SFD Lite Report

Homna Municipality, Cumilla
Bangladesh

This SFD Lite Report was prepared by
CWIS-FSM Support Cell, DPHE

Date of production/ last update: 07/10/2021

1 The SFD Graphic

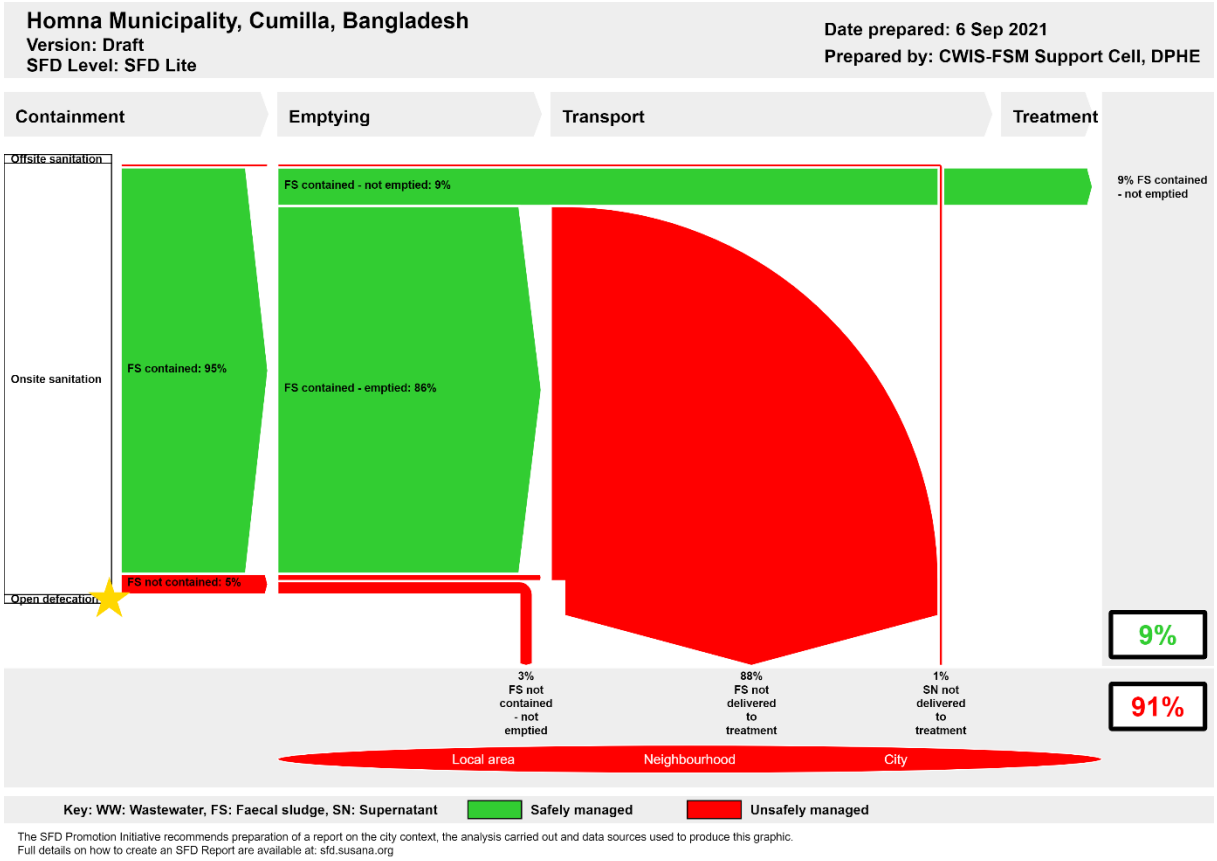

Figure 1: SFD Graphic for Homna municipality.

2 SFD Lite information

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- This report was compiled as part of the field survey and rapid assessment under the project GoB-UNICEF supported WASH Project, DPHE. We would like to thank Mr. Adv. Md. Nazrul Islam, honorable Mayor, Homna Municipality, Mr. Shahadat Hossain, Secretary, Homna Municipality; Mr. Toffazzol Hossain, Assistant Engineer, and Md. Abul Kalam Azad, Sub-Assistant Engineer, Homna Municipality for providing all the required primary and secondary data and cooperating for Key Informant Interviews (KIIs) & Focused Group Discussions (FGDs). This report would not have been possible to produce without the constant support of Mr. Adv. Md. Nazrul Islam, honorable Mayor, Homna Municipality, helped in conducting rapid assessments and FGDs in the field.
- We also acknowledge the support of the Centre for Science and Environment, India for the promotion of SFD in Bangladesh.

Collaborating partners:

- Homna Municipality played vital roles in collecting and sharing data, and producing this SFD graphic and SFD lite report.

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3 General city information

Homna is a sub-district town of Comilla district in the division of Chittagong, Bangladesh. The town is situated beside the Titas River and well connected with road and water to the capital city Dhaka. It town was declared as Municipality in 2002.

Table 1: City profile (Source: Rapid assessment 2021, GoB-UNICEF supported WASH Project, DPHE)

Population parameters	
Estimated population, 2021	39,000
Households, 2020	7,728
Area, sq.km	14.10
Total roads, km	29
Total drains, km	26.5

According to the population census of 2011 by the Bangladesh Bureau of Statistics (BBS), the Municipality population was 29,173. The urban population growth in Homna is considered 3% per year. Considering the floating population, such as farmers and traders, who come to the city every day, the present (2020) population is estimated to be around 39,000.

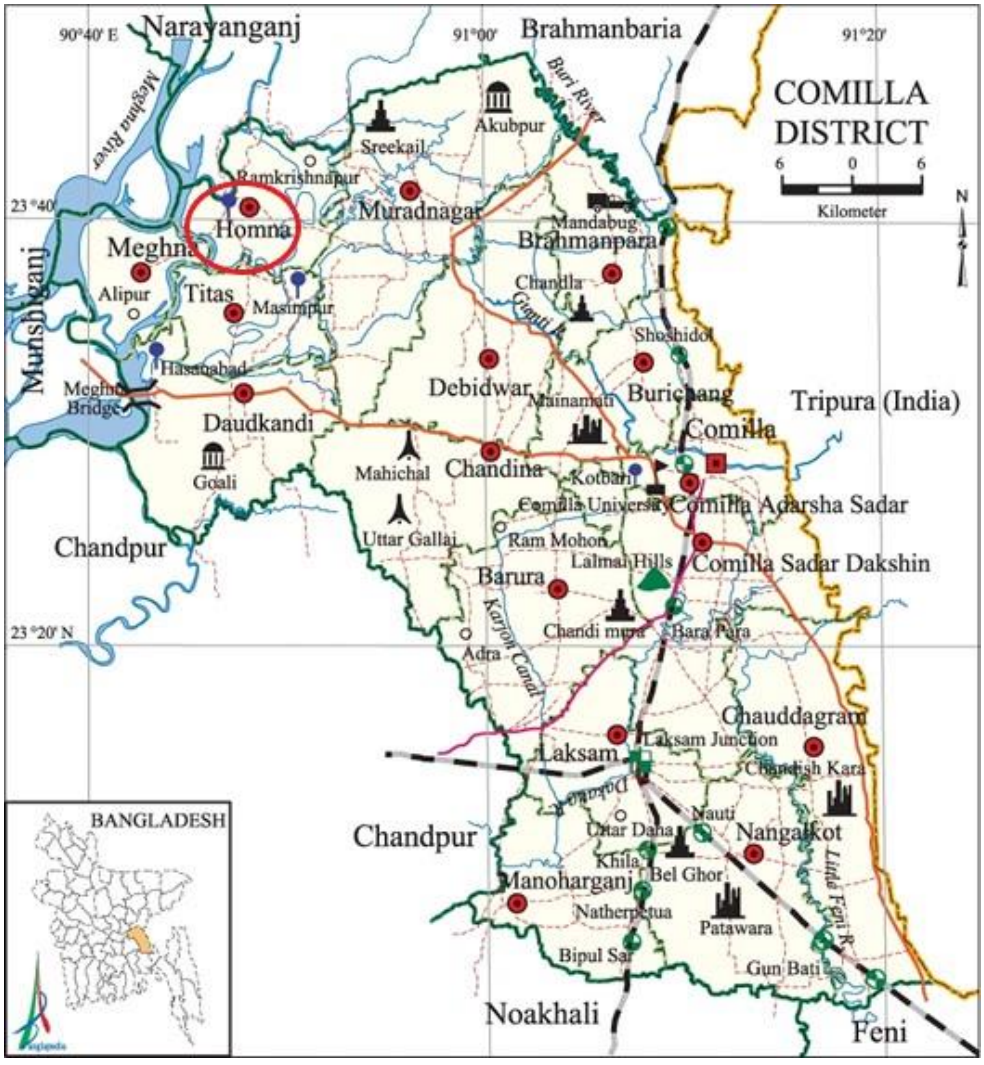

Figure 2: Homna municipality Location Map (https://en.banglapedia.org/index.php/Comilla_District)

The Municipality covers an area of 14.10 square kilometers. At present, Homna Municipality has 29 km of roads, out of which 12 km are bituminous roads and Herring-Bone-Bond (HBB) roads and 17 km are earthen roads. The city has about 26.5 km of drains, which includes 6.50 km of pucca drains and 20 km of earthen drains (Table 1).

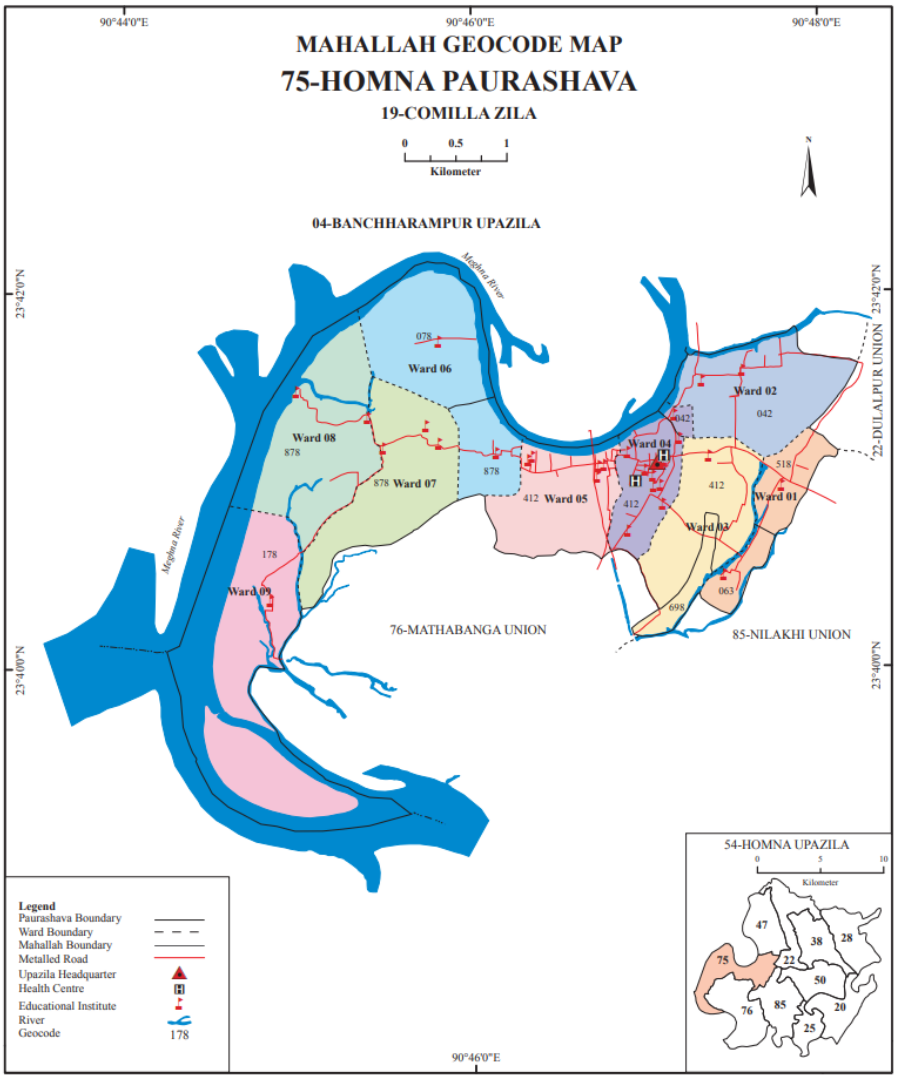

Figure 3: Homna municipality Ward Boundary Map (GIS Project, BBS 2016)

The geographical coordinates of Homna are $23^0$37' to $23^0$45' N, $90^0$38' to $91^0$53' E. In the context of Bangladesh, the Municipality area is relatively plain land. The Titas River passed on the east side of the Municipality.

According to the Bangladesh Meteorological Department (BMD), the city area and surrounding area is distinctive as tropical-subtropical sub-humid climate. It is characterized by warm, humid summers and cool, and dry winters. From November to March, it is dry and cool while from April to May it is hot during the pre-monsoon season. From June to October, the monsoon season is warm, cloudy, and wet. The warmest month is April, the coolest is January, the wettest is July and the driest is January. The maximum mean temperature observed is 25-32°C from May to August, with the minimum temperatures of between 12-15°C in January. The annual average rainfall is about 2430 mm. according to BMD (1981-2017).

In Homna Municipality, most of the physical growth has taken place in the Middle-Northern portion. Other areas including peri-urban settlements have developed in a scattered manner surrounded by agricultural lands.

Figure 4: Homna Municipality, is situated at the bank of the river Titas

(Rapid Assessment, KII & FGD 2021/ GoB-UNICEF supported WASH Project, DPHE)

4 Service outcomes

Homna Municipality, Cumilla, Bangladesh, 6 Sep 2021. SFD Level: SFD Lite
Population: 39000
Proportion of tanks: septic tanks: 90%, fully lined tanks: 0%, lined, open bottom tanks: 100%

Containment						
System type	Population	FS emptying	FS transport	FS treatment	SN transport	SN treatment
	Pop	F3	F4	F5	S4e	S5e
System label and description	Proportion of population using this type of system (p)	Proportion of this type of system from which faecal sludge is emptied	Proportion of faecal sludge emptied, which is delivered to treatment plants	Proportion of faecal sludge delivered to treatment plants, which is treated	Proportion of supernatant in open drain or storm sewer system, which is delivered to treatment plants	Proportion of supernatant in open drain or storm sewer system that is delivered to treatment plants, which is treated
T1A2C5 Septic tank connected to soak pit	1.0	50.0	0.0	0.0		
T1A2C6 Septic tank connected to open drain or storm sewer	1.2	38.0	0.0	0.0	0.0	0.0
T1A2C7 Septic tank connected to open water body	3.2	38.0	0.0	0.0		
T1A2C9 Septic tank connected to 'don't know where'	0.6	38.0	0.0	0.0		
T1A4C10 Lined tank with impermeable walls and open bottom, no outlet or overflow	3.0	0.0	0.0	0.0		
T1A5C10 Lined pit with semi-permeable walls and open bottom, no outlet or overflow	90.0	95.0	0.0	0.0		
T1A6C10 Unlined pit, no outlet or overflow	1.0	0.0	0.0	0.0		

Table 2: SFD Matrix for Homna Municipality.

The outcome of the SFD graphic shows that only nine percent (9%) of the excreta flow is classified as safely managed, and the remaining ninety-one (91%) percent is classified as unsafely managed (Figure 1). The unsafely managed excreta originate from Faecal Sludge (FS) not contained - emptied but not delivered to treatment (88%), FS not contained - not emptied (3%) and 1% of supernatant not delivered to treatment. 9% FS contained - not emptied is considered as safely managed.

The percentages presented in Table 2 and discussed in the next section are based on data collected through rapid assessments, household surveys, Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) (Figure 5 and 6).

Overview on technologies and methods used for different sanitation systems through the sanitation service chain is as follows:

4.1 Offsite Systems

The city does not have a dedicated sewerage system. However, during field observations and rapid assessments, it was found that there are certain areas where a portion of septic tanks are directly connected to open drains or storm sewer. Therefore, T1A2C6 system is considered as 1.2% of the total population of the city to generate the SFD graphic. In the absence of a sewerage system, the supernatant in T1A2C6 is directly discharged into the river or the environment untreated.

4.2 On-site Sanitation Systems

Containment: Almost all the households (99%) in the city have their own latrines connected to single pits, twin pits, or septic tanks. The rest of the households use community latrines (0.5%) and neighbor's toilets (0.5%). From the rapid assessment, it was found that only 6% of the city population uses septic tanks as the containment system, 90% of the toilets have single pit systems and 3% of people use double pits in the city. About 1% of the people have an unlined pit which has a significant risk of groundwater pollution (KII, FGDs, Household visit and rapid assessment, 2021).

Single pit latrine

Single pit-offset latrine

Twin pit latrine

Septic tank directly discharges to a pond, no soak pit

Figure 5: Different types of onsite sanitation systems, containment technologies and their connections in Homna Municipality (Rapid Assessment, KII & FGD 2021/ GoB-UNICEF supported WASH Project, DPHE)

According to the type of connectivity and features of containment technologies, the discharging points of the toilets are categorized as 1% of the population uses septic tanks connected to soak pits (T1A2C5), 1.2% uses septic tanks connected to open drain (T1A2C6), 3.2% uses septic tanks connected to open water body (T1A2C7), 0.5% utilizes septic tanks connected to 'don't know where' (T1A2C9), 3% of the population uses lined tank with impermeable walls and open bottom, no outlet or overflow (T1A4C10)

and 90% of the population rely on the lined pit with semi-permeable walls and open bottom, no outlet or overflow (T1A5C10) and 1% population uses an unlined pit, no outlet or overflow (T1A6C10). Thus, at the containment stage, the city's excreta of 95% of the population are contained. Figure 4 shows pictures of some of these sanitation technologies in operation.

Groundwater Pollution: The groundwater level below the ground surface is 15-20 m. The most common drinking water production technology is tubewell with a hand pump or motorized pump. Over 56% of the households use their own tubewell fitted with an electric motor and 32% use own hand pump tubewell. Only 10% of households use pipeline supply water.

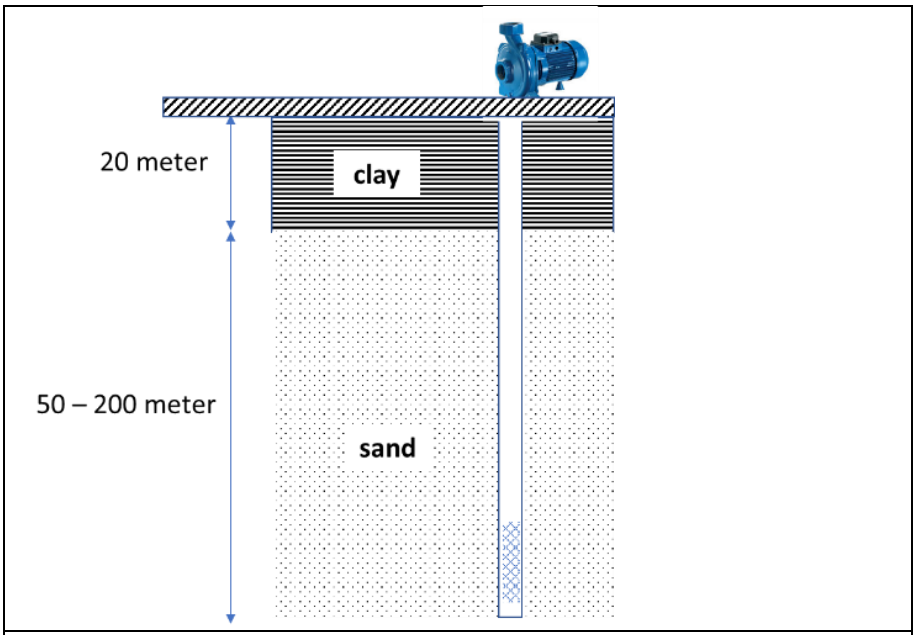

Fig 6 Soil profile in Cumilla district and location of tubewell screen

Lateral separation between sanitation facilities and water sources varies from one area to another. The main source of drinking water is tube well. Tube wells of different sizes and depths are generally used to pump water from the confined aquifers. During the household visit and FGDs, it is found that less than 25% of sanitation facilities are located within 10 meters from the groundwater source. Besides, due to the geographical situation, sanitation facilities are not located uphill of the groundwater sources. According to a survey report on 'Hydrogeological screening, slug test and geophysical logging on observation well units', conducted by the Department of Public Health Engineering (DPHE), drinking water is collected from the confined aquifer (20 m – 200 m) through pumps. Therefore, a low risk of groundwater contamination is considered in the city.

Emptying: Households relying on septic tanks have to arrange themselves for emptying of the septic tank. It is observed from the rapid assessment that most of the septic tanks have been constructed in the last 4-6 years. According to the rapid assessment, the frequency of emptying of septic tanks or covered pits varies from 1 to 10 years depending upon the size, uses, etc.

However, about 50% of the septic tanks, connected to the soak pit are emptied within 2-5 years. About 38% of the septic tanks connected to open drains, open ground or water bodies are emptied within 4-5 years. Almost 95% of single pit latrines are emptied within 1-2 years. Besides the above information, it is also revealed during the discussion in FGDs and household visits, the demand for desludging septic tanks would increase shortly. Desludging of the septic tanks or pit is mostly done by private sweepers (92%). Only in a few households, desludging is done by municipal sweepers (6) and family members (2%).

100% of the sludge withdrawal is done manually using a bucket and rope for several reasons. The use of the manual pump and electric pumps are not found among emptiers. This manual method has high risks for the health and safety of the workers. These reflect the absence of safe and improved technologies for sludge emptying. The municipal authority does not operate any emptying service with mechanical vacuum trucks in this Municipality.

Transportation: The sludge withdrawn from the septic tanks and latrine pits by the cleaners is disposed of in various places. Most of the sludge (85%) is disposed of in the open environment like a drain, open ground, river and water bodies. A small portion (15%) is disposed of in a dug hole covered with soil away from the house.

Treatment/Disposal: There are no facilities for excreta treatment in Homna Municipality. There is currently no re-use of the faecal sludge.

4.3 Open Defecation:

From the Household visit, rapid assessments, KIIs and FGDs, it was found that 100% of citizens use any kind of toilet in the Municipality. Thus, from the sanitation point of view, the town is considered an open defecation-free town.

5 Data and assumptions

The baseline survey conducted in October 2020 contains detailed data on different stages of the sanitation value chain. It included sample household surveys, along with informal interviews, open-ended consultations, key informant interviews and focus group discussions with the municipality officials, town level coordination committee, households, social workers, business persons, pit emptiers and the citizens including women in all the wards of the municipality.

The SFD matrix was generated from these data. Data from all these sources were triangulated to produce the SFD matrix, the SFD graphic and the SFD lite report.

The last census was carried out about 10 years ago. So, the actual population, household and sanitation data is not updated yet. Most of the households with septic tanks do not know the actual type, size and design desludging periods. Also, a large number of pit users are unaware of if they emptied their pits or not. Due to all these data gaps, some assumptions have been made to produce the SFD graphic.

Following assumptions were made for developing the SFD graphic for Homna Municipality:

- ✓ The proportion of FS in septic tanks, fully line tanks and line, open bottom tanks are considered 90%, 0% and 100% respectively, as per the guidance given in the Frequently Asked Questions (FAQs) in the Sustainable Sanitation Alliance (SuSanA) website.
- ✓ According to the population census in 2011 by the Bangladesh Bureau of Statistics (BBS), the Municipality population was 29,173. The urban population growth in Homna is considered 3% per year. Considering the floating population, such as farmers and traders, comes to the city every day, the present (2020) population is estimated to be around 39,000.
- ✓ There are around 3% of twin pit latrines in the containment system. It is assumed that all these twin pit containment technologies are defined as a lined tank with impermeable walls and open bottom (system T1A4C10, 3%). Thus, variable F3 for system T1A4C10 is set to 0%.
- ✓ There are around 90% of single pit latrines in the containment systems. It is assumed that all these single pit containment technologies are defined as lined pits with semi-permeable walls and open bottom, no outlet or overflow (system T1A5C10, 90%). Most of the single pit latrines are found to be emptied within 1-2 years. Thus, variable F3 for system T1A5C10 was set to 95%.
- ✓ 1% of septic tanks are connected to soak pits (system T1A2C5). They are well-constructed as per the field visit observation. The risk of goundwater contamination was deemed low, therefore that option was selected in the SFD Matrix.
- ✓ Around 50% of HHs have emptied their septic tank with a soak pit with a desludging frequency of 2-5 years. Thus, variable F3 for system T1A2C5 is set to 50%.
- ✓ There are 38% of septic tanks connected to the open drain, water bodies and ‘don’t know where which are empties within 2-5 years. Thus, variable F3 for systems T1A2C6, T1A2C7 and T1A2C9 are set to 38%.
- ✓ 1% of containments are found as unlined pits, no outlet or overflow (T1A6C10), since they are not constructed properly. These systems are never emptied (variable F3 set to 0% and hence, variables F4 and F5 are also both set to 0%).
- ✓ Supernatant in T1A2C6 is directly discharged into the river or the environment untreated. Therefore, variables W4c, W5c, S4e and S5e were set to 0%.
- ✓ Since there are no wastewater or faecal sludge treatment facilities in the town and all the collected FS is disposed untreated into the environment, variables F4 and F5 for all systems are considered to be 0%.

6 List of Sources

Reports, literature and website

- Bangladesh Bureau of Statistics (BBS), 2011.
- Population and Housing Census, 2011.
- Rapid Assessment Report – 'GoB-UNICEF supported WASH Project', Department of Public Health Engineering (DPHE), Dhaka, Bangladesh.
- Report on 'Hydrogeological Screening, Slug Test And Geophysical Logging on Observation Well Units' under *Bangladesh Rural Water Supply And Sanitation Project (BRWSSP),* Arsenic Management Division, Department Of Public Health Engineering (DPHE)

Key Informant Interviews (KII) (Rapid Assessment, KII & FGD, March-June 2021/ GoB-UNICEF supported WASH Project, DPHE)

- KII with honorable Mayor, Homna Municipality.
- KII with Secretary, Homna Municipality.

Focus Group Discussions (FGD) (Rapid Assessment, KII & FGD, March-June 2021/ GoB-UNICEF supported WASH Project, DPHE)

- FGD with Municipality Councilors, Homna Municipality.
- A group of conservancy staff who are responsible for sanitation, solid waste management and drainage system
- A group of sweepers and waste collectors, some of them provide service privately for excreta emptying.
- A group of the representative from house owners.
- Participants from local NGOs

A group of conservancy staff who are responsible for sanitation, solid waste management and drainage system

FGD with Municipality Councilors

Figure 7: Focus Group Discussions in Homna Municipality (Rapid Assessment, KII & FGD, March-June 2021/ GoB-UNICEF supported WASH Project, DPHE)

Other sources of information

- Household visit, rapid assessment and partial cluster social maps by Community Mobilizer under GoB UNICEF supported WASH project
- Physical observation under GoB UNICEF supported WASH project

Partial cluster social maps preparation by the community under GoB UNICEF supported WASH project

Physical observation Under GoB UNICEF supported WASH project

Figure 8: Other sources of information
(Rapid Assessment, KII & FGD, March-June 2021/ GoB-UNICEF supported WASH Project, DPHE)

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