THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF WATER

Dar es Salaam Water supply & Sanitation Authority
DAWASA Building, Dunga/Malaga Street, Makumbusho Area
P. O. Box 1573, Dar es Salaam. TANZANIA.
Tel. +25522276006/15; Fax: +255222762480; E-mail: dawasaceo@dawasa.co.tz

Comprehensive Project Brief for the Proposed Simplified Sewerage System to be constructed at Kisiwani and Sindano Mtaa, Makumbusho ward, Kinondoni District, Dar es Salaam Region

Submitted to:

National Environment Management Council,

Head Office, Kambarage Tower, 6th Floor, P. O. Box 2724,
Dodoma.

Phone: +255 262960098, 0713608930,

Email Address: nemcdg@nemc.or.tz

Website: www.nemc.or.tz

Lead Consultant:
Prof. Rubhera RAM Mato (PhD), CEng. (T), Reg. EIA Expert
Mobile: +255754898592; E-Mail: rubheramato@gmail.com

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THE STUDY TEAM

NAME	POSITION	NEMC Reg. No.	SIGNATURE
Prof. Rubhera RAM Mato	Environmentalist and ESIA Team Leader	Registered NEMC/EIA/0092	
Mr. Robert Kishiki	Sociologist	Not Registered	
Mr. Emmanuel Rajab	Environmental Engineer	Registered EC/EE-EIA/2021/0015	
Mr. Melkizedeck Stephano	Environmentalist	Not Registered	

ABBREVIATIONS

AAQ	Ambient Air Quality
AIDS	Acquired Immuno-Deficiency Syndrome
DAWASA	Dar es Salaam Water Supply and Sanitation Authority
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Monitoring Plan
GoT	Government of Tanzania
HIV	Human Infection Virus
IDA	International Development Association
LGA	Local Government Authority
NEMC	National Environment Management Council
NEP	National Environment Policy
OGSP	Off-Grid Sanitation Project
PPE	Personal Protective Equipment
PVC	Polyvinyl Chloride
RAP	Resettlement Action Plan
SSS	Simplified Sewerage System
STDS	Sexual Transmitted Diseases

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Comprehensive Project Brief for the Proposed Simplified Sewerage System to be constructed at Kisiwani and Sindano mtaa, Makumbusho ward, Kinondoni District, Dar es Salaam Region

Proponent: DAWASA

Proponent's Contact: DAWASA House, **Dunga/Malanga**
Street/Mwananyamala
P.O Box 1573 DSM
Tel: +255222760006/15
Fax: +255222762480
Email Address: info@dawasa.go.tz

EIA Expert: **Prof. Rubhera RAM Mato**
(PhD), CEng. (T), Reg. EIA Expert
Mobile: +255754898592
E-Mail: rubheramato@gmail.com

INTRODUCTION

The Government of the United Republic of Tanzania (GoT) through the Dar es Salaam Water and Sewerage Authority (DAWASA) under the Ministry of Water intends to implement an Off-Grid Sanitation Project (OGSP) in Dar es Salaam City to serve peri-urban areas not connected to the central sewerage system. DAWASA has received financing from the International Development Association (IDA) in the form of a credit to implement the project. Before implementing the project, the law in Tanzania requires an Environmental Impact Assessment to be conducted and approved by the relevant authority. To comply with the law in Tanzania, the DAWASA intends to apply a portion of the proceeds of the credit to eligible payments for consulting services for Preparation of Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan (RAP) Report for the construction of off-grid sanitation projects.

Dar es Salaam is the largest and most important commercial and industrial center in Tanzania. The city has an estimated population of about 5.0 million and is projected to double at the end of the project horizon of 25 years. About 10% of the population is served by sewers and the rest almost depend on on-site sanitation systems. The sewer coverage is only limited to the area within the city center with a total length of 67.8km and the system is based on a separate system and discharges their effluent into oxidation ponds, and into the sea through a sea outfall of about 1.03km long. The onsite sanitation systems result in Faecal sludge of which handling and management throughout the sanitation chain (from domestic containment, transportation as well as disposal and treatment) is currently hygienically inadequate thus posing environmental and public health risks. The Off-Grid project is intended to address these challenges. The Off-Grid project is divided into several subprojects which will be implemented in the five municipalities of Dar es Salaam City. One of these is the Construction of Simplified Sewerage System at Makumbusho Kisiwani street, in Makumbusho ward, Kinondoni Municipality. The project is planned to connect 280 households with an estimated population of 24,603 people.

This study was conducted following the Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018 along with the Environmental Impact Assessment and Audit Regulations of 2005. These Regulations provide legal procedures for implementing the requirements of the Environmental Management Act Cap.191 of 2004. The Regulations give a mandate to NEMC to oversee the EIA process, which culminates with an award of the EIA Certificate by the Ministry responsible for Environment.

Following the EIA Regulations, NEMC is mandated to screen projects and make decisions of the level of EIA required as well as evaluating the adequacy of respective environmental statements. Considering the nature and size of the proposed “Simplified Sewerage System in Kinondoni Municipality”, the project falls under Category “B2” (Non-Mandatory) following Reg.4 (1)(c) and First Schedule

of the amended 2018 Regulations which categorizes the *night soil collection and treatment* being under the '*List of small-scale activities and enterprises that require registration but shall not require Environmental Impact Assessment. Further, the projects shall not require screening and scoping, rather, the Project Brief shall be examined and issued with an Environmental Impact Assessment Certificate*'. The regulations require developers to prepare and submit to the National Management Council (NEMC) filled EIA registration forms and "Project Briefs" for all B2 projects. The preparation and content of the "Project Briefs" are provided under Regulation 6(1) of Environmental Impact Assessment and Audit Regulations, 2005. The same has been followed in preparing this "Project Brief". The study for preparing this project brief was conducted from July to October 2020.

This project brief for the Proposed Construction of Simplified Sewerage System in Kinondoni Municipality is being submitted to NEMC together with EIA Registration Forms for EIA Certificate decision.

PROJECT DESCRIPTION

Makumbushois an administrative ward in the Kinondoni district of the Dar es Salaam Region of Tanzania at Latitude -6.737975° and Longitude 39.227269°. According to the 2022 census, the ward has a total population of 52,347, Most of streets in Makumbusho ward are unplanned settlement with restricted access roads for feacal sludge emptying trucks. Furthermore, the ward is characterized by having underlying geographical formation setback where water table is significantly high.

Currently, this area is being served through on site sanitation management that involve domestic containment and emptying trucks that are not satisfactory managed. Apart from illegal emptying, underground seepage of faecal sludge may also contaminate ground water leading to water related diseases within this area. To address above challenges, we recommend construction of simplified sewerage system as the solution of faecal sludge management within the area. Depending

on requirements for simplified sewerage system with its limitation the project will be implemented at Makumbusho Kisiwani and the implementation will be in two Lots. Makumbusho Kisiwani Lot I and Makumbusho Sindano Lot II.

Currently, this area is being served through on site sanitation management that involve domestic containment and emptying trucks that are not satisfactory managed. Apart from illegal emptying, underground seepage of faecal sludge may also contaminate ground water leading to water related diseases within this area. To address above challenges, we recommend construction of simplified sewerage system as the solution of faecal sludge management within the area. The project will be implemented at Makumbusho Kisiwani Street.

The proposed project intends to use the existing alleys (*vichochoro)* for installing the simplified sewer pipelines. The local government in the project area has agreed with DAWASA through a formal meeting held on 16/10/2020 to use the alleys whether formal or non-formal for the construction of a simplified sewerage system and the associated appurtenances to improve the sanitation conditions.

POLICIES, LEGISLATION AND INSTITUTIONAL ARRANGEMENTS

Sector policies that were reviewed when executing the proposed development are;

- National Environment Policy 2021
- National Land Policy of 1997
- Construction Industry Policy (2003)
- National Health Policy (2003)
- National Gender Policy of 2000
- National Human Settlements Development Policy (2000)

Principal Acts, regulations and guidance that support and provide guidelines to implement the intended project are;

- Environmental Management Act (2004)

- The Environmental Management (Fees and Charges) Regulations, 2021
- The Environmental Management (Control of hazardous Waste) regulations, 2021
- The Environmental Management (Control of Noise and vibration) regulations, 2015
- The Environmental Management (Prohibition of Plastic Carrier bags) regulations, 2019
- The Environmental Management (Solid Waste Management) regulations, 2007
- The Environmental Management (Water Quality) regulations, 2009
- The Environmental Management (Air Quality) regulations, 2009
- The Environmental Management (Soil Quality) regulations, 2009
- Occupational Health and Safety Act 2003
- The Water Supply and Sanitation Act No. 12 of 2009
- Engineers Registration Act and its Amendments 1997 and 2007
- The Contractors Registration (Amendment) Act, 2008
- The Architects and Quantity Surveyors Act (1997)
- The Urban World Bank guidelines for Environmental Management and Planning Act (2007)
- Public Health Act (2009)

STAKEHOLDERS ISSUES AND CONCERNS

Different stakeholders were consulted. Among of the issues that arise during consultation at the Kinondoni Municipal Council and community at Makumbusho Kisiwani mtaa are:

Facilities to be developed

- Proper awareness to people on best ways to dispose pads and other waste in order to avoid system blockage

- The proposed facilities should be well protected

Awareness to the community

- Awareness to the people on the system operation, since it is a new technology
- Awareness to the community to avoid riots in the future
- Educate the community to avoid the use of detrimental disinfectants to the system so as to avoid system failure and contaminated manures.

PROJECT REQUIREMENTS AND WASTE GENERATION

Project requirements

The main materials for construction of Simplified sewerage system include cement, aggregates (stones), water, steel, sand, timbers, blocks, PVC pipes, and gravels. During the construction phase the project will require not less than 100 workers both skilled and non-skilled laborers for each phase of project construction. During operational phase it is estimated that 30 unskilled workers will be retained for operating the system.

Equipment expected to be used during the construction works are Tippers, Concrete Mixers, poker vibrators, Wheel barrow, Compactor, etc.

Wastes generation

The major wastes generation associated with the project are solid wastes and liquid waste. During the maximum operation phase a total of 100m^3 per day of liquid waste is estimated to be received at the downstream receiving chamber of the fecal sludge treatment facility close to the project site. During construction it is expected that at least 60kg of solid wastes will be produced.

POTENTIAL IMPACTS

The following impacts were identified to be likely to occur during mobilization phase:

- Employment opportunities

- Noise pollution
- Air pollution from dust emission
- Blockage of paths

The following impacts were identified to be likely to occur during the construction phase;

- Employment opportunities
- Increased socio-cultural interaction
- Increased Revenue to the nation through taxes, both direct and indirect
- Cost reduction for sewage management
- Increased HIV/AIDS and other sexual related diseases
- Land degradation and increased erosion
- Noise pollution
- Air Pollution from dust emission
- High Risk of Health associated with construction work
- Waste generation during construction
- Sewer leakage/overflow
- Blockage of paths

The following impacts were identified to be likely to occur during the operational phase;

- Improved social-economic livelihood and dignity within the beneficiary society
- Increased Revenue to the nation through taxes, both direct and indirect
- Cost reduction for sewage management
- Sewer leakage/overflow

MITIGATION MEASURES AND ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

The options to minimize or prevent the identified adverse social and environmental impacts as well as a monitoring plan have been suggested in this report and are contained in the ESMP. Many of them are based on good engineering practices and the timely responsiveness of the responsible institution. The ESMP describes the implementation schedule of the proposed mitigation measures as well as planning for long-term monitoring activities. It defines the roles and responsibilities of different actors of the plan. The Approach environmental and social costs amount to Tshs 38,000,000.00. The estimated annual costs for carrying out the proposed environmental and social motoring program amounts to TSH 28,000,000.00.

DECOMMISSIONING PLAN

The decommissioning is not anticipated in the foreseeable future. However, if this will happen, may entail change of use (functional changes) or demolition triggered by change of land use. In view of this, specific mitigation measures pertaining to environmental impacts of decommissioning works cannot be proposed at the moment with a reasonable degree of certainty.

CONCLUSION

The proposed project is of greater profit to the community and the country at large as it promotes and improve sanitation in the streets. When there is good and improved sanition, then the outbreak of diseases like diarhoea and associated stomach and waterborne diseases are also reduced and prevented hence improved public health.

The impacts identified are preventable and of less negativity to the community, therefore the developer can be provided with the environmental clearance certifacte in order to commence the implimentation of the project.

It is, therefore, concluded that implementation of the proposed construction of the Simplified sewerage system at Makumbusho Kisiwani mtaa will entail no detrimental impacts provided that the recommended mitigation measures are adequately and timely put in place. The identified adverse impacts shall be

managed through the proposed mitigation measures and implementation regime laid down in this EIS. DAWASA is committed to implementing all the recommendations given in the EIS and further carrying out the environmental auditing and monitoring schedules.

1.0 BACKGROUND AND JUSTIFICATION

The Government of the United Republic of Tanzania (GoT) through the Dar es Salaam Water supply and Sanitation Authority (DAWASA) under the Ministry of Water intends to implement an Off Grid Sanitation Project (OGSP) in Dar es Salaam City to serve peri-urban areas not connected to the central sewerage system. DAWASA has received financing from the International Development Association (IDA) in the form of a credit to implement the project. Prior to the implementation of the project, the law in Tanzania requires an Environmental Impact Assessment to be conducted and approved by relevant authority. In order to comply with the law in Tanzania, the DAWASA intends to apply a portion of the proceeds of the credit to eligible payments for consulting services for Preparation of Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan (RAP) Report for construction of off grid sanitation projects.

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Mtaa, in Makumbusho ward, Kinondoni Municipality. The project is planned to connect 280 households with an estimated population of 24,603 people.

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1.1 NATURE OF THE PROJECT

The proposed project concerns construction of Simplified sewerage system for public use at Mwananymala Kiswani Street, Makumbusho ward, Kinondoni Municipality. The nature of the project enhances environmental protection through proper handling and disposal of domestic sewage. According to First Schedule of the EIA and Audit Regulations (Amended) of 2018, the nature of the project is small and entails no significant impacts. The project can be categorised as Type B2, which according to the regulations are “small-scale activities and enterprises that require registration but shall not require Environmental Impact Assessment. Further, the projects shall not require screening and scoping, rather, the Project Brief shall be examined and issued with an Environmental Impact Assessment Certificate”.

2.0 PROJECT DESCRIPTION

2.1 Project Location

Makumbushois an administrative ward in the Kinondoni district of the Dar es Salaam Region of Tanzania at Latitude -6.737975° and Longitude 39.227269°. According to the 2022 census, the ward has a total population of 52,347, Most of streets in Makumbusho ward are unplanned settlement with restricted access roads for feacal sludge emptying trucks. Furthermore, the ward is characterized by having underlying geographical formation setback where water table is significantly high.

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implementation will be in two Lots. Makumbusho Kisiwani Lot I and Makumbusho Kisiwani Lot II figure 1.

Figure 1: A Map of Dar es salaam region showing the project District

Figure 2: An Extract Google view to show the Location of the project area

2.2 Accessibility

The project area is accessible via Morogoro road, from City Centre then Kawawa road, the site is at the left side as one moves from City center via Morogoro road the Kawawa road. The site is about more than 100meters from River Ng'ombe.

The project area is unplanned settlement with restricted access roads for feacal sludge emptying trucks.

2.3 Specific Features

The proposed project site is characterized with mainly short grasses. There is a soil heap collected, river Ng'ombe, temporary wood bridge and residential buildings at about 60 meters away as can be observed afar from the project site, (Figure 3). The project site is located adjacent to the low sloping hilly side surrounded by residential buildings. The area is normally flooded during rainy season.

Figure 3: Some of the structures at site

2.4 Land ownership and Land Use

2.4.1 Land ownership

The proposed project site is sorely owned by Kinondoni Municipal Council. The municipality has allowed for the construction of the wastewater conyeyance system across the streets. There is a Memorandum of Understanding (MoU) that has been signed between DAWASA and Kinondoni Municipal Council for the implementation of the project (Appendix IV). In this MoU, DAWASA is

responsible for the construction of the toilet while the Kinondoni Municipality avails land and running the project.

2.4.2 Adjacent Land Use

The project site is surrounded by small scale farming field with main crops being cultivated in these being banana and vegetables. Apart from crop cultivation close to the proposed project site there is a playground, figure 4.

Figure 4: The Farming activities and play ground around the project site

2.5 PROJECT ACTIVITIES

2.5.1 Mobilization or pre-construction phase

This phase entails mobilization of labour force, and equipment as well as acquisition of various permits as required by the law.

Other activities during this phase include;

- Topographical Survey for setting out purposes,
- Construction Materials' source Investigation,
- Material transportation, storage and material preparation,

2.5.2 Construction phase

This phase entails all the necessary installations, site grading and placement of the facility components. The major activities include;

- Trench excavation and laying of 4" and 6" PVC pipes for collection of wastewaters from households.
- Backfilling and paving of excavated trenches
- Construction of inspection chambers/junction boxes

- Construction of receiving chambers
- Connection of customers' latrines to the constructed network

2.5.3 Demobilization phase

This phase will involve the dismantling of temporary structures such as scar fording and removing/spreading spoil materials for proper restoration of the site. Other activities include;

- General cleanliness of the area, that is clearance of all sorts of solid wastes (plastics, wood, metal, papers, etc);
- Deposit all wastes to the authorized dumpsite;

2.5.4 Operation phase

The phase entails the actual usage of the Simplified sewerage system where as the individual household will be discharging night soil directly to the system. The main task will be occasional clearance of the blockages and timely replacement of leaking pipes undertaken by DAWASA with the sole cooperation from household owners at the vicinity.

2.5.5 Decommissioning Phase

Decommissioning is not anticipated in the foreseeable future as the completed facility will be serving a number of houses which at present incur many costs to dispose fecal sludge and if not so tend to discharge illegally. However, if this will happen, may entail change of use (functional changes) or demolition triggered by change of land use.

2.6 PROJECT DESIGN

Makumbusho kisiwani Simplified sewerage system will involve construction of a simplified sewerage network which will be connected to a decentralized wastewater treatment plant, the treatment plant is a stand alone project which will be constructed at Mwanayamala Bondeni area of which its capacityis 120m^3 , the stated capacity will handle the estimated amount of effluent The system is planned to collect wastewater from surrounding households using 6" and 4" PVC pipes laid in shallow depth trenches. The system will operate under

controlled gravity flow in accordance to designed gravity and velocity. Collected sewage will be treated at the constructed wastewater treatment plant and treated effluent discharged to the adjacent river stream upon attaining required standards.

2.6.1 Design criteria

Conceptually, simplified sewerage is the same as Conventional Gravity Sewerage, but without unnecessarily conservative design standards and with design features that are better adapted to the local situation. The pipes are usually laid within the property boundaries, through either the back or front yards, rather than beneath the central road, allowing for fewer and shorter pipes.

Some of the criteria and standards for the design of the sewers are:

- Minimum velocity in pipe
- Minimum slopes of pipes
- Minimum pipe diameter
- Design peak flow factor

2.6.2 Technology description

2.6.2.1 Layout

To avoid deep excavations, long trunk pipes to interceptors, and large pumping stations, serious consideration is given to splitting the network into two or more smaller systems, Appendix V. Although network layout is also an important part of conventional design, the optimization of pipe lengths and network subdivisions takes on even greater importance in this system. The total length of the sewer line is 5.2Km.

2.6.2.2 Hydraulics

Design period

Another approach to sewerage systems that can bring major benefits to the project is to reduce the design period of the sewerage system. A great advantage of using shorter term periods is that it avoids uncertainties of

population growth and reduces the high costs of maintenance of large sewer systems with low flow. Other benefits of the reduced design period, are that it can also facilitate financing and achieve greater coverage with the same investment.

Design flow

Wastewater flow quantities are necessarily lower than the quantity of water supplied because water is lost through leakage, garden watering, house cleaning, etc. To determine the expected amount of wastewater, it is important to keep records of pumpage for each day and fluctuations during the day.

Where water use information is not available, the simplified sewerage system is - designed for a minimum flow of 1.5 l/s, infiltration is assumed to be 0.05-1.0 1/s/km of pipe.

2.6.3. Service Connection

In the simplified design, a 60-cm connection (or inspection) box is placed between the building and the service line. All the sewers or drains from the house or building enter the box. This box is usually located under the sidewalk in the public right of way

2.6.4 Depth of sewers

For any type of sewer connection, it is standard to have a minimum depth in which the pipes are laid should be sufficient to make house connections and have a layer of soil over the crown to protect the pipe against structural damage from external loads and frost. On simplified connections, the minimum sewer depths are usually much shallower than the conventional systems. Being as shallow as 0.65-m below sidewalks, 0.95-1.50-m below residential streets (depending on distance from the centerline of street), and 2.5-m below heavily traveled streets.

2.6.5 Manholes and other appurtenances

One of the most important differences between conventional and simplified sewer systems is that the former utilizes many manholes, whereas the latter

type avoids its use as much as possible. The conservative criteria for manhole use contributes to the high cost of sewerage. The use of shallower depths is one way of reducing these costs.

In conventional systems, manholes are generally located at:

- The upper ends of all laterals
- Changes in direction and slope
- Pipe junctions, except building connections
- At intervals not greater than 100m for pipes up to 600mm diameter

2.6.6 Construction Material

The types of materials used in SSS are similar to those used in conventional sewers. The most commonly used and readily available in the market are polyvinyl chloride (PVC) pipes. Additionally, PVC pipes offer the advantage of longer sizes, fewer joints (i.e less infiltration), light weight, water tightness and uniformity. In addition to that, material such as stone and gravels can be acquired from registered dealers such as M/S Even Enterprises Company Limited who has a license to mine at Lugoba area in Bagamoyo District,

2.6.7 Typical SSS house connection layout

The proposed construction of simplified sewerage system will have the similar appearance as the typical layout shown in figure 3;

2.7 Utilities

Water

The main source of water for all project phases is expected to be DAWASA.

Power supply

Power will be supplied from TANESCO whenever necessary,

Manpower.

The project is expected to provide employment to about 100 people directly and indirectly for both skilled and unskilled labors.

Figure 5: Typical Simplified Sewerage system layout aerial view

2.8 PROJECT REQUIREMENTS AND WASTE GENERATION

2.8.1 Project requirements

2.8.1.1 Construction materials and labour force

The main materials for construction of Simplified sewerage system include cement, aggregates (stones), water, steel, sand, timbers, blocks, PVC pipes, and gravels. All materials are available in the local sources in Tanzania. Additionally, PVC pipes offer the advantage of longer sizes, fewer joints (i.e less infiltration), light weight, water tightness and uniformity. In addition to that, material such as stone and gravels can be acquired from registered dealers such as M/S Even Enterprises Company Limited who has a license to mine at Lugoba area in Bagamoyo District,

2.8.1.2 Labour force

The labour force will be determined by the Contractor; nevertheless, it is projected that during the construction phase the project will require not less than 100 workers both skilled and non-skilled laborers for each phase of project construction.

2.8.1.3 Machinery and Equipment

The proposed project development will employ various standard construction equipment and machinery. Equipment expected to be used during the construction works are Tippers, Concrete Mixers, poker vibrators, Wheel barrow, Compactor, etc. All equipment and machineries for construction works needed by the proposed project will be determined when the bill of quantities (BoQ) and selection of Contractor is finalized. These equipment shall be temporary and shall be demobilized once project is completed.

2.8.2 Wastes generation

The major wastes generation associated with the project are solid wastes and liquid waste. The solid wastes so produced will be collected and properly disposed at the collection points ready for transportation to the dumpsite.

2.8.2.1 Liquid waste management

During the maximum operation phase a total of 1,575m^3 per day of liquid waste is estimated to be received at the downstream receiving chamber of the Fecal sludge treatment facility close to the project site. This is based on the assumption that 80% of the 80 liters per capita per day demand for the 24,603 people is discharged as waste water.

2.8.2.2 Solid waste management

From experience point of view, households connected to the simplified sewerage system tend to throw solid wastes especially used sanitary pads into their toilet sinks thinking flushing will help but he results has always been immediate blockage.

The project design will ensure installation of garbage screen at each household level to prevent the system blockage from single individual's fault. This among others will render the household with the blockage to ensure the situation is well and timely handled at their own costs.

Therefore, solid wastes should be properly disposed at the collection points waiting for solid waste pickup trucks. Table 5-1 below shows solid and liquid wastes to be generated by the project and the methods of their disposal.

Table 5-1: Management of construction and operation wastes

Solid waste		
Type of waste	**Sources**	**Disposal / Management procedure**
- Biodegradable materials mainly domestic waste (food, paper, wood etc.)	- Construction crew	Accessible litter bins within the camp site and later to the city waste disposal system (engage a private company)
- Non- biodegradable materials (plastic, glass)	- Construction crew	Recycling/ reuse (Plastics to be sent to plastic recyclers and glass bottles to be sent to glass recyclers)
Liquid waste		
Type of waste	**Sources**	**Disposal / Management procedure**

Solid waste		
Type of waste	**Sources**	**Disposal / Management procedure**
- Excreta (domestic) human - Grey water /cleaners	- Toilets and floor cleaning	Use of septic tanks and when full will use the constructed Simplified sewerage system for further treatment downstream

3.0 POLICIES, LEGISLATION AND INSTITUTIONAL ARRANGEMENTS

According to the fundamental principles of environment, any developmental activities of this nature such as construction of simplified Sewerage System would have socio-economic and somehow environmental impacts that must be addressed and governed in order to serve public interest and sustainable development. Given the many existing and developing environmental laws, regulations and standards in Tanzania, it is worth considering resorting to constitutional provisions to protect and manage the environment. With increasing environmental awareness in recent decades, the environment has become a higher political priority and many constitutions now expressly guarantee a 'right to a healthy environment', as well as the procedural rights necessary to implement and enforce the substantive rights granted. The public or national interest in this aspect is addressed through government Policies and regulated by Principal Acts and Regulations. The implementation of the proposed project shall touch various sectors; therefore, the developer has to comply with number of cross-sectorial policies and legislations relevant to this project. Also, the listed institutions involved in environmental management for the project is included in this chapter.

3.1 RELEVANT POLICIES

This section focuses on various policies which guide the development aspects for sustainable vision, apart from the national environmental policy, there are numbers of sector policies that are to be reviewed when executing the proposed development and these include;

3.1.1 National Environment Policy 2021

The National Environmental Policy of 2021 has just been launched in February 2021. The new policy formulation is a revision of the National Environmental Policy of 1997. The Policy serves as a national framework for planning and sustainable management of the environment in a coordinated, holistic and adaptive approach taking into consideration the prevailing and emerging environmental challenges as well as national and international development

issues. Effective implementation of this policy requires mainstreaming of environmental issues at all levels, strengthening institutional governance, and public participation in environmental management regimes. The long-term vision of this policy is geared towards the realization of environmental integrity, assurance of food security, poverty alleviation, and increased contribution of the environmental resources to the national economy. It also recommends strong institutional and governance measures to support the achievement of the desired objectives and goals.

The policy seeks to promote the economy and livelihoods of people while promoting sustainable utilization of natural resources in the country. The policy provides the framework for the formulation of plans, programmes, and guidelines for the achievement of sustainable development.

The policy overall objective is to provide a national framework for guiding harmonized and coordinated environmental management for the improvement of the welfare of present and future generations. The specific objectives are i) to strengthen coordination of environmental management in sectors at all levels; ii) to enhance environmentally sound management of land resources for socioeconomic development; iii) to promote environmental management of water sources; iv) to strengthen conservation of wildlife habitats and biodiversity; v) to enhance conservation of forest ecosystems for sustainable provision of environmental goods and services; vi) to manage pollution for the safe and healthy environment; vii) to strengthen the national capacity for addressing climate change impacts; viii) to enhance conservation of aquatic system for the sustained natural ecosystem; ix) to ensure safety at all levels of application of modern biotechnology; x) to promote gender consideration in environmental management; xi) to promote good governance in environmental management at all levels; and xii) to ensure predictable, accessible, adequate and sustainable financial resources for environmental management.

3.1.2 National Land Policy of 2021

The National Land Policy states that “the overall aim of a National Land Policy is to promote and ensure a secure land tenure system, to encourage the optimal use of land resources, and to facilitate broad-based social and economic development without upsetting or endangering the ecological balance of the environment”. This study partly responds to this requirement.

3.1.3 Construction Industry Policy (2003)

Among the major objectives of the policy, which supports a sustainable building development sector, include the promotion and application of cost effective and innovative technologies and practices to support socio-economic development activities such as sanitation, water supply, buildings, road-works, shelter delivery and income generating activities and to ensure application of practices, technologies and products which are not harmful to either the environment or human health. Proposed project is in-line with this policy as ultra-modern technology is used during construction and its operation.

3.1.4 National Health Policy (2003)

The Health Policy is a vital guide towards health development of any country. It is particularly, important in a country like ours where resources and technology are more limited than in other countries, which are relatively better off in both technology and resources. This Policy is a revision of the 1990 Health Policy, which emphasized on the need for increasing community involvement in health development and improved access and equity in health and health services.

The Policy recognizes the challenges of consolidating the principles of the previous health policy in community involvement, improved health services provision, access and equity while addressing the different dimensions of reforms that are taking place in the Public Sector.

The proposed project will adhere to policy requirements to ensure no transmission of such communicable diseases between construction workers and the community, protect workers from all sorts of health risks and hazards;

and provide adequate sanitation services within the project and ensure that its activities are not a source of health issues.

3.1.5 National Gender Policy of 2000

The overall objective of the Gender and Development Policy is to promote gender equality and equal participation of men and women through facilitation of access to education, child care, and employment and decision making. Also this policy is to provide guidelines that will ensure that gender-sensitive plans and strategies are developed in all sectors and institutions. While the policy aims at establishing strategies to eradicate poverty, it emphasizes gender quality and equal opportunity of both men and women to participate in development undertakings and to value the role played by each member of society. The proposed project will adhere the requirements addressed under this policy.

3.1.6 National Human Settlements Development Policy (2000)

Among the objectives of this policy is to improve the level of the provision of infrastructure and social services for the development of sustainable human settlements and to make serviced land available for shelter to all sections of the community. Such infrastructure and services constitute the backbone of urban/rural economic activities. Simplified Sewerage System is one among of the important infrastructure for the Mnyamani community and country at large

3.2 PRINCIPAL LEGISLATIONS AND REGULATIONS

The ESIA team reviewed several legislations relevant to the construction of Simplified Sewerage System. These encompass Principal Acts that support and provide guidelines to implement the intended project as discussed below.

3.2.1 Environmental Management Act (2004)

Among the major purposes of the EMA are to provide the legal and institutional framework for sustainable management of the environment in Tanzania; to outline principles for management, impact and risk assessment, the prevention

and control of pollution, waste management, environmental quality standards, public participation, compliance, and enforcement; to provide the basis for the implementation of international instruments on the environment; to provide for the implementation of the National Environmental Policy; to provide for the establishment of the National Environmental Fund and to provide for other related matters.

Part III, Section 15(a) states that "*in matters about the environment, the Director of Environment shall coordinate various environment management activities being undertaken by other agencies to promote the integration of environmental considerations into development policies, plans, programs, strategies projects and undertake strategic environmental assessments to ensure the proper management and rational utilization of environmental resources on a sustainable basis for the improvement of the quality of human life in Tanzania*". Part X of the law deals with Environmental Quality Standards. Section 140 of this act states that "*The National Environmental Standards Committee of the Tanzania Bureau of Standards established under the Tanzania Bureau of Standards Act, 1975 shall develop, review and submit to the Minister proposal for environmental standards and criteria concerning; water quality; discharge of effluent into the water; air quality; control of noise and vibration pollution; sub-sonic vibrations; soil quality, control of noxious smells; light pollution; and any other environmental quality standard*" Some of these standards have already been published in the government *gazette* while others are not in place. This project shall take into account all the standards specified by this act.

3.2.2 The Environmental Management (Fees and Charges) Regulations, 2021

These Regulations shall apply in relation to an act or service in respect of which fees and charges are payable under the Act and Regulations made thereunder. The regulations emphasize that "a person shall not, upon payment of fees and charges prescribed in the Schedule to these Regulations, carry on any of the following":

- Environmental Impact Assessment;

- Environmental Compliance Monitoring and Audit;
- Registration of Environmental Experts;
- Environmental Quality Standards;
- Noise and Vibrations; or
- other activities related to the environment

This project complies with the regulations since the proponent has already paid registration fees and review charges as directed by NEMC.

3.2.3 The Environmental Management (Control of hazardous Waste) regulations, 2021

The objective of these regulations is to protect the environment and human health by preventing or reducing the generation of Hazardous waste, the adverse impacts of the generation and management of hazardous waste and by reducing overall impacts of resource use and improving the efficiency of such use, which are crucial for the transition to a circular economy. The regulation requires that "any person generating, collecting, storing, transporting, treating, recycling, reusing, recovering and disposing of hazardous waste or any person exercising jurisdiction under these Regulations shall, assure that there are no adverse impacts to be generated or caused by the activity conducted. Project developer will comply with the requirements of this regulation by reducing the construction materials which may generate hazardous impacts, as well as proper handling of such waste such as in use of fuels for various purposes etc.

3.2.4 The Environmental Management (Control of Noise and vibration) regulations, 2015

The regulations focus on the maintenance of a healthy environment for all the people in Mainland Tanzania, the tranquility of their surrounding and their psychological well-being by regulating noise and vibration levels to prescribe the maximum permissible noise and vibration levels from a facility or activity to which a person may be exposed. The project developer will make sure that all

the guidelines under this policy will be considered to ensure the healthy environment to everyone.

3.2.5 The Environmental Management (Prohibition of Plastic Carrier bags) regulations, 2019

Regulations are meant to impose a total ban on the import, export, manufacturing, sale, and use of plastic carrier bags regardless of their thickness. Plastic carrier bags have a wide definition in the Regulations, as a bag made of plastic film, with or without handles, or gussets and to which its layer is in any thickness. The Regulations also categorically state that no person shall sell or offer for sale beverages or other commodities wrapped in plastics unless the nature of such commodities require wrappings by plastics, and restricts any licensing authority from issuing any licenses after the Regulations come into force. Project developer will make sure that there will be no use of plastic bags within the project site and the whole project life time, also in case of the need of carrier bags the proponent will make sure that there will be an alternative bag which are allowed by the regulations. For the commodities that are wrapped in plastic, then the proponent will make sure that such plastic will be handled properly.

3.2.6 The Environmental Management (Solid Waste Management) regulations, 2007

The solid waste management regulation of 2007, provides general directive on management of solid waste as follows: -

Regulation detail the requirements and responsibilities for managing solid waste in Tanzania

Highlight waste minimization and cleaner production principles alongside the duty to safeguard the public health and the environment from adverse effects of solid waste. Detail permitting requirements notably that any person dealing with solid waste as collector, transporter, waste depositor or manager of a transfer station will apply to the LGA for a permit. The local authority will also issue licenses to individuals or companies qualified to operate solid waste

disposal sites; permit is required to operate an LGA waste disposal site. The proposed project is expected to generate solid waste in construction phase. Therefore, to comply with this regulation the Project developer will engage the registered solid waste collection contractor.

3.2.7 The Environmental Management (Water Quality) regulations, 2009

Regulations provide for institutional and legal framework for sustainable management and development of water resources; to outline principles for water resources management; to provide for the prevention and control of water pollution; to provide for participation of stakeholders and the general public in implementation of the National Water Policy. These regulations require the sustainable management of water sources and proper use of the available sources without causing any damage towards such sources. Also, the regulations emphasize that it is every one's responsibility to conserve and preserve the available water sources in Tanzania. During all phases of the project there will be water demand, hence the project developer will make sure that there will be a sustainable use of water. Also during construction and maintenance phase the developer will make sure that the water supply pipes will not be damaged in either ways

3.2.8 The Environmental Management (Air Quality) regulations, 2009

The Regulations were formed in order to: -

- Prohibit emissions and releases of hazardous substances into the environment
- Prescribe permissible emission limits and quantities of emissions of sulphur oxide, carbon monoxide, black smoke and suspended particulate matters, nitrogen oxide, ozone, hydrocarbons, dust and lead
- Empower NEMC to issue air pollutant emission permits, enforce compliance, undertake emergency prevention and issue stop orders
- Set baseline parameters on air quality and emissions based on a number of practical considerations and acceptable limits and ensure protection of human health and the environment from various sources of pollution.

The proposed project will adhere the requirements of this Act, emission limits will be monitored to the permissible limits.

3.2.9 The Environmental Management (Soil Quality) regulations, 2009

These Regulations, made by the Minister of State under sections 143, 144 and 230 of the Environmental Management Act, concern soil pollution and soil quality standards and provide with respect to a soil protection permit and compliance system. They also concern measures of enforcement. The object of these Regulations is to

- Set limits for soil contaminants in agriculture and habitat;
- Enforce minimum soil quality standards prescribed by the National Environmental Standards Committee.

Also, the regulations require that, the contaminants of volatile organic compounds in habitat and agricultural soils shall comply with parameters and upper limits as prescribed and contaminants of heavy metals in habitat; agricultural soils shall comply with parameters and upper limits as prescribed and contaminants of pesticides in habitat and agricultural soils shall comply with parameters and upper limits as prescribed. Local government authority may prescribe special or specific measures and guidelines for soil conservation applicable to their respective areas of jurisdictions which are not below standards prescribed under these Regulations. The Project developer will comply with the requirements made under these regulations.

3.2.10 Occupational Health and Safety Act 2003

The provisions of this law require employers to provide decent working environment to employees to guarantee their health and safety. Occupational health and safety services are important for sustainable development of a country, as they reduce occupational accidents and diseases which can have huge economic burden to individuals, enterprises and the nation as whole. Improving health and safety of workers will significantly increase productivity at the workplaces to encourage more investments, increase job creation, higher morale, and job satisfaction hence industrial harmony. The law also entails

employers to fulfil obligations of ensuring safety of the equipment's used by workers and providing proper safety gears as required.

3.2.11 The Water Supply and Sanitation Act No. 12 of 2009

This is also a new legislation that provides for sustainable management and adequate operation and transparent regulation of water supply and sanitation services; provides for establishment of water supply and sanitation authorities as well as community owned water supply organizations; and provides for appointment for service providers. The main aim of this law is to ensure the right of every Tanzanian to have access to efficient, effective and sustainable water supply and sanitation services for all purposes by taking into account among others protection and conservation of water resources and development and promotion of public health and sanitation; and protection of the interest of customers. Under this law, the Minister responsible for water affairs shall establish water authority and cluster water authorities in order to achieve commercial viabilities.

3.12 Engineers Registration Act and its Amendments 1997 and 2007

The Acts regulate the engineering practice in Tanzania by registering engineers and monitoring their conduct. It establishes the Engineering Registration Board (ERB), the law requires any local or foreigner engineer to register with ERB before practicing in the country. Project developer will continue to comply as it has utilized the services of registered engineering firm for its structural designs which it will continue to use to supervise the construction process.

3.2.13 The Contractors Registration (Amendment) Act, 2008

The Contractors Registration Act requires contractors to be registered by the Contractors Board (CRB) before engaging in practice. It requires foreign contractors to be registered by the Board before gaining contracts in Tanzania. Project Developer shall comply with the law requirement during the recruitment of contractors for project implementation.

3.2.14 The Architects and Quantity Surveyors Act (1997)

The Act requires Architects and Quantity Surveyors to be involved in the project to be registered by the Architects and Quantity Surveyor Board (AQSB) before engaging in practice. It also requires foreign contractors to be registered by the Board before gaining contracts in Tanzania. Project Developer has complied with the law requirement during the recruitment of architects who have designed the project and will continue to utilize registered persons in the project implementation.

3.2.15 The Urban Planning Act (2007)

The law provides for the orderly and sustainable development of land in urban areas, to preserve and improve amenities; to provide for the grant of consent to develop land and powers of control over the use of land and to provide for other related matters. Under Section 3, among others the law seeks to improve level of the provision of infrastructure and social services for sustainable human settlement development. This act established planning authorities which include the city, municipal, town and township councils in the country which have responsibilities including:

- Secure the orderly and environmentally sustainable development of area under its jurisdiction;
- Prepare general and detailed planning schemes;
- Control building densities and access to buildings;
- Recommending approval of building schemes and subdivision of plots by developers;
- Secure cooperation of all agencies, utility bodies, land owners and other bodies and institutions involved in the preparation and implementation of planning process;

3.2.16 Public Health Act (2009)

Provide for the promotion, preservation, maintenance of public health with a view to ensuring the provisions of comprehensive, functional and sustainable public health services to the general public. Part III (e) of the act requires premises owners to keep their premises free of mosquitoes and other disease

vectors, vermin or causative agents; Section 54 prohibits causing or suffering from nuisance likely to be injurious or dangerous to health, land, premises, air or water; Part IV (c) assigns responsibility to City council to remove or appoint an agent to collect, transport and dispose solid and liquid waste and charge fees to beneficiaries of this service and responsibilities for prescribing types of wastes and guidelines for their collection and disposal; Section 101 it gives rights to any private sewer to connect it to any available public sewer to discharge foul or storm water therefore the project may connect to and discharge sewage or storm water into the available trunk main. However, the quality of the sewage should be as per agreed with the water authority.

The Contracting Authority will ensure that the project design, construction and operation does not constitute a nuisance; meets the requirements meets public health requirements

3.2.17 World Bank guidelines for Environmental Management

The main objective of this EMP is to establish a set of mitigation and monitoring measures to minimize the adverse social and environmental impacts that can take place during the implementation stage of the subproject. The measures especially focus on sensitive receptors or sensitive locations. The EMP also provides specific information about the monitoring program during construction stage including locations, frequency and reporting process. This project complies with these guidelines as it has ESMP which contains mitigation and monitoring plans of the identified impacts.

4.0 BASELINE INFORMATION

4.1 INTRODUCTION

This section provides baseline data on the relevant environmental characteristics of the project area. Much of the description of the environment is site specific. Other aspects such as that of climate and socio-economic issues are broad covering the whole Kinondoni District. The Consultant relied on primary data as collected from the site as well as secondary data and information gleaned from the literature for the project area.

4.2 PHYSICAL CHARACTERISTICS

4.2.1 Climate

The project area as compared to many other areas in Dar es Salaam city is influenced by coastal climatic conditions. The area experiences a modified type of equatorial climate.

- **Temperature, Sun hours and Radiation**

The region is generally hot and humid throughout the year with an average temperature of 29ºC. The hottest season is from October to March during which temperatures can raise up to 31ºC. It is relatively cool between July to September, with temperature around 20ºC. The maximum sun hours is 9 experienced from August to October, from November to January the sun hours is 8 while in February to March and May to July is 7 hours and the minimum is 5 hours in April. That means from October to March the operation in the project site will probably need more electricity for the purposes of culling at the office, while during coolest monthlies which is from July to September the consumption might go down see figure 4.1

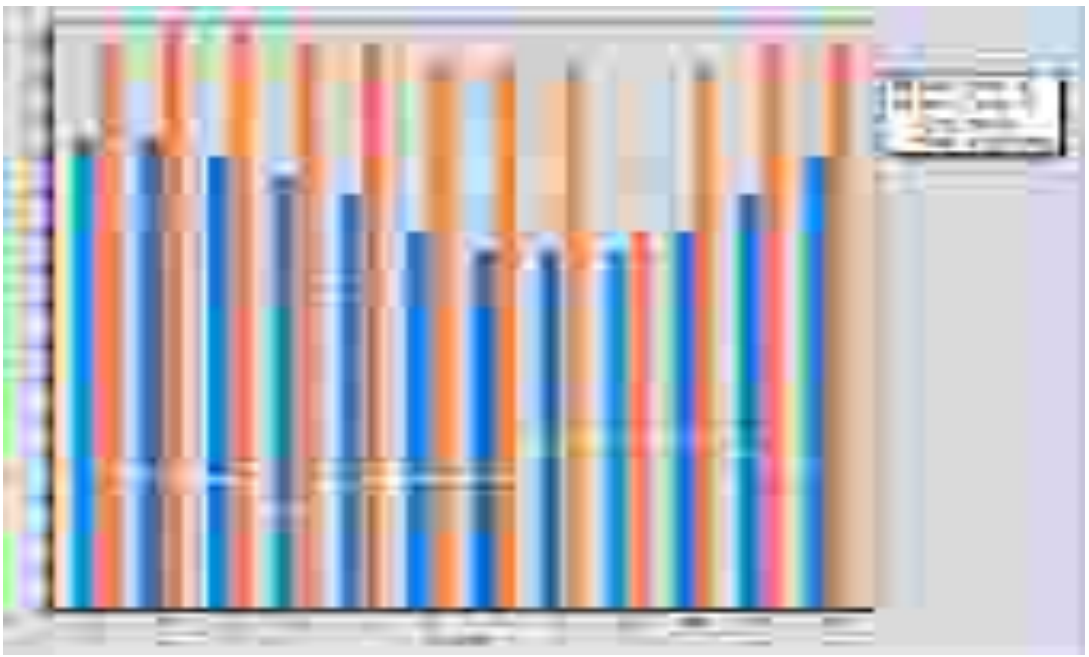


Figure 4.1: Annual temperature, sun hours and radiation of the site

The average radiation of an area is 20.3 MJ/m^2/day, with 16.3 MJ/m^2/day being the minimum in April and 23.7 MJ/m^2/day maximum in October.

- **Wind Speed**

The region experiences the average wind speed of 5.74 m/s. The maximum wind speed is 7.63 m/s experienced in June which blows from the South South East (SSE) direction which means if the project site will produce and air pollutant all activities downstream of SSE direction will be prone to that pollution. The wind is calm around December to March. The climate is also influenced by the south-westerly monsoon winds from April to October and north-westerly monsoon winds between November and March.

- **Rainfall**

There are two main rain seasons; a short rain season from October to December and a long rain season between March and May. Figure 3.4 shows the effective rainfall received at Dar es Salaam region.

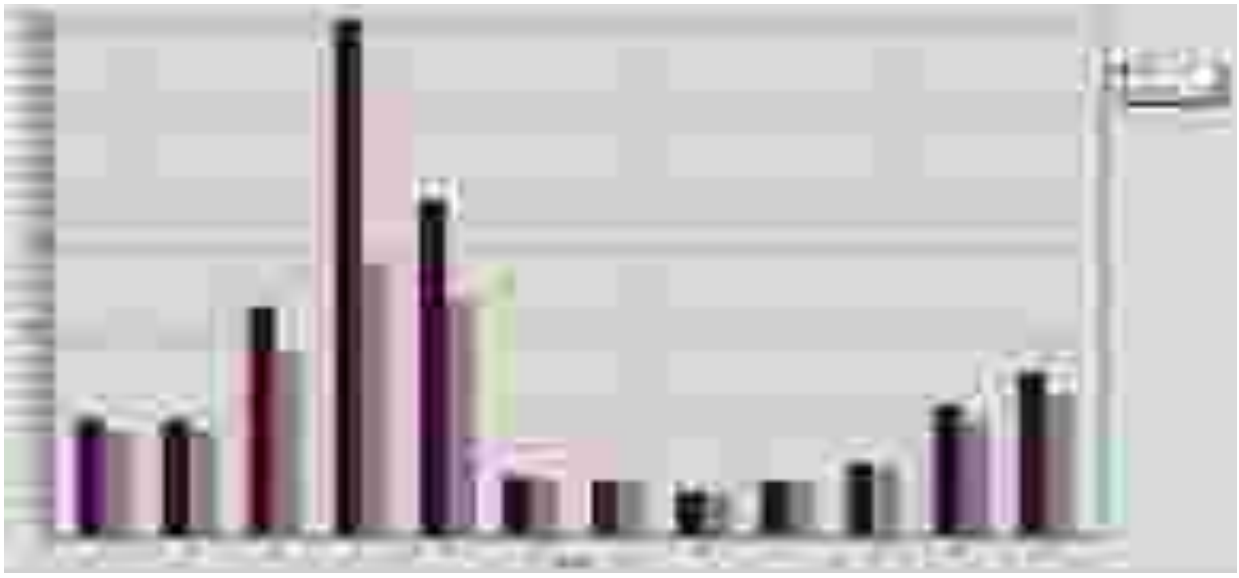


Figure 4.2: Average annual rainfall data for the site (Source Socio-Economic profile 2019)

4.2.2 Groundwater sources

Groundwater is abundant in almost the entire Dar es salaam City. This is because of the sea level rise. The major direct impacts of sea-level rise include

inundation of low-lying areas, loss of coastal wetlands, increased rates of shoreline erosion, saltwater intrusion and increased salinity in estuaries and coastal aquifers, and higher water tables and higher extreme water levels leading to coastal flooding (Nicholls et al., 2007; Bicknell et al., 2009).

4.2.3 Topography

The landscape of the project site is highly manipulated to make the topography flat and suitable for storage activities. The highest contour elevation at the project site is 96.5m Above Mean Sea Level (AMSL) on the western side while the lowest contour elevation is94m AMSL at eastern part of the project site, that means the rainfall runoff at the project site are directed towards southern eastern side.

4.2.4 Air Quality and Noise Level

The ambient air quality at the project area was observed to be good because the area is for residential purposes only, just because of daily activities there will be particulate matter like dust.

4.2.5 Noise and Vibration

The noise and vibration levels at the project site are rated negligible as the only source of noise at the project site are motor vehicles using the street feeder road adjacent to the project area..During construction phase the constructor shall abide to national standars of 75dBA for an average noise level and 5mm/s PPV for ground vibration at all times.

6.0 POTENTIAL IMPACTS

6.1 Positive impacts

6.1.1 Improved living conditions and economic growth

The project will improve the living conditions in Kinondoni Municipal specifically Kisiwani and Sindano Mtaa whereby the project operation phase will do away with illegal faecal sludge dislodging especially during rainy season or during the

night. The monthly charged fee for each connected household will be such as affordable by the intended customer. Thus, there will be increased money circulation that result into increased income consequently better standard of living of people in the project area.

6.1.2 Employment opportunities

Labour force for the project will be originated from Makumbusho ward and the surrounding communities in Kinondoni areas. Even though during construction the employment will be on short term basis, employees will have been benefiting from the project. Some will witness their incomes and livelihood improvement.

6.1.3 Increased socio-cultural interaction

Increased socio-cultural interaction is another anticipated positive impact. The implementation of the project will bring many people from different cultural backgrounds. The interactions may bring about social changes in the communities around the project areas. Interaction with technocrats as a result of new immigrants (customers) into the area will stimulate adoption of the new technologies.

6.1.4 Increased Revenue to the nation through taxes, both direct and indirect

DAWASA is expected to increase its revenue collection on implementing this project. This will be through monthly payment of sanitation services by the respective household. The revenue collected will contribute towards expansion of the water supply and sanitation service within DAWASA service area.

6.1.5 Cost reduction for sewage management

The proposed facility will make it easier for the Institutions and households which at present incur unbearable costs for proper dislodging the septic tanks when full. That simply means the households in the vicinity and the institutions

will benefit through direct connection to the downstream treatment facility depending on the nature of topography.

6.2 Negative impacts

6.2.1 Increased HIV/AIDS and other sexual related diseases:

Local communities surrounding the project area have to be aware of the fact that HIV/AIDS is present in their areas but accede to it not being at an alarming rate. The communities were worried that with an influx of people into the project area the pace of spread will accelerate especially during the construction phase.

Mitigation Measures

- Contractor shall enforce a code of conduct in the project area to encourage respect for the local community and to maintain self-cleanliness of the working area at all times.

- The contractor shall deploy locally available labour to reduce risk of spreading communicable diseases (especially STDs).

- In order to prevent more HIV/AIDS infection, during the implementation phase, the project should include information education and communication component (IEC) in its budget. This will help to raise more awareness on HIV/AIDS, and means to suppress its incidence.

- A safety, health and environment induction course shall be conducted to all workers, putting more emphasis on HIV/AIDS, which has become a national disaster.

6.2.2 Land degradation and increased erosion

Establishment of new facility within the project area might result into land degradation and promote soil erosion.

Mitigation Measures

- Unnecessary trench excavation close to the buildings and sensitive re-alignments shall be avoided.

- Lined drainage channels at sensitive terrains shall be provided to control speed and volumes of storm-water.
- The contractor should plant grass or any other vegetation cover to minimise exposed soil surface.
- Directing flow to properly designated channels within the facility site.
- Timely backfilling

6.2.3 Noise pollution

Noise pollution is likely to occur due to the application of construction equipment and generators at the site.

Mitigation Measure

- The proponent shall maintain equipment in good running conditions to ensure that ambient noise level and vibrations pollution into the environment is very minimum to comply with Tanzania standards.
- The noisy construction activities will be scheduled at normal working hours. Regular inspection and maintenance of construction vehicles and equipment will be done to ensure that they have mufflers installed and worn parts are replaced

6.2.4 Air Pollution from dust emission

Air pollution is likely to occur due to the emission of suspended particulate matter (dust) to the atmosphere from the construction activities.

Mitigation Measure

- Mixing equipment shall be sealed properly and vibrating equipment will be equipped with dust removing devices.
- Also all vehicles that generate excessive black smoke will not be used.
- Adequate training and use of personal protective equipment (PPE) such as eye glasses and dust masks will be ensured in order to reduce risks associated with dust.

6.2.5 High Risk of Health associated with construction work

Construction activities exposes the workers to a lot of risks for example risk of getting into contact with fecal sludge matter, injuries, COVID-19 pandemic etc

Mitigation measure

- The project proponent shall ensure that all personnel are provided with appropriate protective gear.
- All works shall be planned and conducted in accordance with relevant OHS Guidelines. First Aid Kit as well as regular medical check-ups for the workers will be provided during the entire working hours.
- Adequate number of firefighting equipment/extinguishers will be provided in every few distance to help putting off fire in case of occurrence.
- Excavated pits should be protected by warning tape and guardrails to prevent workers and passersby from falling
- Provision of hand washing equipment and soap at every entrance and exit and at random passage ways within the construction site.
- Ensure all workers to take precautionary measures against COVID-19 by washing hands with soap frequently, practicing social distancing and using face masks of their preference.

6.2.6 Waste generation during construction

A lot of waste will be generated especially during construction stage. For example, pipework is likely going to produce some plastics which need to be disposed of. Construction of waste water chambers will both generate wastes. Other wastes will be generated from cleaning of construction equipment and containers like mixers and paint buckets.

Mitigation measures:

- Stick to the design specifications
- Provide waste containers

- Provide training to workers and orient them towards environmental protection values

6.2.7 Eruptions of diseases

There might be the eruption of diseases casueb by pathogens/bacterias from the faecal sludge, and this will be of high imoacts if the system is not well managed and operated, hence eruption of diarhoea, typhoid etc will be inevitable.

Mitigation measures:

- The system should be well managed
- Proper awareness to the community on how touse the system effectively without damage
- Regular maintainance of the network to identify linkage and fix them immediately

7.0 ACTION PLAN FOR PREVENTION AND MANAGEMENT OF ACCIDENTS DURING IMPLEMENTATION STAGE

The project shall be implemented in compliance to labour laws in Tanzania, in particular, the Occupational Health and Safety Act (2003). Clauses to protect the health and safety of workers shall be included in the contract documents for implementation stage.

7.1 Health and Safety

The proponent is committed to protect the health and safety of its employees and those of its contractors, to ensuring that activities are conducted in a manner that protects the environment and people. The Contractor shall provide and enforce the use of appropriate personal protective equipment for all workers e.g. overalls, gloves, masks, etc. (wherever required). Tanzanian/international construction standards will be followed for quality and safety to workers. First aid facility will be installed at the construction site.

7.2 Security

The whole proposed project will take care of security matter of the site by fencing the storage area and provide gates for entrance and exit purpose. The project proponent shall have a 24 hours security services from a private

company to secure the whole project premise at the site. Also since the nature of investment involves fecal sludge management facility with the potential of biogas production. The project proponent will install the best firefighting system at site. The purpose of fire protection is to protect life, good and activities within the project site.

The following are some of the active and passive fire-fighting equipment that will be employed;

- Fire detection system
- Fire hydrant system
- Portable Fire Extinguishers

7.3 Monitoring, Maintenance and repair

The management of the facility will be upon DAWASA to ensure the approved design or plan is implemented accordingly. Furthermore, provision of basic services will be executed at high quality as intended.

8.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

8.1 Environmental and Social Management Plan

The Environmental and Social Management Plan (ESMP) presents the implementation schedule of the proposed mitigation measures for both environmental and social impacts. The ESMP for the proposed Construction of Simplified Sewerage System at Makumbusho Kisiwani Street Makumbusho ward is summarized in Table 8-1. The ESMP also indicates environmental costs needed to implement the recommended mitigation measures. The site selection process has been done, however engineering designs are being prepared and will soon be incorporated with the mitigation measures recommended in this report. Additional recommendations are provided in the ESMP to enable the Simplified sewerage system to be constructed and operated in environmentally friendly manner.

DAWASA shall be the main implementer of the ESMP through. The environmental measures incorporated in the detailed engineering design will be attached to the Bills of Quantities and Contract Documents. Moreover, there will be an Environmental, Social, Health and Safety (ESHS) Code of Conduct to be signed by the Contractor(s) to show their commitment in the implementation of the Environmental, Social, Health and Safety. The implementation of the Code will be supervised by DAWASA or his consultant.
The ESHS Code is a set of Guidelines attached to the Bidding Document and Contract to be adopted by Contractor during project implementation. It contains the commitment and obligations of the Contractor and its subsidiaries (i.e. Sub-Contractors and staff) to undertake construction activities in accordance with all applicable Laws, Rules, and Regulations. The Contractor and its subsidiaries shall comply with the Code of Conduct with high ethical standards. Failure to observe the Code, will subject the firm to disciplinary action, including Contract termination. Violation of the Code, is violation of Law which may result to civil and/or criminal penalties to Contractors, Supervisors or Firm.

Some of the issues to be included in the ESHS shall include;

- Site specific **ESMP, HSMP**,
- Traffic Management Plan **(TMP), where applicable**
- HIV/AIDS Awareness Program,
- Occupational Health and Safety Awareness Program.
- Sexual Harassment Prevention Policy
- Child Labour Prevention Policy

The environmental and social mitigation and enhancement measures incorporated in the detailed engineering design will be attached to the Contract Documents. The Contractor shall take stock of the contents of the Project Brief.

Table 8-1: Environmental and Social Management Plan for the Proposed Construction of Simplified sewerage system at Kisiwani and Sindano Mtaa, Makumbusho ward, Kinondoni District

Impact	Mitigation Measure	Responsible Institution	Estimated One Time Cost (TZS)	Estimated Annual cost (TZS)
Mobilization Phase				
Increased waste generation	o Stick to the design specifications o Provide waste containers o Provide training to workers and orient them towards environmental protection values	DAWASA	To be included in the BOQ	
Noise pollution during construction	o The proponent shall maintain equipment in good running conditions to ensure that ambient noise level and vibrations pollution into the environment is very minimum to comply with Tanzania standards o All construction works will be scheduled at normal working hours.	DAWASA	500,000.00	

Impact	Mitigation Measure	Responsible Institution	Estimated One Time Cost (TZS)	Estimated Annual cost (TZS)
	o Proper inspection and maintenance of construction vehicles and equipment will be done to ensure that they have mufflers installed and worn parts are replaced			
Construction Phase				
Increased waste generation	o Stick to the design specifications o Provide waste containers o Provide training to workers and orient them towards environmental protection values	DAWASA	To be included in the BOQ	
Increased HIV/AIDS and other STD	o Contractor shall enforce a code of conduct in the project area to encourage respect for the local community and to maintain self-cleanliness of the working area at all times.	DAWASA	5,000,000.00	

Impact	Mitigation Measure	Responsible Institution	Estimated One Time Cost (TZS)	Estimated Annual cost (TZS)
	o The contractor shall deploy locally available labour to reduce risk of spreading communicable diseases (especially STDs). o In order to prevent more HIV/AIDS infection, during the implementation phase, the project should include information education and communication component (IEC) in its budget. This will help to raise more awareness on HIV/AIDS, and means to suppress its incidence. o A safety, health and environment induction course shall be conducted to all workers, putting more emphasis			

Impact	Mitigation Measure	Responsible Institution	Estimated One Time Cost (TZS)	Estimated Annual cost (TZS)
	on HIV/AIDS, which has become a national disaster.			
Land degradation and increased erosion	• The contractor should Plant vertiver grasses to minimize exposed soil surface. • To obtain the construction materials official negotiated should be performed with wards leaders in order to avoid conflict.	DAWASA	25,000,000	
Noise pollution during construction	o The proponent shall maintain equipment in good running conditions to ensure that ambient noise level and vibrations pollution into the environment is very minimum to comply with Tanzania standards	DAWASA	1,000,000.00	

Impact	Mitigation Measure	Responsible Institution	Estimated One Time Cost (TZS)	Estimated Annual cost (TZS)
	o All construction works will be scheduled at normal working hours. o Proper inspection and maintenance of construction vehicles and equipment will be done to ensure that they have mufflers installed and worn parts are replaced			
Dust generation during construction	o Mixing equipment shall be sealed properly and vibrating equipment will be equipped with dust removing devices. o Also all vehicles that generate excessive black smoke will not be used. o Adequate training and use of personal protective equipment (PPE) such as eye glasses and dust	DAWASA	3,000,000.00	

Impact	Mitigation Measure	Responsible Institution	Estimated One Time Cost (TZS)	Estimated Annual cost (TZS)
	masks will be ensured in order to reduce risks associated with dust.			
Health Risks associated with construction works	o The project proponent shall ensure that all personnel are provided with appropriate protective gear. o All works shall be planned and conducted in accordance with relevant OHS Guidelines. First Aid Kit as well as regular medical check-ups for the workers will be provided during the entire working hours. o Adequate number of firefighting equipment/extinguishers will be provided in every few distance to help	DAWASA	3,000,000.00	

Impact	Mitigation Measure	Responsible Institution	Estimated One Time Cost (TZS)	Estimated Annual cost (TZS)
	putting off fire in case of occurrence. o Excavated pits should be protected by warning tape and guardrails to prevent workers from falling o The developer to ensure adequate supply of provisions o Adhere to good maintenance			
Demobilization phase				
Noise pollution during construction	o The proponent shall maintain equipment in good running conditions to ensure that ambient noise level and vibrations pollution into the environment is very minimum to comply with Tanzania standards	DAWASA	500,000.00	

Impact	Mitigation Measure	Responsible Institution	Estimated One Time Cost (TZS)	Estimated Annual cost (TZS)
	o All construction works will be scheduled at normal working hours. o Proper inspection and maintenance of construction vehicles and equipment will be done to ensure that they have mufflers installed and worn parts are replaced			
Operational Phase				
Health Risks associated with construction works	o The project proponent shall ensure that all personnel are provided with appropriate protective gear. o All works shall be planned and conducted in accordance with relevant OHS Guidelines. First Aid Kit as well as regular medical check-ups for the workers will be	DAWASA	Depend on the operational manual	

Impact	Mitigation Measure	Responsible Institution	Estimated One Time Cost (TZS)	Estimated Annual cost (TZS)
	provided during the entire working hours. o Adequate number of firefighting equipment/extinguishers will be provided in every few distance to help putting off fire in case of occurrence. o Excavated pits should be protected by warning tape and guardrails to prevent workers from falling o The developer to ensure adequate supply of provisions o Adhere to good maintenance			
Total			**38,000,000.00**	**38,000,000.00**

9. 0 MONITORING PLAN

9.1 Environmental Monitoring

The national EIA guidelines require the developer to prepare and undertake monitoring plan of implemented development projects. Monitoring is needed to check if and to what extent the impacts are mitigated, benefits enhanced and new problems addressed. Recommendations for monitoring have been included in the Table 9-1. The monitoring plan also assigns responsibilities for different actors. Moreover, the ward and street environmental committees will shoulder the long-term monitoring of the project.

Table 9-1: Monitoring Plan for the Proposed Construction of Simplified sewerage system at Kisiwani and Sindano Mtaa, Makumbusho ward, Kinondoni Municipal

Parameter	Monitoring Frequency	Sampling Area	Measurement Unit	Method	Target Level/Standard	Responsibility for monitoring	Estimated Annual (or once cost (TZS)
Mobilization Phase							
Dust	Daily	Immediate working area	Presence of nuisance dust	Physical-visual	-	DAWASA	DAWASA
Air Quality	Daily	In and around the Faecal Sludge Plant	Presence of smells	Smelling (nasal)	Absence of nuisance smells	DAWASA	DAWASA
Waste Generation	Weekly	At the working area	Amount of waste	Physical measurement or estimation	All waste contained	DAWASA	DAWASA
Health risks	Daily	At working area	Accidents	Counting	NO accident	DAWASA	DAWASA
HIV/AIDS	Monthly	Workers	Training	Numbers	One per month during construction phase only	DAWASA	DAWASA
Biodiversity	Once (at commencement)	Working area	Destruction of habitat or removal of biodiversity	Area affected	Minimal disturbance to biodiversity	DAWASA	DAWASA

Parameter	Monitoring Frequency	Sampling Area	Measurement Unit	Method	Target Level/Standard	Responsibility for monitoring	Estimated Annual (or once cost (TZS)
Construction phase							
Dust	Daily	Immediate working area	Presence of nuisance dust	Physical-visual	-	DAWASA	DAWASA
Air Quality	Daily	In and around the Faecal Sludge Plant	Presence of smells	Smelling (nasal)	Absence of nuisance smells	DAWASA	DAWASA
Waste Generation	Weekly	At the working area	Amount of waste	Physical measurement or estimation	All waste contained	DAWASA	DAWASA
Health risks	Daily	At working area	Accidents	Counting	NO accident	DAWASA	DAWASA
HIV/AIDS	Monthly	Workers	Training	Numbers	One per month during construction phase only	DAWASA	DAWASA
Biodiversity	Once (at commencement)	Working area	Destruction of habitat or removal of biodiversity	Area affected	Minimal disturbance to biodiversity	DAWASA	DAWASA
Demobilization Phase							
Dust	Daily	Immediate	Presence of nuisance dust	Physical-visual	-	DAWASA	DAWASA

Parameter	Monitoring Frequency	Sampling Area	Measurement Unit	Method	Target Level/Standard	Responsibility for monitoring	Estimated Annual (or once cost (TZS)
		working area					
Air Quality	Daily	In and around the Faecal Sludge Plant	Presence of smells	Smelling (nasal)	Absence of nuisance smells	DAWASA	DAWASA
Waste Generation	Weekly	At the working area	Amount of waste	Physical measurement or estimation	All waste contained	DAWASA	DAWASA
Health risks	Daily	At working area	Accidents	Counting	NO accident	DAWASA	DAWASA
HIV/AIDS	Monthly	Workers	Training	Numbers	One per month during construction phase only	DAWASA	DAWASA
Biodiversity	Once (at commencement)	Working area	Destruction of habitat or removal of biodiversity	Area affected	Minimal disturbance to biodiversity	DAWASA	DAWASA
Operation phase							
Dust	Daily	Immediate working area	Presence of nuisance dust	Physical-visual	-	DAWASA	DAWASA

Parameter	Monitoring Frequency	Sampling Area	Measurement Unit	Method	Target Level/Standard	Responsibility for monitoring	Estimated Annual (or once cost (TZS)
Air Quality	Daily	In and around the Faecal Sludge Plant	Presence of smells	Smelling (nasal)	Absence of nuisance smells	DAWASA	DAWASA
Waste Generation	Weekly	At the working area	Amount of waste	Physical measurement or estimation	All waste contained	DAWASA	DAWASA
Health risks	Daily	At working area	Accidents	Counting	NO accident	DAWASA	DAWASA
HIV/AIDS	Monthly	Workers	Training	Numbers	One per month during construction phase only	DAWASA	DAWASA
						Total	**28,000,000.00**

10.0 PROJECT BUDGET

The investment cost for the proposed Simplified sewerage system is estimated to be around Tshs. 300 Million that will be financed by the World Bank.

11.0 DECOMMISSIONING PLAN

11.1 Decommissioning

The decommissioning is not anticipated in the foreseeable future. However, if this will happen, may entail change of use (functional changes) or demolition triggered by change of land use. In view of this, specific mitigation measures pertaining to environmental impacts of decommissioning works cannot be proposed at the moment with a reasonable degree of certainty.

A decommissioning plan that takes environmental issues into consideration shall be prepared by the developer prior to the decommissioning works. Currently the study is discussing the preliminary plan that will be used as insight for Decommissioning plan in future.

This plan will serve to ensure that the decommissioning and ultimate dispositions of the residential buildings are considered during the initial design and construction of that facility. Also the system will be renovated and rehabilitated to ensure performance of the system.

11.2 Aim of the Preliminary Plan

The preliminary plan serves to establish decommissioning as an important consideration from the inception of the project, during design and throughout the operation of the project. The plan has the following purposes:

a) To ensure that the Sewer network project designers are aware of decommissioning during the initial design stage of the project.
b) To identify the ultimate decommissioning options and final project status. Appropriate options would be evaluated and narrowed to the decommissioning method of choice as the end of project life is approached.

c) To notify the regulatory agencies that, important aspects of decommissioning are considered as early as possible during the initial design of the project.

11.3 Content of the Preliminary Plan

The preliminary plan provides general description of the proposed decommissioning methods considered feasible for the project though with low level of significance. The description is intended to demonstrate that the methods considered are practical and that they protect the health and safety of the public and decommissioning personnel.

Design personnel should study the proposed decommissioning methods and ensure that the design incorporates all features that will facilitate decommissioning like;

i). An estimate of manpower, materials and cost anticipated to support decommissioning processes.

ii). A description of the anticipated final disposition and status of the structures at site as well as reinstatement of the project area.

iii). Identification of records that should be maintained during construction and operation which might facilitate decommissioning.

11.4 Project Decommissioning Methodology and Schedule

The proponent shall implement all aspects of project decommissioning, including but not limited to, all engineering works, environmental assessment, permitting, construction, and mitigation activities associated with the removal of the structures. The proponent shall monitor environmental impacts during and after project removal to respond to defined events during the monitoring phase, some of the considerable issues to be addressed by the plan are:

1. Decommissioning will involve, but not limited to the specified list, because some issues or problems may raise during subsequent monitoring and audits;

- Wherever possible, the pipelines, toilets and Manholes will continuously be rehabilitated and renovated. The solid wastes have to be disposed in

accordance to the instruction directives given in EMSP and Kinondoni Municipal Council Office that is decommissioning permit.

- Employees will be terminated from their employments. In doing this, three important things will be observed;

  i. The proponent have to ensure that their contributions to the pension fund will be made monthly as required by the law

  ii. A training programme will be facilitated to ensure that appropriate skills to responsible workers is adequately given.

  iii. Terminations benefits such as transport and disturbance allowances will be provided to all employees.

2. On decommissioning the proponent will search for experts' opinions in order to convert the entire premises into or other uses.

3. The restoration plan for the entire premises will be made by proponent (with expertise from environmental engineers and economists) and then forwarded to NEMC for approval

4. DAWASA shall obtain all permits required to undertake decommissioning of the project.

The demotion process will begin soon after closure plan has completed and approved by the responsible organs. The proponent will make inventory to all components that need to be displaced, removed and or disposed. This inventory will include like building structures, equipment, and sanitary facilities that need to be demolished/dismantled. Lastly, mode of disposal will have to be finalized. The information will assist in the preparation of the final decommissioning plan for approval by NEMC.

After the approval of the decommissioning plan the metal parts will be removed first within the first three (3) months (it's important to ensure that they are not vandalized). The second three (3) months of the decommissioning will be used to remove concrete structures and foundations. All disturbed areas will be landscaped and re-vegetated using indigenous trees.

Project decommissioning has five phases;

1. Pre-removal monitoring: Pre-removal monitoring includes environmental and socio-economic status of the project site and the surrounding. This monitoring is essential to identify if there is any environmental or social liability which need to be settled before the permit to closure is given. This period will also be used to inventories all assets and facilities that need to be disposed of and to prepare a final decommissioning plan for approval by NEMC
2. Permitting: DAWASA shall obtain all permits required to undertake removal of the project structures. This basically will include NEMC, Kinondoni Municipal Council and other stakeholders that will be recommended at that particular time.
3. Interim Protective Actions: This will take care of any interim protective measure that needs to be implemented to protect human health and environment, if any.
4. Project Removal: As noted above, the removal of the project will be completed within one year.
5. Post-Removal Activities: Post-Project removal monitoring will continue for one year

12.0 STAKEHOLDER VIEWS ON THE PROPOSED PROJECT

During this study, different stakeholders were consulted. Among these include the Kinondoni Municipal Council and community at Makumbusho Kisiwani (see Figure 6). Consultations were made through meetings.

Figure 6: Stakeholder's consultation meeting at Kinondoni Municipal office and Makumbusho kisiwani community

During the meeting, the consultant gave a brief explanation on the proposed Simplified sewerage system. The project description covered proposed location, type and design (a typical design was displayed). The stakeholders were given chance give their views on the project. Moreover, the consultant offered chance to clarify issues where stakeholders wanted to be given more explanations. The comments by stakeholders were analyzed and incorporated in the design of mitigation measures. Table 12-1 summarizes the issues raised. The names of the stakeholders consulted are given in Appendix II.

Table 12-1: Stakeholders issues and concerns

Institution	Name	Position	Issues/ concerns
TFS	Dr. Masota Abel	Manager Forest Resources, MFR	-Ensuring a large number of households are connected to the facilities so as to maximize positive results
TFS	John Rutagwaba	Principal Forest Officer	-Awareness to the people to accept the effluent for normal irrigation use
KINONDONI MUNICIPAL COUNCIL	Aron T. Kagurumjuli	MD-KMC	-The proposed DEWATs should be designed such that no any ground water intrusion is allowed especially at places with high water table. -Proposed a massive DEWAT at Jangwani Area taking the advantage of closeness to Indian Ocean so as to save the largest part of the City.
KINONDONI MUNICIPAL COUNCIL	Kennedy Mrina	EHO-KMC	-In case of direct discharge to the Ocean has the possibility of transmitting diseases like earthworm to fishes and then back to human consumer
KINONDONI MUNICIPAL COUNCIL	Eng. Leopold Runji	MANAGER AT TARURA-KMC	-The DEWAT design at Bondeni ground should put into consideration the ongoing sinza river lining project under DMDP
KINONDONI MUNICIPAL COUNCIL	Maduhu K. Ilaga	MUNRO-KMC	-The proposed Rasco ground as the project site should be shifted to Bondeni ground.
KISIWANI AND SINDANO MTAA	Happy H. Danga	MEO	-Ensure the wastewater pipes are large enough to accommodate the generated wastewater

References

1. Bicknell, J.; Dodman, D., and Satterthwaite, D., (eds.), 2009. Adapting Cities to Climate Change: Understanding and Addressing the Development Challenges. London, UK: Earthscan, 397p.

2. Nicholls, R.J., Wong, P.P., Burkett, V.R., Codignotto, J.O., Hay, J.E., McLean, R.F., Ragoonaden, S. and Woodroffe, C.D. 2007. Coastal systems and low-lying areas. In: M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden, and C.E. Hanson, (Eds), Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, UK, p. 315-356.

3. Population and Assets Exposure to Coastal Flooding in Dar es Salaam (Tanzania): Vulnerability to Climate Extremes

4. Kinondoni Municipal Socio-economic profile 2018

Appendix I: List of Stakeholders Consulted

Appendix II: Minutes of Meetings with Locals

Appendix III: Screening Decision from NEMC

THE UNITED REPUBLIC OF TANZANIA

VICE PRESIDENT'S OFFICE
UNION AND ENVIRONMENT

NATIONAL ENVIRONMENT MANAGEMENT COUNCIL (NEMC)

In reply please quote:
Ref: **EC/EIA/2021/8281** **Date:20/04/2021**

Director General,
Dar es Salaam Water Supply and Sanitation Authority,
P. O. Box 1573,
Dar es Salaam.

RE: SCREENING DECISION OF THE PROPOSED SIMPLIFIED SEWARAGE SYSTEM TO BE LOCATED AT MWANANYAMALA KISIWANI, NDUNGUMBI WARD, KINONDONI MUNICIPALITY, DAR ES SALAAM REGION

Reference is made to the above heading.

2. The Council acknowledges receipt of your project brief for the aforementioned project. Following review of the submitted documents, the Council has reached a decision that your project falls under type B2 projects (Project Brief Stage). Thus you are required to prepare a **Comprehensive Project Brief** which will guide the Council in decision making.

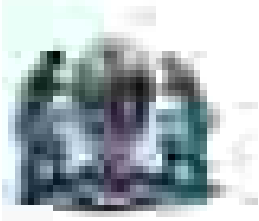
3. Moreover, the following information and documents must be included in the project brief;
   i. Provide information on land ownership and acquisition of the area together with specific area that will affected by the network system. Ensure the provided area should conform to Urban Planning (Planning Space Standards) Regulations, 2018
   ii. Clearly state suitability of the site for the proposed project as the area is prone to flood during rainy season; the following should be observed;
      a) **Hydrology study** should be conducted and appended in the document;

Appendix IV: Permit to use the Land from the Local Government Authority

HALMASHAURI YA MANISPAA YA KINONDONI

[illegible]

Appendix V: Memorandum of Understanding between DAWASA and Dar es Salaam Municipal Councils



MEMORANDUM OF UNDERSTANDING

BETWEEN

MINISTRY OF WATER

AND

THE DAR ES SALAAM WATER SUPPLY AND SEWERAGE AUTHORITY,

REGIONAL ADMINISTRATIVE SECRETARIAT

AND

DAR ES SALAAM MUNICIPAL COUNCILS

(Kinondoni, Kala, Temeke, Ubungo, Kigamboni)

JANUARY 2019

ACRONYMS

BC	Beneficiary Community
CEO	Chief Executive Officer
CPM	Critical Path Method
CV	Curriculum Vitae
DAWASA	Dar es Salaam Water and Sewerage Authority
DDCA	Drilling and Dam Construction Agency
DEWATS	Decentralized Wastewater Treatment System
DSM	Dar es Salaam
EMP	Environmental Management Plan
ESA	Environmental and Social Assessment
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
EWURA	Energy and Water Utilities Regulatory Authority
FDR	Final Design Report
FSM	Feacal Sludge Management
GIS	Geographic Information System
GoT	Government of the United Republic of Tanzania
H&S	Health and Safety
ICB	International Competitive Bidding
IFRs	Interim Financial Report
LGAs	Local Government Authorities
m^3	Cubic meter = 1,000 litres
MD	Managing Director
MKUKUTA	National Strategy for Growth and Reduction of Poverty
MoEVT	Ministry of Education and Vocational Training
MoHCDEC Children	Ministry of Health, Community Development, Gender, Elderly and
MoU	Memorandum of Understanding
MoW	Ministry of Water
NCB	National Competitive Bidding
NEMC	National Environment Management Council

NGO	Non-Governmental Organization
NWSDS	National Water Sector Development Strategy
O&M	Operations and Maintenance
PAP	Projected Affected Person
PERT	Program Evaluation Review Technique
PIM	Project Implementation Manual
PIP	Program Implementation Plan
PO	Private Operators
PO-RALG	Presidents Office Regional Administration and Local Government
PPRA	Public Procurement Regulatory Authority
RAP	Resettlement Action Plan
RAS	Regional Administrative Secretary
RS	Regional Secretariat
RFP	Request for Proposals
SDG	Sustainable Development Goal
SPS	Small Piped Water Supply
TBS	Tanzania Bureau of Standards
ToR	Terms of Reference
UWSA	Urban Water and Sewerage Authority
WC	Water Committee
WSDP	Water Sector Development Program
WSS	Water Supply and Sanitation.
WSSP	Water Sector Development Program
WSSP II	Second Water Sector Support Project

A MEMORANDUM OF UNDERSTANDING
FOR THE IMPLEMENTATION OF THE OFF- GRID WATER SUPPLY AND SANITATION PROJECTS UNDER THE SECOND WATER SUPPLY AND SANITATION PROJECT USING EARMARKED FINANCING

Memorandum of Understanding ("MoU") between the Ministry of Water on one part and the Dar es Salaam Water Supply and Sewerage Authority ("DAWASA"),the Dar es Salaam Regional Secretariat(RS),and the five municipalities of Dar es Salaam(collectively referred to as "the MUNICIPALITIES ") on the other part.

WHEREAS in recognition of the importance and contribution of the water sector to the social and economic development of the United Republic of Tanzania, the Government has developed a water sector support framework set out in the following documentation: (a) the National Strategy for Growth and Reduction of Poverty ("MKUKUTA, as amended") ,(b) the National Water Sector Development Strategy ("NWSDS") and (c) the Water Sector Development Program ("WSSP").

WHEREAS after being satisfied with the objectives of the WSSP II, parties to this Memorandum have expressed their willingness to participate fully in its implementation;

WHEREAS The WSSPII project development objective is to strengthen the capacity for the integrated water resources planning and management in the united Republic of Tanzania and improve access to water supply and sanitation services in an operationally efficient manner in Dar es Salaam. The project has four components namely: Integrated Water Resources Management, Dar es Salaam Water Supply improvement, Dar es Salaam Sanitation Improvement, and Project Management and Implementation support.

WHEREAS the project is being financed by IDA Credit through Investment Project Financing, the recipient has declared its commitment to the objectives of the Project.

WHEREAS on the other part DAWASA has committed itself to the principle of harmonization and strive for the highest degree of alignment with the Government's budgetary and accountability systems and local financial framework so as to enhance effective implementation, reduce the administrative burden on the Government, and minimize transaction costs, and

NOW THEREFORE, the parties hereby agree to cooperate in coordinating the implementation of the off-grid water supply and sanitation part of WSSP II in accordance with the principles and procedures set forth in this MoU; provided, however, that in case of any conflict between the provisions of this MoU AND THE PROJECT Financing Agreement, the provisions of the Financing Agreement shall prevail.

I DEFINITIONS

Unless the context otherwise requires, several terms defined in the Preamble of this MoU have the respective meanings set forth therein, and the additional terms referred to below have the following meanings:

1. **Off Grid water supply** means the activities which will provide water supply services to people of Dar es Salaam, who are not connected to the formal network. The proposed solutions include decentralized Interventions, which may be an interim measure to be integrated to the grid network as it expands in the future. Schemes to be implemented include mostly independent water supply distribution systems supplied from point sources (e.g boreholes) or a bulk water supply from the DAWASA distribution system. In areas where the existing grid network is not available, independent stand-alone Small Piped Water Supply (SPS) systems will be implemented. These projects, typically involve a source of water (for example, borehole), a community-based distribution system and water points at a community and/or household level. The operations and maintenance will be supported from the tariff collected from the users.

2. **Off-Grid Sanitation** means activities which will provide sanitation services in Dar es Salaam to areas without access to sewers. This activity will support installation of improved toilets; safe emptying and transportation of the waste to a treatment facility; and treatment and safe disposal of treated waste into the environment. This will include piloting decentralized systems and other new technology.

3. **Environmental and Social Management Framework or ESMF"** means the framework dated September 2006, prepared by the Government and cleared by the International Development Association, setting forth an environmental and social screening process that will enable WSSP II Implementing Agencies to identify and assess potential adverse environmental and social impacts, and offset and reduce them to acceptable levels, or enhance positive impacts, and in accordance with which environmental and social management plans will be prepared by WSSPII Implementing Agencies.

4. **MKUKUTA II** Means the Government's National Strategy for Growth and Reduction of Poverty dated July 2010, covering the period from 2011 12 to 2016 – 17 and subsequent versions that may be introduced by GOT

5. **Resettlement Policy Framework** or RPF means the governing framework dated September 2006, prepared by the Government and approved by the International Development Association, for land acquisition, resettlement and compensation under the WSDP, and in accordance with which resettlement action plans will be prepared,

as necessary, as the same may be amended from time to time with the concurrence of the International Development Association;

6. **WSSP Implementation Manual** means the Project Implementation Manual (PIM) specifying implementation arrangements for the Second WSSP, including institutional arrangements; procedures for procurement, disbursement of funds, financial management, environmental and social management, and monitoring and evaluation; and progress reporting requirements, including annexes to the said manual.

7. **Project Management Team** means a team set up by DAWASA for day to day management of the off-grid water supply sub-project. Same for management of off-grid sanitation sub-project.

8. **Facilitation Team** A team appointed by the Municipal Director of the respective Municipal Council from Dar es Salaam region for the purpose of facilitating the implementation of the Off-Grid water supply projects and Off- Grid Sanitation projects. The scope of their responsibility are detailed in the PIM and summarized in this MoU.

2. UNDERLYING PRINCIPLES

2.1 The MoW, DAWASA, RS and Municipalities agree that the following are the underlying principles that govern this partnership:

(a.) Commitment to the fulfilment of the aspirations of the National Development Vision 2025;
(b.) Compliance with defined budgeting, procurement and public financial management rules and regulations;
(c.) Good governance and accountability of the Government to its citizens, including an active fight against corruption;
(d.) Coordinating the implementation of the off-grid water supply and sanitation sub-projects cost effectively; and
(e.) Each party executing its respective roles in a timely manner

3. GENERAL PROVISIONS

3.1 Purpose

This MoU outlines the responsibilities of the **MoW, DAWASA, RS and Municipalities** with respect to the implementation of off-grid water supply and sanitation sub-projects and sets forth common institutional, environmental and social measures, monitoring and evaluation, audit and reporting arrangements The WSSP II Implementation Manual complements procedures and arrangements set out in this MoU.

3.2 Status of the MoU

This MoU is not intended to create any legally binding obligations and the parties take due cognizance of the separate sector laws and regulations between the Government Institutions, and this MoU is adopted pursuant to and subject to any such regulations. In case of any conflict between the provisions of this MoU and the project Financing Agreement, the provisions of the Financing Agreement shall prevail.

4. OFF GRID WATER SUPPLY

4.1 Commitment

The DAWASA declares its commitment to the objectives of the **Second Water Sector Support Project** and will act with due diligence and efficiency to facilitate the successful implementation of the projects. To this end, DAWASA, as an Implementing Agency will effectively carry out its roles and responsibilities in the implementation of the off-grid water supply and sanitation sub-projects as defined in the WSSP II Project Implementation Manual. The Ministry of Water, as the Responsible Agency for WSSP II will have overall responsibility for the coordination and implementation of the off-grid water supply and sanitation sub-projects.

4.2 Institutional Arrangements

The institutional framework for overseeing the implementation of the WSSP II comprises the following key bodies, as set out in the Sections below, and in greater detail in the WSSP Implementation Manual:

1. Ministry of Water;
2. Prime Minister's Office Regional Administration and Local Government;
3. Ministry of Health, Community Development, Gender, Elderly and Children
4. Municipal Councils
5. Beneficiary Communities ("BC");

4.2.1 Ministry of Water (MoW)

The MoW will be responsible for provision of overall coordination and oversight. The Ministry will also provide technical and administrative support in the implementation of WSSP II, including without limitation the following activities:

1. Coordinating and consolidating the quarterly WSSP II IFRs (Interim Financial Report); semi–annual and annual progress reports; and ensuring that funds earmarked for implementation of WSSP II activities are duly considered in the annual work plans

and budgets of the implementing agencies; and that the WSSP II procurement plans are consistent with WSSP II work plans and budgets;

2. Ensuring quality and consistency of the documents referred to in subparagraph (a) above prior to consolidation as indicated in the Programme Implementation Manual and submission to the Off-Grid WSS SC for discussion;

3. Monitoring the implementation of the Annual Work Plans and Budgets by the WSSP II Implementing Agencies, at least on quarterly basis;

4. Providing oversight on financial management, controls, audit and reports; and

5. Ensuring that management decisions made by the Off-Grid WSS Steering Committee are communicated to the Implementing Agencies, implemented and monitored.

4.2.2 DAWASA

DAWASA will be responsible for overall coordination and implementation of off grid water supply activities. The off-grid water supply shall be implemented under the Directorate of Infrastructure Development (for construction arrangements) in collaboration with the Communication Unit (for coordination arrangements). The Communication Unit will be generally responsible for:-

1. Coordinating inputs as required from other units within DAWASA such as Procurement, Technical Services, and Finance, etc.
2. Supervising and monitoring contracts / agreements
3. Seeting up Sub-project Agreements with beneficiary communities
4. Monitoring and reporting overall progress of the off-grid water supply sub-component.
5. Reviewing and evaluating the operation and management of the water supply sub-projects.
6. The financial aspects for off- grid water supply sub-projects will be managed as per Project Implementation Manual VOLUME II, and
7. Overall supervision of off-grid water supply activities.

4.2.3 Municipal Councils (or DLGAs)

The five Dar es Salaam Municipal Councils, through their respective Urban Planning Department. Legal Unit, Municipal Health and Water Department, will be responsible for the following tasks:

1. Creating awareness and mobilization of the communities.

2. Each DLGA will form a Municipal Facilitation Team comprising different specialists from Water, Health, Education, Community Development departments that will be tasked to assist consultants/contractors/PO on implementation and operation of Off Grid Water Supply facilities in their respective areas.
3. DLGAs through Legal unit, Health and Water department will coordinate the formation of Water Supply by-laws and regulations and thereafter enforcing for sustainability of Off Grid Water Supply facilities.
4. DLGAs will be responsible for identification and facilitation of Land acquisition for construction of Off- Grid Water Supply facilities

4.2.4 WSS Steering Committee

Given the multiplicity of institutions with varying roles, a WSS Steering Committee (SC) will be set up under the project to ensure coordination, synergy, and dovetailing. This SC will be newly set up or be adopted from some of the other projects (for example, Dar es Salaam Metropolitan Development Program [DMDP]) which may have similar steering mechanisms. This steering committee will be chaired by the Head of the Water Sector from RS and DAWASA will provide the secretary to WSS SC.

The RS will chair the Off Grid WSS Steering Committee, which will be comprised of representatives from the DAWASA, RS, WRBO, MOW, DLGAs i.e Temeke, Ilala, Kinondoni, Kigamboni and Ubungo. The Steering Committee will be responsible for providing general oversight of the selection and approval of sub-projects for implementation by the Off-Grid Water Supply and Sanitation. The key responsibilities of the Off Grid WSS Steering Committee include:

1. Reviewing overall Off Grid Sanitation implementation arrangements
2. Reviewing and approving Off Grid Sanitation sub-project operational guidelines
3. Reviewing and approving Off Grid Sanitation sub-project proposals
4. Reviewing overall Off Grid Sanitation progress and performance and providing guidance for improvements if needed
5. Conflict Resolution as per PIM.

4.2.5 Beneficiary Community

At the project level, Beneficiary Community will be involved in the project appraisal, that includes identification of sources, selection of appropriate sites, kiosk locations, and

protection of water source and infrastructures. DAWASA will be responsible for the efficient operation and management of the water supply systems.

4.2.6 Private Operator

The Private Operator (PO) may be engaged if the expansion of DAWASA grid network is beyond five years away. The PO would primarily have as its members the households from the community, with an operating body selected by the members from among themselves, with additional membership from DAWASA/DLGA. The regulation of these systems, including the tariff, would be undertaken by EWURA, as part of the overall regulation of the sector in Dar es Salaam.

Private Operator will operate, maintain, and manage the scheme under contract with DAWASA.

The Private Operator shall be responsible for keeping and maintaining appropriate records of its business activities. These shall include:

1. Customer details
2. Operation and maintenance records including volume of water produced and sold
3. Asset register, work as executed records, manuals of plant and equipment
4. Condition and expected life of assets
5. The details of network expansions as up to standards.
6. The Private Operator shall prepare monthly and quarterly operation and maintenance
7. Reports for the completed off -grid water supply subproject
8. Billing and payment records
9. Business accounts and financial statement

In general, the Operation and Maintenance Reports will address such issues as:

1. Number of registered customers in the service area
2. Number of people in the service area and number of people served
3. Business plan and budget
4. Level of service; proposed and actual
5. Revenue and expenses, progress against budget
6. Customer satisfaction
7. Maintenance activities, breakdowns, failures
8. Availability of ground /reliable water sources
9. Availability for land resources for project activities
10. Manage non-revenue water in the business area

4.3 SELECTION CRITERIA

DAWASA, in consultation with the five municipalities Ilala, Temeke, Kinondoni, Kigamboni and Ubungo will identify communities which are eligible for the Off-Grid Water Supply sub-project under the WSSP II. The identification will follow the criteria below;

1. High population density
2. Low-income areas
3. Prevalence/risk of waterborne diseases
4. No wholesome water services
5. Near-trunk infrastructure
6. Availability of sufficient land for the interventions
7. Unplanned settlements
8. Community willingness

Each of these criteria will be allocated a score, and the communities prioritized according to their total score. Keeping in mind the decisions of other interventions (for example, The Dar es salaam Metropolitan Development Program - DMDP), WSSP-II will invest in those communities which have the highest need.

5.0 OFF-GRID SANITATION

5.1 Definition.

The Off-Grid Sanitation components will provide much needed improvements to wastewater management services in areas of Dar es Salaam that are not served by DAWASA network. These improvements will be realised as a result of construction of Off-Grid sanitation stand-alone projects such as Decentralized Waste Water Treatment Systems (DEWATSs), faecal sludge treatment facilities, and condominial/simplified sewerage. The Off-Grid Sanitation Services will address the lack of sanitation services in unserved areas.

5.2 Institutional Arrangements

A strategy to address the poor sanitation in Dar es Salaam requires clarity and coordination among the various institutions involved in the sector. However, institutional responsibility is fragmented and unclear, being divided between National Ministries, City Utilities, Municipal Organizations, Regulatory Authorities, Community-Based Organizations, the Informal Private Sector and sanitation users themselves

Currently sanitation service delivery is undertaken by a mixture of Utilities, Municipalities and Regulators. DAWASA will be responsible for overall coordination and supervision of Off-Grid sanitation activities. Other institution as detailed in PIM are summarised below-

1. MoHCDGEC,
2. MoW,
3. RS,
4. DLGAs,
5. NGOs,
6. PO

5.2.1 Ministry of Water

Ministry of Water will be responsible with setting Policy and guidelines specific to FSM and overall project coordination and implementation support .

5.2.2 DAWASA

DAWASA will provide a foundation and resources for the overall implementation of Off-Grid Sanitation.

Directorate of Infrastructure Development will be the department within DAWASA responsible for overseeing the implementation of the WSSP II including Off-Grid Sanitation Sub component. The head of this department will report directly to the DAWASA Chief Executive Officer and will generally be responsible for:

1. Coordination of the Off-Grid Sanitation Steering Committee as well as establishing a general agenda and timetable for Steering Committee meetings with consultation with Steering Committee Chairperson and providing secretariat services.
2. Coordinating inputs as required from other Directorates within DAWASA such as Procurement, Infrastructure Development, and Finance, etc.
3. Signing, supervising and monitoring contracts / agreements
4. Setting up Sub-project Agreements with successful communities.
5. Monitoring and reporting overall progress of the Off-Grid Sanitation
6. Reviewing and evaluating the operation and management of the community sanitation schemes.

In support of Sub Component 3.2: a Sanitation coordination team led by PO-RALG - Regional Secretariat will be established to coordinate implementation of the Off- Grid sanitation services The technical department in the municipalities in coordination with DAWASA will be responsible for implementation of the off-grid sanitation component. DLGAs through Health, Legal unit and Water departments will coordinate the formation or improvement of existing Sanitation by laws and regulations and thereafter enforcing them for the sustainability of Off Grid Sanitation facilities. Areas where these facilities will be built people will be required to connect. DLGAs will be responsible for identification and facilitation of Land acquisition for construction of Off- Grid Sanitation facilities, and management of Public toilets.

5.2.3 MoHCDGEC/MoW:

Policy and guidelines specific to FSM.

5.2.4 DLGAS under Regional Secretariat:

Roles and responsibilities of the DLGAs will include.

1. Creating awareness and mobilization of the community
2. Formulation of Municipal Facilitation Team comprised of specialists from Water, Health, Education, Community Development departments that will be tasked to assist consultants/Contractors/TO on implementation and operation of Off Grid Sanitation facilities
3. Coordination of the formation of Sanitation by-laws and regulations and thereafter enforcing them for sustainability of Off Grid Sanitation facilities through Legal unit, Health and Water Department
4. Identification and facilitation of land acquisition for construction of Off- Grid Sanitation facilities
5. Establish and capacitate the grievance redress mechanism (GRM) team
6. Monitor and evaluate project implementation, trouble shooting and responding to grievances raised by Grievance Redress Mechanisms (GRM) teams
7. Prepare and submit to WSS SC a monthly project implementation progress report

5.2.5 WSS Steering Committee

Given the multiplicity of institutions with varying roles, a WSS Steering Committee (SC) will be set up under the project to ensure coordination, synergy, and dovetailing. This SC will be newly set up or be adopted from some of the other projects (for example, Dar es Salaam Metropolitan Development Program [DMDP]) which may have similar steering mechanisms. This steering committee will be chaired by the Head of the Water Sector from RS and DAWASA will provide the secretary to WSS SC.

The RS will chair the Off Grid WSS Steering Committee, which will be comprised of representatives from the DAWASA, RS, WRBO, MOW, DLGAs i e Temeke, Ilala, Kinondoni, Kigamboni and Ubungo. The Steering Committee will be responsible for providing general oversight of the selection and approval of sub-projects for implementation by the Off-Grid Water Supply and Sanitation. The key responsibilities of the Off Grid WSS Steering Committee include

1. Reviewing overall Off Grid Sanitation implementation arrangements
2. Reviewing and approving Off Grid Sanitation sub-project operational guidelines
3. Reviewing and approving Off Grid Sanitation sub-project proposals

4 Reviewing overall Off Grid Sanitation progress and performance and providing guidance for improvements if needed

5 Conflict Resolution as per PIM.

5.2.6 Private Operator (PO):

The domestic private sector will be a major institution which will require to be involved for sanitation in low-income settlements. Their involvement will include approaches to empty faecal sludge from latrine pits and septic tanks. This could be through vacuum trucks, or in areas where access is difficult, small 'gulper' technologies.

Private Operator will form the basic unit for planning and eventually operating and managing the community-based sanitation schemes implemented under the off-grid sanitation. Off-grid sanitation POs, will be responsible for:

1. Possession of necessary registration as per requirements.
2. Undertaking training and development in operations and maintenance, financial management, monitoring and reporting.
3. Operating and maintaining the off-grid sanitation Scheme in a sustainable manner and providing equitable access to the service for everyone in the community
4. Maintaining adequate records and reporting on technical and financial performance to DLGAs and DAWASA.

5.2.7 NGOs/ Consultant:

NGO will be responsible for Capacity building, mobilization of community; media campaigns

DAWASA will contract with a reputable NGO active in the DAWASA service area as implementing agents for the off- grid Sanitation. The key roles of the off-grid sanitation NGO include:

1. Mobilising community groups to identify all sanitation needs and raising awareness within community groups about sanitation issues.
2. Assisting community members to obtain legal status if required and to set up the necessary bank accounts, for the community to qualify for funding from micro finance institution for toilet improvements.
3. Undertaking a needs analysis and preparing a subproject proposal design, budget, impact assessment, operational and maintenance of the sanitation facility
4. Preparing subproject proposals in association with the community members for consideration by the off-grid sanitation Steering Committee.
5. Sensitization and training of POs to operate, maintain, and manage off-grid sanitation systems.

6. Assisting DAWASA to develop suitable O&M guidelines/manuals and financial management guidelines for use by the POs in operating and managing the completed schemes.

5.3 SELECTION CRITERIA

DAWASA, in consultation with the five municipalities Ilala, Temeke, Kinondoni, Kigamboni and Ubungo will identify communities which are eligible for Off-Grid Sanitation sub-project under the WSSP II, in the eligible project area using the criteria mentioned in the PIM. The criteria will include the availability of land resources for the project activities as additional criteria.

Each of these criteria will be allocated a score, and the communities prioritized according to their total score. Keeping in mind the decisions of other interventions (for example, DMDP), WSSP-II will invest in those communities, which have the highest need.

The five municipalities will be the focal point for planning, prioritizing, and implementing the off-grid sanitation in their areas. A comprehensive master sanitation plan, based on empirical data and evidence, will form the basis for this planning and implementation.
The results of the ongoing efforts to map the city on the said indicators, will form the basis for the planning efforts by the stakeholders.

Summary of Institutional Roles for Sanitation Provision

MoH/MoW/PO-RALG	Policy and guidelines specific to FSM
MoW	Overall project coordination and implementation support
EWURA	Regulate performance of DAWASA
DAWASA	Facilitating the establishment and operation of treatment facilities (FSM and the like and facilitating the development of options for transportation and treatment of this waste, establishment and management of public toilets; regulating the services of transporters
Municipalities	Facilitating the upgrading of unimproved household toilets to improved ones and regulation of waste disposal; facilitating the availability of land for decentralized systems; provide licenses to private transport operators
Private sector	Development of infrastructure for transportation and treatment, operation
NGOs	Capacity building, mobilization of community; media campaigns

TBS	Setting up of standards for effluent disposal
NEMC	Regulation of disposal of effluent

6.0 EFFECTIVENESS AND DURATION OF MoU

6.1. This MoU will become effective on the date of signature by all parties.

6.2 This MoU shall remain in force until end Closure of the Second WSSP, or as shall be mutually agreed by the parties hereto.

7.0. AMENDMENTS

This MoU may be amended at any time with the written agreement of the parties hereto.

8.0 CONFLICT RESOLUTION

In the event of any differences arising with respect to the provisions of this MoU, the parties will endeavour to find a solution through dialogue and consultation.

9.0 INFORMATION AND NOTICES

9.1 The parties to this MoU will furnish to each other all such information in relation to the WSSP II as will be reasonably requested in a timely manner.

9.2 Any notices or documents given, made or sent by the parties in relation to this MoU will be in writing and will be deemed to have been duly given, made or sent to the organization or person to which it is addressed at the time of its delivery by hand, mail, or courier at its respective address, as listed in this MoU.

9.3. Any party hereto may, by written notice to the other parties, change the address to which any notice or request for the Participant so giving such notice will be addressed.

9.4 All communications and documents submitted to any party and by any part will be in the English language.

9.5 The following addresses are specified for purposes of Section 16.2.

9.6 FOR THE PARTIES

Permanent Secretary
Ministry of Water
Address
Tel:
E-mail:

Chief Executive Officer
DAWASA
Address
Tel:
E-mail:

Region Administrative Secretary
Dar es Salaam Region
Address:
Tel:
E-mail:

Municipal Director
Temeke Municipal Council
Address:
Tel:
E-mail:

Municipal Director
Ilala Municipal Council
Address:
Tel:
E-mail:

Municipal Director
Kinondoni Municipal Council
Address:
Tel:
E-mail:

Municipal Director
Ubungo Municipal Council
Address:
Tel:
E-mail:

Municipal Director
Kigamboni Municipal Council
Address:
Tel:
E-mail:

Signed by the duly authorized representatives of the parties as hereunder:

Permanent Secretary Ministry of Water	
	Date 18/12/2018
Regional Administrative Secretary Dar es Salaam	
	Date 12
CEO DAWASA	
	Date 23.01.2019
Municipal Director Temeke	
	Date
Municipal Director Ilala	
	Date
Municipal Director Ubungo	
	Date 01/2/2019
MD Kinondoni	
Municipal Director Kigamboni	
	Date 02

Appendix VI: Approved Architectural Drawings

THE UNITED REPUBLIC OF TANZANIA

DAR ES SALAAM WATER SUPPLY AND SANITATION AUTHORITY

SECOND WATER SECTOR SUPPORT PROJECT
PROJECT ID No: P150361

BIDDING DOCUMENT
FOR
CONSTRUCTION OF SIMPLIFIED SEWER SYSTEMS IN
DAR ES SALAAM (MWANANYAMALA - 2 LOTS)

Reference No.: TZ-DAWASA-302315-CW-NCB

VOLUME 3: DRAWINGS

DAR ES SALAAM WATER SUPPLY AND SANITATION AUTHORITY
DAWASA BUILDING, DUNGA/ MALANGA STREET
P.O. BOX 1573
DAR ES SALAAM, TANZANIA

JULY, 2022

GENERAL NOTES

NOTES

GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP TO COMPLY WITH THE CURRENT TANZANIAN SPECIFICATIONS AND STANDARDS.
2. ALL PIPES AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE "ACCEPTED PRODUCTS AND MATERIALS" LIST AS SPECIFIED IN THE SPECIFICATIONS.
3. PROPERTY CONNECTIONS SHALL BE LOCATED WITHIN THE PROPERTY AS SHOWN IN THE DRAWINGS.
4. WHERE PIPES ARE LAID IN FILL, THE FILLING SHALL BE CARRIED OUT IN LAYERS NOT EXCEEDING 300 mm (LOOSE) IN DEPTH AND SHALL BE COMPACTED UNTIL THE COMPACTION IS NOT LESS THAN 95% OF THE MATERIALS MAXIMUM COMPACTION WHEN TESTED IN ACCORDANCE WITH BS STANDARDS (MODIFIED COMPACTION). TESTING SHALL BE CARRIED OUT AFTER EACH ALTERNATE LAYER.
5. THE LOCATIONS OF UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE ONLY, AND IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATIONS AND DEPTHS WITH APPROPRIATE AGENCIES.
6. BEFORE COMMENCEMENT OF CONSTRUCTION ACTIVITY CONTRACTOR SHALL (I) NOTIFY ALL UTILITY AGENCIES (O) HAND-EXCAVATE TO LOCATE ALL UTILITIES AND ESTABLISH CONFLICTS/OBSTRUCTIONS. (A) OBTAIN CLEARANCE FROM THE CONCERNED AGENCIES AND SUBMIT TO THE ENGINEER, REGARDING SAFETY AND CARE/RELOCATION OF AFFECTED/ CONFLICTING UTILITY.
7. GROUND WATER LEVELS SHOULD BE CHECKED AND WATER FLOW CONTROLLED BY NECESSARY DRAINAGE SYSTEM (SURFACE PUMP OR WELL POINT AS NECESSARY).
8. FOR CONSTRUCTION OF A BRANCH ON A NEW LINE OR CONNECT TO AN EXISTING BRANCH, THE EXACT LOCATION AND CONDITION SHALL BE ESTABLISHED IN ADVANCE TOGETHER WITH THE REPRESENTATIVES OF THE UTILITY AUTHORITY.
9. FOR PIPELINE CONSTRUCTION OUTSIDE ROAD ADDITIONAL SOIL INVESTIGATION MAY BE REQUIRED TO CHECK FOR SOIL CONDITION AND SOIL IMPROVEMENT/REINFORCEMENT MAY BE DONE ACCORDINGLY
10. CONTRACTOR MUST ALWAYS DISPLAY GOOD SENSE OF RESPECT FOR THE PUBLIC/ RESIDENTS OF WORK NEIGHBORHOOD AND PROVIDE PRACTICAL MEASURES TO AVOID ANY CHANCE OF POSSIBLE BREACH OF PEACE OR HARMONY DUE TO CONTRACTOR'S WORK.
11. CONTRACTOR MUST COORDINATE HIS CONSTRUCTION ACTIVITIES WITH OTHER CONTRACTORS WORKING IN HIS WORK LIMITS.
12. PROPERTY/BLOCK CONNECTIONS HAVE BEEN DESIGNED TO CONTROL THE REQUIRED SERVICE AREA OF EACH BLOCK AT A MINIMUM GRADE OF 1:200 AND A MINIMUM DEPTH OF PROPERTY CONNECTION AT 0.4m. UNLESS OTHERWISE STATED. FOR HOUSE CONNECTION DETAILS REFER SSS-STD-302 & FOR JUNCTION DETAILS REFER SSS-STD-303.
13. COLLECTOR/MAIN SEWERS HAVE BEEN DESIGNED TO CONTROL THE REQUIRED SERVICE AREA OF EACH COLLECTOR NETWORK AT A MINIMUM GRADE OF 1:200 AND A MINIMUM DEPTH OF PROPERTY CONNECTION AT 0.8m. UNLESS OTHERWISE STATED.
14. EXISTING STRUCTURES TO BE MAINTAINED IN A STABLE CONDITION AND NO PART TO BE OVER-STRESSED DURING CONSTRUCTION. UNLESS OTHERWISE STATED.

DRAWING NOTES

1. ALL DIMENSIONS ARE GENERALLY IN MILLIMETRES (MM) AND ALL LEVELS ARE IN METRES (M). DRAWINGS ARE GENERALLY MADE TO SCALE BUT NORMALLY NO DIMENSION SHOULD BE SCALED FROM THE DRAWINGS, UNLESS SHOWN OTHERWISE.
2. THE TENDER/CONTRACT ENGINEERING DRAWINGS ARE PRODUCED IN A1 SIZE BUT REDUCED TO A3 SIZE FOR ATTACHING IN REPORTS AND PRESENTED AS BOUND SETS.
3. VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCING WORK ON SITE.
4. ALL SEWERS LATERALS SHALL BE A MINIMUM OF 100MM INSIDE DIAMETER AND MAXIMUM OF 150MM INSIDE DIAMETER. UNLESS OTHERWISE STATED.

SETTING OUT

1. THE SETTING OUT AND LEVELS OF ALL STRUCTURES/PIPES SHALL BE CHECKED AND APPROVED BY THE ENGINEER PRIOR TO THE START OF ANY CONSTRUCTION WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SET OUT THE WORKS CORRECTLY TO THE SATISFACTION OF THE ENGINEER.
2. EXCAVATION LINES ARE PROVISIONALLY SHOWN IN THE DRAWINGS. THE CONTRACTOR WILL BE REQUIRED TO CONFIRM ALL LEVELS TO MAINTAIN SLOPE OF PIPELINE AS INDICATED IN THE HYDRAULIC SETTING OUT DATA.
3. INVERT LEVEL OF THE UPSTREAM SEWER PIPE SHALL ALWAYS BE ABOVE THE INVERT LEVEL OF THE DOWNSTREAM SEWER PIPE.

INSPECTION CHAMBERS

1. ALL CONSTRUCTION JOINTS SHALL INCLUDE SEAL INSTALLED TO MANUFACTURER'S SPECIFICATIONS.
2. ENDS OF SEWER PIPES SHALL FINISH FLUSH WITH THE INSIDE FACE OF INSPECTION CHAMBER WALL.
3. INSPECTION CHAMBERS SHALL BE LOCATED CENTRALLY OVER SEWERS UNLESS SPECIFIED OTHERWISE.
4. INSPECTION CHAMBERS TOP SLABS AND COVERS SHALL BE PRECAST ELEMENTS

CONCRETE

1. THE FOLLOWING CONCRETE GRADES SHALL BE USED. THE REQUIRED 28-DAY CONCRETE CUBE STRENGTH IN N/SQ MM IS INDICATED AS THE FIRST NUMBER. THE SECOND NUMBER INDICATES THE MAXIMUM SIZE OF AGGREGATES.

   GRADE 15/20
   GRADE 25/19
   GRADE 30/20

   CONCRETE SHALL NOT BE PLACED BEFORE THE ENGINEER'S APPROVAL OF THE FORMWORK AND REINFORCEMENT HAS BEEN GIVEN.

2. THE CONCRETE SURFACE SHALL IMMEDIATELY AFTER THE COMPLETION OF CONCRETING BE PROTECTED FROM THE HARMFUL EFFECTS OF SU[illegible] WIND, RAIN, RUNNING WATER AND VIBR[illegible] SHALL BE KEPT DAMP FOR AT LEAST 7 [illegible]LLOWS:

Client	Consultant	Project	Designed	Drawn	Title
THE UNITED REPUBLIC OF TANZANIA DAWASA Chief Executive P. O. Box 1573 Dunga/Malanga Street, Mwananyamala Dar es Salaam, Tanzania	DOH ENGINEERING CO. LTD In Association with [illegible] and KWS Design & Development Co. Ltd DOHWA Engineering Co. Ltd	Provision of Facilitation and Technical Services for Creation of Enabling Framework Conditions, Designs ... of the Off-grid Sanitation Works in Dar es Salaam	Checked / Scale: NTS	Approved / Date: June, 2021	SIMPLIFIED SEWER SYSTEM STANDARD DETAILS DRAWINGS GENERAL NOTES Rev. 01 / Drawing No. SSSMG-Gen-001

VERTICAL FACES AND SOFFITS: THE FORMWORK SHALL BE LEFT IN PLACE AND KEPT DAMP BY SPRAYING WITH WATER REGULARLY.

UPPER EXPOSED SURFACE: THE EXPOSED CONCRETE SURFACE SHALL BE COVERED BY A 50-100 MM THICK LAYER OF SAND WHICH SHALL BE KEPT CONSTANTLY WET BY SPRAYING WITH WATER

REINFORCEMENTS

1. PLAIN ROUND HOT-ROLLED MILD STEEL BARS (GRADE 250) AND COLD WORKED DEFORMED STEEL BAR (GRADE 460) SHALL COMPLY WITH BS4449.1988.
2. ALL BARS SHALL BE BENT COLD AND NO BARS SHALL BE STRAIGHTENED OR RE-BENT AFTER INITIAL BENDING. NO SPLICE SHALL BE MADE ON THE REINFORCEMENT EXCEPT WHERE SHOWN ON THE DRAWING OR WHERE APPROVED BY THE ENGINEER.
3. STEP LADDER WILL BE OF Y20 BAR.

FORMWORK

1. ALL FORMWORKS SHALL BE APPROVED BY THE ENGINEER. FORMWORKS FOR ALL EXPOSED SURFACES SHALL BE PRODUCED WITH FAIR FINISHES TO THE CLASSES SPECIFIED IN THE SPECIFICATIONS.

SOIL

1. TOPSOIL AND SUBSOIL SHALL BE STOCKPILED SEPARATELY
2. BEFORE COMMENCEMENT OF CONSTRUCTION ACTIVITY CONTRACTOR SHALL (T) NOTIFY ALL UTILITY AGENCIES (O) HAND-EXCAVATE TO LOCATE ALL UTILITIES AND ESTABLISH CONFLICTS/OBSTRUCTIONS. (A) OBTAIN CLEARANCE FROM THE CONCERNED AGENCIES AND SUBMIT TO THE ENGINEER, REGARDING SAFETY AND CARE/RELOCATION OF AFFECTED/ CONFLICTING UTILITY.

ENVIRONMENTAL PROTECTION

1. ALL ENVIRONMENT PROTECTION MEASURES SHOULD BE IMPLEMENTED PRIOR TO ANY CONSTRUCTION WORK, INCLUDING CLEARING, COMMENCING.

SAFETY

1. THE CONSTRUCTION OF THE WORKS SHALL COMPLY WITH ALL SAFETY REQUIREMENT AS ALSO GUIDED BY OSHA REGULATIONS.
2. THE CONTRACTOR SHALL DEVELOP CONSTRUCTION AND INSTALLATION SAFE WORK METHOD STATEMENTS TO ELIMINATE AND MINIMIZE WORKS INSTALLATION RISKS. THE SAFE METHOD STATEMENT SHALL BE REVIEWED AND APPROVED BY THE ENGINEER.
3. EXCAVATED TRENCHES AND WORK AREAS NEAR RESIDENTIAL AREAS OR ROADS MUST BE SHORED UP AGAINST CAVING IN AND PROVIDED WITH SAFETY BARRIERS AND WARNING SIGNS, ALSO NECESSARY FLASHING LIGHTS DURING THE NIGHT TIME.
4. CONTRACTOR MUST TAKE ALL NECESSARY PRECAUTIONS AND MEASURES TO ENSURE SAFETY OF ALL UNDERGROUND UTILITIES. ACCIDENTAL DAMAGE IF ANY, MUST BE PROMPTLY REPORTED TO ALL CONCERNED AND REPAIRED/REINSTATEMENT DONE THE SOONEST POSSIBLE, TO THE SATISFACTION OF THE ENGINEER AND OTHER PARTIES CONCERNED.

Client
THE UNITED REPUBLIC OF TANZANIA
D[illegible] Chief Executive
P [illegible] 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant
[illegible] in Association with [illegible] and WWS Design & Development Co. Ltd
DOHWA Engineering Co., Ltd [illegible]

Project
[illegible] of Feasibility and Technical Services for [illegible] of Essential Framework Conditions, Preparation of Detailed Bidding Documents, and Construction [illegible] the Citywide Sanitation Works in Dar es Salaam

No.	Date	Description
[illegible]		

Designed [illegible] Drawn [illegible]
Checked [illegible] Approved [illegible]
Scale: NTS
Date: June, 2021

Title: SIMPLIFIED SEWER SYSTEM STANDARD DETAILS DRAWINGS
GENERAL NOTES

Sheet No. 01
Drawing No. SSSMC-GEN-Std-1

LIST OF DRAWINGS

SHEET

NAME: CONSTRUCTION OF LIFIED

CATEGORY:	DESCRIPTION			MM YY 2021
DWG NO.	DRAWING TITLE	SCALE	SIZE	REV
	SITE PLANS FOR KINONDONI MUNICIPAL COUNCIL SIMPLIFIED SEWERAGE SYSTEMS			
SSS-KMC-GEN-001	SIMPLIFIED SEWERAGE SYSTEMS - GENERAL LAYOUT PLAN	AS SHOWN	A3	*
SSS-KMC-101	SIMPLIFIED SEWERAGE SYSTEM FOR MWANANYAMALA BONDENI IN KINONDONI MUNICIPAL COUNCIL (2 LOTS) - KEY LAYOUT PLAN	AS SHOWN	A3	1
SSS-KMC-101-01	SIMPLIFIED SEWERAGE SYSTEM FOR MWANANYAMALA BONDENI IN KINONDONI MUNICIPAL COUNCIL - DETAILED LAYOUT PLAN 1 OF 11	AS SHOWN	A3	1
SSS-KMC-101-02	SIMPLIFIED SEWERAGE SYSTEM FOR MWANANYAMALA BONDENI IN KINONDONI MUNICIPAL COUNCIL - DETAILED LAYOUT PLAN 2 OF 11	AS SHOWN	A3	1
SSS-KMC-101-03	SIMPLIFIED SEWERAGE SYSTEM FOR MWANANYAMALA BONDENI IN KINONDONI MUNICIPAL COUNCIL - DETAILED LAYOUT PLAN 3 OF 11	AS SHOWN	A3	1
SSS-KMC-101-04	SIMPLIFIED SEWERAGE SYSTEM FOR MWANANYAMALA BONDENI IN KINONDONI MUNICIPAL COUNCIL - DETAILED LAYOUT PLAN 4 OF 11	AS SHOWN	A3	1
SSS-KMC-101-05	SIMPLIFIED SEWERAGE SYSTEM FOR MWANANYAMALA BONDENI IN KINONDONI MUNICIPAL COUNCIL - DETAILED LAYOUT PLAN 5 OF 11	AS SHOWN	A3	1
SSS-KMC-101-06	SIMPLIFIED SEWERAGE SYSTEM FOR MWANANYAMALA BONDENI IN KINONDONI MUNICIPAL COUNCIL - DETAILED LAYOUT PLAN 6 OF 11	AS SHOWN	A3	1
SSS-KMC-101-07	SIMPLIFIED SEWERAGE SYSTEM FOR MWANANYAMALA BONDENI IN KINONDONI MUNICIPAL COUNCIL - DETAILED LAYOUT PLAN 7 OF 11	AS SHOWN	A3	1
SSS-KMC-101-08	SIMPLIFIED SEWERAGE SYSTEM FOR MWANANYAMALA BONDENI IN KINONDONI MUNICIPAL COUNCIL - DETAILED LAYOUT PLAN 8 OF 11	AS SHOWN	A3	1
SSS-KMC-101-09	SIMPLIFIED SEWERAGE SYSTEM FOR MWANANYAMALA BONDENI IN KINONDONI MUNICIPAL COUNCIL - DETAILED LAYOUT PLAN 9 OF 11	AS SHOWN	A3	1
SSS-KMC-101-10	SIMPLIFIED SEWERAGE SYSTEM FOR MWANANYAMALA BONDENI IN KINONDONI MUNICIPAL COUNCIL - DETAILED LAYOUT PLAN 10 OF 11	AS SHOWN	A3	1
SSS-KMC-101-11	SIMPLIFIED SEWERAGE SYSTEM FOR MWANANYAMALA BONDENI IN KINONDONI MUNICIPAL COUNCIL - DETAILED LAYOUT PLAN 11 OF 11	AS SHOWN	A3	1
	PLAN AND PROFILE DRAWINGS FOR SIMPLIFIED SEWERAGE SYSTEMS IN KINONDONI MUNICIPAL COUNCIL			
SSS-KMC-PP 212	PLAN AND PROFILE DRAWINGS FOR MWANANYAMALA BONDENI SIMPLIFIED SEWERAGE SYSTEMS LINE No 01 - CH 0+000 to 0+600	AS SHOWN	A3	1
SSS-KMC-PP 213	PLAN AND PROFILE DRAWINGS FOR MWANANYAMALA BONDENI SIMPLIFIED SEWERAGE SYSTEMS LINE No 02 - CH 0+000 to 0+202	AS SHOWN	A3	1
SSS-KMC-PP 214	PLAN AND PROFILE DRAWINGS FOR MWANANYAMALA BONDENI SIMPLIFIED SEWERAGE SYSTEMS LINE No 03 - CH 0+000 to 0+365	AS SHOWN	A3	1
SSS-KMC-PP 215	PLAN AND PROFILE DRAWINGS FOR MWANANYAMALA BONDENI SIMPLIFIED SEWERAGE SYSTEMS LINE No 04 - CH 0+000 to 0+261	AS SHOWN	A3	1
SSS-KMC-PP 216	PLAN AND PROFILE DRAWINGS FOR MWANANYAMALA BONDENI SIMPLIFIED SEWERAGE SYSTEMS LINE No 07 - CH 0+000 to 0+249.86	AS SHOWN	A3	1
SSS-KMC-PP 217	PLAN AND PROFILE DRAWINGS FOR MWANANYAMALA BONDENI SIMPLIFIED SEWERAGE SYSTEMS LINE No 08 - CH 0+000 to 0+110.86	AS SHOWN	A3	1
	STANDARD DETAIL DRAWINGS FOR ALL SIMPLIFIED SEWERAGE SYSTEMS			
SSS-STD-301	TYPICAL DRAWINGS FOR SIMPLIFIED SEWERAGE SYSTEM FOR ALL SITES - TYPICAL CROSS SECTIONS AND TRENCH DETAILS	AS SHOWN	A3	1
SSS-STD-302	FOR ALL SITES - INSPECTION CHAMBER 600MM x 600MM SIZE (TYPE II)	AS SHOWN	A3	1
SSS-STD-303	TYPICAL DRAWINGS FOR SIMPLIFIED SEWERAGE SYSTEM FOR ALL SITES - INSPECTION CHAMBER 400MM x 400MM SIZE (TYPE I)	AS SHOWN	A3	1
SSS-STD-304	TYPICAL DRAWINGS FOR SIMPLIFIED SEWERAGE SYSTEM FOR ALL SITES - INSPECTION CHAMBER 600MM x 600MM SIZE (TYPE II)	AS SHOWN	A3	1
SSS-STD-305-01	TYPICAL DRAWINGS FOR SIMPLIFIED SEWERAGE SYSTEM FOR ALL SITES - LATRINE CONNECTION	AS SHOWN	A3	1
SSS-STD-305-02	TYPICAL DRAWINGS FOR SIMPLIFIED SEWERAGE SYSTEM FOR ALL SITES - LATRINE CONNECTION	AS SHOWN	A3	1
SSS-STD-306-01	TYPICAL DRAWINGS FOR SIMPLIFIED SEWERAGE SYSTEM FOR ALL SITES - LIST OF HOUSES	AS SHOWN	A3	1
SSS-STD-306-02	TYPICAL DRAWINGS FOR SIMPLIFIED SEWERAGE SYSTEM FOR ALL SITES - LIST OF HOUSES	AS SHOWN	A3	1
SSS-STD-306-03	TYPICAL DRAWINGS FOR SIMPLIFIED SEWERAGE SYSTEM FOR ALL SITES - LIST OF HOUSES	AS SHOWN	A3	1
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	TREATMENT PLANT FOR MWANANYAMALA BONDENI SIMPLIFIED SEWERAGE NETWORK			
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MWN-WTP-101-02	& GENERAL ARRANGEMENT	AS SHOWN	A3	1
MWN-WTP-101-03	WASTEWATER TREATMENT PLANT - SCHEMATIC DIAGRAM	AS SHOWN	A3	1
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MWN-WTP-101-05	WASTEWATER TREATMENT PLANT - ANAEROBIC BAFFLE REACTOR SECTION GENERAL ARRANGEMENT	AS SHOWN	A3	1
MWN-WTP-101-06	WASTEWATER TREATMENT PLANT - ANAEROBIC BAFFLE REACTOR WALLS GENERAL ARRANGEMENT	AS SHOWN	A3	1
MWN-WTP-101-07	WASTEWATER TREATMENT PLANT - ANAEROBIC BAFFLE REACTOR SLABS AND FOUNDATION GENERAL DETAILS	AS SHOWN	A3	1
MWN-WTP-101-08	WASTEWATER TREATMENT PLANT - ANAEROBIC BAFFLE REACTOR RC SECTION DETAILS	AS SHOWN	A3	1
MWN-WTP-101-09	WASTEWATER TREATMENT PLANT - ANAEROBIC BAFFLE REACTOR FOUNDATION RC SECTION DETAILS	AS SHOWN	A3	1
MWN-WTP-101-10	WASTEWATER TREATMENT PLANT - ANAEROBIC BAFFLE REACTOR - TOP SLAB BOTTOM REINFORCEMENTS DETAILS	AS SHOWN	A3	1
MWN-WTP-101-11	R - TOP SLAB TOP REINFORCEMENTS DETAILS	AS SHOWN	A3	1
MWN-WTP-101-12	WASTEWATER TREATMENT PLANT - ANAEROBIC BAFFLE REACTOR - REINFORCEMENTS BAR BENDING SCHEDULES 1 OF 2	AS SHOWN	A3	1

SHEET

PROJE[illegible] SYSTEMS WORKS IN DAR ES [illegible] 2

SIMPLIFIED SEWERAGE SYSTEMS - DRAWINGS LIST

CATEGORY:	DESCRIPTION			DD 31 / MM 08 / YY 2021
DWG NO	**DRAWING TITLE**	**SCALE**	**SIZE**	**REV**
WWN-WTP-101-13	WASTEWATER TREATMENT PLANT - ANAEROBIC BAFFLE REACTOR - REINFORCEMENTS BAR BENDING SCHEDULES 2 OF 2	AS SHOWN	A3	1

DRAWING INFORMATION

For Tender	T	Approved Drawings	A
For Construction	C	Concept Design	CD
Draft Drawings	D	Survey Drawing	S
Re-Issued	R		

Issued on 31-08-2021

NUMBER OF DRAWINGS ISSUED

Contractor	
Client	42
Others	

GENERAL SITE LAYOUTS

GENERAL LAYOUT PLAN

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malonga Street, Mwananyamala
Dar es Salaam, Tanzania

HWA

SIMPLIFIED SEWER SYSTEMS

GENERAL LAYOUT PLAN

KEY.

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street; Mwananyamala
Dar es Salaam, Tanzania

ISO 9001:2015 Certified

DOHWA

Provision of Consultancy and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents and Construction of the Citywide Sanitation Works in Dar es Salaam

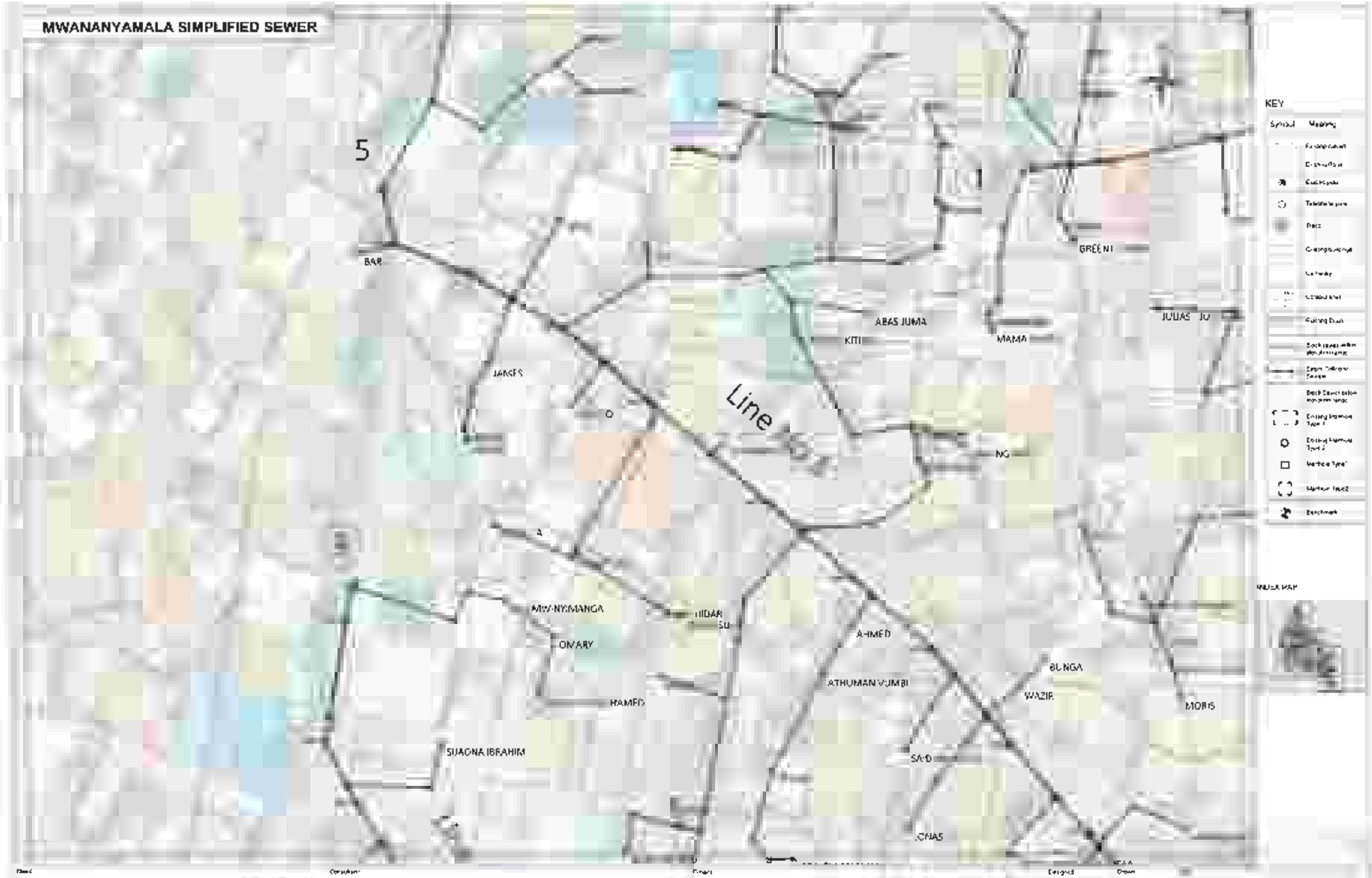
MWANANYAMALA - BONDENI SIMPLIFIED SEWERAGE SYSTEM

KEY SITE LAYOUT PLAN

Scale	Date
1:1250	June 2021

01

MWANANYAMALA SIMPLIFIED SEWER



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DAWASA Chief Executive
P. O. Box 1573
Dunga/Mlanga Street, Mwananyamala
Dar es Salaam, Tanzania

DOHWA Engineering Co., Ltd

Project
Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents, and Construction Supervision of the Off-grid Sanitation Water in Dar es Salaam

Designed
Drawn
Checked
Approved
Scale
1:1000
Date
JUNE 2021

MWANANYAMALA - KINONDONI
SIMPLIFIED SEWERAGE SYSTEM
DETAILED LAYOUT PLAN 1 OF 11

Sheet No.
01
Drawing No.
SSS-KND-DLP-01

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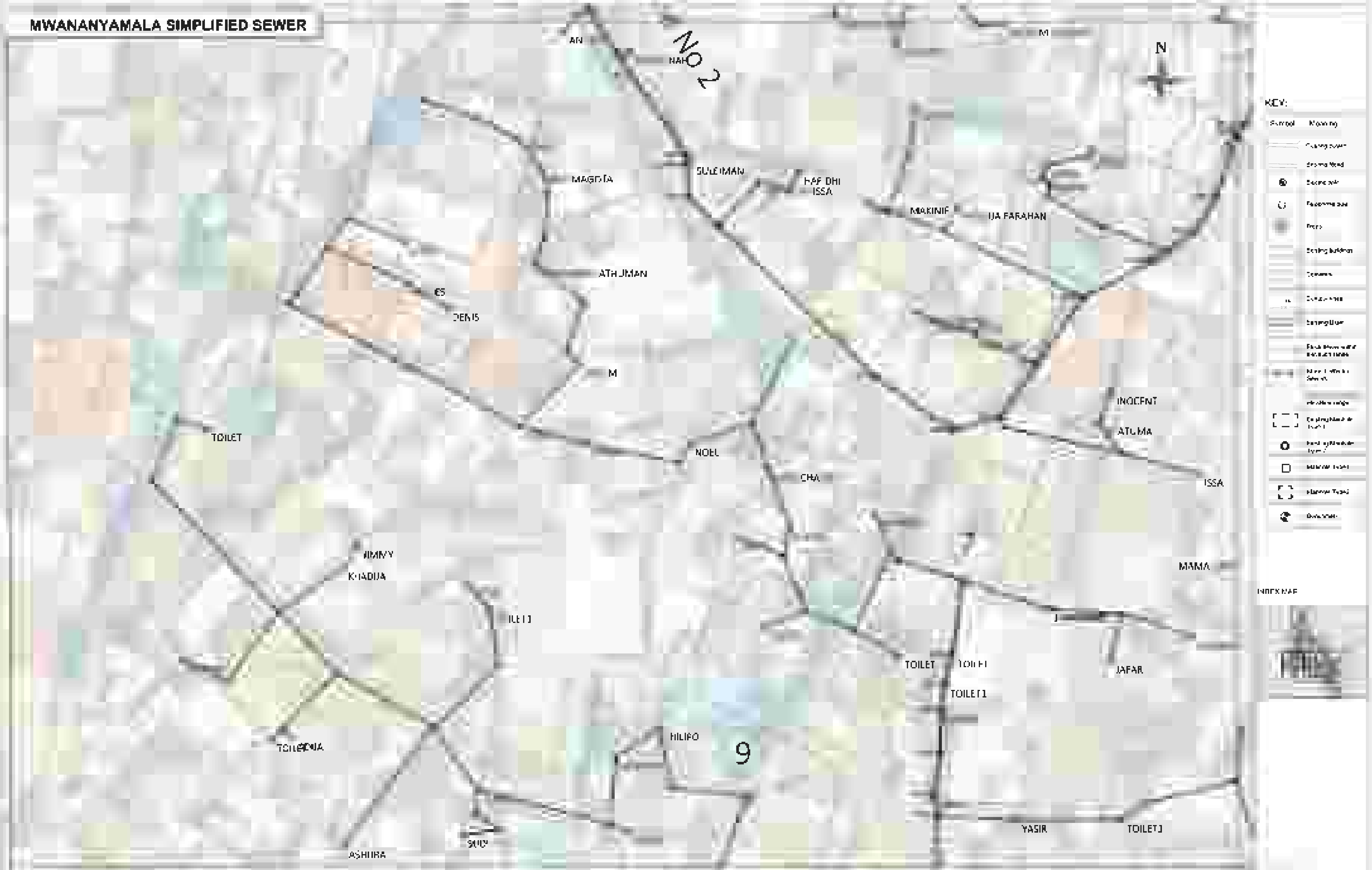
MWANANYAMALA - BONDENI SIMPLIFIED SEWERAGE SYSTEM

DETAILED LAYOUT PLANS OF 11

1:1000

June, 2021

01



T[redacted]BLIC OF TANZANIA
D[redacted]itve
P[redacted]
D[redacted], Mwananyamala
Dar es Salaam, Tanzania

DOHWA Engineering Co. Ltd

Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Designs of the Off-grid Sanitation Works in Dar es salaam

MWANANYAMALA - BONDENI SIMPLIFIED SEWERAGE SYSTEM
DETAILED LAYOUT 3 OF 11

1:1000 June 2021

MWANANYAMALA SIMPLIFIED SEWER

THE [illegible] BLIC OF TANZANIA
D[illegible]ive
P[illegible]
D[illegible], Mwananyamala
Dar es Salaam, Tanzania

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Scale 1:1000
Date June, 2021
Rev. No. 01

MWANANYAMALA - RONDENI SIMPLIFIED SEWERAGE SYSTEM
DETAILED LAYOUT PLAN 4 OF 11

MWANANYAMALA SIMPLIFIED SEWER

N

KEY.

JAMILA

HALIMA MASEWETA

SHARIFA

MWAJUMA

DGILI

MOAZA

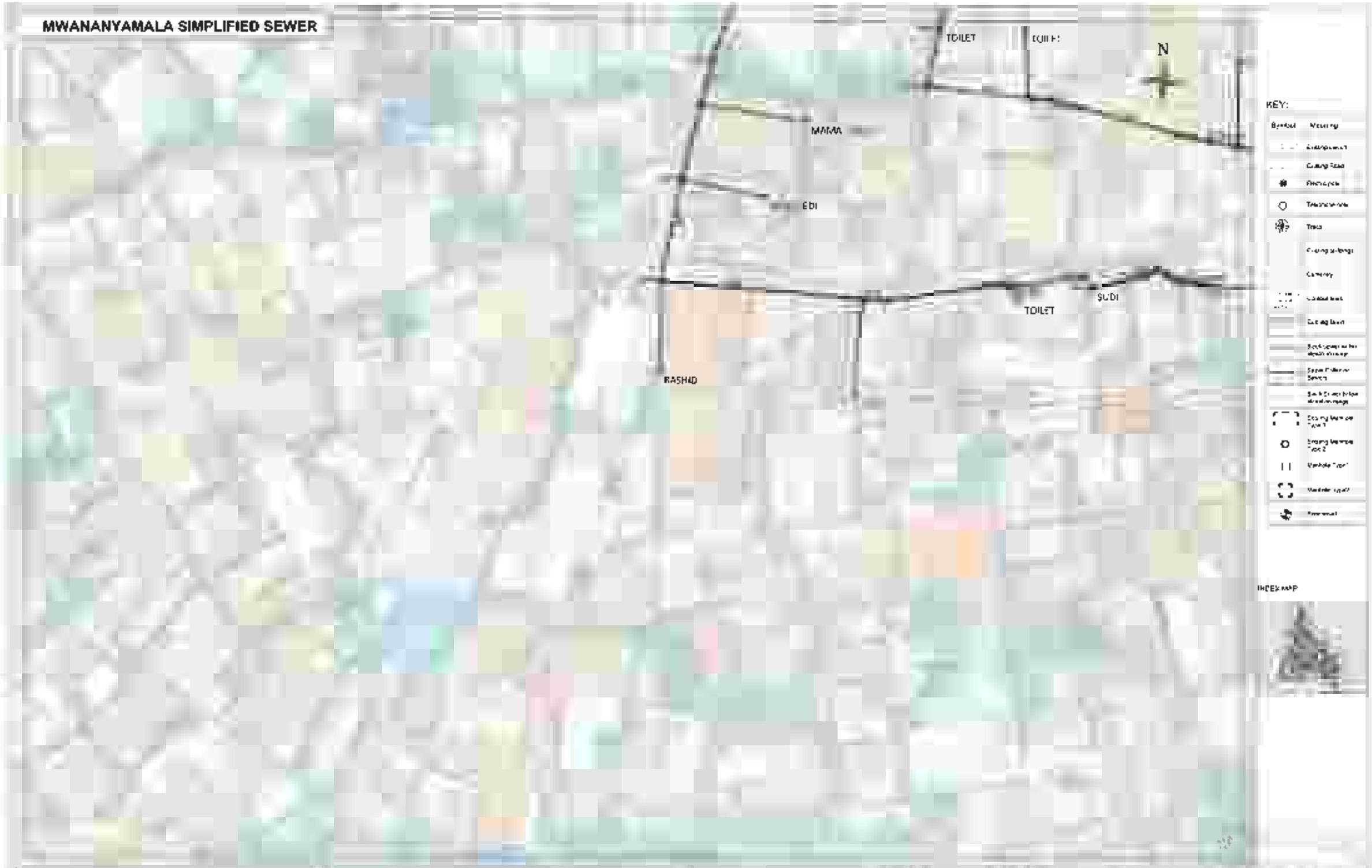
INDEX MAP

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

MWANANYAMALA - BONDEN
SIMPLIFIED SEWERAGE SYSTEM
DETAILED LAYOUT PLAN 5 OF 11

1:1000 June, 2021 01

MWANANYAMALA SIMPLIFIED SEWER



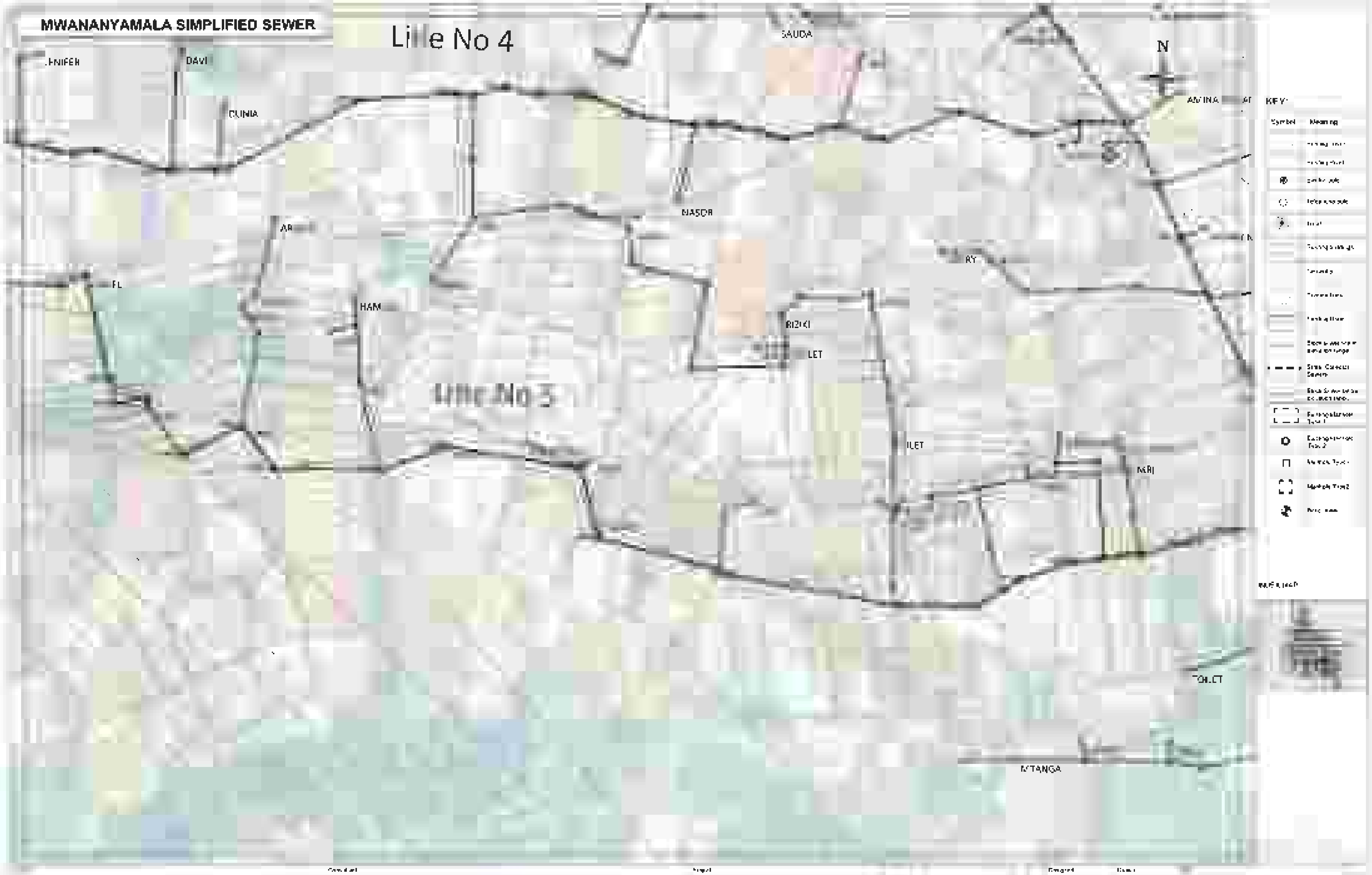
Client
THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant

Project
Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Existing, Preparation of Detailed Engineering Designs and Bidding Documents and Construction of the Off-grid Sanitation Works in Dar es Salaam

Designed | Drawn | Title

Scale 1:1000 | June, 2021 | 01



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DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant

DOHWA

In Association

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Provision of Equipment and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents, and Construction Supervision of the Oil and Sanitation Works in Dar es Salaam

Designed | Drawn
Checked | Approved
Scale | Date
1:1000 | June 2021

MWANANYAMALA - BONDENI SIMPLIFIED SEWERAGE SYSTEM
DETAILED LAYOUT PLAN 7 OF 11

01

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DAWASA Chief Executive
P. O. Box 1573
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Dar es Salaam, Tanzania

MWANANYAMALA - BONDENI SIMPLIFIED SEWERAGE SYSTEM

DETAILED LAYOUT PLAN 8 OF 11

June 2021

01

MWANANYAMALA SIMPLIFIED SEWER

ABEID

2

FLOODS WATER
13.102M

WATER LEVEL

CH

KEY:

To Treatment Units

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DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

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Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents, and Construction Supervision of the Off-grid Sanitation Works in Dar es Salaam

MWANANYAMALA - BONDENI
SIMPLIFIED SEWERAGE SYSTEM

1:5000

June, 202

D1

MWANANYAMALA SIMPLIFIED SEWER

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DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant
DOH Engineering Co., Ltd

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Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents, and Construction Supervision of the Off-grid Sanitation Works in Dar es Salaam

Rev.	Date	Description	Drawn

Designed | Drawn
Checked | Approved
Scale 1:1000 | Date June 2021

MWANANYAMALA - BONDENI SIMPLIFIED SEWERAGE SYSTEM
DETAILED LAYOUT PLAN 9 OF 11

Rev. No. 01 | Drawing No.

MWANANYAMALA SIMPLIFIED SEWER

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Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Prepared
In association with
and

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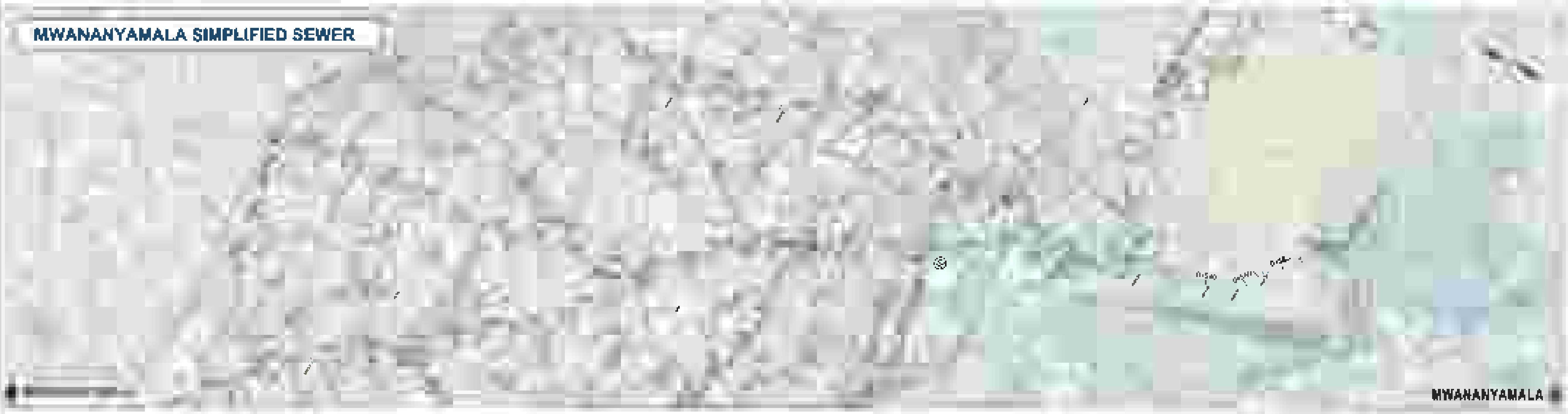
Provision of Facilitation and Technical Services for
Creation of Enabling Framework Conditions
Preparation of Detailed Engineering Designs
Bidding Documents and Construction
Off-grid Sanitation Works in Dar es Salaam

MWANANYAMALA - BONDENI
SIMPLIFIED SEWERAGE SYSTEM
DETAILED LAYOUT PLAN 9 OF 11

Scale 1:1000
Date June, 2021
01

PLAN AND PROFILE

MWANANYAMALA SIMPLIFIED SEWER



KEY

Symbol	Meaning
	Existing Sewer Pipe
	Main sewer
	Collector Sewer
	Electric pole
	Telephone pole
	Tree
	Existing buildings
	Contour lines
	Existing Road
	Manhole
	Manhole
	Manhole Type 1
	Manhole Type 2

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DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant:
DOH ENGINEERING CO. LTD
In Association with
and

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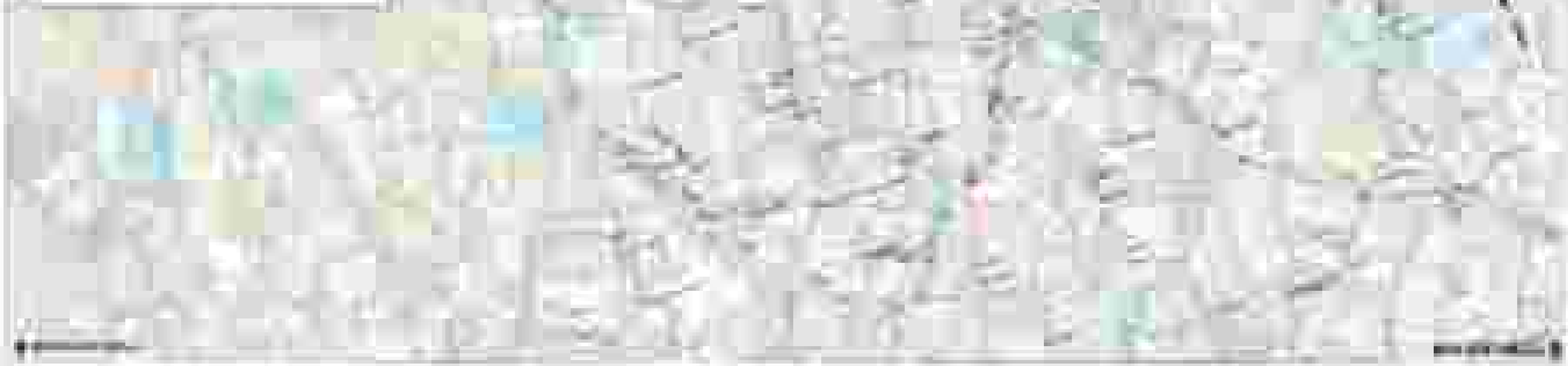
Designed | Drawn
Checked | Approved
Scale: 1:1000 | Date: June, 2020

Title:
MWANANYAMALA - BONDENI
SIMPLIFIED SEWER SYSTEM
PLAN AND PROFILE FOR LINE NO 01

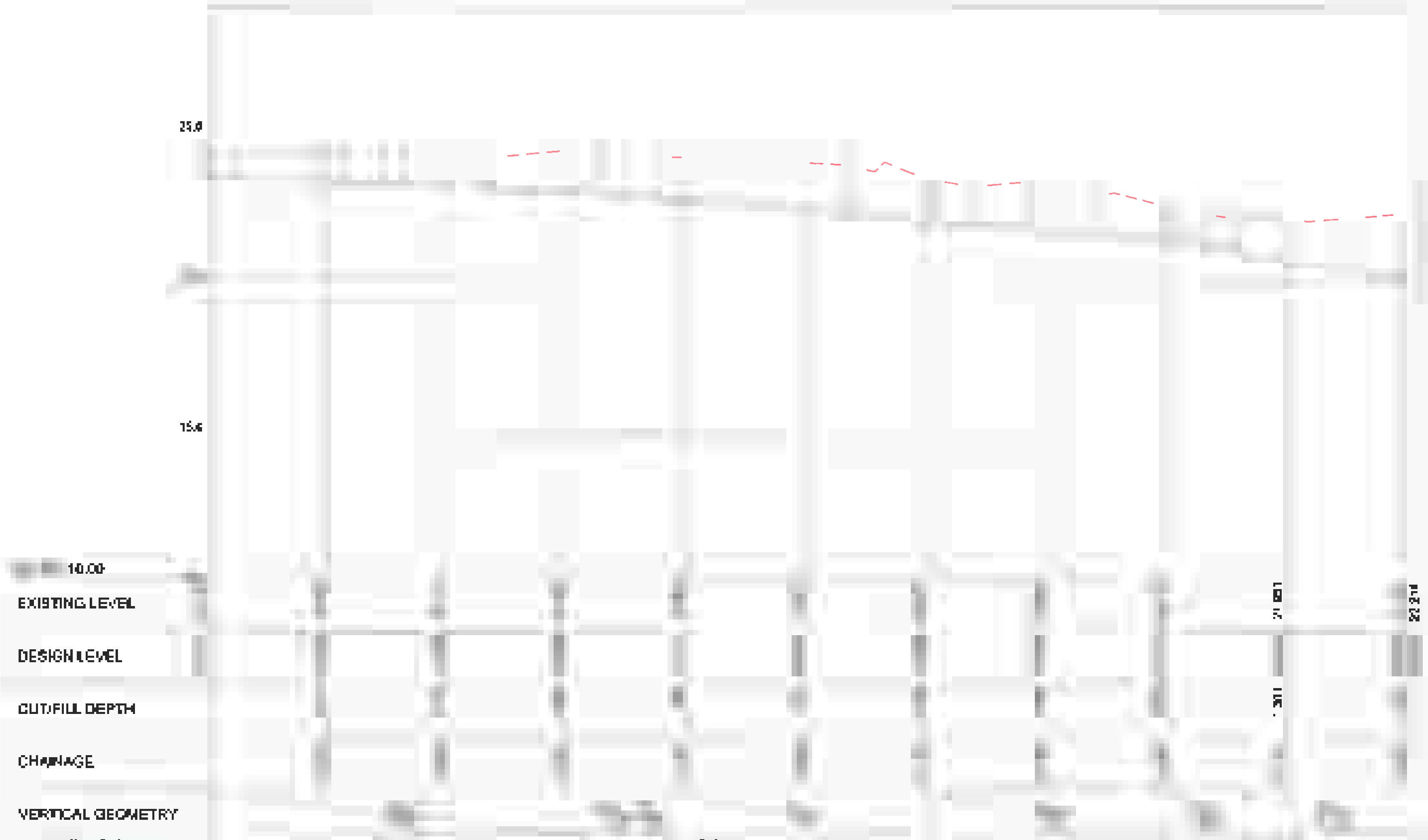
Drawing No.: 01 | SSS-MWC-PP 212

MWANANYAMALA SIMPLIFIED SEWER



KEY:

Symbol	Meaning
	Existing Pipe
	[illegible] Street
	Electric pole
	Telephone pole
	Tree
	Existing buildings
	Contour lines
	Existing Drain
	Manhole
	Manhole
	Manhole Type1
	Manhole Type2



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THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant

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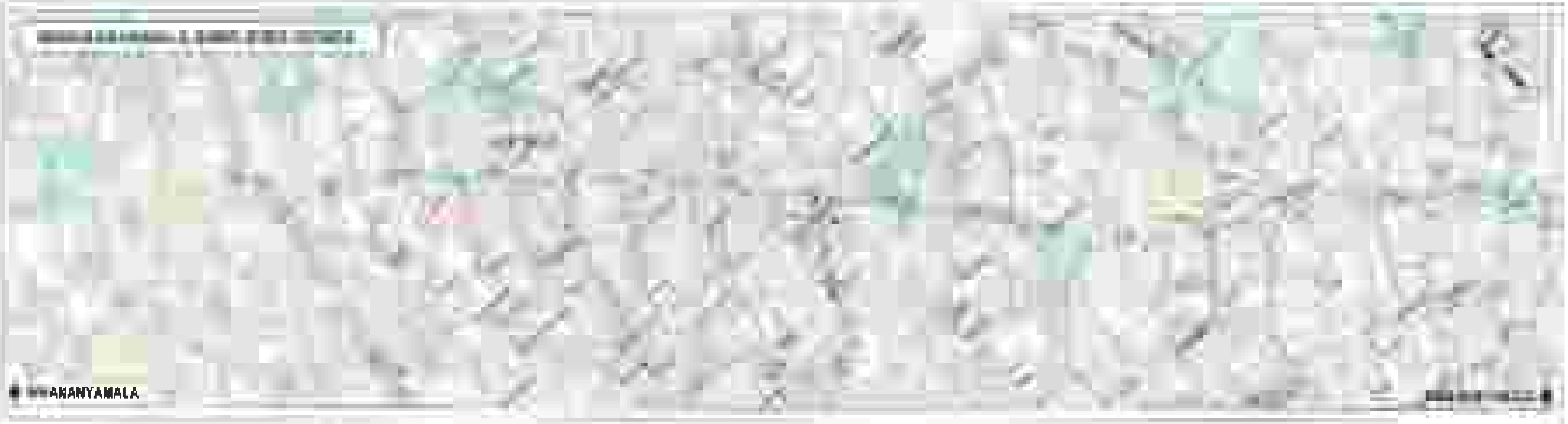
Scale 1:500 | June, 2021

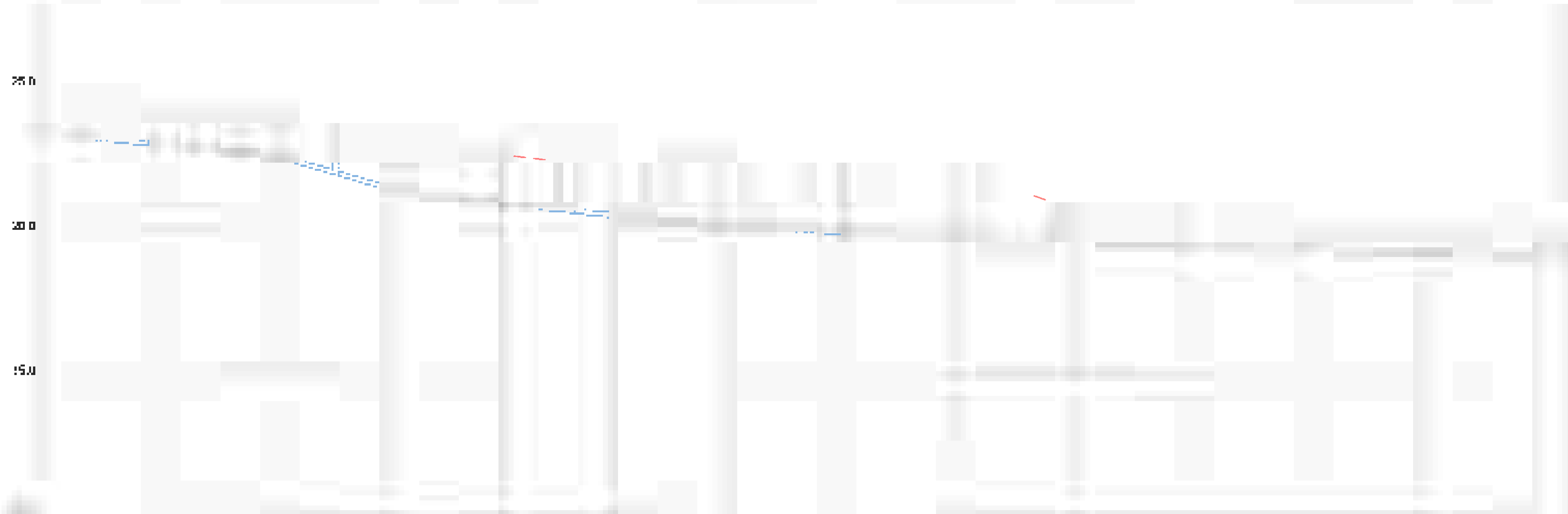
SIMPLIFIED SEWERAGE SYSTEM
PLAN AND PROFILE FOR LINE 02

Rev. No. 01



KEY:

Symbol	Meaning
	Existing DAWASA Pipe
	Feeder Sewer
	Collector Sewer
	Electric pole
	Telephone pole
	Trees
	Existing buildings
	Contour lines
	Existing Drain
	Existing Manhole Type 1
	Existing Manhole Type 2
	Manhole Type1
	Manhole Type2



EXISTING LEVEL	24.935	24.140	23.839	23.170	22.522	22.321	22.456	22.226	22.093	20.776	20.287	19.966	19.756	20.303	19.807
DESIGN LEVEL	23.222	22.891	22.444	21.390	20.447	20.431	20.110	19.851	19.887	19.535	19.413	19.304	19.196	19.088	19.054
OUT/FILL DEPTH		1.269	1.406	1.774	1.880	1.560	2.346	2.385	2.415	1.242	0.888	0.591	0.560	0.216	
CHAINAGE		0+030	0+060	0+090	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				
VERTICAL GEOMETRY															

Client

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DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant

DOHWA Engineering Co., Ltd | LUPTAN Consults Ltd | WMS Design &Development Co. Ltd

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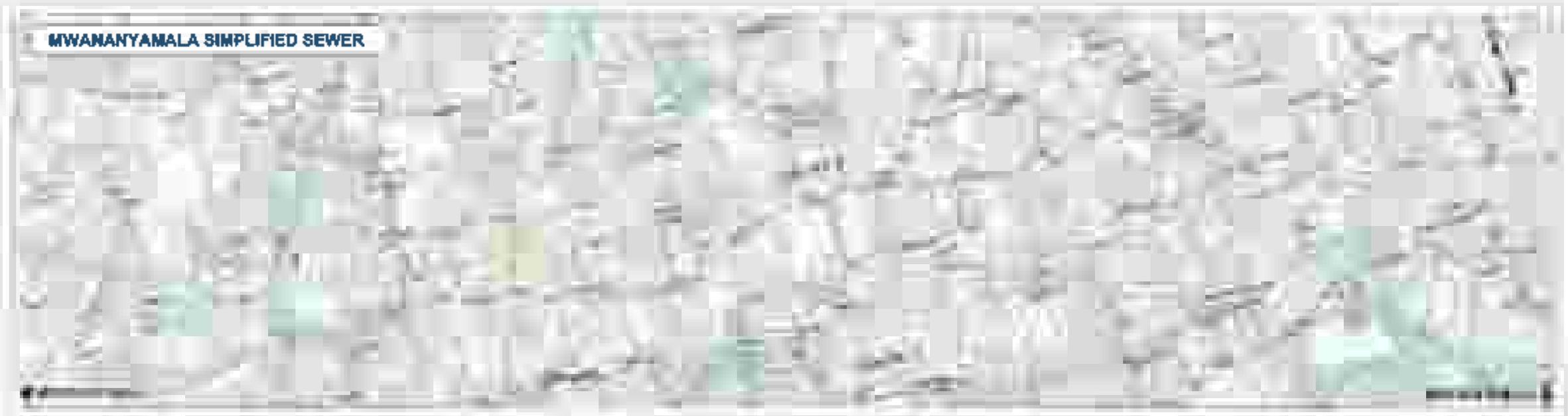
Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Designs of the Off-grid Sanitation Works in Dar es salaam

Designed | Drawn | Scale 1:500 | June, 2021

MWANANYAMALA BONDENI
SIMPLIFIED SEWERAGE SYSTEM
PLAN AND PROFILE FOR LINE NO 03

SSS-MWC-PP 214



MWANANYAMALA SIMPLIFIED SEWER

KEY:

Symbol	Meaning
—	Existing Pipe
—	Block Sewer
—	Collector Sewer
●	Electric pole
○	Telephone pole
✳	Trees
▨	Existing buildings
	Contour lines
	Existing Drain
	Manhole
○	Manhole
☐	Manhole Type1
☐	Manhole Type2

Client

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant

Dolsen Engineering Co. Ltd

In Association with

JUPTAN Consult Ltd

and

WWS Design & Development Co. Ltd

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Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents, and Construction Supervision of the Off grid Sanitation Works in Dar es salaam

Rev. Date Description

Designed Drawn

Checked Approved

Scale Date

1:500 June, 2021

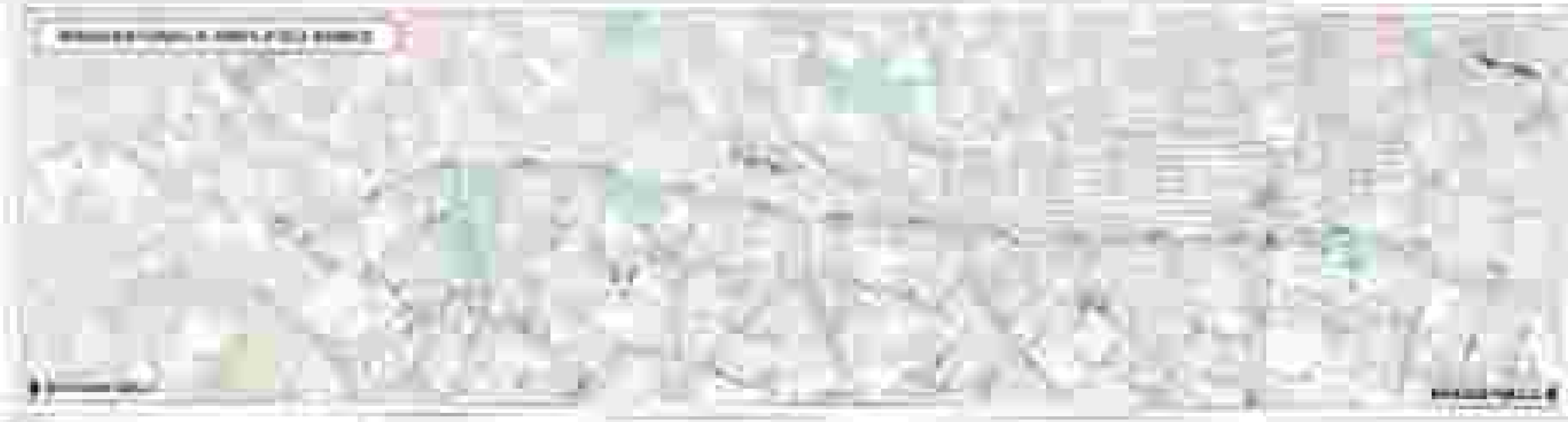
SIMPLIFIED SEWERAGE SYSTEM

PLAN AND PROFILE FOR LINE NO 04

Rev. No.

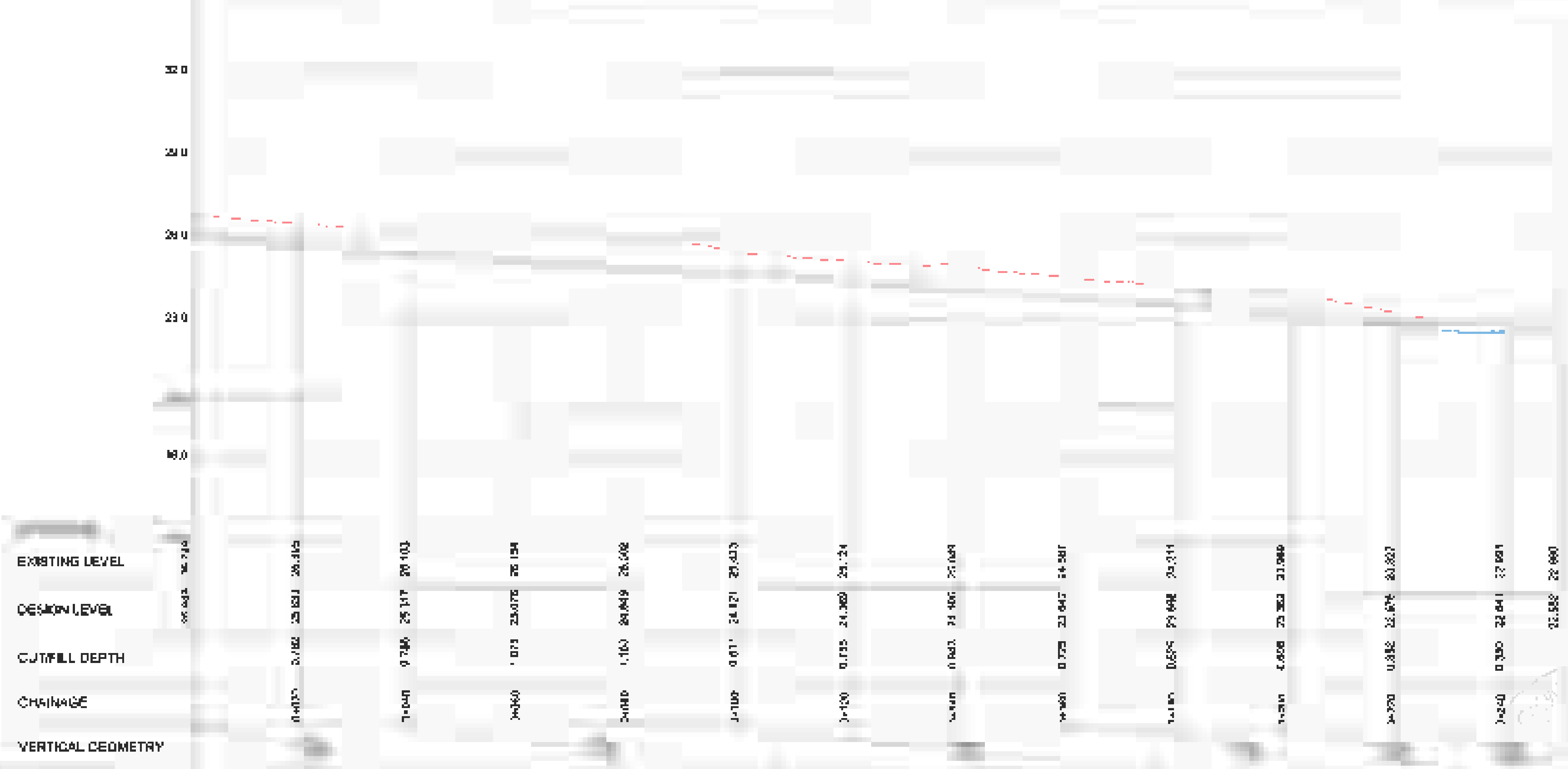
01

SSS-MNC-PP-215



KEY:

Symbol	Meaning
	Existing Sewer Pipe
	Road/drains
	Collector Sewer
	Electric pole
	Telephone pole
	Trees
	Existing buildings
	Contour lines
	Existing plots
	Existing Manhole Type 1
	Existing Manhole Type 2
	Manhole Type 1
	Manhole Type 2



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DAWASA Chief Executive
P. O. Box 1573
Dunga/Malenga Street, Mwananyamala
Dar es Salaam, Tanzania

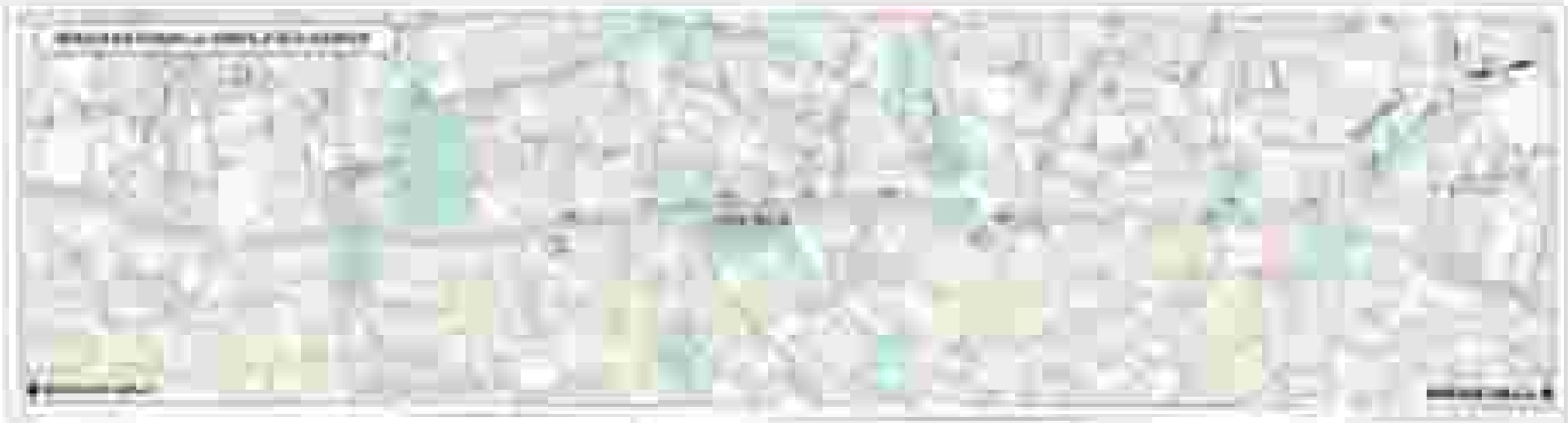
Project
Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Designs of the Off-grid Sanitation Works in Dar es Salaam

SYSTEM
PLAN AND PROFILE FOR LINE NO C7

Scale 1:500

May, 2021

00



KEY:

Symbol	Meaning
	Existing Drainage Pipe
	Block Sewer
	Common Sewer
	Electric pole
	Telephone pole
	Tree
	Existing Buildings
	Contour lines
	Existing Drain
	Existing Manhole Type 1
	Existing Manhole Type 2
	Manhole Type1
	Manhole Type2

82.0

29.3

33.3

18.3

EXISTING LEVEL

DESIGN LEVEL

CUT/FILL DEPTH

CHAINAGE

VERTICAL GEOMETRY

Client:

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DAWASA Chief Executive
P. O. Box 1573
Ounga/Malanga Street, Mwananyamala
Dar es Salaam. Tanzania

Consultant:

DOHWA Engineering Co., Ltd

LUPIAN Consults Ltd

WWS Design &Development Co. Ltd

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Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents, and Construction Supervision of the Orig'd Sanitation Works in Dar es Salaam

Rev	Date	Description

Designed: Drawn:

Checked: Approved:

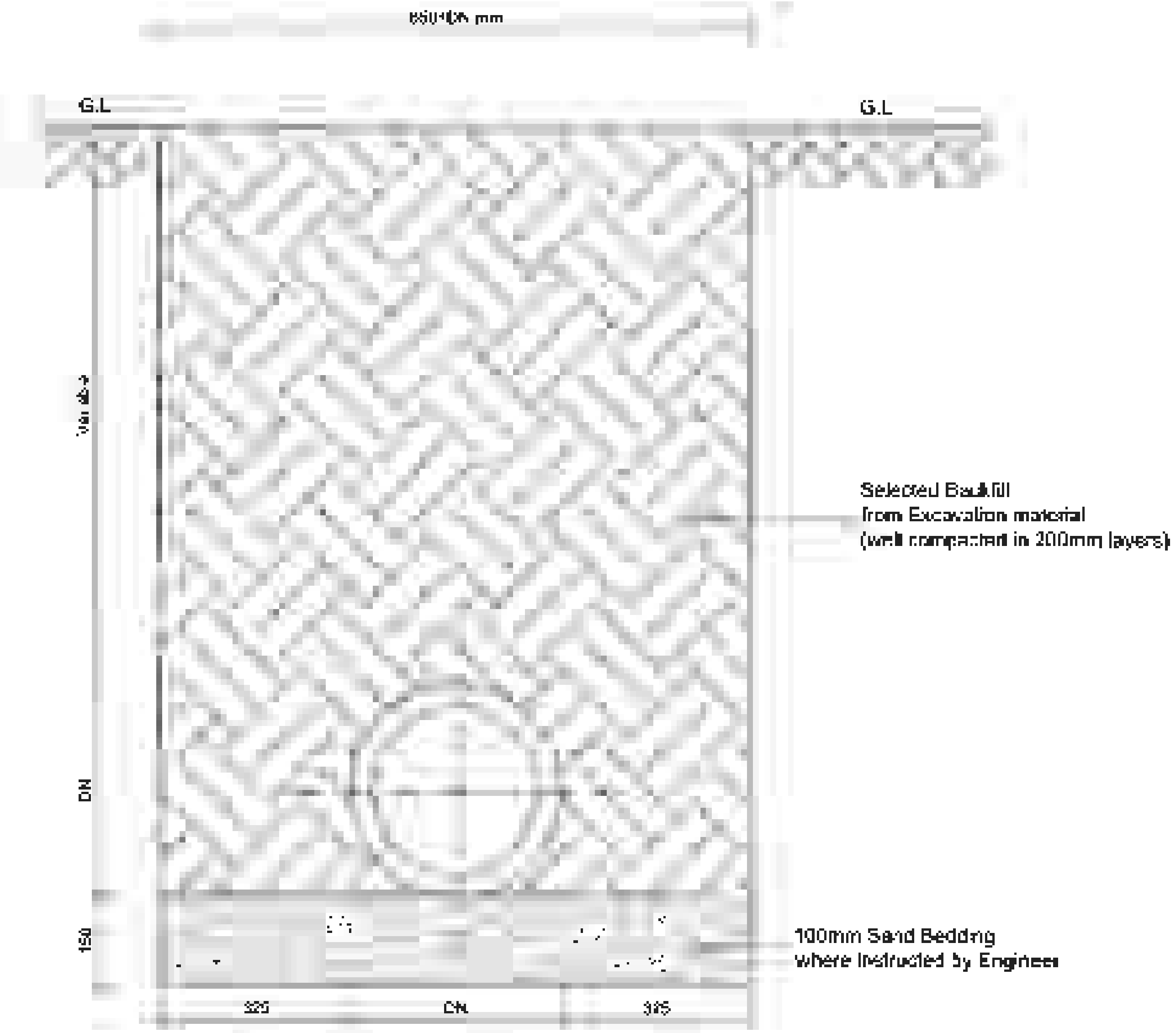
Scale: 1:500 Date: June, 2021

Title:

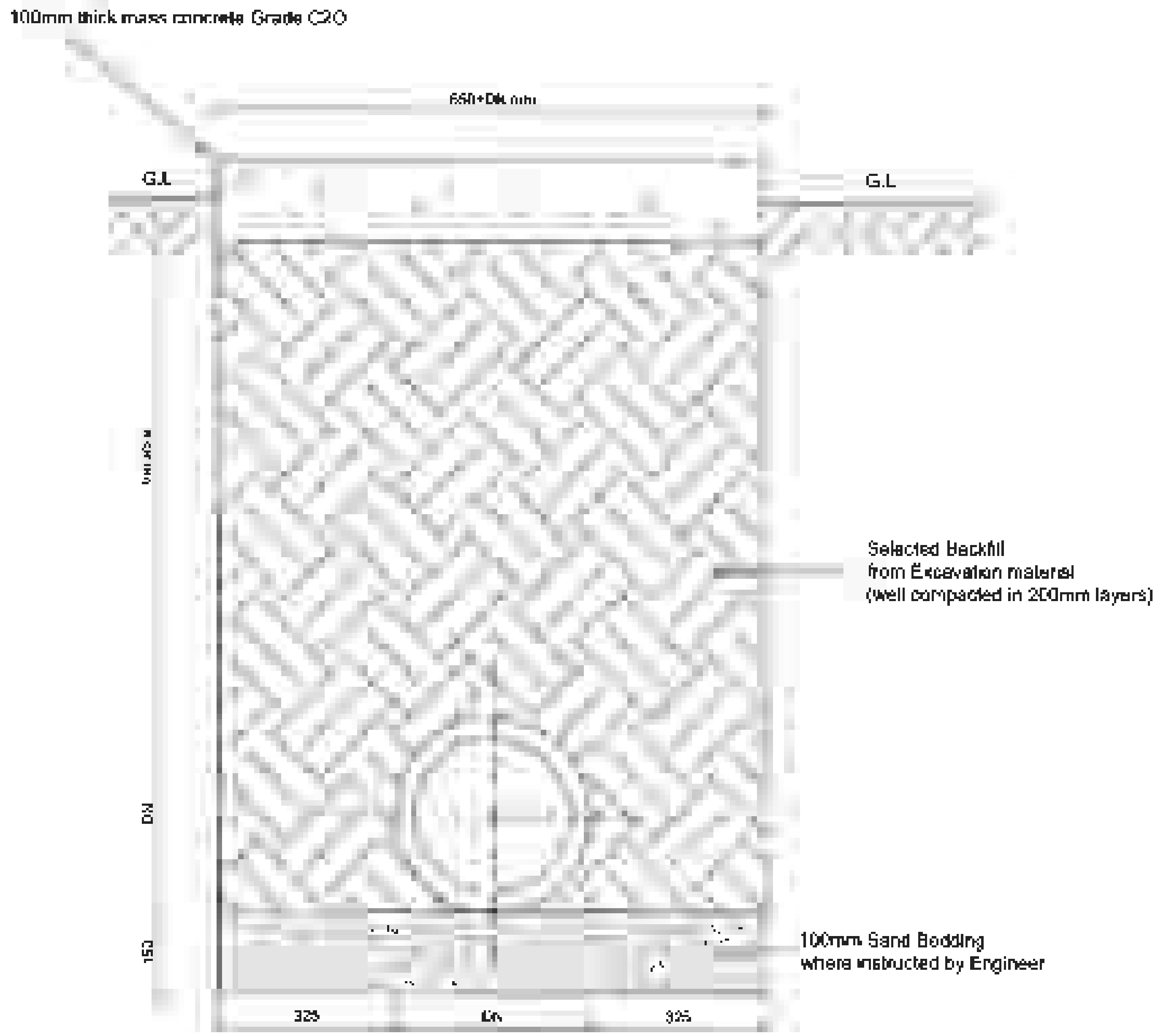
MWANANYAMALA - ROMDENI
SIMPLIFIED SEWERAGE SYSTEM
PLAN AND PROFILE FOR LINE 08

Sheet No.: 00 Drawing No.: SSS-RMC-PP 317

TYPICAL CROSS SECTIONS



BEDDING IN NORMAL AND ROCKY SOIL



TYPICAL ENCASEMENT OF SEWER PIPE ALONG THE WALK WAYS

Notes:

1. Minimum width of trench excavation is 400 mm and Maximum width is 800 mm.
2. Minimum depth for excavation for block sewer is 0.4 m and for collector sewers is 0.8 m. Excavation depths will vary depending on the slope requirement and existing ground level as per drawing.
3. The contractor will be required to confirm all levels to maintain slope of pipeline as indicated in the hydraulic setting out data.

Client:

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant: DOMAS Engineering Co. Ltd

Project: Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents, and Construction Supervision of the Off-grid Sanitation Works in Dar es Salaam

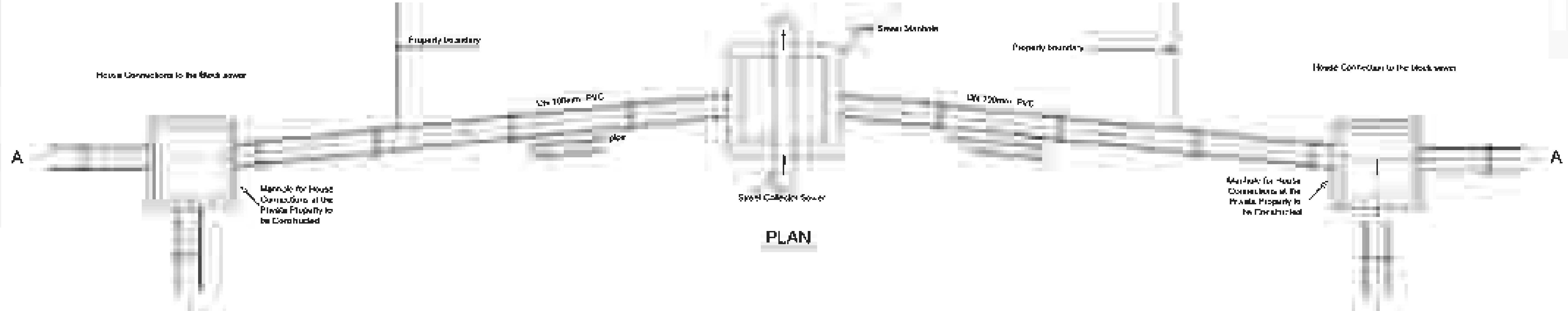
Scale: NTS | Date: July, 2021

Title: SIMPLIFIED SEWER SYSTEM STANDARD DETAILS DRAWINGS

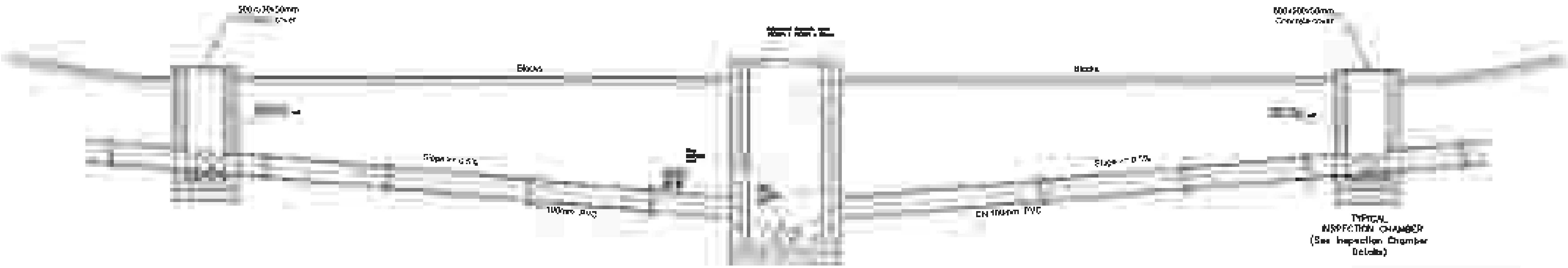
TYPICAL CROSS SECTIONS AND TRENCH DETAILS

01 | SSS-STD-331

STANDARD DETAILS



PLAN



SECTION A-A

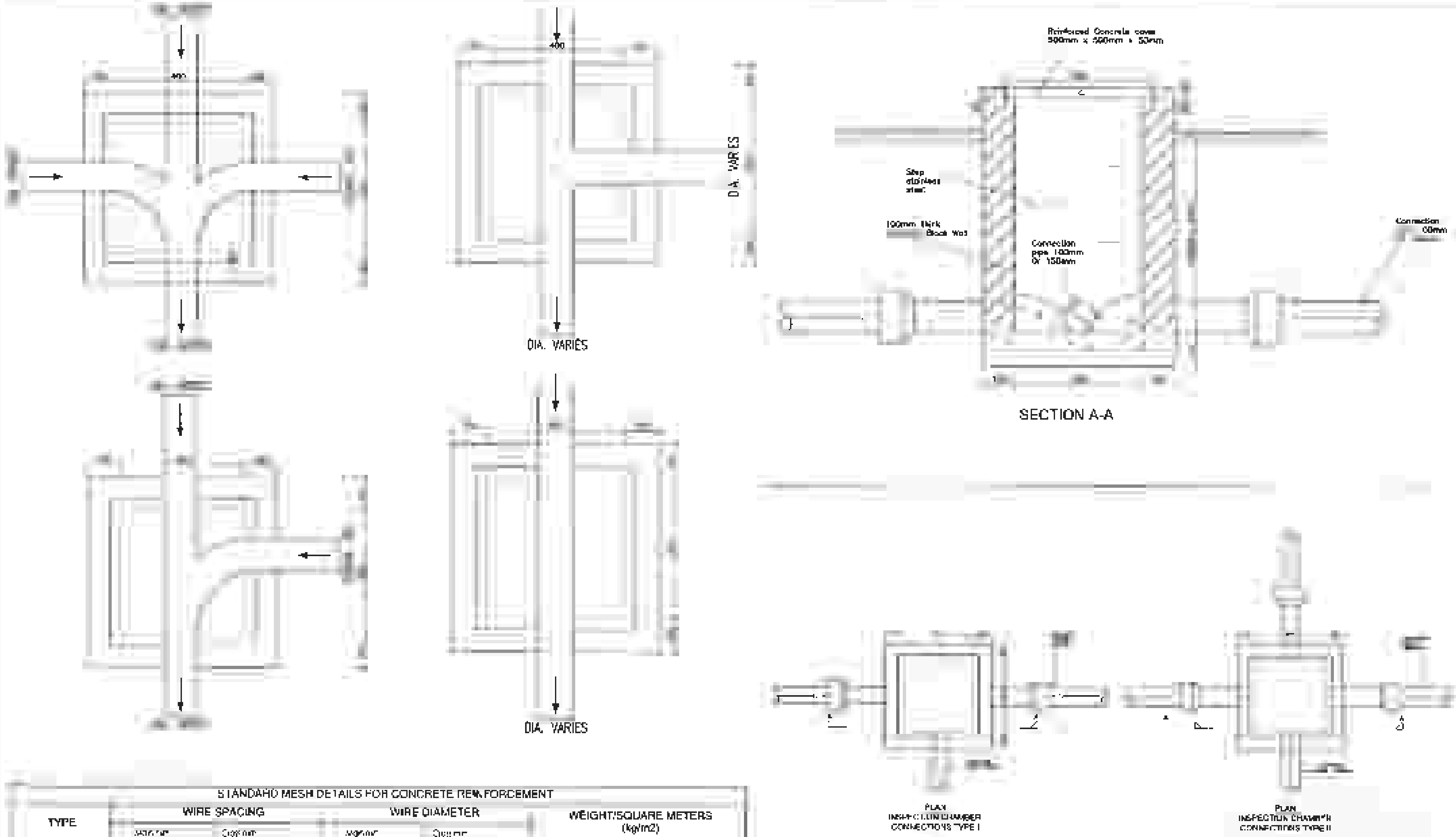
THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Melanga Street, Mwananyamala
Dar es Salaam, Tanzania

Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents and Construction Supervision of the Off-grid Sanitation Works in Dar es salaam

SIMPLIFIED SEWER SYSTEM
STANDARD DETAILS DRAWINGS

TYPICAL HOUSE CONNECTION DETAILS

NTS | June, 2021



STANDARD MESH DETAILS FOR CONCRETE REINFORCEMENT

TYPE	WIRE SPACING		WIRE DIAMETER		WEIGHT/SQUARE METERS (kg/m2)
	[illegible]	Cross mm	[illegible]	Cross mm	
[illegible]	200	200	08	[illegible]	3.95
[illegible]	200	200	10	[illegible]	3.95
STEEL	HIGH TENSILE, ACCORDING TO BS [illegible]				

Client

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant

DOHWA Engineering Co. Ltd in association with [illegible] and WWS Design & Development Co. Ltd

Project

Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents, and Construction Supervision of the Citywide Sanitation Works in Dar es salaam

Rev. | Date | Description

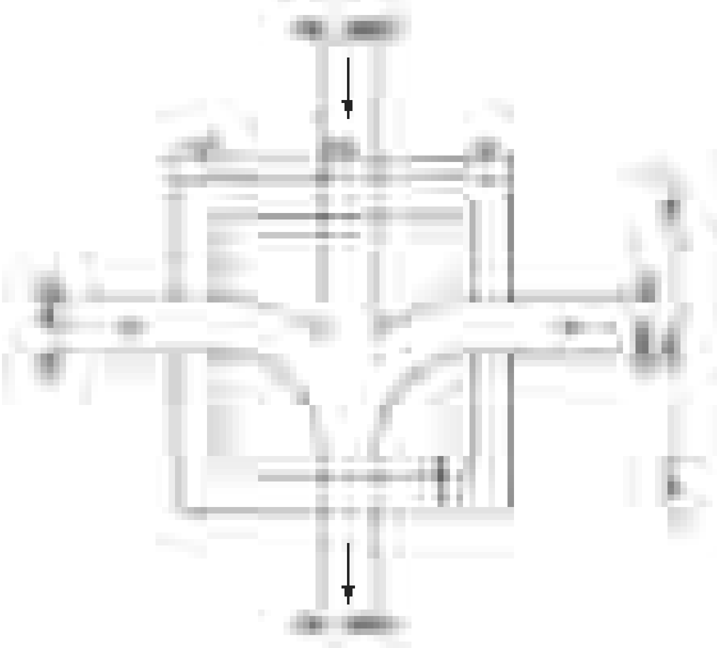
Designed | Drawn | Checked | Approved

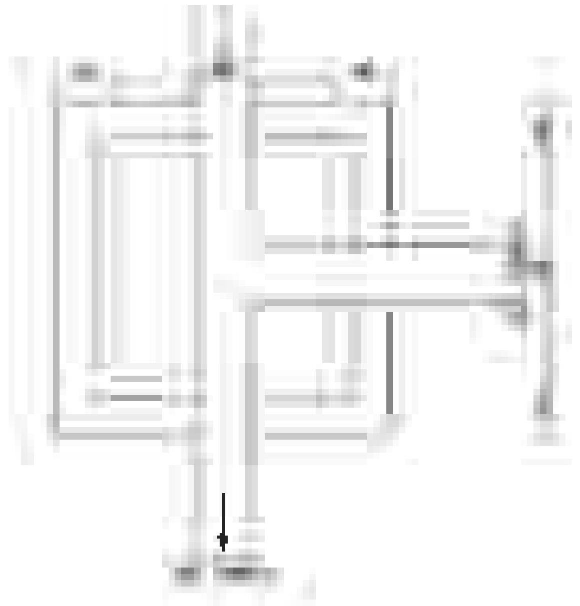
Scale: NTS | Date: June, 2021

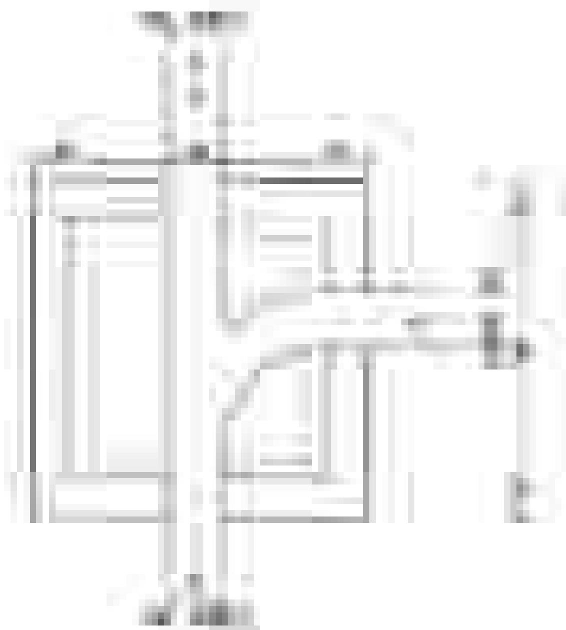
Title

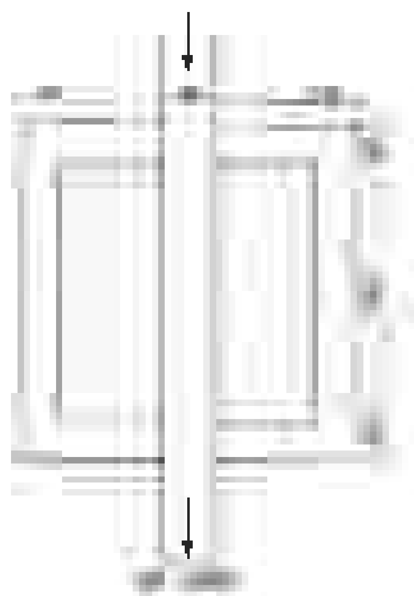
SIMPLIFIED SEWER SYSTEM
STANDARD DETAILS DRAWINGS
INSPECTION CHAMBER 400mm x 400mm
GENERAL ARRANGEMENT

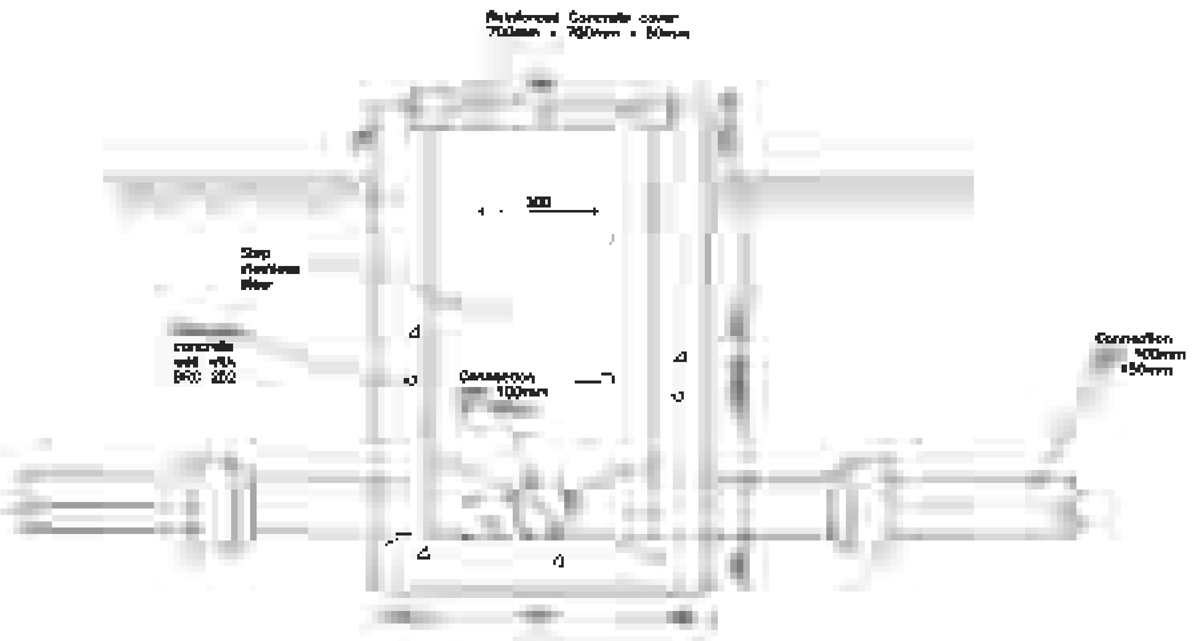
Rev. No: 01 | Drawing No: SSS/MCS/STD 907



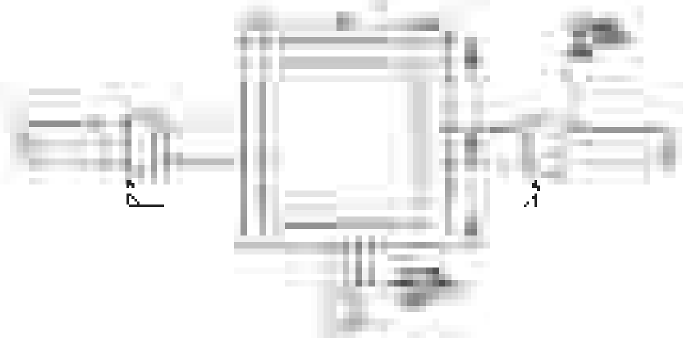




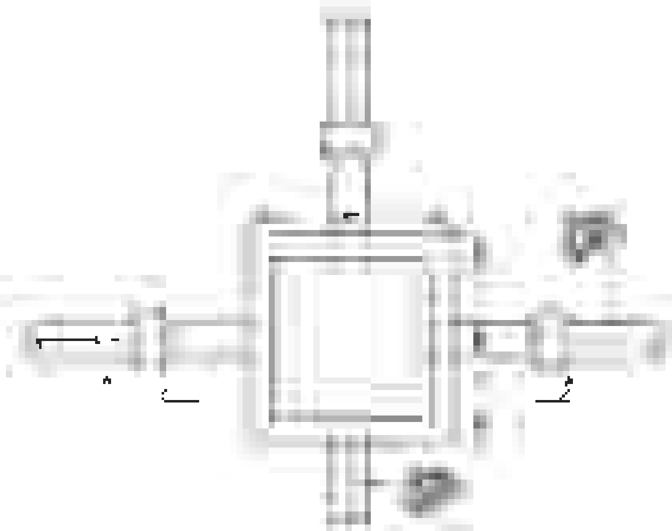




SECTION A-A



PLAN
INSPECTION CHAMBER
CONNECTIONS TYPE I



PLAN
INSPECTION CHAMBERS
CONNECTIONS TYPE II

STANDARD MESH DETAILS FOR CONCRETE REINFORCEMENT					
TYPE	WIRE SPACING		WIRE DIAMETER		WEIGHT/SQUARE METERS (kg/m2)
	Main mm	Cross mm	Main mm	Cross mm	
A252	200	200	08	08	3.95
A19x	200	200	10	10	3.95
STEEL	HIGH TENSILE, ACCORDING TO BS 4482				

Client

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant

In Association with ... and WAS Design & Development Co. Ltd

COWIWA Engineering Co. Ltd — LUPTAN Consult Ltd

Project

Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents, and Construction Supervision of the Off-grid Sanitation Works in Dar es salaam

Rev	Date	Description	Drawn

Designed | Drawn | Checked | Approved | Scale: NTS | Date: June, 2021

SIMPLIFIED SEWER SYSTEM
STANDARD DETAILS DRAWINGS

INSPECTION CHAMBER 600mm x 600mm

Rev. No: 01 | Drawing No: SSS/MLS/STD 304

Front Elevation

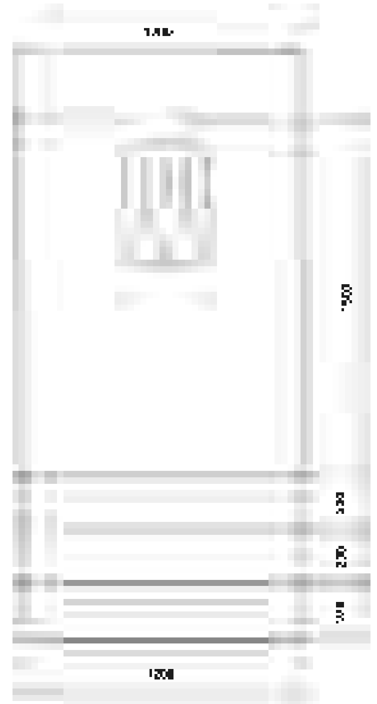
Rear Elevation

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN
2. DO NOT SCALE FROM THIS DRAWING
3. THE SCALES GIVEN ON THIS DRAWING REFER TO THE A1 SIZE ORIGINAL DRAWING
4. THE SUBGRADE SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY BEFORE THE PLACEMENT OF HARDCORE
5. CONCRETE SHALL BE CLASS C25 FOR STRUCTURAL MEMBERS AND CLASS C8/10 FOR BLINDING
6. THE MAXIMUM SIZE OF AGGREGATE SHALL BE 20mm UNLESS OTHERWISE SHOWN
7. REINFORCEMENT SHALL BE HIGH TENSILE DEFORMED TYPE WITH A CHARACTERISTIC YIELD STRESS OF AT LEAST 429N/mm²
8. COVER TO REINFORCEMENT SHALL BE:
   - FOUNDATIONS 50mm
   - SLABS 25mm
   - WALLS AND BEAMS 30mm
9. LAPS TO ALL REINFORCEMENT SHALL BE 50 * BAR DIAMETER UNLESS OTHERWISE SHOWN

Right Side Elevation

Left Side Elevation



FLOOR PLAN FOR TOILET

Client:

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant:

DOWYA Engineering Co. Ltd in Association with ... and WAS Design & Development Co Ltd

Project:

Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed ... and Bidding Documents, and Construction ... of the Off-grid Sanitation Works in Dar es Salaam

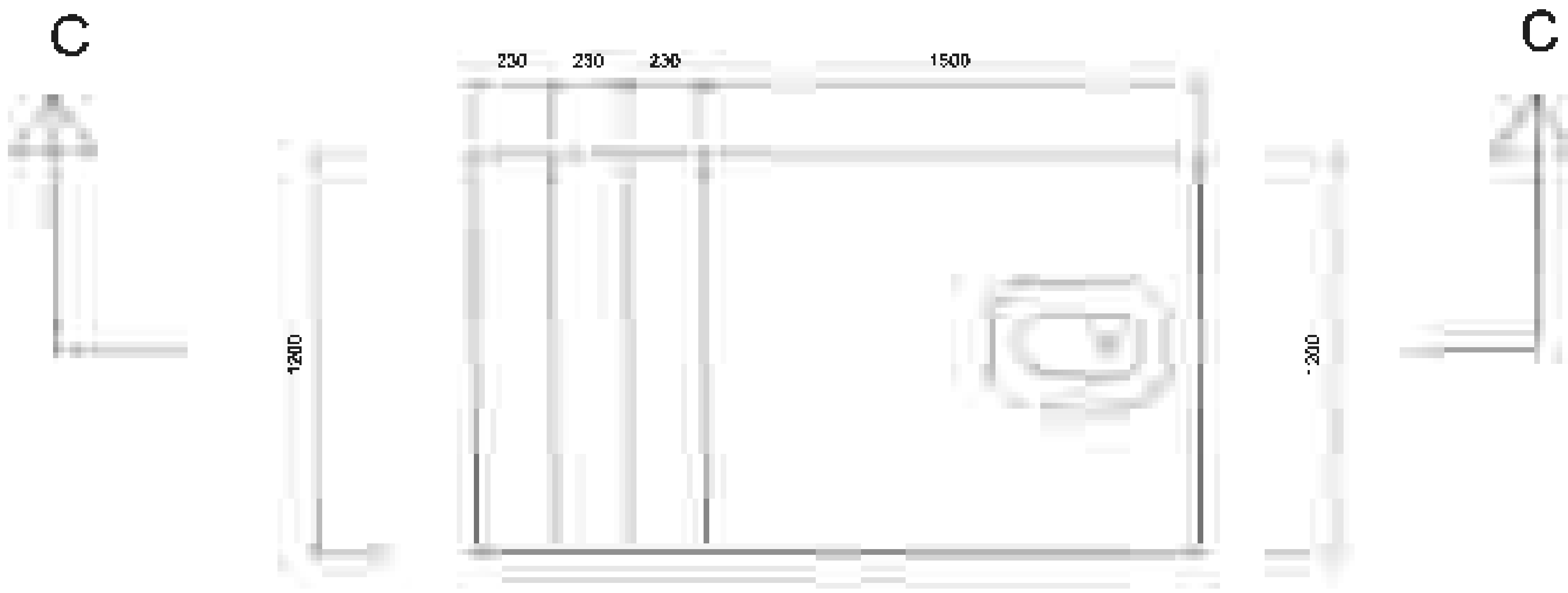
Rev	Date	Description

Designed | Drawn | Title
Checked | Approved
Scale: 1:16 | Date: June, 2021

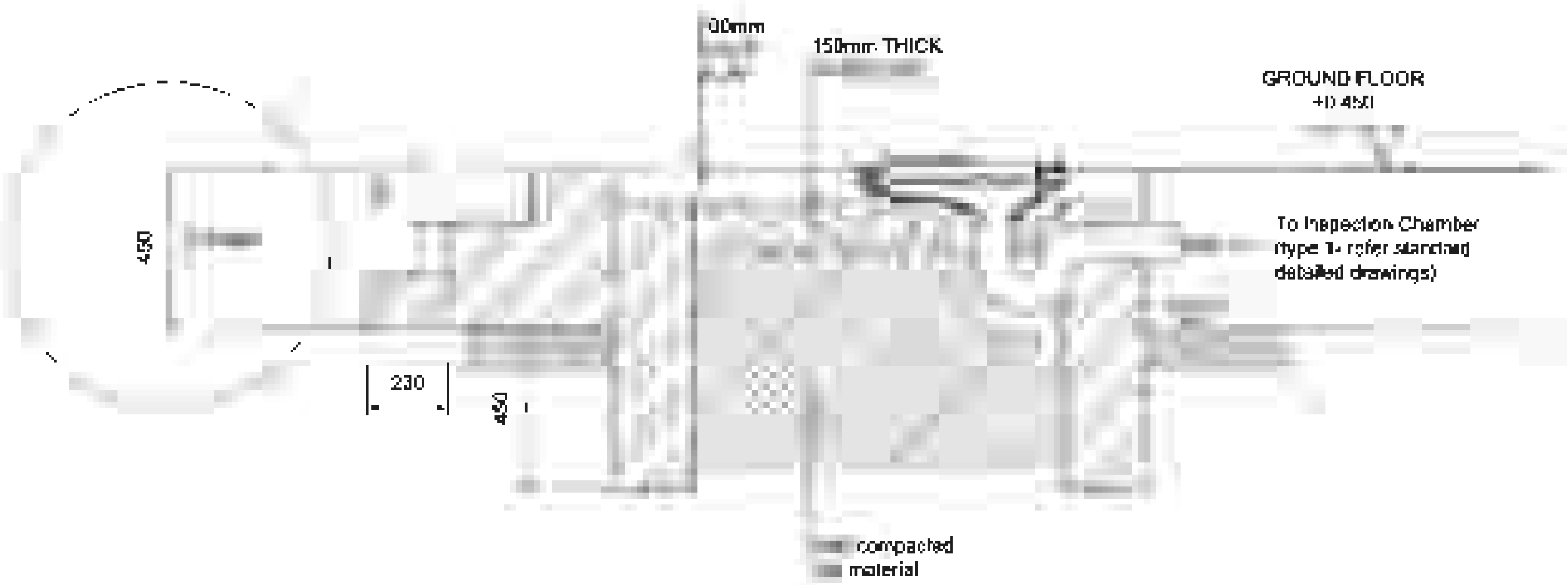
SIMPLIFIED SEWER SYSTEM STANDARD DETAILS DRAWINGS

LATRINE CONNECTION DETAILS

Revision: 01 | SSS-STD-30-01



TOP PLAN
Scale 1:10



SECTION C-C

Scale 1:10

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN
2. DO NOT SCALE FROM THIS DRAWING
3. THE SCALES GIVEN ON THIS DRAWING REFER TO THE A1 SIZE ORIGINAL DRAWING
4. THE SUBGRADE SHALL BE COMPACTED TO 99% MAXIMUM DRY DENSITY BEFORE THE PLACEMENT OF HARDCORE
5. CONCRETE SHALL BE CLASS C30/37 FOR STRUCTURAL MEMBERS AND CLASS C8/10 FOR BLINDING
6. THE MAXIMUM SIZE OF AGGREGATE SHALL BE 20mm UNLESS OTHERWISE SHOWN
7. REINFORCEMENT SHALL BE HIGH TENSILE DEFORMED TYPE WITH A CHARACTERISTIC YIELD STRESS OF AT LEAST 429N/mm²
8. COVER TO REINFORCEMENT SHALL BE:
   - FOUNDATIONS 50mm
   - SLABS 25mm
   - WALLS AND BEAMS 30mm
9. LAPS TO ALL REINFORCEMENT SHALL BE 50 * BAR DIAMETER UNLESS OTHERWISE SHOWN

Client

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant

BOHWA Engineering Co. Ltd
In Association with
COPTEN Consults Ltd
and
WMS Design & Development Co. Ltd

Project

Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Designs of the Off-site Sanitation Works in Dar es salaam

Designed	Drawn	Title
Checked	Approved	SIMPLIFIED SEWER SYSTEM STANDARD DETAILS DRAWINGS
Scale: SHOWN	Date: June, 2021	LATRINE CONNECTION DETAILS
		01 SSS-STD-305-02

Rev Date Description

S/No	Description	Eastings	Northings	S/No	Description	Eastings	Northings	S/No	Description	Eastings	Northings
1	TOILET	527902.53	9248901.23	48	KARIM	527839.19	9248900.99	95	MAMA REHEMA	527831.86	9249039.13
2	MBONDE	527896.15	9248902.39	49	TOILET	527849.19	9248893.49	96	MARKET TOILET	527827.53	9248995.81
3	TOILET	527888.15	9248902.77	50	MWAHIJA	527840.41	9248888.03	97	MFAUME	527848.58	9248983.69
4	SUED	527894.68	9248915.80	51	FESTO	527832.01	9248884.91	98	MPONDA	527837.19	9249107.82
5	TOILET	527897.87	9248924.41	52	GRACE	527820.03	9248880.16	99	MWAFATIMA	527829.17	9249014.17
6	ATHUMAN	527896.79	9248925.41	53	TOILET	527825.98	9248886.51	100	MWANAHAWA	527827.22	9249053.83
7	TOILET	527879.66	9248893.88	54	SHABAN	527844.11	9248882.82	101	MZEE	527814.73	9248980.89
8	MMBAGA	527879.65	9248887.92	55	TOILET	527842.74	9248883.35	102	TOILET	527815.04	9249032.35
9	ALI	527858.41	9248880.64	56	JOSHUA	527845.94	9248884.65	103	TOILET	527838.04	9249091.27
10	TOILET	527856.14	9248886.18	57	GRACE	527820.03	9248880.16	104	TOILET	527861.86	9249042.11
11	SAID ATHUMAN	527850.14	9248909.15	58	PL	527816.65	9248861.34	105	TOILET	527860.37	9249040.92
12	SAID RANGI	527883.93	9248912.85	59	AMRI	527797.47	9248912.84	106	TOILET	527832.70	9249019.66
13	BINT J	527883.86	9248941.60	60	TOILET	527800.39	9248921.10	107	TOILET	527862.23	9249007.16
14	SALIM	527874.11	9248956.36	61	MAU	527809.11	9248971.37	108	TOILET	527860.90	9249000.92
15	ANASTAZIA	527868.54	9248946.74	62	TOILET	527810.43	9248970.55	109	ZENA HASSANI MNYIKA	527815.04	9249046.37
16	IBRAHim MSONDE	527866.85	9248944.38	63	TOILET	527851.39	9248981.63	110	SAID	528070.42	9248673.36
17	MATHA	527864.04	9248937.97	64	TOILET	527829.29	9248973.37	111	MGAZA	528063.56	9248678.95
18	TOILET	527863.82	9248926.70	65	HILAL	527815.08	9248991.00	112	ALI	528050.80	9248689.43
19	TOMAS	527851.68	9248932.17	66	ARAFA SHAWEJI	527829.17	9249040.35	113	ESTA	528045.29	9248682.67
20	TOILET	527842.69	9248950.01	67	TOILET	527809.36	9249022.34	114	ESTA1	528040.44	9248679.87
21	GUEST	527843.43	9248924.23	68	SAID	527809.59	9248988.43	115	MKOPI	528032.36	9248696.29
22	TOILET	527856.17	9248930.77	69	RAMRA ISSA	527810.15	9248979.03	116	OMARY	528030.50	9248700.79
23	TOILET	527816.41	9248931.04	70	SALUM MAHAMBA	527809.74	9249037.18	117	SIMBA	528033.49	9248701.62
24	ZAMDA	527820.63	9248939.05	71	GUEST	527820.80	9249086.37	118	TOILET	528032.46	9248703.42
25	MGANYIZE	527822.47	9248939.52	72	HAIDAL KAVIRA	527828.27	9249085.36	119	KIMTI	528020.83	9248734.14
26	TOILET	527831.63	9248945.95	73	JACOB	527833.37	9249087.97	120	ZAHARA	528022.14	9248732.97
27	IDD	527831.47	9248959.32	74	MWINYI ALLY	527838.40	9249100.48	121	TOILET	528022.10	9248728.20
28	MWAJUMA	527864.30	9248954.98	75	MANJAWILA	527855.89	9249090.63	122	JAMALY	528041.70	9248733.44
29	TOILET	527869.71	9248958.49	76	MKOPA	527859.26	9249087.58	123	ZAKIA	528029.93	9248715.56
30	TOILET	527870.00	9248984.50	77	TOILET	527839.72	9249060.74	124	MZEE AJALI	528015.71	9248722.22
31	HUSEIN	527880.28	9248985.36	78	JOHN MUSSA	527833.77	9249074.14	125	MAKUSANYA	528015.45	9248715.27
32	KHALID	527882.85	9248970.81	79	JUMA	527863.16	9249059.21	126	MERRY	528014.44	9248712.61
33	MAJUMBA	527880.98	9248963.76	80	MBINGA	527841.25	9249057.97	127	AMIDU	527998.22	9248780.26
34	TOILET	527895.88	9248926.55	81	SAID JUMA	527839.88	9249052.65	128	SADA	527991.97	9248774.62
35	CHUWA	527898.70	9248929.89	82	AMINA ELIAS	527847.52	9249009.41	129	FATUMA	527977.73	9248775.98
36	TOILET	527894.61	9248940.54	83	HASSAN MSHAMU	527848.79	9248996.97	130	KALISTA	527970.04	9248778.82
37	TOILET	527914.74	9248911.71	84	TOILET	527861.02	9248997.09	131	SALUM HASHIM	527969.63	9248744.92
38	MADAM Z	527842.22	9248906.93	85	TOILET	527869.71	9249003.78	132	KITENGU	527976.55	9248721.58
39	TOILET	527844.62	9248907.20	86	ALOYCE KINYUNYU	527857.88	9249037.65	133	MWAMBEPO	527982.38	9248709.43
40	MAMBA	527839.92	9248906.94	87	HAMIDU	527872.56	9249015.73	134	RUTH	528000.65	9248684.30
41	TOILET	527814.21	9248917.98	88	KINUMBI	527862.39	9249037.94	135	ASHA	528008.71	9248690.72
42	JUMBE	527810.25	9248917.90	89	TOILET	527877.62	9249028.20	136	SAID	527990.58	9248653.25
43	TOILET	527813.30	9248908.68	90	TOILET	527867.39	9249048.37	137	SAUDA	527978.09	9248657.49
44	JUMA	527808.32	9248911.87	91	ABDALLAH SEMLANGWA	527836.05	9249078.99	138	NICOLAUS	527982.35	9248659.19
45	MAULID	527807.61	9248895.89	92	HAMZA	527836.90	9249091.71	139	MANYIKA	527980.92	9248660.42
46	RAJABU MUHOZA	527807.10	9248868.28	93	HAWADH	527819.24	9249076.76	140	MAMA MASOUD	527969.01	9248664.41
47	TOILET	527834.87	9248900.43	94	KASSIM	527868.07	9249057.26	141	TOILET	527961.54	9248667.58

Client

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant

DOH ENGINEERING CO. LTD

DOHWA Engineering Co. Ltd

and

Wilaya Design Associates Co Ltd

Project

Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions Building, Preparation of Detailed Engineering Designs and Bidding Documents, and Construction of the Off-grid Sanitation Works in Dar es Salaam

Designed | Drawn | Checked | Approved | Scale: NTS | Date: June 2021

Title

SIMPLIFIED SEWER SYSTEM
STANDARD DETAILS DRAWINGS

LIST OF HOUSES - MWANANYAMALA SSS

Drawing No. 01

SSS-STD-108-01

S/No	Description	Eastings	Northings	S/No	Description	Eastings	Northings	S/No	Description	Eastings	Northings
142	JUMA	527990.57	9248678.12	189	KITAWE	527848.54	9248759.41	236	PROFESSOR	527990.01	9248862.11
143	ABDALLA CHUMA	528005.93	9248666.76	190	TOILET	527849.12	9248760.48	237	MAGOMA	527988.26	9248862.94
144	ABBAS	527952.53	9248653.66	191	ANDREW	527841.79	9248756.23	238	CECILIA	527967.55	9248886.77
145	MAKWEGA	527930.38	9248667.96	192	JAMES	527842.48	9248758.23	239	ANORD	527967.23	9248883.91
146	TOILET	527929.68	9248670.45	193	ALLY	527832.28	9248734.41	240	MOHAMED	527960.13	9248889.01
147	ISMAIL	527927.17	9248673.22	194	MWANAISHA HAMIS	527893.08	9248782.62	241	BILAL	527962.94	9248886.11
148	JINOPEMBE	527959.79	9248660.02	195	OFFICE SERIKALI YA MTAA	527868.43	9248778.69	242	ALLY	527952.03	9248874.91
149	SAIDI	527961.87	9248680.66	196	JONAS	527853.20	9248782.66	243	MSAMBAA	527929.96	9248888.91
150	SELEMANI	527926.01	9248693.49	197	WAZIR	527869.22	9248802.83	244	MGOSI	527925.34	9248868.30
151	MOHAMMED	527921.38	9248694.13	198	BUNGA	527872.97	9248806.94	245	RASHID	527930.60	9248877.53
152	OTHMAN	527928.92	9248695.27	199	SAID ABDALLAH	527852.87	9248793.86	246	SAID	527920.53	9248859.56
153	MASHAKA	527931.24	9248706.15	200	AHMED	527845.04	9248811.67	247	NGOMBO	527899.38	9248871.04
154	SALUM	527938.55	9248695.43	201	ATHUMAN VUMBI	527840.87	9248804.67	248	JUMANNE	527894.69	9248857.16
155	MSIKITI	527953.12	9248713.55	202	MARY TEMU	527854.82	9248835.54	249	JULIAS	527889.26	9248857.21
156	RAMADHAN	527884.59	9248731.60	203	JUMA NGINDO	527861.12	9248837.51	250	MOHAMED	527905.97	9248847.57
157	SAUDA	527886.21	9248737.94	204	MWINJUMA	527853.69	9248840.45	251	MAGRETH	527906.06	9248827.98
158	JONGO	527885.25	9248736.96	205	MPEKA	527856.20	9248840.01	252	ROBERT MFINANGA	527887.22	9248815.84
159	JUMA	527887.74	9248717.69	206	MAMA HIDAR	527816.99	9248814.56	253	RAJAB	527890.57	9248810.50
160	RASHID	527886.83	9248714.00	207	MAMA SUMA	527820.43	9248812.98	254	ABDUL	527878.58	9248825.89
161	MFAUME	527904.45	9248695.74	208	SHAIBU	527817.47	9248804.38	255	MAMA MUSHI	527865.48	9248854.00
162	BRUNO	527918.57	9248677.47	209	OMARY	527802.27	9248810.15	256	MAKOTA	527866.91	9248856.58
163	KIPAKAPAKA	527893.57	9248671.60	210	SIWAZURI	527805.70	9248821.90	257	MAMA ZAKIA	527865.00	9248858.34
164	SHAIBU	527898.85	9248669.76	211	MSEMWA	527793.53	9248826.23	258	GREENT OMARY	527877.42	9248868.94
165	ASIA	527925.95	9248666.64	212	MRISHO	527804.91	9248843.23	259	KIMARO	527875.16	9248870.15
166	ISSA	527864.33	9248714.41	213	WAPANGALA	527827.16	9248837.94	260	MFAUME	527857.55	9248872.40
167	INOCENT	527851.85	9248725.97	214	DAUD	527803.39	9248870.18	261	FAUSTINE KITINDI	527837.07	9248853.79
168	MPATUMA	527849.91	9248721.65	215	JAMES	527792.81	9248849.09	262	ABAS JUMA	527847.96	9248856.48
169	JAFAR	527851.48	9248687.86	216	BAR	527774.31	9248865.08	263	PIUS	527815.73	9248866.08
170	MWANAID	527843.56	9248695.27	217	CENTER	527965.65	9248705.30	264	MAMA KHADIJA	527891.03	9248808.51
171	JUMATANO	527842.66	9248695.26	218	NASIR	528015.70	9248811.65	265	MORIS	527892.48	9248801.40
172	FARIJARY	527863.17	9248691.26	219	NDEMLA	528018.22	9248828.62	266	SHOMARI SAID	527910.55	9248822.70
173	MAMA HAPPY	527860.56	9248702.58	220	KONDO	528004.47	9248827.55	267	RAJAB MSANGI	527920.62	9248818.90
174	ASHA KILAKALA	527894.16	9248681.21	221	MWAJUMA	527999.66	9248822.22	268	RASUL	527930.17	9248823.24
175	KISAKI	527885.56	9248695.46	222	HASSAN	527993.47	9248840.21	269	MWANAID SUDI	527920.13	9248834.96
176	MZEE NDEVU	527919.92	9248737.57	223	ELIZABETH	527981.41	9248857.05	270	SUBIRA KARIM	527922.80	9248850.23
177	MBOGO	527925.72	9248750.55	224	TOILET	527977.72	9248843.84	271	TOILET	527922.60	9248794.76
178	KIDILE	527932.34	9248755.39	225	TOILET1	527981.78	9248839.01	272	HAMDUNI	527920.61	9248797.63
179	TOILET	527915.19	9248765.72	226	ABUU	528006.25	9248804.12	273	MAGRETH	527821.13	9248775.52
180	KASEBELA	527926.14	9248779.98	227	TOILET	528008.16	9248805.04	274	IBRAHIM SELEMAN	527836.62	9248778.33
181	SAMWEL	527918.57	9248782.04	228	ASHA	527976.99	9248788.56	275	SALUM	527833.54	9248791.06
182	ELIAS KIRIA	527919.30	9248794.86	229	TOILET	527975.60	9248775.73	276	HAMZA	527819.22	9248786.47
183	FELISTER	527916.45	9248797.63	230	TOILET	527972.43	9248810.18	277	JOHN MAFUSO	527812.37	9248779.34
184	KIDILE	527934.86	9248777.85	231	KULWA	527971.83	9248815.26	278	ABDALLAH MOHAMED	527800.03	9248801.84
185	ASHURA	527913.59	9248778.27	232	HILALI	527970.69	9248811.86	279	SIJAONA IBRAHIM	527785.91	9248794.79
186	MBWANA KIDILE	527892.90	9248743.11	233	MWANAISHA	527960.53	9248823.72	280	ALLY MWINYIMANGA	527794.98	9248815.33
187	MAGOTA	527871.01	9248761.71	234	JUMA	527963.84	9248824.33	281	MRISHO	527789.33	9248839.88
188	KAJUTA	527866.29	9248765.19	235	MAKENZI	527958.22	9248857.83	282	HALFAN	527789.50	9248838.13

Client
THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant
DOHWA ENGINEERING CO. LTD
Dohwa Engineering Co., Ltd

Project
Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents, and Construction Supervision of the Off-grid Sanitation Works in Dar es Salaam

SIMPLIFIED SEWER SYSTEM
STANDARD DETAILS DRAWINGS
LIST OF HOUSES - MWANANYAMALA SSS

Scale: NTS
Date: June, 2021
01

S/No	Description	Eastings	Northings	S/No	Description	Eastings	Northings	S/No	Description	Eastings	Northings
283	MAMA NAH	527783.31	9248774.33	330				377			
284	SULEIMAN	527792.01	9248758.62	331				378			
285	ABDALLAH ISSA	527801.44	9248755.73	332				379			
286	JUMA MRISHO	527824.05	9248737.39	333				380			
287	HAMIS ABDUL	527826.39	9248736.28	334				381			
288	ASHURA MAKINJE	527816.73	9248752.99	335				382			
289	AIDAN	527823.93	9248766.43	336				383			
290	HAFIDHI	527807.38	9248757.21	337				384			
291	KHADIJA FARAHAN	527830.04	9248752.22	338				385			
292	MSELEM	527832.52	9248733.80	339				386			
293	KASHINDE	527817.98	9248708.73	340				387			
294	MZEE CHANDE	527802.74	9248715.12	341				388			
295	NOEL	527791.68	9248718.75	342				389			
296	FRANK	527776 98	9248718.67	343				390			
297	JAMES	527767.26	9248721.17	344				391			
298	SALUM	527775.98	9248730.00	345				392			
299	ASIA ATHUMAN	527774.78	9248744.06	346				393			
300	GOMIGO	527769.66	9248744.11	347				394			
301	ABDI MAGOTA	527770.70	9248757.46	348				395			
302	ANDREW	527773.84	9248777.25	349				396			
303	OMARY	527767.07	9248762.05	350				397			
304	JUMA	527750.98	9248747.26	351				398			
305	HAJI	527749.54	9248730.63	352				399			
306	DENIS	527757.12	9248737.87	353				400			
307	MOSES	527751.52	9248741.43	354				401			
308	TOILET	527802.19	9248692.63	355				402			
309	TOILET	527821.31	9248688.63	356				403			
310	SAMIA	527798.31	9248705.44	357				404			
311	FARIDA	527805.81	9248706.74	358				405			
312	TOILET	527828.91	9248688.68	359				406			
313	TOILET1	527827.79	9248684.51	360				407			
314	HAMZA	527827.31	9248680.77	361				408			
315	TOILET1	527870.26	9248678.34	362				409			
316				363				410			
317				364				411			
318				365				412			
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326				373				420			
327				374				421			
328				375				422			
329				376				423			

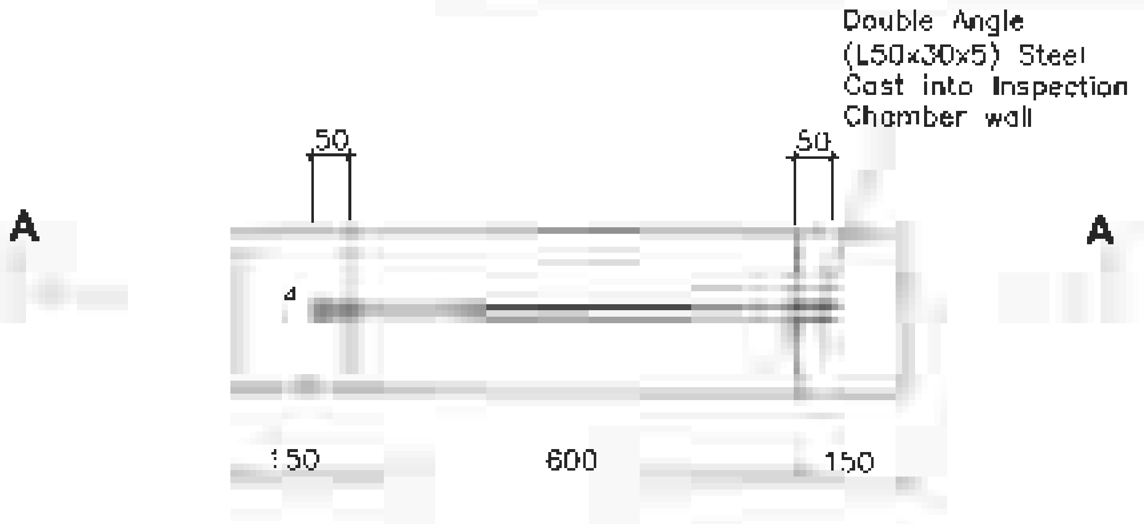
THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

DOHWA ENGINEERING CO., LTD
In Association with
WWS Design & Development Co Ltd

Project:
Provision of Legislation and Technical Services for Creation of Enabling Framework Conditions Building, Preparation of Detailed Engineering Designs and Bidding Documents, and Construction of the Off-grid Sanitation Works in Dar es salaam

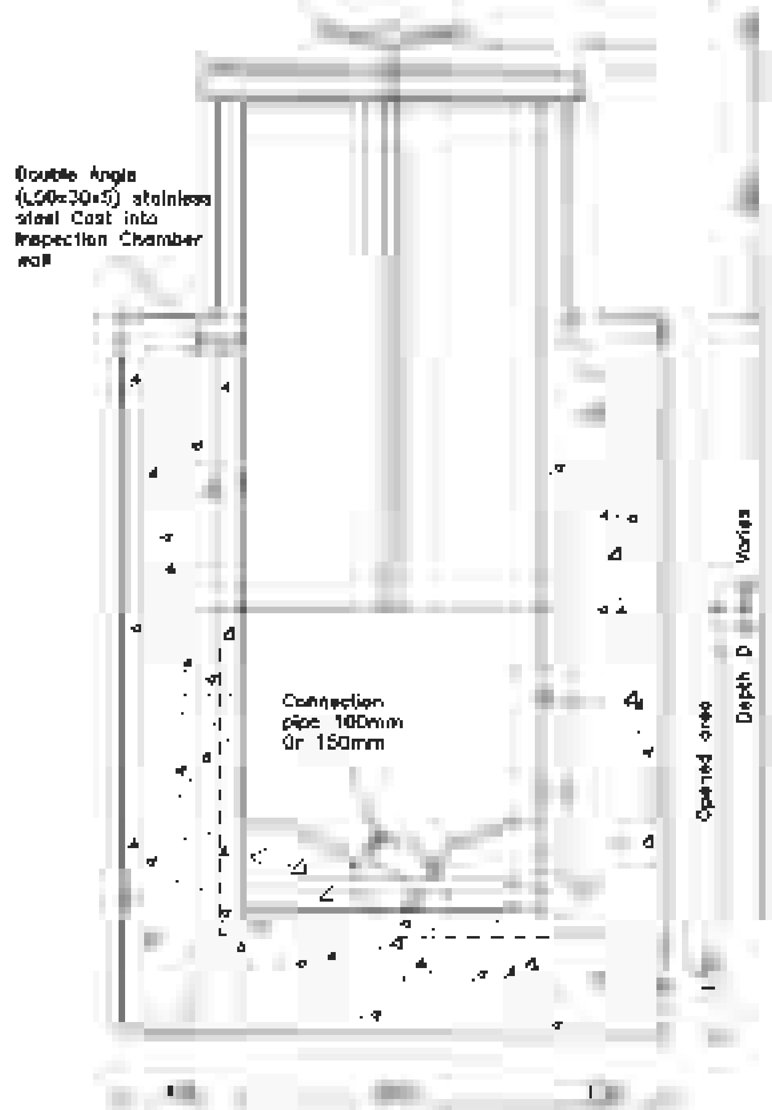
SIMPLIFIED SEWER SYSTEM
STANDARD DETAILS DRAWINGS
LIST OF HOUSES - MWANANYAMALA SSS

Scale: NTS | Date: June, 2021 | 01 | SSS-STD-30-43



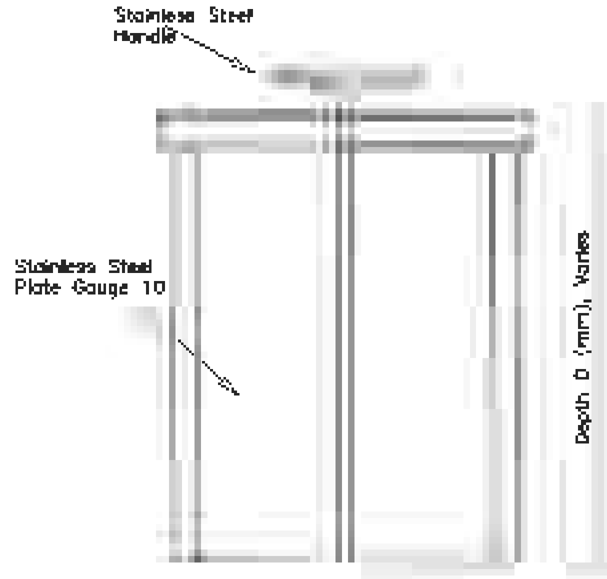
PENSTOCK PLAN

SCALE NTS



SECTION A-A

SCALE NTS



PENSTOCK DETAIL

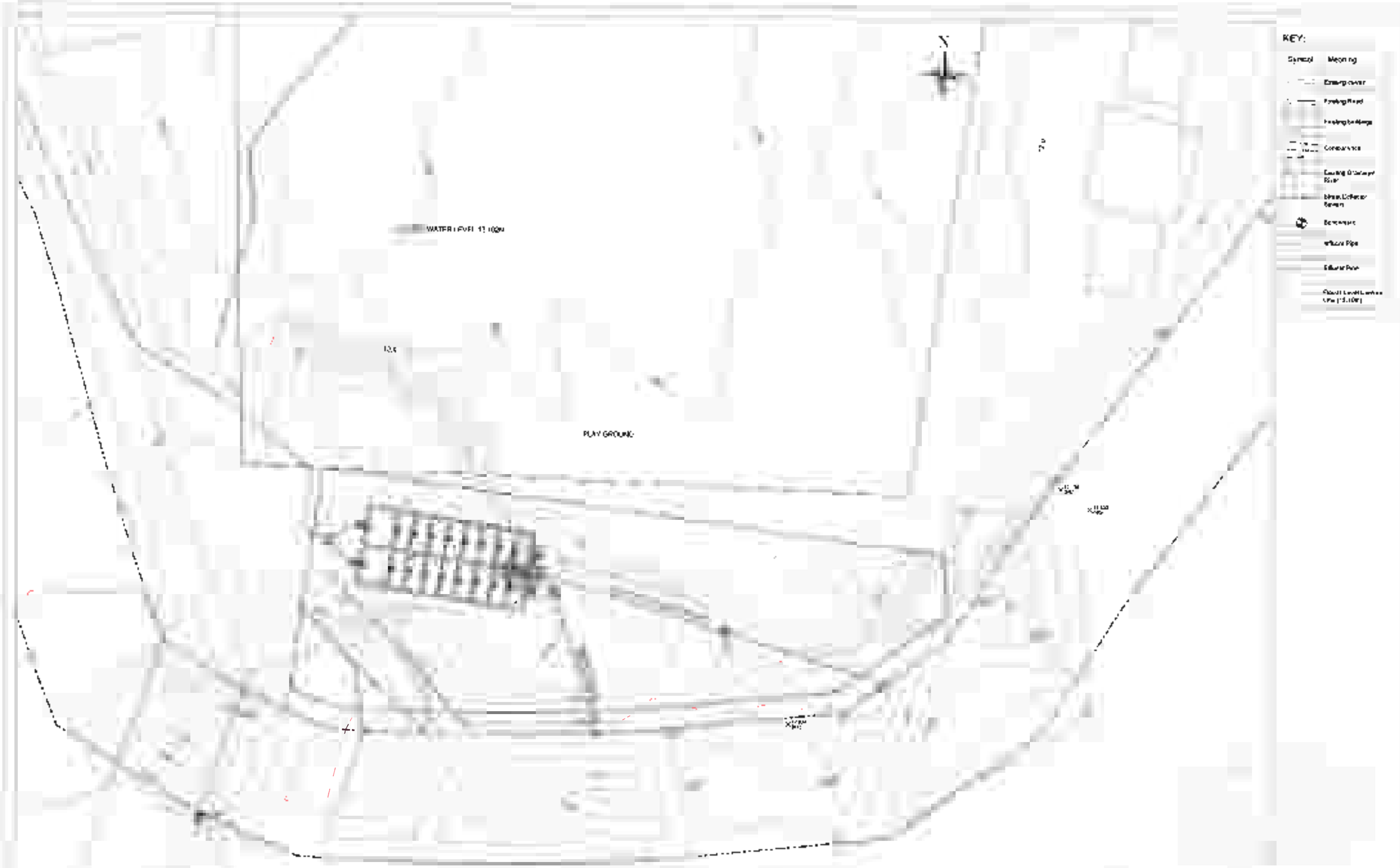
SCALE NTS

Notes

1. Penstock channel to be installed at a collector chamber to the prescribed location by the Engineer and at Junction chamber of the primary line when two collector sewer lines meet. Penstock Gates to be supplied as per BOQ to each scheme.
2. Contractor is required to confirm the locations prior, with the Engineer's Instruction.

Client: THE UNITED REPUBLIC OF TANZANIA DAWASA Chief Executive P. O. Box 1573 Dunga/Malanga Street, Mwananyamala Dar es Salaam, Tanzania	Consultant: DOWA Engineering Co. Ltd, LUPTAN Consults Ltd and WWG Design & Development Co. Ltd	Project: Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents, and Construction Supervision of the Off-grid Sanitation Works in Dar es salaam	SIMPLIFIED SEWER SYSTEM STANDARD DETAILS DRAWINGS PENSTOCK DETAILS
Rev / Date / Description	Scale: NTS	Date: June, 2021	Rev. No: 01 / Drawing No: SSS/MO/STD 307

TREATMENT UNIT



THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam. Tanzania

Consultant

In Association with

and

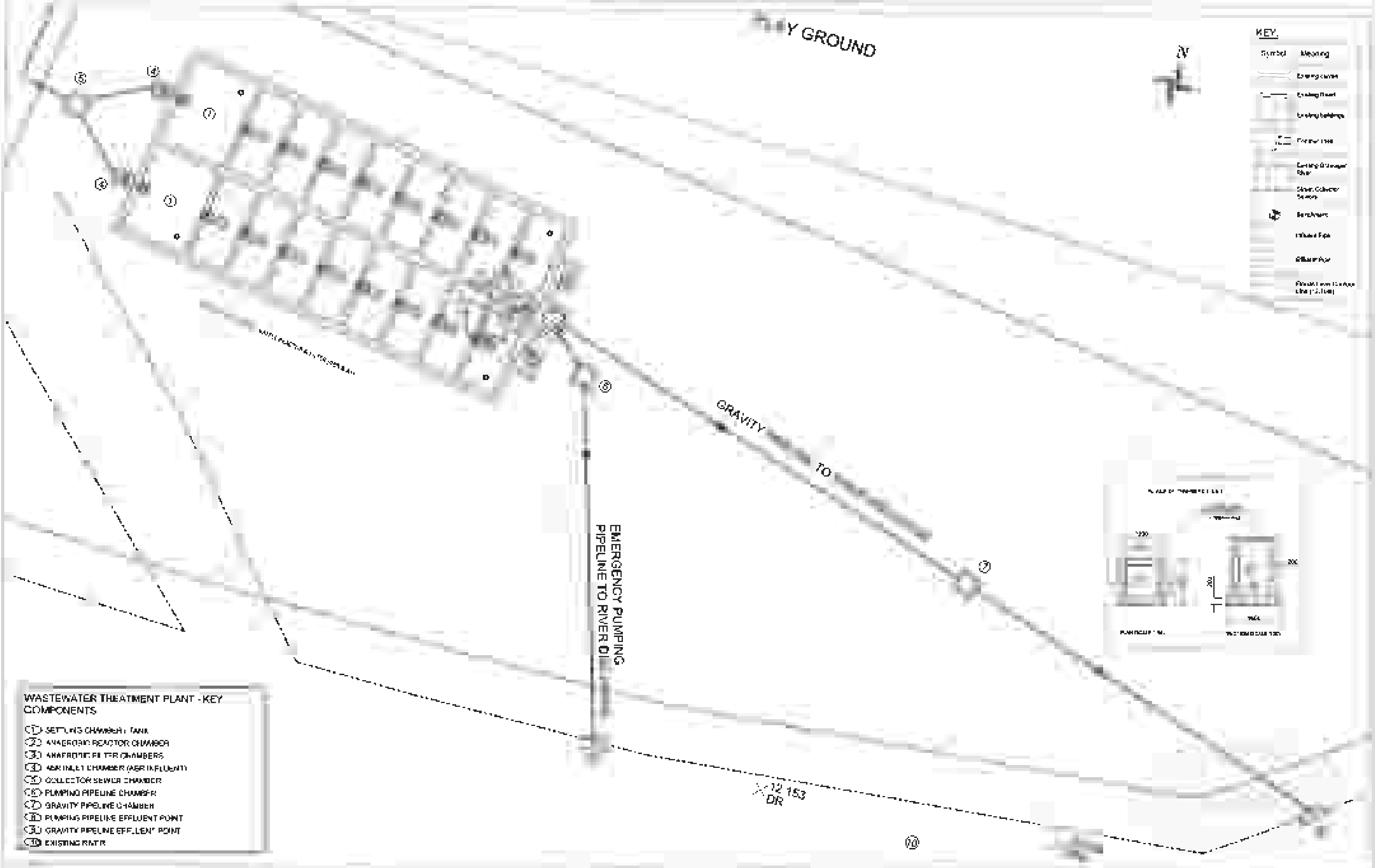
MWE Design & Development Co Ltd

Project
Provision of Facilitation and Technical Services for Creation of Enabling Framework Conditions, Capacity Preparation of Detailed Engineering Designs and Bidding Documents, and Construction for Off-grid Sanitation Areas in Dar es Salaam

Designed | Drawn
Checked | Approved
Scale: 1:500 | Date: Aug 2021

Title
MWANANYAMALA SIMPLIFIED SEWERAGE SYSTEM WASTEWATER TREATMENT PLANT
SITE LOCATION PLAN

Rev: 01 | Drawing No.: MWAWTP-101.01



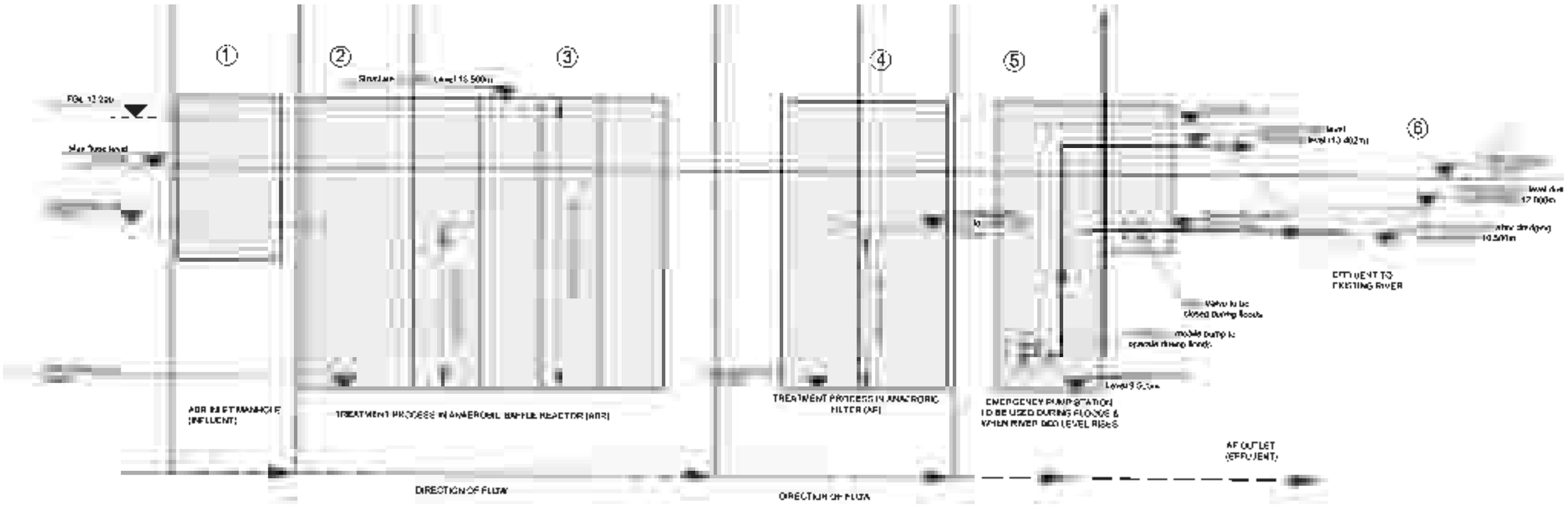
THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Project: Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Preparation of Detailed Documents, and Construction of the Offgrid Sanitation Works in Dar es salaam

LEPTAN Consults Ltd

Title: MWANANYAMALA SIMPLIFIED SEWERAGE SYSTEM WASTEWATER TREATMENT PLANT
SITE LAYOUT & GENERAL ARRANGEMENT

Scale: 1:100
Date: Aug 2021
Rev: 01
Drawing No: MWN-WTP-01-02



WASTEWATER TREATMENT PLANT - KEY

1. ABR INLET CHAMBER (ABR INFLUENT)
2. SEDIMENTATION CHAMBER (SETTLER)
3. ANAEROBIC REACTOR (ANAEROBIC TREATMENT CHAMBERS)
4. ANAEROBIC FILTER CHAMBERS
5. ANAEROBIC FILTER (AF) OUTLET CHAMBER (AF EFFLUENT)
6. EXISTING WASTEWATER STABILIZATION PONDS (WSP)

Client:

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant:

DOHWA Engineering Co., Ltd

in Association with

LUPTON Consult Ltd

and

WAS Design & Development Co. Ltd

Project:

Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents, and Construction Supervision of the Off-grid Sanitation Works in Dar es salaam

Designed: Drawn:

Checked: Approved:

Scale: Date:

No. Date Description

NOT TO SCALE Aug 2021

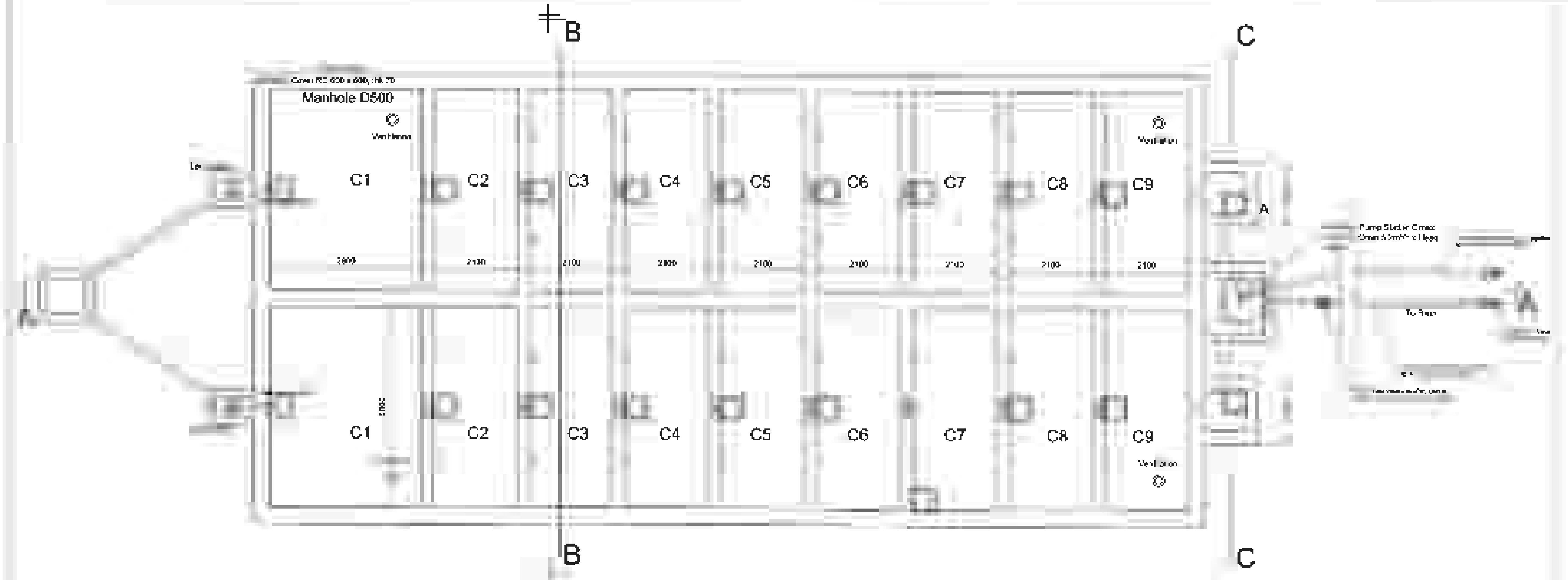
Title:

MWANANYAMALA SIMPLIFIED SEWERAGE SYSTEM WASTEWATER TREATMENT PLANT

SCHEMATIC DIAGRAM

Rev. No. 03

Drawing No. MWA-WTP-101-03



Plan (Scale 1:50)

LEGEND

C1 - Sedimentation Tank
C2 - Anaerobic Baffle Reactor (ABR)
C3 - Anaerobic Baffle Reactor (ABR)
C4 - Anaerobic Baffle Reactor (ABR)
C5 - Anaerobic Baffle Reactor (ABR)
C6 - Anaerobic Baffle Reactor (ABR)
C7 - Anaerobic Baffle Reactor (ABR)
C8 - Anaerobic Filter (AF)
C9 - Anaerobic Filter (AF)

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

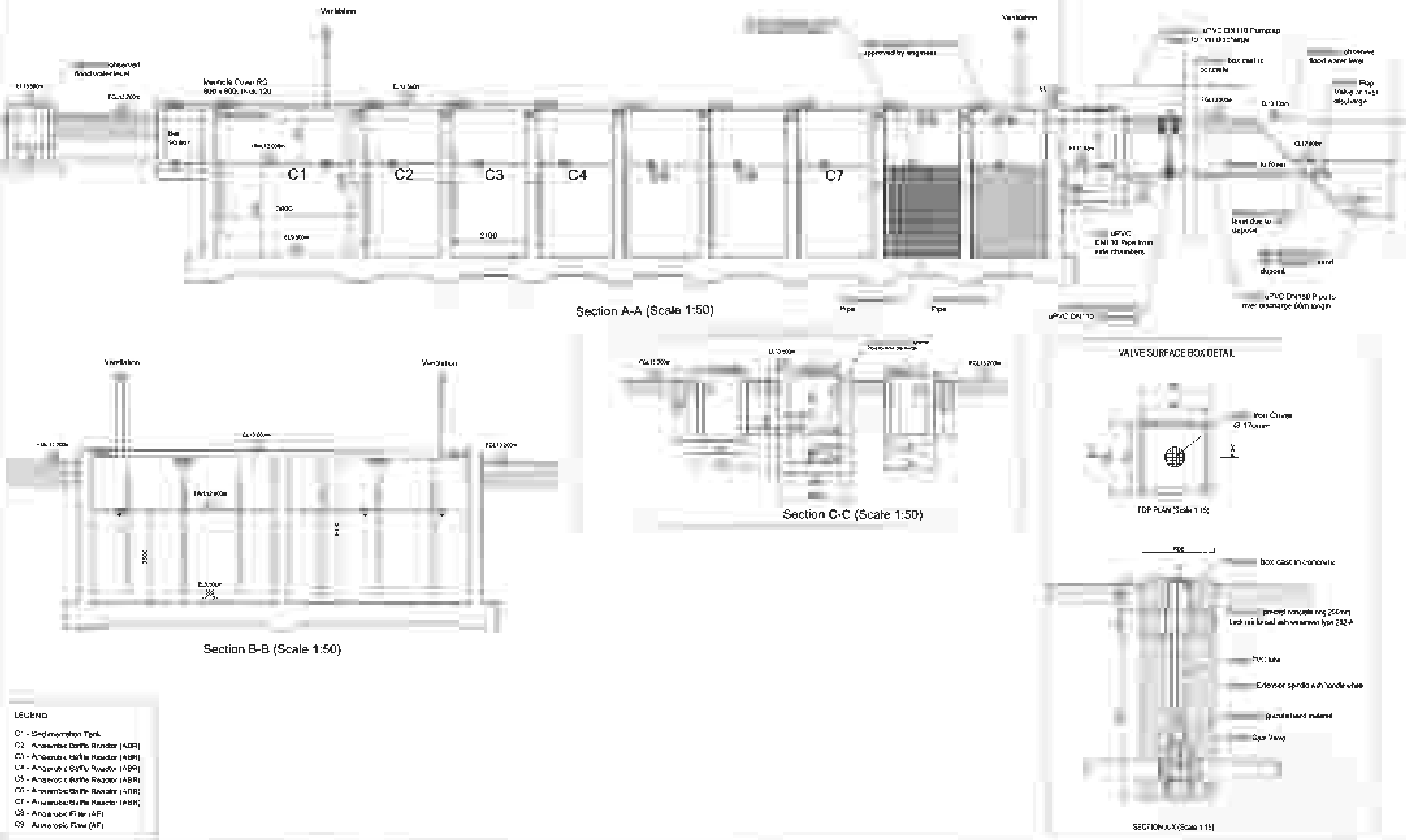
Consultant: DOHWA Engineering Co., Ltd

Creation of Essential Framework Conditions, Capacity ... Preparation of Detailed Engineering Designs and ... Documents, and Construction ... of the Off-grid Sanitation Works in Dar es Salaam

MWANANYAMALA SIMPLIFIED SEWERAGE SYSTEM WASTEWATER TREATMENT PLANT

ANAEROBIC BAFFLE REACTOR PLAN GENERAL ARRANGEMENT

Scale: 1:50 | Date: Aug 2021 | 01



LEGEND

C1 - Sedimentation Tank
C2 - Anaerobic Baffle Reactor (ABR)
C3 - Anaerobic Baffle Reactor (ABR)
C4 - Anaerobic Baffle Reactor (ABR)
C5 - Anaerobic Baffle Reactor (ABR)
C6 - Anaerobic Baffle Reactor (ABR)
C7 - Anaerobic Baffle Reactor (ABR)
C8 - Anaerobic Filter (AF)
C9 - Anaerobic Filter (AF)

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

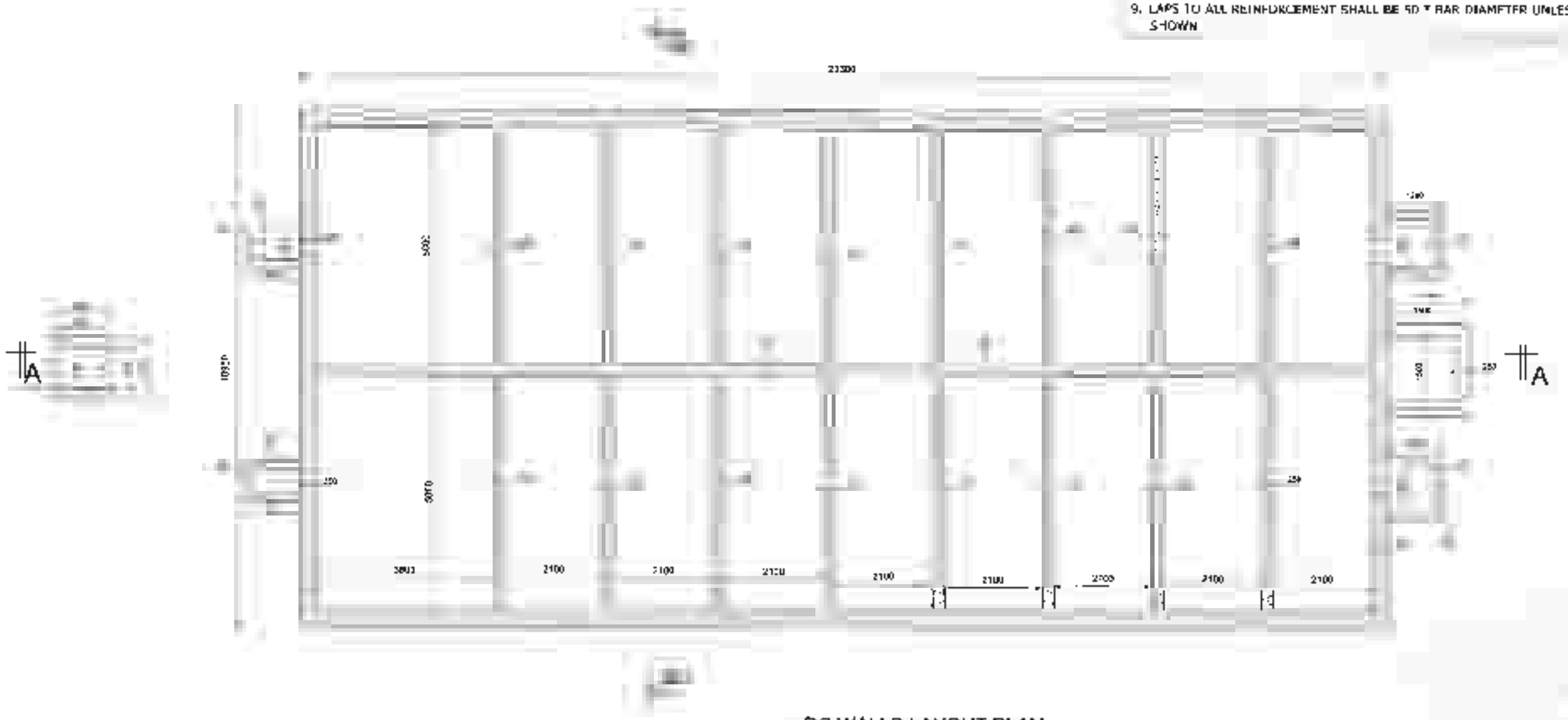
Project: Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Designs of the Off-grid Sanitation Works in Dar es Salaam

Title: MWANANYAMALA SIMPLIFIED SEWERAGE SYSTEM WASTEWATER TREATMENT PLANT
ANAEROBIC BAFFLE REACTOR SECTIONS GENERAL ARRANGEMENT

Scale: AS SHOWN | Date: Aug 2021 | Rev: 01

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN
2. DO NOT SCALE FROM THIS DRAWING
3. THE SCALES GIVEN ON THIS DRAWING REFER TO THE A1 SIZE ORIGINAL DRAWING
4. THE SUBGRADE SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY BEFORE THE PLACEMENT OF HARDCORE
5. CONCRETE SHALL BE CLASS C30/37 FOR STRUCTURAL MEMBERS AND CLASS C8/10 FOR BLINDING
6. THE MAXIMUM SIZE OF AGGREGATE SHALL BE 20mm UNLESS OTHERWISE SHOWN
7. REINFORCEMENT SHALL BE HIGH TENSILE DEFORMED TYPE WITH A CHARACTERISTIC YIELD STRESS OF AT LEAST 420N/mm²
8. COVER TO REINFORCEMENT SHALL BE:
   - FOUNDATIONS 50mm
   - SLABS 25mm
   - WALLS AND BEAMS 30mm
9. LAPS TO ALL REINFORCEMENT SHALL BE 50 T BAR DIAMETER UNLESS OTHERWISE SHOWN



RC WALLS LAYOUT PLAN

Client

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

In association with

Project

Provision of Equitation and Technical Services for Creation of Essential Framework Conditions Capacity Designs of the Off-grid Sanitation Works in Dar es Salaam

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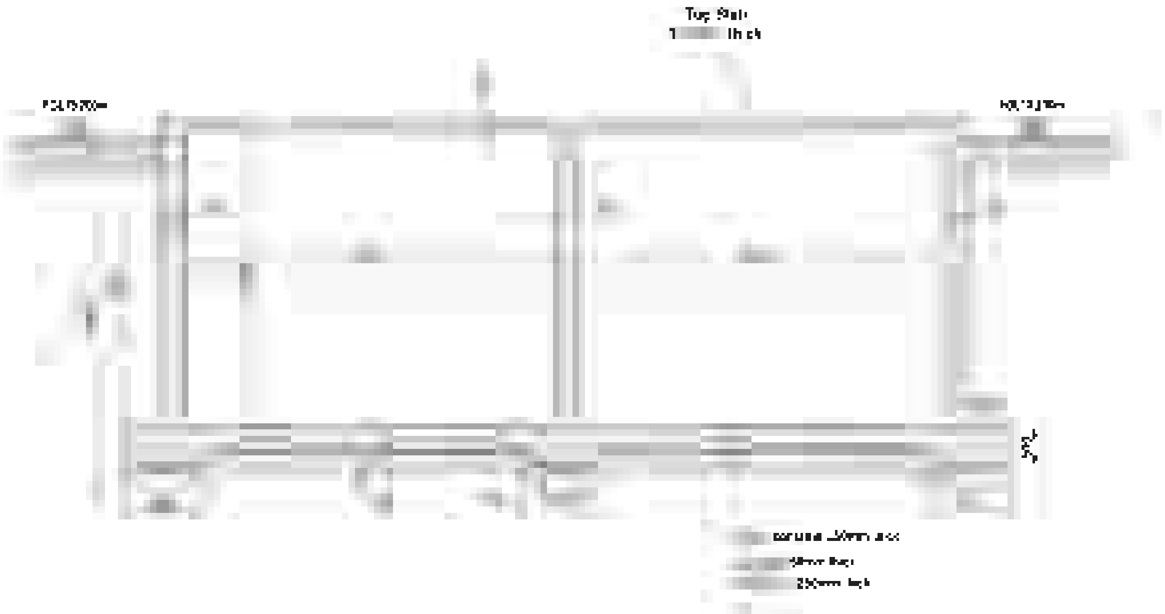
Checked | Approved
Scale 1:50 | Date Aug 2021

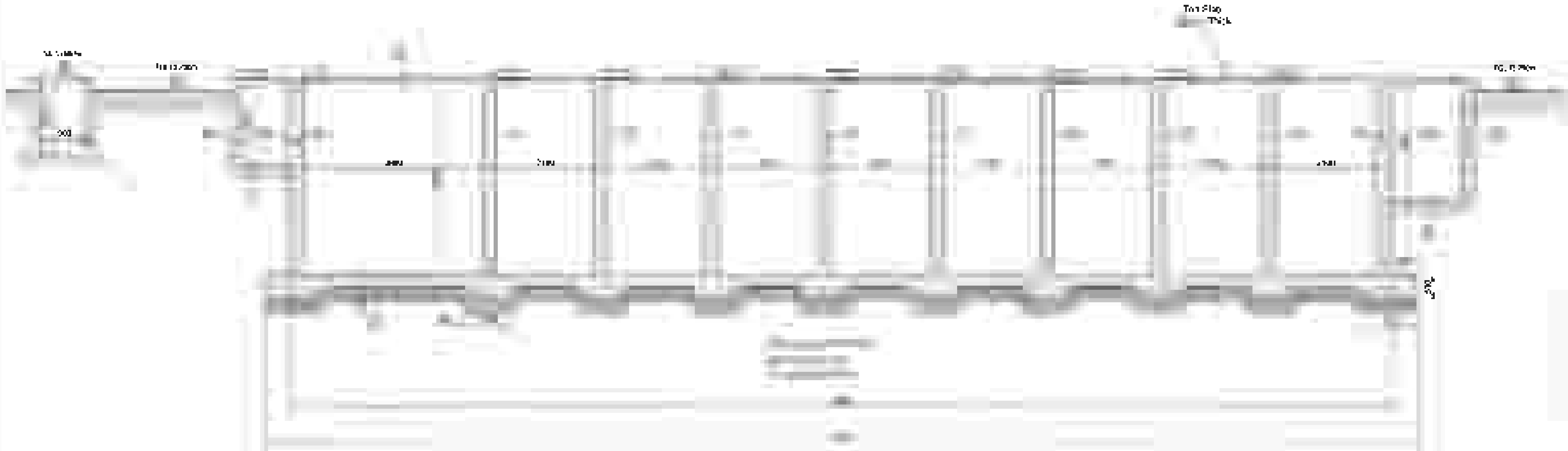
Title

MWANANYAMALA SIMPLIFIED SEWERAGE SYSTEM WASTEWATER TREATMENT PLANT

ANAEROBIC BAFFLE REACTOR WALLS, GENERAL ARRANGEMENT DETAILS

Dwg. No. 01 | Drawing No. MWN/WTP-101-05





NOTES:

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4. THE SUBGRADE SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY BEFORE THE PLACEMENT OF HARDCORE
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7. REINFORCEMENT SHALL BE HIGH TENSILE DEFORMED TYPE WITH A CHARACTERISTIC YIELD STRESS OF AT LEAST 420N/mm²
8. COVER TO REINFORCEMENT SHALL BE:
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9. LAPS TO ALL REINFORCEMENT SHALL BE 50 * BAR DIAMETER UNLESS OTHERWISE SHOWN

Client

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant

DOHWA Engineering Co. Ltd

In association with ... and WAPS Design & Development Co. Ltd

Project

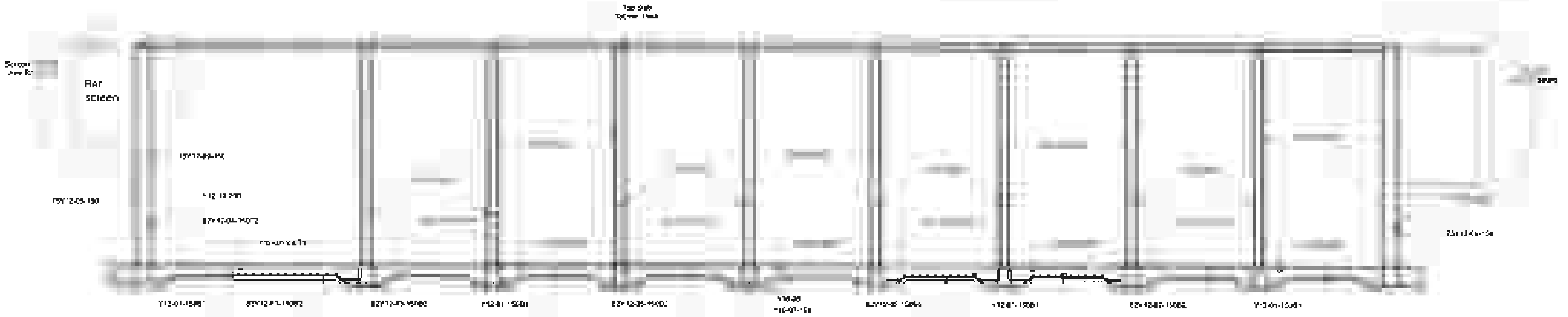
Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents, and Construction Supervision of the Off-grid Sanitation Works in Dar es Salaam

Title

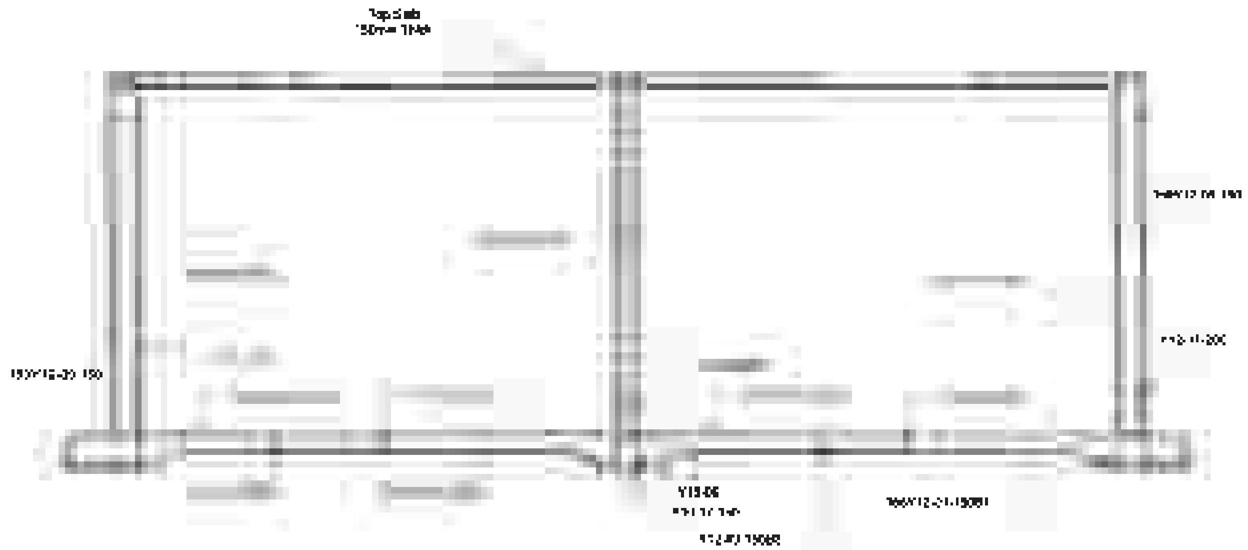
MWANANYAMALA SIMPLIFIED SEWERAGE SYSTEM WASTEWATER TREATMENT PLANT

ANAEROBIC BAFFLE REACTOR SLABS AND FOUNDATION GENERAL DETAILS

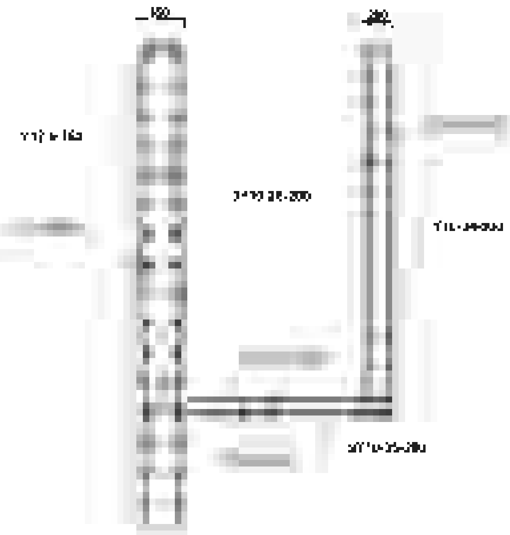
Scale 1:50 | Date Aug 2021 | Rev 01



SECTION A-A RC DETAILS
(SCALE 1:40)



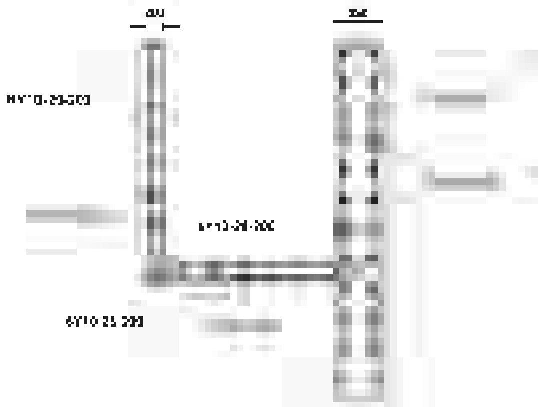
SECTION B-B RC DETAILS
(SCALE 1:40)



MANHOLE RC DETAILS
(SCALE 1:25)

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN
2. DO NOT SCALE FROM THIS DRAWING
3. THE SCALES GIVEN ON THIS DRAWING REFER TO THE A1 SIZE ORIGINAL DRAWING
4. THE SUBGRADE SHALL BE COMPACTED TO 99% MAXIMUM DRY DENSITY BEFORE THE PLACEMENT OF HARDCORE
5. CONCRETE SHALL BE CLASS C30/37 FOR STRUCTURAL MEMBERS AND CLASS C8/10 FOR BLINDING
6. THE MAXIMUM SIZE OF AGGREGATE SHALL BE 20mm UNLESS OTHERWISE SHOWN
7. REINFORCEMENT SHALL BE HIGH TENSILE DEFORMED TYPE WITH A CHARACTERISTIC YIELD STRESS OF AT LEAST 479N/mm²
8. COVER TO REINFORCEMENT SHALL BE:
   - FOUNDATIONS 50mm
   - SLABS 25mm
   - WALLS AND BEAMS 30mm
9. LAPS TO ALL REINFORCEMENT SHALL BE 50 * BAR DIAMETER UNLESS OTHERWISE SHOWN



SCREEN CHAMBER RC DETAILS
(SCALE 1:25)

Client

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant

Dorsch Engineering Co. Ltd | UPTAN Consult Ltd | and | WWS Design & Development Co. Ltd

Project

Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents and Construction Supervision of the Off-grid Sanitation Works in Dar es salaam

Designed	Drawn
Checked	Approved
Scale: AS SHOWN	Date: Aug 2021

Rev. | Date | Description

Title

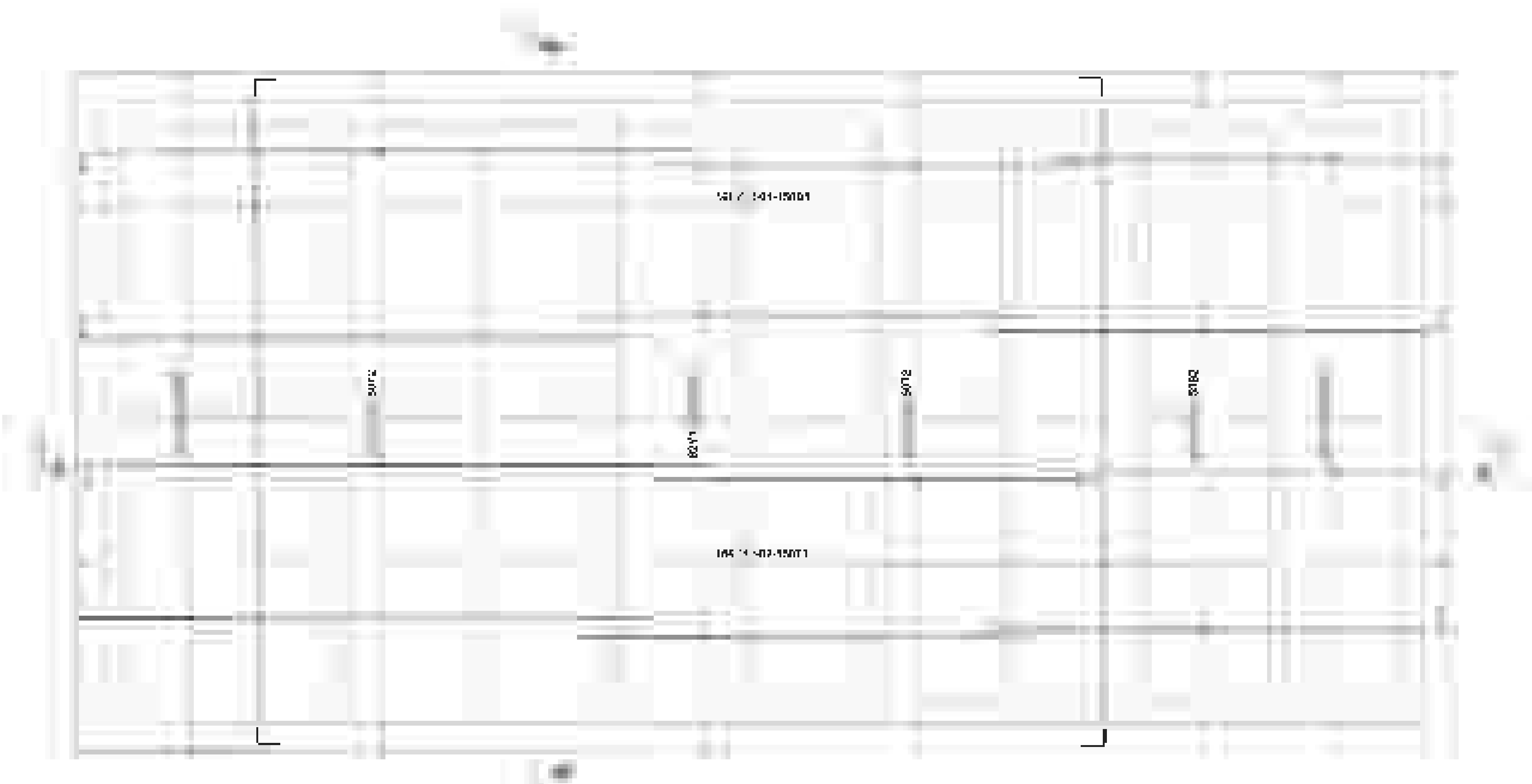
MWANANYAMALA SIMPLIFIED SEWERAGE SYSTEM WASTEWATER TREATMENT PLANT

ANAEROBIC BAFFLE REACTOR - RC SECTIONS DETAILS

01

Drawing no.

MWN-WTP-101-05



FOUNDATION BASE RC DETAILS

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN
2. DO NOT SCALE FROM THIS DRAWING
3. THE SCALES GIVEN ON THIS DRAWING REFER TO THE A1 SIZE ORIGINAL DRAWING
4. THE SUBGRADE SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY BEFORE THE PLACEMENT OF HARDCORE
5. CONCRETE SHALL BE CLASS C30/37 FOR STRUCTURAL MEMBERS AND CLASS C8/10 FOR BLINDING
6. THE MAXIMUM SIZE OF AGGREGATE SHALL BE 20mm UNLESS OTHERWISE SHOWN
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8. COVER TO REINFORCEMENT SHALL BE:
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   - SLABS 25mm
   - WALLS AND BEAMS 30mm
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Client

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DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant

DOHWA Engineering Co., Ltd and WWe Design & Development Co. Ltd

Project

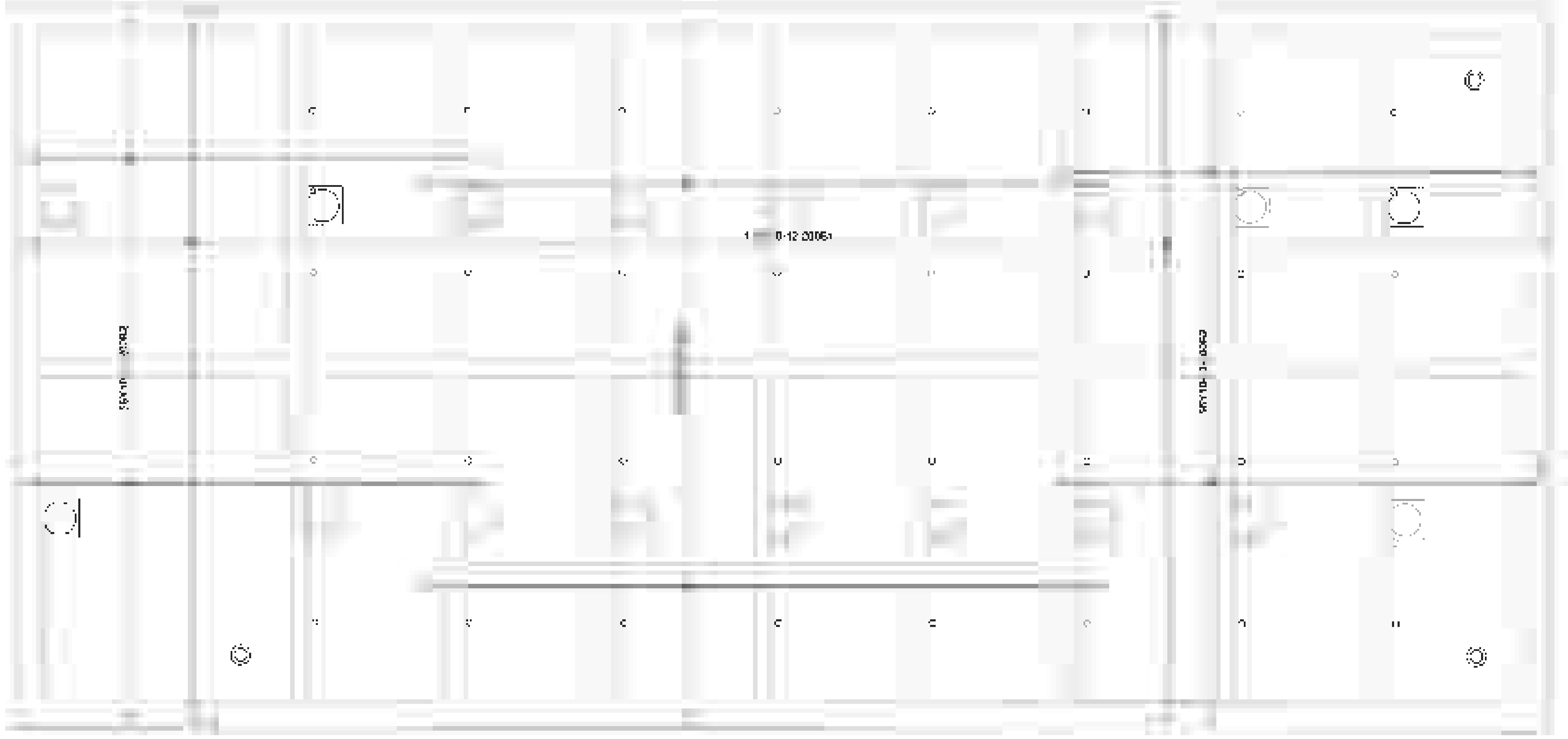
Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Building, Preparation of Detailed Engineering Designs, Bidding Documents and Construction Offsite Sanitation Works in Dar es salaam

Title

MWANANYAMALA SIMPLIFIED SEWERAGE SYSTEM WASTEWATER TREATMENT PLANT

ANAEROBIC BAFFLE REACTOR-FOUNDATION BASE RC DETAILS

Rev	Date	Description	Scale	Date	Rev	Drawing No.
			1:40	Aug 2021	01	MwfuWTP-201-09



TOP SLAB - BOTTOM REINFORCEMENTS DETAILS

Client

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Project

Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents and Construction Supervision of the Off-grid Sanitation Works in Dar es Salaam

Scale: 1:40

Date: Aug 2021

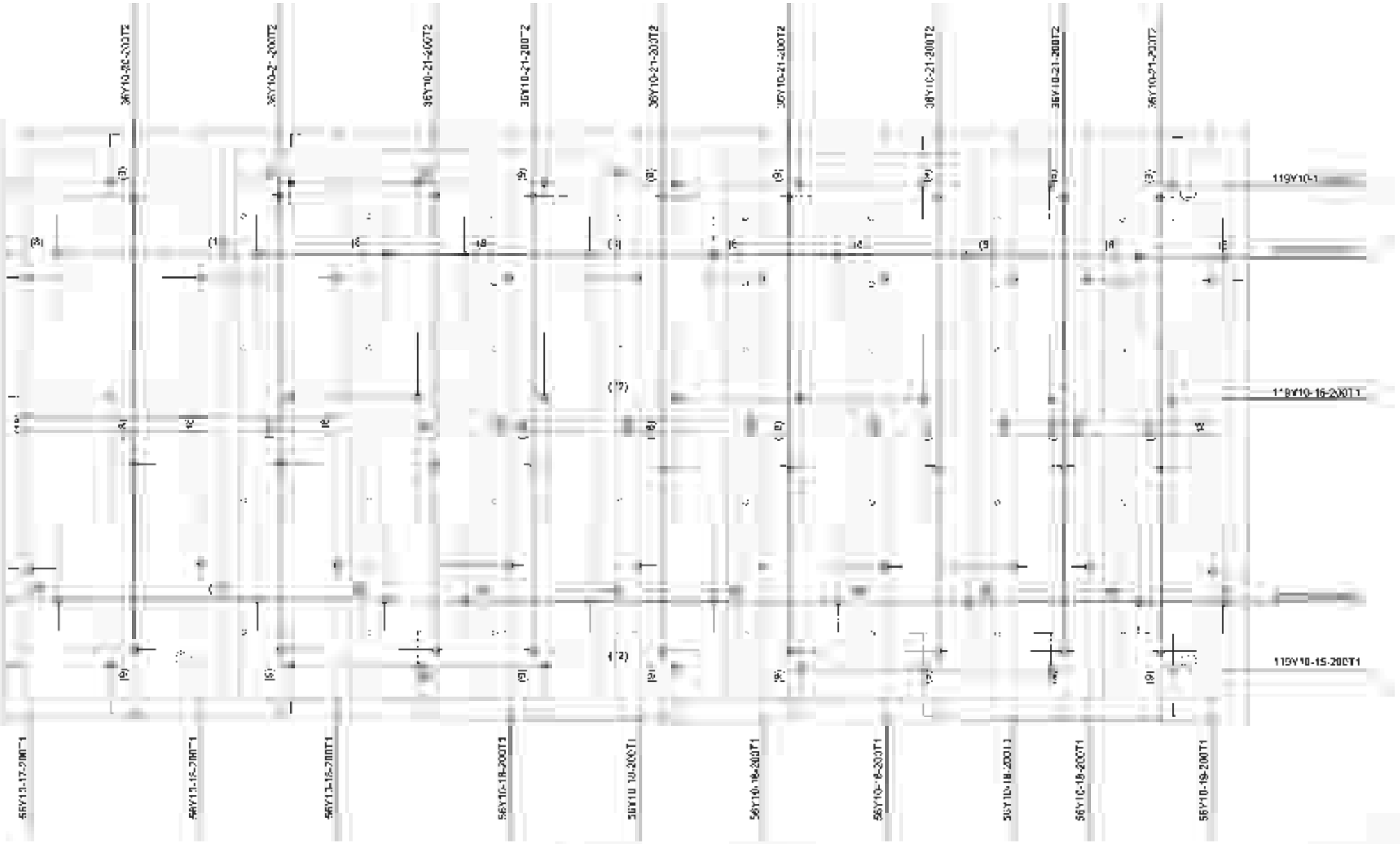
Title

MWANANYAMALA SIMPLIFIED SEWERAGE SYSTEM WASTEWATER TREATMENT PLANT

ANAEROBIC BAFFLE REACTOR- TOP SLAB BOTTOM REINFORCEMENTS DETAILS

01

MWN-WTP-101-10



TOP SLAB - TOP REINFORCEMENTS DETAILS

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

DAWA Engineering Co., Ltd

AWE Design & Development Co Ltd

Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Detailed Engineering Designs and Bidding Documents, and Construction of the Off-grid Sanitation Works in Dar es Salaam

Designed | Drawn | Approved | Scale 1:25 | Date Aug 2021

MWANANYAMALA SIMPLIFIED SEWERAGE SYSTEM WASTEWATER TREATMENT PLANT

ANAEROBIC BAFFLE REACTOR- TOP SLAB TOP REINFORCEMENTS DETAILS

Sheet No. 01 | Drawing No. MWWW-TP-101-11

BAR BENDING SCHEDULE

PROJECT	OFF GRID-DAWASA PROJECT						Bar schedule ref :	4			
Site ref	MWANANYAMALA						Date prepared	17-Aug-21			
Job no	1						Prepared by :	Issa Magange			
Member	Bar mark	Type	Dia	No of members	No. in each	Total Numbers	Length in mm	Unit Wt	Weight in kg	Bar Bending Shape	Remarks
RAFT	1	Y	12	1	166	166	12100	0.888	1,783.26	125 11850 125	Bottom1 reinforcements
	2	Y	12	1	166	166	12100	0.888	1,783.26	125 10850 125	Top 1 reinforcements
	3	Y	12	1	82	82	10675	0.888	777.15	125	Bottom2 reinforcements
	4	Y	12	1	82	82	9675	0.888	704.35	125 9550	Top2 reinforcements
	5	Y	12	1	82	82	8300	0.888	604.25	125	Bottom2 reinforcements
	6	Y	12	1	82	82	7350	0.888	535.09	125 7225	Top 2 reinforcements
	7	Y	12	1	82	82	8975	0.888	653.39	125	Bottom2 reinforcements
	8	Y	12	1	82	82	7975	0.888	580.59	125 7850	Top 2 reinforcements
Exterior short walls	9	Y	12	2	150	300	5050	0.888	1,345.04	125 4525 400	Main reinforcements
	10	Y	12	2	42	84	11150	0.888	831.53	10900 125	Distribution reinforcements
Exterior+ Mid Long walls	9	Y	12	3	318	954	5050	0.888	4,277.22	125 4525 400	Main reinforcements
	10	Y	12	3	84	252	11775	0.888	2,634.81	125 11650	Distribution reinforcements
Interior walls	9	Y	12	5	150	750	5050	0.888	3,362.60	125 4525 400	Main reinforcements
	10	Y	12	5	42	210	11150	0.889	2,078.82	10905 125	Distribution reinforcements

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN
2. DO NOT SCALE FROM THIS DRAWING
3. THE SCALES GIVEN ON THIS DRAWING REFER TO THE A1 SIZE ORIGINAL DRAWING
4. THE SUBGRADE SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY BEFORE THE PLACEMENT OF HARDCORE
5. CONCRETE SHALL BE CLASS C30/37 FOR STRUCTURAL MEMBERS AND CLASS C8/10 FOR BLINDING
6. THE MAXIMUM SIZE OF AGGREGATE SHALL BE 20mm UNLESS OTHERWISE SHOWN
7. REINFORCEMENT SHALL BE HIGH TENSILE DEFORMED TYPE WITH A CHARACTERISTIC YIELD STRESS OF AT LEAST 420N/mm²
8. COVER TO REINFORCEMENT SHALL BE:
   - FOUNDATIONS 50mm
   - SLABS 25mm
   - WALLS AND BEAMS 30mm
9. LAPS TO ALL REINFORCEMENT SHALL BE 50 * BAR DIAMETER UNLESS OTHERWISE SHOWN

Client:
THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant:
COHHA ENGINEERING CO. LTD
In Association with
and
WWS Design &Development Co Ltd
COHHA Engineering Co. Ltd

Project:
of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Preparation of Detailed Engineering Designs, Bidding Documents, and Construction the Off grid Sanitation Works in Dar es salaam

Designed | Drawn | Checked | Approved | Scale: NOT TO SCALE | Date: Aug 2021

Rev. | Date | Description

Title:
MWANANYAMALA SIMPLIFIED SEWERAGE SYSTEM WASTEWATER TREATMENT PLANT
ANAEROBIC BAFFLE REACTOR
BAR BENDING SCHEDULE 1 OF 2

Rev No: 01 | Drawing No: MWN/WTP-101-12

PROJECT	OFF GRID DAWASA PROJECT						Bar schedule ref :		4		
Site ref	MWANANYAMALA						Date prepared		17-Aug-21		
Job no	1						Prepared by :		Isaa Maganga		
Member	Bar mark	Type	Dia	No of members	No in each	Total Numbers	Length in mm	Unit Wt	Weight in kg	Bar Bending Shape	Remarks
Top slab	12	Y	10	1	119	119	11150	0.617	818.65	125 10900 125	Bottom 1 reinforcements
	13	Y	10	1	112	112	6625	0.617	457.43	125 6505	Bottom 2 reinforcements
	14	Y	10	1	56	56	8900	0.617	307.26	8900	Bottom 2 reinforcements
	15	Y	10	1	238	238	1925	0.617	282.47	125 1800	Top1 reinforcements
	16	Y	10	1	119	119	3600	0.617	264.12	3600	Top1 reinforcements
	17	Y	10	1	56	56	1225	0.617	42.29	125 1100	Top1 reinforcements
	18	Y	10	1	448	448	2050	0.617	566.23	2050	Top1 reinforcements
	19	Y	10	1	48	48	1150	0.617	34.03	125 1025	Top1 reinforcements
	20	Y	10	1	36	36	1200	0.617	26.63	1200	Top2 reinforcements
	21	Y	10	[illegible]	288	288	900	0.617	159.81	900	Top2 reinforcements
	22	Y	10	1	168	168	2000	0.617	207.16	2000	Top2 reinforcements
Beams (short)	1	Y	16	10	6	60	5740	1.578	522.33	200 5340 200	Main reinforcements
	1	Y	10	10	63	630	1260	0.617	489.41	240 340 240	Links
Beams (Long)	1	Y	16	3	12	36	11925	1.578	677.50	200 11725	Mainreinforcements
	1	Y	10	3	156	468	1260	0.617	363.56	240 340 240	Links
Total Reinforcement (Kg)									27,569.41		

NOTES:

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2. DO NOT SCALE FROM THIS DRAWING
3. THE SCALES GIVEN ON THIS DRAWING REFER TO THE A1 SIZE ORIGINAL DRAWING
4. THE SUBGRADE SHALL BE COMPACTED TO 95% MAXIMUM DRY DENSITY BEFORE THE PLACEMENT OF HARDCORE
5. CONCRETE SHALL BE CLASS C30/37 FOR STRUCTURAL MEMBERS AND CLASS C8/10 FOR BLINDING
6. THE MAXIMUM SIZE OF AGGREGATE SHALL BE 20mm UNLESS OTHERWISE SHOWN
7. REINFORCEMENT SHALL BE HIGH TENSILE DEFORMED TYPE WITH A CHARACTERISTIC YIELD STRESS OF AT LEAST 425N/mm²
8. COVER TO REINFORCEMENT SHALL BE:
   - FOUNDATIONS 50mm
   - SLABS 25mm
   - WALLS AND BEAMS 30mm
9. LAPS TO ALL REINFORCEMENT SHALL BE 50 * BAR DIAMETER UNLESS OTHERWISE SHOWN

Summary

	Weights				
	Y10 Kg	Y12 Kg	Y16 Kg	Y20 Kg	Y25 Kg
RAFT	0.00	7,421.33	0.00	0.00	0.00
Walls		14,529.61			
Top slab	3,165.55				
Beams	852.97		1,599.96		
Total weight	4,018.52	21,950.94	1,599.96	0.00	0.00
Total	27,569.41				

THE UNITED REPUBLIC OF TANZANIA
DAWASA Chief Executive
P. O. Box 1573
Dunga/Malanga Street, Mwananyamala
Dar es Salaam, Tanzania

Consultant: COHIMA Engineering Co. Ltd | In Association with | WWS Design & Development Co. Ltd

Project: Provision of Facilitation and Technical Services for Creation of Essential Framework Conditions, Capacity Building, Preparation of Standard Engineering Designs and Bidding Documents, and Construction Supervision of the Off-grid Sanitation Works in Dar es salaam

Designed | Drawn | Checked | Approved | Scale: NOT TO SCALE | Date: Aug 2021

Title: MWANANYAMALA SIMPLIFIED SEWERAGE SYSTEM - WASTEWATER TREATMENT PLANT
ANAEROBIC BAFFLE REACTOR
BAR BENDING SCHEDULE 2 OF 2

Rev | Date | Description | App

Revision: 01 | Drawing no: MANA/WTP/ABR/13

Appendix VII: Non-Technical Summary

THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF WATER

Dar es Salaam Water Supply & Sanitation Authority
DAWASA Building, Dunga/Malaga Street, Makumbusho Area
P. O. Box 1573, Dar es Salaam. TANZANIA.
Tel. +25522276006/15; Fax: +255222762480; E-mail: dawasaceo@dawasa.co.tz

Provision of Consultancy Services for Preparation of Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan (RAP) Report for Construction of Off Grid Sanitation Projects

Ref No: TZ-DAWASA-91652-CS-QCBS

Comprehensive Project Brief for the Proposed Simplified Sewerage System to be constructed at Kisiwani and Sindano mtaa, Makumbusho ward, Kinondoni District, Dar es Salaam Region

NON-TECHNICAL EXECUTIVE SUMMARY
(English and Kiswahili Versions)

Submitted to:

National Environment Management Council,

Head Office, Kambarage Tower, 6th Floor, P. O. Box 2724, Dodoma.

Phone: +255 262960098, 0713608930,

Email Address: nemcdg@nemc.or.tz

Website: www.nemc.or.tz

Lead Consultant:

Prof. Rubhera RAM Mato (PhD), CEng. (T), Reg. EIA Expert
Mobile: +255754898592; E-Mail: rubheramato@gmail.com

27th February 2024

NON-TECHNICAL EXECUTIVE SUMMARY

Comprehensive Project Brief for the Proposed Simplified Sewerage System to be constructed at Makumbusho Kisiwani mtaa, Makumbusho ward, Kinondoni District, Dar es Salaam Region

Proponent: DAWASA

Proponent's Contact: DAWASA House, **Dunga/Malanga Street/Makumbusho**
P.O Box 1573 DSM
Tel: +255222760006/15
Fax: +255222762480
Email Address: info@dawasa.go.tz

EIA Expert: **Prof. Rubhera RAM Mato**
(PhD), CEng. (T), Reg. EIA Expert
Mobile: +255754898592
E-Mail: rubheramato@gmail.com

INTRODUCTION

The Government of the United Republic of Tanzania (GoT) through the Dar es Salaam Water and Sewerage Authority (DAWASA) under the Ministry of Water intends to implement an Off-Grid Sanitation Project (OGSP) in Dar es Salaam City to serve peri-urban areas not connected to the central sewerage system. DAWASA has received financing from the International Development Association (IDA) in the form of a credit to implement the project. Before implementing the project, the law in Tanzania requires an Environmental Impact Assessment to be conducted and approved by the relevant authority. To comply with the law in Tanzania, the DAWASA intends to apply a portion of the proceeds of the credit to eligible payments for consulting services for Preparation of Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan (RAP) Report for the construction of off-grid sanitation projects.

Dar es Salaam is the largest and most important commercial and industrial center in Tanzania. The city has an estimated population of about 5.0 million and is projected to double at the end of the project horizon of 25 years. About 10% of the population is served by sewers and the rest almost depend on on-site sanitation systems. The sewer coverage is only limited to the area within the city center with a total length of 67.8km and the system is based on a separate system and discharges their effluent into oxidation ponds, and into the sea through a sea outfall of about 1.03km long. The onsite sanitation systems result in Faecal sludge of which handling and management throughout the sanitation chain (from domestic containment, transportation as well as disposal and treatment) is currently hygienically inadequate thus posing environmental and public health risks. The Off-Grid project is intended to address these challenges. The Off-Grid project is divided into several subprojects which will be implemented in the five municipalities of Dar es Salaam City. One of these is the Construction of Simplified Sewerage System at Mwanyamala Kisiwani street, in Makumbusho ward, Kinondoni Municipality. The project is planned to connect 280 households with an estimated population of 24,603 people.

This study was conducted following the Environmental Management (Environmental Impact Assessment and Audit) (Amendment) Regulations, 2018 along with the Environmental Impact Assessment and Audit Regulations of 2005. These Regulations provide legal procedures for implementing the requirements of the Environmental Management Act Cap.191 of 2004. The Regulations give a mandate to NEMC to oversee the EIA process, which culminates with an award of the EIA Certificate by the Ministry responsible for Environment.

Following the EIA Regulations, NEMC is mandated to screen projects and make decisions of the level of EIA required as well as evaluating the adequacy of respective environmental statements. Considering the nature and size of the proposed “Simplified Sewerage System in Kinondoni Municipality”, the project falls under Category “B2” (Non-Mandatory) following Reg.4 (1)(c) and First

Schedule of the amended 2018 Regulations which categorizes the *night soil collection and treatment* being under the '*List of small-scale activities and enterprises that require registration but shall not require Environmental Impact Assessment. Further, the projects shall not require screening and scoping, rather, the Project Brief shall be examined and issued with an Environmental Impact Assessment Certificate*'. The regulations require developers to prepare and submit to the National Management Council (NEMC) filled EIA registration forms and "Project Briefs" for all B2 projects. The preparation and content of the "Project Briefs" are provided under Regulation 6(1) of Environmental Impact Assessment and Audit Regulations, 2005. The same has been followed in preparing this "Project Brief". The study for preparing this project brief was conducted from July to October 2020.

This project brief for the Proposed Construction of Simplified Sewerage System in Kinondoni Municipality is being submitted to NEMC together with EIA Registration Forms for EIA Certificate decision.

PROJECT DESCRIPTION

Makumbushois an administrative ward in the Kinondoni district of the Dar es Salaam Region of Tanzania at Latitude -6.737975° and Longitude 39.227269°. According to the 2022 census, the ward has a total population of 52,347,. Most of streets in Makumbusho ward are unplanned settlement with restricted access roads for feacal sludge emptying trucks. Furthermore, the ward is characterized by having underlying geographical formation setback where water table is significantly high.

Currently, this area is being served through on site sanitation management that involve domestic containment and emptying trucks that are not satisfactory managed. Apart from illegal emptying, underground seepage of faecal sludge may also contaminate ground water leading to water related diseases within this area. To address above challenges, we recommend construction of simplified sewerage system as the solution of faecal sludge management within

the area. The project will be implemented at Makumbusho Makumbusho Kisiwani Street.

The proposed project intends to use the existing alleys (*vichochoro)* for installing the simplified sewer pipelines. The local government in the project area has agreed with DAWASA through a formal meeting held on 16/10/2020 to use the alleys whether formal or non-formal for the construction of a simplified sewerage system and the associated appurtenances to improve the sanitation conditions.

POLICIES, LEGISLATION AND INSTITUTIONAL ARRANGEMENTS

Sector policies that were reviewed when executing the proposed development are;

- National Environment Policy 2021
- National Land Policy of 1997
- Construction Industry Policy (2003)
- National Health Policy (2003)
- National Gender Policy of 2000
- National Human Settlements Development Policy (2000)

Principal Acts, regulations and guidance that support and provide guidelines to implement the intended project are;

- Environmental Management Act (2004)
- The Environmental Management (Fees and Charges) Regulations, 2021
- The Environmental Management (Control of hazardous Waste) regulations, 2021
- The Environmental Management (Control of Noise and vibration) regulations, 2015
- The Environmental Management (Prohibition of Plastic Carrier bags) regulations, 2019

- The Environmental Management (Solid Waste Management) regulations, 2007
- The Environmental Management (Water Quality) regulations, 2009
- The Environmental Management (Air Quality) regulations, 2009
- The Environmental Management (Soil Quality) regulations, 2009
- Occupational Health and Safety Act 2003
- The Water Supply and Sanitation Act No. 12 of 2009
- Engineers Registration Act and its Amendments 1997 and 2007
- The Contractors Registration (Amendment) Act, 2008
- The Architects and Quantity Surveyors Act (1997)
- The Urb World Bank guidelines for Environmental Managementan Planning Act (2007)
- Public Health Act (2009)

STAKEHOLDERS ISSUES AND CONCERNS

Different stakeholders were consulted. Among of the issues that arise during consultation at the Kinondoni Municipal Council and community at Makumbusho Kisiwani mtaa are:

Facilities to be developed

- Proper awareness to people on best ways to dispose pads and other waste in order to avoid system blockage
- The proposed facilities should be well protected

Awareness to the community

- Awareness to the people on the system operation, since it is a new technology
- Awareness to the community to avoid riots in the future
- Educate the community to avoid the use of detrimental disinfectants to the system so as to avoid system failure and contaminated manures.

PROJECT REQUIREMENTS AND WASTE GENERATION

Project requirements

The main materials for construction of Simplified sewerage system include cement, aggregates (stones), water, steel, sand, timbers, blocks, PVC pipes, and gravels. During the construction phase the project will require not less than 100 workers both skilled and non-skilled laborers for each phase of project construction. During operational phase it is estimated that 30 unskilled workers will be retained for operating the system.
Equipment expected to be used during the construction works are Tippers, Concrete Mixers, poker vibrators, Wheel barrow, Compactor, etc.

Wastes generation

The major wastes generation associated with the project are solid wastes and liquid waste. During the maximum operation phase a total of 100m^3 per day of liquid waste is estimated to be received at the downstream receiving chamber of the Fecal sludge treatment facility close to the project site. During construction it is expected that at least 60kg of solid wastes will be produced.

POTENTIAL IMPACTS

The following impacts were identified to be likely to occur during mobilization phase:

- Employment opportunities
- Noise pollution
- Air pollution from dust emission
- Blockage of paths

The following impacts were identified to be likely to occur during the construction phase;

- Employment opportunities
- Increased socio-cultural interaction
- Increased Revenue to the nation through taxes, both direct and indirect

- Cost reduction for sewage management
- Increased HIV/AIDS and other sexual related diseases
- Land degradation and increased erosion
- Noise pollution
- Air Pollution from dust emission
- High Risk of Health associated with construction work
- Waste generation during construction
- Sewer leakage/overflow
- Blockage of paths

The following impacts were identified to be likely to occur during the operational phase;

- Improved social-economic livelihood and dignity within the beneficiary society
- Increased Revenue to the nation through taxes, both direct and indirect
- Cost reduction for sewage management
- Sewer leakage/overflow

MITIGATION MEASURES AND ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

The options to minimize or prevent the identified adverse social and environmental impacts as well as a monitoring plan have been suggested in this report and are contained in the ESMP. Many of them are based on good engineering practices and the timely responsiveness of the responsible institution. The ESMP describes the implementation schedule of the proposed mitigation measures as well as planning for long-term monitoring activities. It defines the roles and responsibilities of different actors of the plan. The Approach environmental and social costs amount to Tshs 38,000,000.00. The estimated annual costs for carrying out the proposed environmental and social motoring program amounts to TSH 28,000,000.00.

DECOMMISSIONING PLAN

The decommissioning is not anticipated in the foreseeable future. However, if this will happen, may entail change of use (functional changes) or demolition triggered by change of land use. In view of this, specific mitigation measures pertaining to environmental impacts of decommissioning works cannot be proposed at the moment with a reasonable degree of certainty.

CONCLUSION

The proposed project is of greater profit to the community and the country at large as it promotes and improve sanitation in the streets. When there is good and improved sanition, then the outbreak of diseases like diarhoea and associated stomach and waterborne diseases are also reduced and prevented hence improved public health.

The impacts identified are preventable and of less negativity to the community, therefore the developer can be provided with the environmental clearance certifacte in order to commence the implimentation of the project.

It is, therefore, concluded that implementation of the proposed construction of the Simplified sewerage system at Makumbusho Kisiwani mtaa will entail no detrimental impacts provided that the recommended mitigation measures are adequately and timely put in place. The identified adverse impacts shall be managed through the proposed mitigation measures and implementation regime laid down in this EIS. DAWASA is committed to implementing all the recommendations given in the EIS and further carrying out the environmental auditing and monitoring schedules.

MUHTASARI USIO WA KIUFUNDI

Muhtasari wa Mradi wa Mfumo wa Majitaka uliorahisishwa unaotarajiwa kujengwa Mtaa wa Kisiwani na Sindano, Kata ya Makumbusho, Wilaya ya Kinondoni, Mkoa wa Dar es Salaam

Mmiliki: Mamlaka ya Majisafi na Usafi wa Mazingira Dar es Salaam

Mawasliano ya Mmiliki: DAWASA,
DAWASA Building, Dunga/Malaga Street, Makumbusho
S.L.P 1573, Dar es Salaam. TANZANIA.
Simu. +25522276006/15; Fax: +255222762480;
Barua Pepe: dawasaceo@dawasa.co.tz

Mshauri Mwelekezi: Prof. Rubhera RAM Mato (PhD), CEng. (T), Reg. EIA Expert
S.L.P 35478, Dar es Salaam, Tanzania
Simu: +255754898592
Barua Pepe: rubheramato@gmail.com

UTANGULIZI

SERIKALI ya Jamhuri ya Muungano wa Tanzania (GoT) kupitia Mamlaka ya Majisafi na Majitaka Dar es Salaam (DAWASA) chini ya Wizara ya Maji inatarajia kutekeleza Mradi wa Usafi wa Mazingira Nje ya Mtandao (OGSP) katika Jiji la Dar es Salaam ili kuhudumia maeneo ya pembezoni mwa miji. maeneo ambayo hayajaunganishwa na mfumo mkuu wa maji taka. DAWASA imepata ufadhili kutoka kwa Jumuiya ya Maendeleo ya Kimataifa (IDA) ikiwa ni mkopo wa kutekeleza mradi huo. Kabla ya kutekeleza mradi huo, sheria nchini Tanzania inataka Tathmini ya Athari kwa Mazingira ifanyike na kuidhinishwa na mamlaka husika. Ili kuzingatia sheria nchini Tanzania, DAWASA inatarajia kutumia sehemu ya mapato ya mikopo kwa malipo stahiki kwa ajili ya huduma za ushauri kwa ajili ya Maandalizi ya Tathmini ya Athari kwa Mazingira na Kijamii (ESIA) na Ripoti ya Mpango Kazi wa Makazi mapya (RAP) kwa ajili ya ujenzi wa miradi ya usafi wa mazingira nje ya gridi ya taifa.

Dar es Salaam ni kituo kikubwa na muhimu zaidi cha biashara na viwanda nchini Tanzania. Jiji lina idadi ya watu wanaokadiriwa kuwa milioni 5.0 na inakadiriwa kuongezeka mara mbili mwishoni mwa upeo wa mradi wa miaka 25. Takriban 10% ya watu wanahudumiwa na mifereji ya maji machafu na

wengine karibu hutegemea mifumo ya usafi wa mazingira kwenye tovuti. Mfereji wa maji taka ni mdogo tu kwa eneo la katikati mwa jiji lenye urefu wa jumla ya 67.8km na mfumo unategemea mfumo tofauti na humwaga maji machafu yao kwenye madimbwi ya vioksidishaji, na baharini kupitia mkondo wa bahari wa takriban 1.03km. . Mifumo ya usafi wa mazingira kwenye tovuti husababisha uchafu wa kinyesi ambao utunzaji na usimamizi wake katika mnyororo mzima wa usafi wa mazingira (kutoka kwa vyombo vya nyumbani, usafirishaji na utupaji na matibabu) kwa sasa hautoshi kiafya na hivyo kuhatarisha mazingira na afya ya umma. Mradi wa Off-Grid unakusudiwa kutatua changamoto hizi. Mradi wa Off-Grid umegawanywa katika miradi midogo kadhaa ambayo itatekelezwa katika manispaa tano za Jiji la Dar es Salaam. Mojawapo ni Ujenzi wa Mfumo wa Majitaka Rahisi katika mtaa wa Makumbusho Kisiwani, Kata ya Makumbusho, Manispaa ya Kinondoni. Mradi umepangwa kuunganisha kaya 280 zenye idadi ya watu wanaokadiriwa kuwa 24,603.

Utafiti huu ulifanyika kwa kufuata Kanuni za Usimamizi wa Mazingira (Tathmini na Ukaguzi wa Athari kwa Mazingira) (Marekebisho), 2018 pamoja na Tathmini ya Athari za Mazingira na Kanuni za Ukaguzi za mwaka 2005. Kanuni hizi zinatoa taratibu za kisheria za kutekeleza matakwa ya Sheria ya Usimamizi wa Mazingira Sura ya 191. ya 2004. Kanuni zinatoa mamlaka kwa NEMC kusimamia mchakato wa EIA, ambao unaishia kwa kutunukiwa Cheti cha EIA na Wizara inayohusika na Mazingira.

Kufuatia Kanuni za EIA, NEMC ina mamlaka ya kuchunguza miradi na kufanya maamuzi ya kiwango cha EIA kinachohitajika pamoja na kutathmini utoshelevu wa taarifa za mazingira husika. Kwa kuzingatia aina na ukubwa wa pendekezo la “Mfumo wa Majitaka uliorahisishwa katika Manispaa ya Kinondoni”, mradi upo chini ya Kitengo “B2” (Sicho lazima) kwa kufuata Kanuni ya 4 (1)(c) na Jedwali la Kwanza la Kanuni zilizorekebishwa za 2018 ambazo zinaainisha. ukusanyaji na matibabu ya udongo usiku ukiwa chini ya 'Orodha ya shughuli ndogo ndogo na biashara zinazohitaji usajili lakini hazitahitaji Tathmini ya Athari

kwa Mazingira. Zaidi ya hayo, miradi haitahitaji uchunguzi na upeo, badala yake, Muhtasari wa Mradi utachunguzwa na kutolewa kwa Cheti cha Tathmini ya Athari kwa Mazingira. Kanuni hizo zinawataka wasanidi programu kuandaa na kuwasilisha kwa Baraza la Kitaifa la Usimamizi (NEMC) lililojaza fomu za usajili wa EIA na "Muhtasari wa Miradi" kwa miradi yote ya B2. Maandalizi na maudhui ya “Muhtasari wa Mradi” yametolewa chini ya Kanuni ya 6(1) ya Tathmini ya Athari kwa Mazingira na Kanuni za Ukaguzi, 2005. Vile vile vimefuatwa katika kuandaa “Muhtasari wa Mradi” huu. Utafiti wa kuandaa muhtasari wa mradi huu ulifanyika Julai hadi Oktoba 2020.

Muhtasari huu wa mradi wa Mapendekezo ya Ujenzi wa Mfumo wa Majitaka uliorahisishwa katika Manispaa ya Kinondoni unawasilishwa NEMC pamoja na Fomu za Usajili wa TAM kwa uamuzi wa Cheti cha TAM.

MAELEZO YA MRADI

Makumbushoni kata ya wilaya ya Kinondoni katika Mkoa wa Dar es Salaam , Tanzania iliyoko Latitudo -6.737975° na Longitude 39.227269° . Kwa mujibu wa sensa iliyofanyika mwaka wa 2002, kata ina wakazi wapatao 52,347 waishio humo, kata ya Makumbusho. Mitaa mingi katika kata ya Makumbusho ni makazi ambayo hayajapangwa na barabara zenye vizuizi kwa lori za kumwaga tope. Zaidi ya hayo, kata ina sifa ya kuwa na upungufu wa malezi ya kijiografia ambapo kiwango cha maji kiko juu sana.

Kwa sasa, eneo hili linahudumiwa kupitia usimamizi wa usafi wa mazingira ambao unahusisha uzuiaji wa ndani na lori za kuondoa mizigo ambazo hazidhibitiwi kwa njia ya kuridhisha. Kando na umwagaji haramu, mkondo wa chini ya ardhi wa tope la kinyesi unaweza pia kuchafua maji ya ardhini na kusababisha magonjwa yanayohusiana na maji ndani ya eneo hili. Ili kutatua changamoto zilizo hapo juu, tunapendekeza ujenzi wa mfumo wa maji taka uliorahisishwa kama suluhu ya udhibiti wa kinyesi katika eneo hilo. Mradi huo utatekelezwa katika mtaa wa Makumbusho Kisiwani.

Mradi unaopendekezwa unakusudia kutumia vichochoro vilivyopo (vichochoro) kwa ajili ya kuweka mabomba ya maji taka yaliyorahisishwa. Serikali ya mtaa katika eneo la mradi imekubaliana na DAWASA kupitia kikao rasmi kilichofanyika tarehe 16/10/2020 kutumia vichochoro hivyo iwe rasmi au visivyo rasmi kwa ajili ya ujenzi wa mfumo wa majitaka uliorahisishwa na vyombo husika ili kuboresha mazingira ya usafi.

SERA, SHERIA NA MIPANGO YA TAASISI

Sera za kisekta ambazo zilipitiwa upya wakati wa utekelezaji wa maendeleo yaliyopendekezwa ni;

- Sera ya Kitaifa ya Mazingira ya 2021
- Sera ya Taifa ya Ardhi ya mwaka 1997
- Sera ya Sekta ya Ujenzi (2003)
- Sera ya Taifa ya Afya (2003)
- Sera ya Taifa ya Jinsia ya 2000
- Sera ya Taifa ya Maendeleo ya Makazi (2000)

Sheria Kuu, kanuni na miongozo inayosaidia na kutoa miongozo ya kutekeleza mradi uliokusudiwa ni;

- Sheria ya Usimamizi wa Mazingira (2004)
- Kanuni za Usimamizi wa Mazingira (Ada na Ada) za 2021
- Kanuni za Usimamizi wa Mazingira (Udhibiti wa Taka hatarishi), 2021
- Kanuni za Usimamizi wa Mazingira (Udhibiti wa Kelele na Mtetemo), 2015
- Kanuni za Usimamizi wa Mazingira (Marufuku ya Mifuko ya Kubeba Plastiki), za 2019
- Kanuni za Usimamizi wa Mazingira (Udhibiti wa Taka Ngumu), 2007
- Kanuni za Usimamizi wa Mazingira (Ubora wa Maji), 2009
- Kanuni za Usimamizi wa Mazingira (Ubora wa Hewa), 2009
- Kanuni za Usimamizi wa Mazingira (Ubora wa Udongo), 2009
- Sheria ya Afya na Usalama Kazini ya 2003
- Sheria ya Ugavi wa Maji na Usafi wa Mazingira Na. 12 ya 2009

- Sheria ya Usajili wa Wahandisi na Marekebisho yake ya 1997 na 2007
- Sheria ya Usajili wa Makandarasi (Marekebisho) ya mwaka 2008
- Sheria ya Wabunifu na Wakadiriaji Majenzi (1997)
- Miongozo ya Benki ya Dunia ya Urb kwa Sheria ya Mipango ya Usimamizi wa Mazingira (2007)
- Sheria ya Afya ya Umma (2009)

MASUALA NA MAMBO YA WADAU

Wadau mbalimbali walishauriwa. Miongoni mwa mambo yanayojitokeza wakati wa mashauriano katika Halmashauri ya Manispaa ya Kinondoni na jamii katika Mtaa wa Makumbusho Kisiwani ni pamoja na:

Vifaa vya kuendelezwa

- Uelewa sahihi kwa watu juu ya njia bora za kutupa pedi na taka zingine ili kuzuia kuziba kwa mfumo
- Vifaa vinavyopendekezwa vinapaswa kulindwa vyema
- Ufahamu kwa jamii
- Ufahamu kwa watu juu ya uendeshaji wa mfumo, kwa kuwa ni teknolojia mpya
- Uhamasishaji kwa jamii kuepuka machafuko siku zijazo
- Kuelimisha jamii kuepuka matumizi ya dawa hatarishi kwenye mfumo ili kuepusha kushindwa kwa mfumo na mbolea iliyochafuliwa.

MAHITAJI YA MRADI NA UZALISHAJI WA TAKA

Mahitaji ya mradi

Nyenzo kuu za ujenzi wa mfumo wa maji taka uliorahisishwa ni pamoja na saruji, mikusanyiko (mawe), maji, chuma, mchanga, mbao, vitalu, mabomba ya PVC na changarawe. Wakati wa awamu ya ujenzi mradi utahitaji wafanyakazi wasiopungua 100 wenye ujuzi na vibarua wasio na ujuzi kwa kila awamu ya

ujenzi wa mradi. Wakati wa awamu ya uendeshaji inakadiriwa kuwa wafanyakazi 30 wasio na ujuzi watahifadhiwa kwa uendeshaji wa mfumo.
Vifaa vinavyotarajiwa kutumika wakati wa kazi za ujenzi ni Tippers, Mixers Zege, vibrators poker, barrow gurudumu, Compactor, nk.

Uzalishaji wa taka

Uzalishaji mkubwa wa taka unaohusishwa na mradi ni taka ngumu na taka za kioevu. Wakati wa awamu ya upeo wa operesheni jumla ya lita za ujazo 100,000 kwa siku ya taka ya kioevu inakadiriwa kupokelewa kwenye chumba cha kupokelea cha chini cha mkondo cha kituo cha kutibu kinyesi karibu na eneo la mradi. Wakati wa ujenzi inatarajiwa kwamba angalau kilogramu 60 ya taka ngumu itatolewa.

ATHARI ZINAZOWEZA

Athari zifuatazo zilitambuliwa kuwa zinaweza kutokea wakati wa awamu ya uhamasishaji:

- Fursa za ajira
- Uchafuzi wa kelele
- Uchafuzi wa hewa kutokana na uchafuzi wa vumbi
- Kuziba kwa njia

Athari zifuatazo zilitambuliwa kuwa zinaweza kutokea wakati wa awamu ya ujenzi;

- Fursa za ajira
- Kuongezeka kwa mwingiliano wa kijamii na kitamaduni
- Ongezeko la Mapato kwa taifa kupitia kodi, za moja kwa moja na zisizo za moja kwa moja
- Kupunguza gharama za usimamizi wa maji taka
- Kuongezeka kwa VVU/UKIMWI na magonjwa mengine yanayohusiana na ngono
- Uharibifu wa ardhi na kuongezeka kwa mmomonyoko wa ardhi

- Uchafuzi wa kelele
- Uchafuzi wa Hewa kutokana na uchafuzi wa vumbi
- Hatari kubwa ya Afya inayohusishwa na kazi ya ujenzi
- Uzalishaji wa taka wakati wa ujenzi
- Kuvuja kwa maji taka/kufurika
- Kuziba kwa njia

Athari zifuatazo zilitambuliwa kuwa zinaweza kutokea wakati wa awamu ya uendeshaji;

- Kuboresha maisha ya kijamii na kiuchumi na heshima ndani ya jamii inayofaidika
- Ongezeko la Mapato kwa taifa kupitia kodi, za moja kwa moja na zisizo za moja kwa moja
- Kupunguza gharama za usimamizi wa maji taka
- Kuvuja kwa maji taka/kufurika

HATUA ZA KUPUNGUZA NA MPANGO WA USIMAMIZI WA MAZINGIRA NA KIJAMII (ESMP)

Chaguzi za kupunguza au kuzuia athari mbaya za kijamii na kimazingira zilizotambuliwa pamoja na mpango wa ufuatiliaji zimependekezwa katika ripoti hii na zimo katika ESMP. Wengi wao ni msingi wa mazoea mazuri ya uhandisi na mwitikio wa wakati wa taasisi inayowajibika. ESMP inaelezea ratiba ya utekelezaji wa mapendekezo ya hatua za kupunguza na pia kupanga shughuli za ufuatiliaji wa muda mrefu. Inafafanua majukumu na wajibu wa watendaji mbalimbali wa mpango. Gharama za Mbinu za kimazingira na kijamii zinafikia Tshs 38,000,000.00. Makadirio ya gharama za kila mwaka za kutekeleza mpango unaopendekezwa wa magari ya kimazingira na kijamii ni TSH 28,000,000.00.

MPANGO WA KUONDOKA

Uondoaji wa amri hautarajiwi katika siku zijazo zinazoonekana. Hata hivyo, kama hii itatokea, inaweza kuhusisha mabadiliko ya matumizi (mabadiliko ya

kiutendaji) au uharibifu unaosababishwa na mabadiliko ya matumizi ya ardhi. Kwa kuzingatia hili, hatua mahususi za kupunguza zinazohusu athari za kimazingira za kazi za uondoaji kazi haziwezi kupendekezwa kwa sasa kwa kiwango cha uhakika.

HITIMISHO

Mradi unaopendekezwa una faida kubwa kwa jamii na nchi kwa ujumla kwani unakuza na kuboresha usafi wa mazingira mitaani. Kunapokuwa na usafi wa mazingira bora na ulioboreshwa, basi mlipuko wa magonjwa kama vile kuhara na magonjwa yanayohusiana na tumbo na yale yatokanayo na maji pia hupungua na kuzuiwa hivyo kuboreshwa kwa afya ya umma.

Athari zilizoainishwa zinaweza kuzuilika na hazina hasi kidogo kwa jamii, kwa hivyo msanidi anaweza kupewa cheti cha kibali cha mazingira ili kuanza kuhusisha mradi.

Hivyo basi, inahitimishwa kuwa utekelezaji wa mapendekezo ya ujenzi wa mfumo wa majitaka uliorahisishwa katika Mtaa wa Makumbusho Kisiwani hautaleta madhara yoyote isipokuwa kwamba hatua zinazopendekezwa za kupunguza madhara zimewekwa ipasavyo na kwa wakati. Athari mbaya zilizotambuliwa zitadhibitiwa kupitia hatua zilizopendekezwa za kupunguza na mfumo wa utekelezaji uliowekwa katika ripoti ya TAM. DAWASA imejitolea kutekeleza mapendekezo yote yaliyotolewa katika ripoti ya TAM na kutekeleza zaidi ratiba za ukaguzi na ufuatiliaji wa mazingira.