: Component 1: institutional strengthening and capacity building; Component 2: improvement of water supply and wastewater systems; and Component 3: Project Management.

The main activities under component 1 are aimed at expanding technical assistance to SUE “Dushanbevodokanal” (DVK) for corporate development, operations, and improving financial management. Component 2, consisting of subcomponents 2A and 2B, supports material investment and preparation of engineering structures and construction supervision (CS) services aimed at improving priority water supply and wastewater systems in Dushanbe city. Component 3 finances the general operating costs of the DVK and its Project Implementation Unit (PIU) for coordination and implementation.

Subproject: Procurement and installation of energy saving equipment for 21 booster pumping stations (DWSWP/G-02)

The proposed subproject will support investments in water supply and maintenance of water supply networks in the Sino district of Dushanbe city under subcomponent 2A. This subcomponent will finance a water supply investment to replace mainline water and booster pumps and build two 6,000 m<sup>3</sup> water storage tanks in the Sino district of Dushanbe city. The location and diameter of the pipelines to be replaced is based on a hydraulic model that will be completed as part of the current DWSP2-AF. The direct benefits of this subcomponent will be to reduce non-revenue water by reducing water leakage. Thus, it will increase the availability of water for the population and reduce the frequency of intermittent water supply.

The following actions and works will be carried out within the framework of the project:

1. Laying the motor cable and the control cable in separate trays.

Keep the motor cable away from the route of other cables. It is recommended to lay the motor and control cables in separate trays. In general, long parallel runs with other cables should be avoided to reduce electromagnetic interference caused by rapid changes in the frequency converter's output voltage.

If the cable has been laid in parallel with other cables, the minimum distances given below must be observed:

Distances between cables [10]

Distance between cables, m 0.3 Length of shielded cable, m <50

Distance between cables, m 1.0 Length of shielded cable, m <200

2. Verification of the conformity of the input voltage indicated on the frequency converter with the voltage of the mains to which it is planned to be connected.

The input voltage of the frequency converter must be the same as the mains supply to which it is connected. If the potential of the network is less, then the drive will not give out the necessary characteristics during operation, it will give errors. If the potential of the network is higher, then such a connection is prohibited.

3. The drive ground connection is individual to each drive.

The drive ground must be connected individually to each drive. The grounding distance is made as small as possible. The thickness of the grounding must not be less than the mains cable. The ground must be connected first.

4. Checking the condition of high-voltage equipment, in which there is no unacceptable risk associated with harm to life or health of people, property of individuals or legal entities, state or municipal property, the environment.

**Installation**, adjustment and maintenance of the frequency converter should only be performed by qualified technical personnel. Rough handling can damage the inverter.

Do not throw the inverter, subject it to shock or shock while carrying it.

**Safety instructions for the installation of the frequency converter (the instructions for the frequency converter are used:**

1. Touching live parts can be fatal even if the equipment is disconnected from the mains. When working with live parts, make sure that the voltage inputs are disconnected: both the mains supply and any other (connection of the DC intermediate circuit), the motor cable is disconnected (if the motor is rotating).

Be aware that high DC voltages may persist even if the LEDs are extinguished. Wait at least 4 minutes before touching potentially hazardous live parts of drives up to and including 7.5 kW. Wait at least 15 minutes before touching actuators with a capacity greater than 7.5 kW.

2. Frequency converters must be properly grounded. The earth leakage current exceeds 3.5 mA. It is forbidden to use the neutral wire as a ground.

3. The [OFF] button on the operator panel does not function as a safety switch. It does not disconnect the frequency converter from the mains and does not guarantee a power failure between the frequency converter and the motor.

**Checking the conformity of the components before starting the installation.**

1. Verify the code number of the transmitter with the one you ordered.

2. Check that the input voltage indicated on the adjustable frequency drive matches the voltage of the mains supply to which you plan to connect. If the mains voltage is lower than the input voltage of the frequency converter, the device will work with reduced characteristics, or it will work with an error. Connecting the device to a mains supply with a voltage higher than the input voltage of the inverter indicated on the rating plate is not permitted!

For the purposes of this technical regulation, the following basic concepts are used:

Safety of high-voltage equipment - the state of high-voltage equipment in which there is no unacceptable risk in the process of its production, installation, adjustment, operation, storage, transportation and disposal associated with harm to life or health of people, property of individuals or legal entities, state or municipal property, environment;

overvoltage protection - protection of equipment against voltages exceeding the highest values permissible for this equipment;

equipment voltage class - nominal phase-to-phase voltage of the electrical network for which this equipment is intended;

electrical switching device - a device designed for switching electrical connections of elements of electrical circuits;

contact switching device - electrical switching device designed to close and open one or more electrical circuits using contacts;

electrical rotating machine - an electromechanical device designed to convert mechanical energy into electrical or electrical energy into mechanical energy using electromagnetic induction;

the highest operating voltage of the equipment - the highest voltage with a frequency of 50 Hz, an unlimited prolonged application of which to the terminals of different phases (poles) of electrical equipment is permissible under the conditions of its insulation;

switchgear - an electrical device intended for receiving and distributing electrical energy and containing electrical switching devices, busbars and connecting buses, control, protection, communication and measurement devices;

Project category and tools used to prevent and reduce environmental and social risks.

The overall environmental impact of the subproject will be largely positive, associated with improved access to water and, as a result, better health outcomes, while increasing the resilience of water supply networks to natural disasters and climate change.

At the same time, based on the environmental and social impact assessment document of the Project, confirmed by the results of targeted environmental and social screening for this subproject on water supply networks, in accordance with the Bank's security policies and procedures, including OP / WB / GP 4.01 Environmental rating, this subproject has been categorized as Category B.

For this subproject, the adverse environmental impacts are mainly related to construction and are moderate in scope, temporary in nature and largely reversible. Potential adverse environmental risks of the proposed project during construction and / or reconstruction of existing pipelines can be summarized as follows: soil, surface water and air pollution; decrease in the stability of coastal zones, noise during construction work, construction waste, including possibly including asbestos, toxic materials, occupational health and safety, increased seismic risks in case of non-compliance with technologies, etc. All of these potential consequences are expected to be effectively prevented,

Activities in this category require the development of an Environmental and Social Management Plan (ESMP) adapted to the activities and location.

In this regard, this Environmental and Social Management Plan (ESMP) has been developed to ensure the implementation of environmental and social safety measures during the implementation of water supply and wastewater works in the Sino-1 district of Dushanbe.

The purpose of this ESMP is to identify and further manage environmental and social risks and impacts during the installation of frequency converters to save electricity in the Sino-1 district of Dushanbe. Information on specific risks and measures for their prevention and control is contained in a separate section (page 7) to this ESMP.

Thus, this ESMP:

- Describes the existing social and environmental conditions in the subproject area;
- Describes the design of the subproject, the proposed construction work and operational parameters;

- Describes the extent, duration and severity of potential impacts;
- Analyzes all significant impacts;
- Formulates actions to mitigate risks and impacts and presents it all in the form of an Environmental and Social Management Plan (ESMP).

This ESMP is an integral annex to the contract for the production of works and the basis for the inclusion in the list of scopes of the necessary measures aimed at ensuring safety both at the stage of production of work and for the sustainable maintenance of safety at the stage of operation. The ESMP can be modified in the course of the work, if necessary, in agreement with the Project Implementation Group and with the approval of the experts of the supporting team of the World Bank.

## 1. GENERAL INFORMATION ABOUT THE TERRITORY OF THE SUBPROJECT AND ITS BENEFICIARIES

Target Sino 1 is the largest district in Dushanbe with approximately 350,000 people living in the area. The project provides direct benefits to about 120,000 people living in the Sino 1 district, but more than 200,000 people are expected to benefit from increased water security, including future planned housing projects in the target area. In addition to the population, the beneficiaries will be government institutions such as the municipality of Dushanbe, Sino 1 district and other organizations at the district level. The Department of Architecture and Urban Development will also benefit from activities aimed at improving the integrated resilience of urban water resources.

As part of the preparation of activities for sub-component 2 A, 21 locations were identified for 52 pumps to be installed (with engine power from 4 to 55 kW and frequency converters will be installed in these motors to save energy).

There are no protected areas or parks in the vicinity of the project area that may be affected by the project work.

The target site is located in zone 3 of the Sino district. Sino is the largest district in Dushanbe in terms of area and population. Sino's water supply coverage is 100 percent and the number of customers is 85,600, and only 27,753 customers have meters installed.

There are only 44,806 customers in the Sino-1 district, and 15,000 of them have a meter.

About 10 percent of the target population living in makhallas is not covered by a centralized sewerage system. The total length of the water supply network in the Sino district is 220 km. The network is limited and has many leaks, which DVK is trying to fix on a one-off basis. The target area is developing and a multi-storey residential building is currently under construction in Zarafshon and Ispechak. Residents of the area are faced with interruptions in water supply and low pressure in the system. Most of the logged interrupts are due to system failures.

The project area has a well-developed infrastructure. There are 19 secondary schools, 17 kindergartens, 1 center for children and adolescents, a maternity hospital, 3 city polyclinics, the Republican hospital Kariya Bolo, the Diamed Diagnostic Center with three departments, an infectious diseases hospital, more than five private clinics and hospitals. In the northern part of the district there is an industrial zone in which manufacturing enterprises, as well as transport and service enterprises and institutions are located.



All these objects will be covered by the project.

### 1.1. Electrical work on the installation of frequency converters

The list of booster stations (pumping stations of the 3rd lift) includes the following objects.

These booster stations work only for drinking water pipelines.

Table 1. Booster stations in the Sino-1 district of the city of Dushanbe

No.	The address	Pump brand	Engine power	Number of pumps
1	I. SOMONI 39	1K80-50-200, 1K20 / 30	11KW 4 KW	1 pcs, 1 pcs
2	GAFUROV 32	ZKM6, 50-90	15 KW, 22 KW	1 pcs, 2 pcs
3	MUKHAMADIEVA 6	ZK6-90-35, 1K80-50-200	15 KW 18.5 KW	1 pcs, 1 pcs
4	NAVOI 45/1	F 40 / 160-7.5- 2-12	7.5 KW	2 pcs
5	ISPECHAK -1	ZK 680-50-200	No engine	1 pcs
6	ZARAVSHON1-1	W 65 / 200-22- 2-12	22 KW	3 pcs
7	ZARAFSHON 2	W 65 / 200-22- 2-12	22 KW	3 pcs
8	ISPECHAK 1-1	Zh40 / 200-15- 2-12, 1K 100/80/160	15 KW 15 KW	1 pcs, 1 pcs
9	ISPECHAK 2-1	W 65 / 200-15- 2-12	15 KW	2 pcs
10	SHAMSI 1	1K80-50-200, 1K80-50- 200	15 KW 18.5 KW	1 pcs, 1 pcs
11	MUKHAMADIEV 70	Zh65 / 160-15- 2-12	15 KW	2 pcs
12	NAVOI 53	N40 / 160-7.5- 2-12	7.5 KW	2 pcs
13	I. SOMONI 72	1K80-50-200	15 KW	1 pcs
14	I. SOMONI 74	1K100-65-250, 1K100-65- 250	55 KW 45 KW	1 pcs, 1 pcs
15	NAVOI 3/2	Zh32 / 160-4-2- 12	4 KW	2 pcs
16	NAVOI 3/6	K65-50-160	5.5 KW	2 pcs
17	NAVOI 17/1	Zh50 / 200-11- 2-12	11 KW	2 pcs
18	LUCHOB 3	K100-65-200	45 KW	2 pcs

19	LUCHOB 53	K100-65-250	55 KW	2 pcs
20	LUCHOBI BOLO	CNS 13-140	18,5 KW	2 pcs
21	ZARAFSHON 25	1K80-50-200	15 KW	1 pcs

The PIU (Project Implementation Unit) and DVK (Dushanbevodokanal) are responsible for the acceptance of electrical and energy security. DVK is responsible for commissioning.

The professionals who install these electrical equipment must:

1. High voltage equipment approval
2. Electrician Training Certificate
3. License for electrical equipment
4. Electrician certificates (category 5)
5. Diploma of a technical school or vocational technical school

## 1.2. Environmental and social risks

During the environmental and social screening, the following possible risks to the health and safety of the contractor's employees were identified.

- Danger during electrical work and the risk of electric shock to performers (specialists).
- Occupational health and safety of project workers.

Risks associated with labor relations.

**Risk-** a combination of the likelihood of a hazardous event occurring in the course of work, the severity of injury or other damage to human health caused by this event.

As a result of the social screening, no risks associated with involuntary resettlement were found, since the work will be carried out on the territory of pumping stations, which have a fenced-in area.

### **Contract documents**

The contract documents will be broadly similar to the tender documents. This ESMP will be included as an Appendix to the Contract, therefore the Contractor will be held liable for any non-compliance with the ESMP.

## 2. LEGISLATIVE AND REGULATORY FRAMEWORK OF THE REPUBLIC OF TAJIKISTAN AND ITS COMPLIANCE DURING THE PROJECT IMPLEMENTATION

Environmental legislation in the Republic of Tajikistan includes the Constitution, codes and laws on air quality, noise, mineral resources, land management, forests, health and safety, waste and chemicals management. The RT Framework Law "On Environmental Protection" was adopted in 1993, it was adopted in 1994 and consistently changed in 1996, 1997, 2002, 2004 and 2007. It was then replaced by a new law in 2011 and amended in 2017. The Water Code was adopted in 2000 (as amended in 2008, 2009, 2011 and 2012), the Land Code in 1996 (as

amended in 1999, 2001, 2004, 2006 and 2011, twice in 2008 and 2012) and the Forestry Code in 1993 (with two amendments in 1997 and 2008). □

Other important environmental regulations include: □

- Law on Drinking Water and Drinking Water Supply (No. 670 of December 29, 2010);
- Law on Environmental Information (No. 705 of March 25, 2011);
- Environmental Monitoring Law (No. 707 of 25 March 2011);
- Law on the Protection of Atmospheric Air (No. 915 of December 28, 2012);
- The Law on Ensuring the Sanitary and Epidemiological Safety of the Population (No. 49 of December 8, 2003, as amended by the Law of the Republic of Tajikistan No. 441 of October 6, 2008, No. 481 of December 31, 2008, No. 793 of December 26, 2011 and No. 1010 of July 22, 2013);
- The Law on Energy Saving and Efficiency (No. 1018 of September 19, 2013);
- Law of the Republic of Tajikistan "On environmental education of the population" 2010
- Law of the Republic of Tajikistan "On State Ecological Expertise" 2012
- Law of the Republic of Tajikistan "On Access to Information"
- Law of the Republic of Tajikistan "On Public Associations" 2007 (2019)
- Law of the Republic of Tajikistan "On local government bodies"
- Public Health Code 2017
- Law of the Republic of Tajikistan "On Production and Consumption Waste" 2002 (2011)

**Construction** norms and rules (BCR) - a set of normative acts of a technical, economic and legal nature, adopted by the executive authorities, regulating the implementation of urban planning activities, as well as engineering surveys, architectural and construction design and construction.

**Construction norms and rules of the Republic of Tajikistan "LBC RT 11-05-2005 Composition and procedure for the development, coordination and approval of project documentation for the construction of enterprises, buildings and structures"**

These Building Norms and Rules of the Republic of Tajikistan are developed in accordance with Articles 2, 19 and 22 of the Law of the Republic of Tajikistan "On Architecture and Urban Planning», article of the Law of the Republic of Tajikistan "On Standardization" and article of the Law of the Republic of Tajikistan "On Normative Legal Acts" and covers a range of issues considered at the design stage of the investment process in construction.

In addition to the listed laws, the Republic of Tajikistan has a variety of regulations explaining the application of certain laws (for example, the Procedure for assessing the impact on the environment, adopted by the Resolution of the Government of the Republic of Tajikistan No. Pin 2.1.7.020-09 on the wastewater protection of soils - the rules for the collection, storage and disposal of waste from building materials, and other standards, construction and sanitary norms and rules, etc.)

Strict compliance with the relevant national laws, regulations and standards (including the passage of state and / or public environmental expertise), as well as the requirements of this ESMP, which is an integral annex to the contract for the production of works, is the responsibility of the Contractor.

The project initiator is responsible for the correct assessment of the environmental impact within the framework of the state environmental impact assessment procedures. - PIU under the DVK, which prepares a package of documents for passing the SEE in the Committee for Environmental Protection under the Government of the Republic of Tajikistan.

To harmoniously meet the requirements of national legislation and the World Bank on the environment, the principle of "greatest restrictions" is used: when preparing, performing work and monitoring their implementation, those provisions and principles are taken into account that have the "greatest restrictions" in comparison with others, which are considered and reflected in ESMP. That is, if national requirements turn out to be stronger in terms of environmental and social protection measures than those of the World Bank, then the requirements of national legislation are used. If the provisions of the Bank are in some respects more demanding than the national ones, then the provisions of the Bank prevail. These possible discrepancies are analyzed by the Contractor and specially specified in the texts of Thematic Plans,

TABLE 2. INSTITUTIONAL AND ADMINISTRATIVE DATA...

Country	Tajikistan	
Name of the Project and Contract	DUSHANBE SINO-1 WATER SUPPLY AND WATER WASTEWATER PROJECT  Project number D 4780 - T  Contract name –DWSWP / G-02	
Coverage of the project and project activities	Northwestern part of the Sino-1 districts of the city of Dushanbe.	
Scope of activity of the site / object	Sino-1 district of Dushanbe city	
Institutional arrangements	PIU project manager: Mr. Sharif Alizoda  Tel: 2 22 20 47; 77 333 40 40;  dwspcu@gmail.com	PIU specialists in the field of protective measures: Mr. Zuvaydov Bakhtiyor EP specialist  Tel: 93 888 87 51;  Mirzoev Nasim Social Issues Specialist  Tel: 93 900 09 67;

Implementation mechanisms (Borrower)	Agency executor (specify)	Inspector / supervisor of works: (to be determined)	Joint Venture LLC "Ittikhod Inshoot and Zumrut"
International Development Agency (IDA)	State Unitary Enterprise "Dushanbevo dokanal"	PIU	
<b>GRM</b>			
Contact details of persons responsible for registering complaints at the PIU level	PIU project manager: Mr. Sharif Alizoda Tel: 2 22 20 47; 77 333 40 40; <a href="mailto:dwspecu@gmail.com">dwspecu@gmail.com</a>		
Contractor, if specified	Contractor organization: Joint venture LLC "Ittikhod inshoot and Zumrut": Director of the Joint Venture LLC "Ittikhod Inshoot and Zumrut"		
Joint Venture LLC Ittikhod Inshoot and Zumrut:	Gulmurodov Kholnazar Tel: 93 993 84 54;		

### Environmental and Social Management Plan

Potential Impact / Issue	Mitigation / management measures	Responsibilities for implementation	Monitoring responsibilities
Earthquakes	Frequency converters must be properly fixed in order to comply with the current construction standards for earthquakes (BCR)	Joint Venture LLC "Ittikhod Inshoot and	ORP / DVK

		Zumrut" / DVK	
ESMP	Preparing the ESMP for inclusion:  1) Health and safety plan 2) Equipment installation plan 3) Electrical Safety Compliance Plan	Joint Venture LLC "Ittikhod Inshoot and Zumrut" DVK	PIU / DVK
Installation principles	Follows equipment installation principles	Joint Venture LLC "Ittikhod Inshoot and Zumrut"	PIU / DVK
Air quality	Air quality management plan implementation.  Equipment installation will be maintained at a good level and equipment operation will be monitored regularly by a DVK specialist during operation.	Joint Venture LLC "Ittikhod Inshoot and Zumrut"	Monthly monitoring by PIU / DVK
Dust	The contractor will ensure that the equipment depots are located in a protected and closed area.	Joint Venture LLC "Ittikhod Inshoot and Zumrut"	PIU / DVK

**Appendices No. 1. Plan of measures for labor protection of JV LLC "Ittikhod inshoot" and "Zumrut" for 2021-2022.**

Approved

Order No. 1 dated 05.24.2021

Director of JV LLC Ittikhod Inshoot and Zumrut

H. Gulmurodov.

**PLAN**

**labor protection measures**

**JV LLC "Ittikhod inshoot" and "Zumrut" on**

**2021-2022 year.**

**Dushanbe, 2021**

Activity	Duration	Responsible
<b>1. Measures aimed at improving the working conditions of employees</b>		
Procurement of missing personal protective equipment for workers and carrying out the necessary modernization of current PPE	June	Chief Engineer of JV Ittikhod Inshoot and Zumrut LLC N. Nazarov
Procurement of new personal protective equipment for workers from electric current and carrying out the necessary modernization of current PPE of the corresponding type	June	Chief Engineer of JV Ittikhod Inshoot and Zumrut LLC N. Nazarov
Organization of storage of personal protective equipment of all types	June	Manager of Ittikhod Inshoot and Zumrut LLC R. Odinaev
Procurement of workwear	June	Manager of Ittikhod Inshoot and Zumrut LLC R. Odinaev
<b>2. Measures aimed at optimizing the infrastructure in order to improve the safety of workers</b>		
Providing employees with soap, detergents and degreasing agents in accordance with established standards	June August	Head of the labor protection service of "Ittikhod inshoot" and "Zumrut" LLC Khudoikulov H.
Placement of safety signs, posters in places of action of hazardous and harmful production factors, application of signal colors to equipment	June August	Head of the labor protection service of "Ittikhod inshoot" and "Zumrut" LLC Khudoikulov H.
Installation of equipment designed to provide employees with drinking water	June August	Head of the labor protection service of "Ittikhod inshoot" and "Zumrut" LLC Khudoikulov H.
Procurement of methodological literature, posters and visual aids on labor protection	June	Head of the labor protection service of "Ittikhod inshoot" and "Zumrut" LLC Khudoikulov H.



Procurement and replenishment of a medical kit	June-September	Head of the labor protection service of "Ittikhod inshoot" and "Zumrut" LLC Khudoikulov H.
Checking instrumentation and protective earth	July August	Chief Engineer of JV Ittikhod Inshoot and Zumrut LLC N. Nazarov
<b>3. Measures aimed at increasing the level of knowledge of workers in the field of labor protection</b>		
Acquisition of the necessary technical means for organizing instructions and training on labor protection	June	Manager of Ittikhod Inshoot and Zumrut LLC R. Odinaev
Conducting briefings and training on labor protection	June-September	Chief Engineer of JV Ittikhod Inshoot and Zumrut LLC N. Nazarov
Providing new employees with instructions on labor protection	June-September	Manager of Ittikhod Inshoot and Zumrut LLC R. Odinaev
Training employees in first aid skills in emergency situations	June-September	Manager of Ittikhod Inshoot and Zumrut LLC R. Odinaev
Training employees in the knowledge necessary to perform labor functions in hazardous industries	June-September	Chief Engineer of JV Ittikhod Inshoot and Zumrut LLC N. Nazarov
<b>4. Activities aimed at promoting a healthy lifestyle and the development of a culture of occupational safety among employees, preventive measures</b>		
Carrying out medical examinations of employees of the organization	June-September	Chief Engineer of JV Ittikhod Inshoot and Zumrut LLC N. Nazarov
Providing assistance to the initiatives of the company's employees to promote and maintain a healthy lifestyle	June-September	Chief Engineer of JV Ittikhod Inshoot and Zumrut LLC N. Nazarov
Conducting Occupational Safety Day with awarding the best teams and workers based on the results of the year	July	Manager of Ittikhod Inshoot and Zumrut LLC R. Odinaev

Conducting Occupational Safety Day with awarding the best teams and workers based on the results of the year	September	Manager of Ittikhod Inshoot and Zumrut LLC R. Odinaev
<b>5. Measures for conducting production control and scheduled inspections of the state of labor protection at the enterprise</b>		
Verification of compliance with labor protection requirements by workers performing work at height	July	Chief Engineer of JV Ittikhod Inshoot and Zumrut LLC N. Nazarov
Checking the use of personal protective equipment during work	June-September	Chief Engineer of JV Ittikhod Inshoot and Zumrut LLC N. Nazarov
<b>6. Measures for the development of documentation in the field of labor protection (their adjustment)</b>		
Development and adjustment of training programs for working specialties	June-September	Manager of Ittikhod Inshoot and Zumrut LLC R. Odinaev
Development and adjustment of local acts of the enterprise on labor protection	June-September	Manager of Ittikhod Inshoot and Zumrut LLC R. Odinaev

**Designed by:**

Head of the labor protection service Khudoikulov H. \_\_\_\_\_  
(signature)

**Agreed:**

Chief Engineer N. Nazarov \_\_\_\_\_  
(signature)

The grievance redress mechanism for workers and the contractor community consists of the following steps:

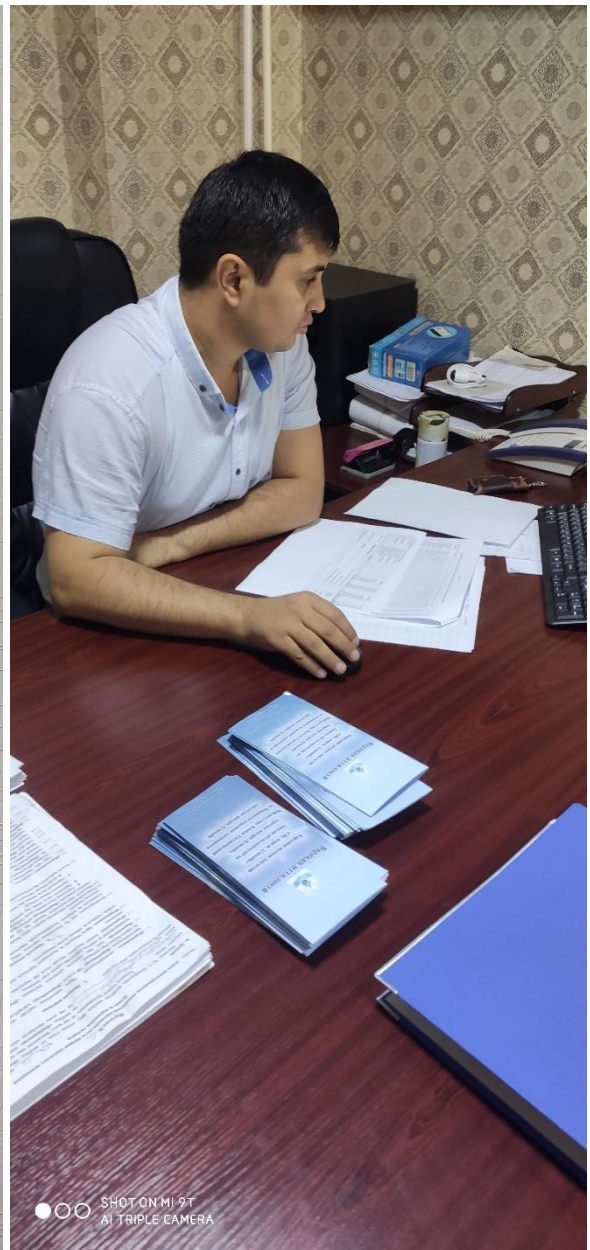
1. Registration of received complaints in the book of complaints.
2. Handling complaints.
3. Resolution of complaints.

In connection with the spread of the coronavirus infection Covid-19, public hearings were held, but in absentia. Namely, on July 14, 2021, information brochures on the installation of frequency converters in the project area at the level of makhallas and micro districts were developed and distributed by the employees of the PIU DVK. The information brochures

contain the contact details of PIU employees for contacting the public in case of problems, filing complaints and obtaining the necessary information.

These information brochures were distributed to the heads of makhallas and heads of housing departments in order to inform the population about the installation of frequency converters in pumping stations located in the project area (photos are attached).

In order to ensure open access, the ESMP for "Procurement and installation of energy-saving equipment for 21 pumping stations for (DWSWP / G-02)" 07/27/2021 was posted on the official website of the State Unitary Enterprise "Dushanbevodokanal" ([www.obidushanbe.tj](http://www.obidushanbe.tj))





## **Appendix No. 2. General recommendations for organizing measures to prevent the spread of coronavirus Covid-19**

- Appointment of a responsible person for personnel health protection;
- Development of a notification scheme in case of accidents at the construction site, including the appearance of symptoms of coronavirus infection;
- The responsible person will prepare information on the contractor (see Appendix 1), as well as identify the available employees with chronic diseases;
- Development of measures for entering and exiting the territory of the construction site for workers;
- A designated health worker will oversee the restriction of workers' contact with people near the facility, and, if necessary, will prohibit individual workers from leaving the site during the term of their contract, in order to avoid contact with local residents. Moving workers off-site only with respiratory masks.
- Submission of weekly information on measures to reduce the proliferation of S-19 to the ARIS technical supervision or the regional Project engineer;
- Conducting a daily briefing to remind employees to self-control possible symptoms (fever, cough) and the need to inform the person in charge if they have symptoms or feel unwell;
- Provide pre-job briefings to workers, with a focus on cough etiquette, hand hygiene and spacing;
- Preventing a worker from returning from an infected area or after contact with an infected person to a facility for 14 days, or (if this is not possible) isolating such a worker for 14 days.
- Prevent the sick worker from entering the facility, referring him to local health facilities if necessary to require isolation at home for 14 days.
- Extending the duration of the existing contract to avoid workers returning home to affected areas or, conversely, workers returning to the site from affected areas.
- Mandatory installation of washstands, provision of antiseptic agents for workers at the work site;
- Confirmation that employees are fit for work (relevant certificates) before they start work. Checking and recording temperatures of workers and other people entering the facility or requiring them to report themselves before or after entering the facility.
- Conduct daily pre-shift briefings for workers with a focus on COVID-19, including cough etiquette, hand hygiene and distancing measures.
- Train workers and staff at the facility on the signs and symptoms of COVID-19, how it spreads, how to protect themselves (including regular hand washing and social distancing);

## **Appendix No. 3. Technical specifications**

### General information

The Supplier must provide the manpower, equipment, and materials necessary to complete all work related to the Supply and Installation of the following equipment:

Frequency converter, pumping units - as well as all the necessary equipment and components for adjusting the water flow rate and for saving electricity at pumping stations of the third lift of the State Unitary Enterprise “Dushanbevodokanal”.

Materials under this contract are supplied by those Suppliers who are ISO 9001: 2008 certified. However, Suppliers, along with their proposals, must submit a copy of a valid ISO 9001: 2008 certificate for each proposed manufacturer. The absence of the specified certificate will result in the rejection of the bid.

In order to ensure an appropriate technical and financial assessment, all offered goods and services must be accompanied by detailed technical documentation and specifications.

The goods and services supplied under this Contract must comply with the following requirements:

- a) The goods must be certified in Tajikistan;
- b) The Bidder must provide full technical support and service in Tajikistan,
- c) Products must represent the latest technology.

The various descriptions and requirements of the Specifications should not be repeated in each separate section of the specifications. They refer to all parts of the work to which they can be applied, even without a corresponding reference.

### **Scope of work**

The activities included in the Delivery component of the Contract are as follows:

procurement of Goods;

delivery of goods to the territory and warehouses of the DVK in accordance with the provisions of the Contract;

Installation of all units of equipment, adjustment, calibration,

Commissioning / acceptance;

Training of technical personnel;

Executive scheme

Warranty service;

## Standards

ISO International Organization for Standardization,

1, rue de Varembé, Case postal 56, CH-1211 Geneva 20, Switzerland,

Fax: +41 22 733 34 30

BS British Standards Organization

389 Chiswick High Road, London W4 4Al, United Kingdom

Fax +44 02 8996 7001

AFN French Association for Standardization

Tour Europe, 92049 Paris La Defense Cedex - France

Fax 33 1 42 91 56 56

DIN German Institute for Standardization

Burggrafenstrasse 6, D-10772 Berlin, Germany

Fax +49 30 26 01 12 60

GOST State standard

Leninsky Prospekt 9, Moscow, B-49, GSP-1, 119991, Russia

Fax: 095 236 62-31

## **Applicable standards**

Applicable standards ISO, DIN, BS, AFN, GOST. Unless otherwise specified, for any referenced standard, the latest version as of 28 days prior to the deadline for submitting Bids applies.

In the event that the Contract Documentation contains special specifications or more restrictive specifications than those required by the referenced Standards, then the Contract Documentation shall prevail.

Standards other than the above

If the requirements are due to a reference to a standard developed in a particular country, this does not mean that the requirements are limited exclusively to that standard of that country. The Bidder may offer the Buyer an equivalent standard. In this case, the Bidder must indicate that the proposed standard is equivalent to the established standard, or exceeds it.

At the request of the Buyer, the Supplier must provide a copy of the proposed standard in English or its translation into Russian, certified by an authorized body.

### **Submitted documents**

The Supplier must submit to the Buyer for consideration a description of the goods, drawings and data, including calculations, schedules, instructions, certificates, as well as a list of spare parts for service and operation, including the current proposed prices.

The supplier indicates the name and address of its representative in Tajikistan.

The installation and operating instructions should be submitted in English (and Russian, if possible). All other documents must be in Russian

All dimensions of the documentation must comply with the international standard (from A0 to A4). Symbols must comply with approved standards.

If the content of the presented literature from manufacturers includes data that is not related to the provided documents, then these parts of the presented content should be clearly highlighted and, if possible, that part that is not related to the provided documentation should be deleted.

In the documents submitted, attention should be paid to any deviations from the Specifications.

### **Quality of goods**

All goods supplied under the Contract All goods must be designed and manufactured in accordance with established practice with particular attention to operational and maintenance requirements regarding reliability and safety.

All components must be complete, as required by their importance, location and purpose.

All products of the same type must be of the same manufacturer, unless otherwise agreed.

### **Construction requirements**



The nominal values of climatic factors are in accordance with GOST 15150 and GOST 15543.1-89. Wherein:

- ambient air temperature for the soft starter from + 5 ° C to + 45 ° C and from + 45 ° C to + 55 ° C with a decrease in the rated current by 10% with an increase in temperature for every 5 ° C;
- height above sea level - no more than 1000 m;
- in terms of the corrosiveness of the atmosphere, the converters must comply with the group of operating conditions "L" for metal products.

Protection degree - IP 21 in accordance with GOST 14254-80.

The dimensions of the switchboard are determined by the minimum during design, but must be at the request of the customer. The service of the shield is one-way.

The control cabinet must meet the requirements of TC16-536.042-76.

### **Applicable materials**

Only materials of the highest quality and type, suitable for the intended purpose, should be used.

The materials must be suitable both mechanically and electrically to the operating conditions. In connection devices, they must be mechanically and electrically compatible with each other and with the surrounding equipment.

Materials must be selected to provide adequate resistance to wear and corrosion.

At the request of the Buyer, the Supplier shall provide reports of the results of material testing by the manufacturer.

### **Installation, Service and Training**

As part of the services, the Supplier is responsible for on-site assembly, installation and start-up of equipment. In addition, the Supplier conducts training for the technical personnel of the Buyer on the theoretical foundations of the operation of the frequency converter and pumping units, maintenance and repair. The Supplier is responsible for demonstrating the operation and repair of all equipment to Buyer's personnel and ensuring that personnel are fully familiar with the equipment. The theoretical part of the training will be carried out at the headquarters of SUE "Dushanbevodokanal", the practical part at the respective pumping stations at the installation site, in the form of a single training program for each individual type of equipment. The duration of the training must be determined by the Supplier and after completion of the course and passing the exams for the theoretical course and practical work, trainees must be issued with

the appropriate Certificate. Training for two weeks (or as agreed between the Supplier and the Buyer) should be organized for a group of 10 - 20 people. Training should be conducted in Russian or Tajik.

All services at the facility, repair base in Dushanbe or at the place of work (water treatment station of the State Unitary Enterprise "Dushanbevodokanal") must be included in the cost of products.

#### Reliability requirements

Equipment reliability indicators in accordance with GOST 27.003-90 and GOST 4.148

Reliability indicators of electrical equipment and pumping units are indicators of reliability, durability and maintainability in general for the future.

#### **Safety requirements**

According to the method of protection against electric shock, the shield must correspond to class I in accordance with GOST 12.2.007.0-75.

All non-conductive metal parts accessible to touch, which may be energized, must be connected to the grounding elements, the grounding circuit must be continuous.

The design of the switchboard must ensure compliance with the following regulatory documents and standards during installation, commissioning and operation:

"Rules for the device of electrical installations";

"Rules for the operation of electrical installations of consumers";

"Interdisciplinary rules for labor protection (safety rules) during the operation of electrical installations".

#### Cable routing requirements

The electrical wiring in the pumping station is carried out according to special rules in accordance with the requirements of the EMP, which are specially designed for wet rooms. The main rules are as follows: all cables are laid in damp rooms in PVC pipes.

The cables used to connect to the power supply of the frequency converter, connect the electric motor to the frequency converter and control a variable frequency asynchronous electric drive must meet the requirements for electromagnetic compatibility (EMC), conductor heating temperature, rated output currents of the frequency converter, and the transfer impedance of the cable screen. In GOST 24607-88 "Frequency converters semiconductor.

General technical requirements "in clause 2.4.2.17, only the permissible levels of radio interference created by frequency converters are determined, which is not enough. In the

countries of the European Union in January 1996, the Electro Magnetic Compatibility directive was introduced. According to the Electro Magnetic Compatibility directive, an electrical device must not be a source of interference to other equipment and must have a certain immunity to interference caused by the operation of the equipment.) EMC directive must be level I.

Level I: EI meets the requirements for emissions in industrial environments (EN 50081-2; EN 61800-3).

Level C: EI satisfies the emission requirements for residential, office and industrial environments (E N 50081-1-2; EN 61800-3). All EI levels I, C must meet the requirements of interference immunity (E N 50081-1-2; E N 61800-3).

The transfer impedance of the motor cable shield must be less than or equal to 1 Ohm / m in the frequency range up to 100 MHz. The transfer impedance of the control cable shield must be less than or equal to 250 Ohm / km in the frequency range up to 30 MHz. The cable size must be sized for the rms output current of the frequency converter.

### **Mandatory Warranty and Service Conditions**

The Supplier must provide full warranty service within the period specified in the Contract. Service on site or in specialized repair shops, in the Buyer's country, or in the workshops of Dushanbevodokanal, if necessary, including the delivery of necessary spare parts, missing equipment or its replacement, should be provided without additional costs for the Buyer to interrupt the operation of the equipment. As a minimum, the Supplier must provide qualified personnel at the request of the Buyer no later than seven calendar days after the receipt of the claim to the Supplier or his local representative about the accident, the need to replace, if possible, defective parts using spare parts supplied in accordance with the Contract, or deliver and install.

### **Frequency converter.**

Frequency converters (FC) are designed to control the speed or torque of an electric motor in a wide range and with maximum efficiency.

The frequency converter provides complete motor protection: against short-circuit to earth and between phases, thermal protection against overcurrent and torque. The frequency converter measures, registers, displays and transmits motor parameters via the ACS network: current, speed, torque, power, voltage, temperature, consumed electricity.

The frequency converter must provide:

high starting torque at low starting current and low engine speeds (due to effective control of the electromagnetic field)

high motor overload torque

long smooth acceleration or stopping of the engine with high inertial load

efficient dynamic braking of the motor

engine operation control, both in motor and generator mode

maximum engine efficiency in all operating modes

electromagnetic brake control (in lifts)

Process variable PID control

motor operation with speed and position feedback

Local control of the technological process in the FC can be built in a logical controller, expandable inputs for connecting sensors and outputs, automatic control of the rotation speed of the pump drive mechanisms, allows you to better stabilize the technological process.

Factory warranty

The warranty period is at least 12 months from the date of initial verification.

During installation and commissioning within 12 months from the date of commissioning.

The warranty period is at least 12 months.

### **Photos of frequency converters**



## **Dushanbe Sino-1 Water Supply and Wastewater Project**

### **Public Hearing Minutes**

**Topic: Procurement and installation of energy-saving equipment for 21 booster pumping stations**

Date: July 14, 2021

Location: Dushanbe city, Sino district.

Participants:

1. Residents of the Sino district.
2. Mahalla chairmen, heads of housing departments.
3. Representatives of the project implementation department.

Agenda:

- Information about the installation of frequency converters in booster stations.
- Grievance redress mechanism and its rules of application.

In connection with the spread of the coronavirus infection Covid-19, public hearings were held in absentia.

From the side of the PIU employees, information brochures were distributed by the chairmen of the mahalla and the heads of housing departments. Thus, the population was informed about the installation of frequency converters in 21 booster stations in the project area. These information brochures provide contact details for the Environmental Officer, Social Officer and PIU Manager.

After the distribution of information brochures, the PIU contact services received telephone calls from the population, chairmen of makhallas and heads of housing departments, with some questions regarding the implementation of the project, which were answered by PIU employees:

**Question 1:** When will the frequency converters be installed?

**Answer:** The installation of frequency converters is planned at the beginning of August 2021.

**Question 2:** Why are frequency converters installed?

**Answer:** Frequency converters are installed to save energy consumption and adjust the operation of the water pump motor.

**Question 3:** Will these frequency converters make noise when the motor is running?

**Answer:** Frequency converters do not generate noise during operation of the electric motor and will not adversely affect the environment.

**Question 4:** What safety measures will be taken during the installation and operation of frequency converters?

**Answer:** Frequency converters will be installed inside pumping stations, which are located in separate areas.

The installation will take place during the shutdown of the electric motor (approximately from 14:00 to 17:00 and from 23:00 to 5:00).

Based on the results of the public hearing in absentia, a decision was made to inform the population about the date and time of the beginning of the installation and commissioning of equipment.

Based on the results of the public hearing in absentia, no changes were made to the ESMP, since all information regarding the ESMP was explained to the public and no proposals were received from the participants.

